MISSISSIPPI MILITARY DEPARTMENT
State of Mississippi
1410 Riverside Drive
Jackson, Mississippi 39202-1271

Mississippi Army National Guard

INVITATION TO BID AND
TECHNICAL SPECIFICATIONS FOR:

YCA BUILDINGS PHASE II & III
CAMP SHELBY JOINT FORCES TRAINING CENTER
CAMP SHELBY, MISSISSIPPI

MMD PN 28260036-36, 28270009-12

BOBBY M. GINN, JR.
Major General, Mississippi National Guard
The Adjutant General of Mississippi

REGISTERED ARCHITECT
CHRIS L. ROBINSON
3104
STATE OF MISSISSIPPI

Set of

Updated July 2025

PROJECT IDENTIFICATION

PROJECT: YCA BUILDINGS PHASE II & III
CAMP SHELBY JOINT FORCES TRAINING CENTER
CAMP SHELBY, MISSISSIPPI

DATE: MARCH 10, 2026

OWNER: MISSISSIPPI MILITARY DEPARTMENT
BOBBY M. GINN, JR.
MAJOR GENERAL, MISSISSIPPI NATIONAL GUARD
THE ADJUTANT GENERAL OF MISSISSIPPI

OWNER'S REPRESENTATIVE: CURTIS BODDY, JR
MISSISSIPPI MILITARY DEPARTMENT
ATTN: NGMS-SRC
1410 RIVERSIDE DRIVE
JACKSON, MISSISSIPPI 39202-1271
(601) 313-6209

ARCHITECT: ALBERT & ROBINSON ARCHITECTS
P.O. BOX 1567
HATTIESBURG, MS 39403
601-544-1970

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LEGAL NOTICE
ADVERTISEMENT FOR BIDS
NOTICE TO CONTRACTORS

Sealed bids will be received, publicly opened and read in the office of the Adjutant General, 1410 Riverside Drive, Jackson, Mississippi, 39202-1271. Electronic Bids may be received via MAGIC portal or Physical Receipt. Prospective bidders are encouraged to monitor the Mississippi Department of Finance and Administration website for updates and future bidding opportunities.

UNTIL: 1:30 PM April 30, 2026

FOR: Repair YCA Buildings Phase II & III, CSJFTC, Camp Shelby, MS

Plans and specifications may be obtained by contacting Albert & Robinson Architects via Plan House printing at https://www.ar-architectsprojects.com. Login information (username and password) will be provided by Plan House Printing at (601) 336-6378. Bid documents are available in hard copy form for a non-refundable deposit of $450.00 per set of documents. Bid preparation shall be in accordance with instructions to bidders bound in the project manual.

A pre-bid conference will be conducted 10AM April 7, 2026 at the YCA Conference Room. ALL PROSPECTIVE BIDDERS ARE ENCOURAGED TO ATTEND.

Bidders shall be advised that in accordance with the Mississippi Code, the Military Department has Thirty (30) calendar days to deliver a warrant to the vendor from the date an application for payment is determined to be due and payable under the terms and conditions of the contract.

The Adjutant General reserves the right to reject any and/or all bids and to waive informalities. Award of contract is subject to availability of funds. Bids will be held open for 60 days from bid date.

PUBLISH: March 25 & April 1, 2026

SECTION 00 20 00

INSTRUCTION TO BIDDERS

1. PROJECT IDENTIFICATION

The construction contemplated in the following specifications and the attached or accompanying documents including plans prepared as essential parts hereof include furnishing all plant, labor, tools equipment, materials, fixtures, accessories and other things necessary for construction of project as specified herein and as shown on the drawings. The State of Mississippi, represented by the Adjutant General of said State, shall be hereinafter referred to as the Director, State Purchasing and Contracting and/or Contracting Officer. Wherever the term "Owner" is used, it shall refer to the State of Mississippi.

2. BID SECURITY

Each bid must be accompanied by certified check, cashier's check, of the bidder, or a bidder's bond equal to 5% of the total amount of the base bid. Certified checks must be issued by a bank located within the State of Mississippi. If bid is submitted electronically, the physical Certified check or Cashier's check must be placed in the hands of the MS Military Department's state personnel directly serving the procurement activity prior to the date and time set for in the advertisement.

The successful bidder, upon failure or refusal to execute and deliver the contract and bond required within ten (10) days after he/she has been notified of award of the contract to him/her, shall forfeit to the Director, State Purchasing and Contracting and/or Contracting Officer, as liquidated damages not as penalty, for such failure or refusal, the security deposited with his/her bond.

3. SITE EXAMINATION

Each bidder must inform himself/herself fully of the conditions relating to construction and labor under which the work is to be performed by visiting each site and familiarizing himself/herself with the problem's peculiar to the various items of work. Failure to visit the site will in no way relieve the successful Bidder from furnishing any materials or performing any work required to complete work in accordance with Plans, Specifications or other contract documents without additional cost to the Owner.

4. APPROVAL

The Adjutant General of the State of Mississippi shall, and does, have the right to approve any and all material and equipment used in the construction of the projects involved and to make selection thereof.

5. PERFORMANCE BONDS

The Contractor shall give a Performance Bond and Payment Bond in the amount equal to 100% of the contract price in a surety company authorized to do business in the State of Mississippi as surety

thereon. OPTIONAL: If contract price is under $25,000, contractor may accept one/final payment in lieu of Performance Bond ONLY.

If, at any time after execution and approval of this contract and performance bond required by the contract documents, the Owner shall deem any of the sureties upon such bond to be unsatisfactory, or if for any reason, such bond shall cease to be adequate security for the Owner the Contractor shall, within five (5) days after notice of the Owner to do so, furnish a new and additional bond in form and sum signed by such parties as shall be satisfactory to the owner. No further payment shall be deemed to be due, nor shall any further payment be made to the Contractor until such new bonds shall be paid for the Contractor, only bonding and surety companies that are approved in "Federal Register" 570, Surety Company Acceptable on Federal Bonds, will be acceptable to this office as underwriters.

6. EXECUTION OF BIDS

Each bid must be signed in writing by any individual authorized to enter into a binding agreement for the Business making the bid proposal. Any bid not so signed may be rejected for informality. All prices must be printed in ink or typewritten. No erasures permitted. Errors may be crossed out and corrections printed in ink or typewritten adjacent and must be initialed in ink by person delivering bid.

Should the bidder be a partnership, bid should be so signed as to show the various members making up the partnership. Should it be a company non-corporate, owner may be individual or group, this should also be made clear.

Failure to complete any and/or all bid items as required will render same irregular to the probable extent of causing rejection.

All bids must be submitted by one of the following:

Preferred Method: in a sealed envelope and addressed as shown on the bid specifications, Directions for Mailing Bids DMB Section 00 21 13 -1/1. Bids must be placed in the hands of the state personnel directly serving the procurement activity prior to the hour of the date mentioned in the advertisement. Bidder submitting bid, whether hand delivered or mailed, is responsible for ensuring that the sealed bid is delivered by the required time and the bidder assumes all risk of delivery. The time of receipt shall be determined by the time clock of the Director, State Purchasing and Contracting and/or Contracting Officer or authorized representative directly serving the procurement activity for the Mississippi Military Department. Bids received after the hour and date specified will be rejected.

Bidder hand delivering his/her bid is encouraged to **arrive 30 minutes early** to preclude any delays due to heightened security at our facility.

Bidder mailing his /her bid must ensure that the mailing envelope is marked same as described in the Direction Mailing Bids DMB Section 00 21 13 -1/1.

Second Method: Electronically via MAGIC Portal. Bidder will ensure that the opening page will be either the COR Number or Bid Does Not Exceed $75,000.00 Only, the pages to follow will be the Bid Form, etc. Bids must be electronically completed by the required date and time set for in the advertisement for bids and the bidder assumes all risk of electronic delivery. The site for MS Suppliers (Vendors) is http://www.dfa.ms.gov/dfa-offices/mmrs/mississippi-suppliers-vendors/ at the bottom it will have Self service, supplier training etc.

Bidder may modify the bid PRIOR to the scheduled closing time indicated in the Advertisement of Bids on the outside of the sealed envelope containing the bid. A facsimile will not be acceptable.

If the agency is closed for any reason, including but not limited to: acts of God, strikes, lockouts, riots, acts of war, epidemics, governmental regulations superimposed after the fact, fire, earthquakes, floods, or other natural disasters, (the "Force Majeure Events"), which closure prevents the opening of bids at the advertised date and time, all bids received shall be publicly opened and read aloud on the next business day that the agency shall be open and at the previously advertised time. The new date and time of the bid opening, as determined in accordance with this paragraph, shall not be advertised, and all Contractors, upon submission of a bid proposal, shall be deemed to have knowledge of and shall have agreed to the provisions of this paragraph. Bids shall be received by the agency until the new date and time of the bid opening as set forth herein.

The agency shall not be held responsible for the receipt of any bids for which the delivery was attempted and failed due to the closure of the agency as a result of a Force Majeure Event. Each Contractor shall be required to ensure the delivery and receipt of its bid by the agency prior to the new date and time of the bid opening.

7. FORMS

For the purpose of uniformity and equity in all proposals, and clearly indicating alternate propositions as called for, bidders will be required to use the bid form incorporated herein. Where prices are stated, they must be expressed both in figures and written words in the spaces provided for that purpose. In the case of difference in the figures and the written price, the latter will be considered binding. No amendments, alterations, insertions, provisions, or other additions made by the bidder for the purpose of changing the intent of expression of the forms provided will be allowed. Also, any changes may render the bid irregular and thereby cause its possible rejection. Loose copies of the proposal form shall be furnished to all bidders upon request.

Contractors shall hold their bids open for acceptance for a period up to sixty (60) days from the date of the bid opening. The successful bidder further agrees that upon notification of an award of the

contract, the successful bidder shall furnish the State of Mississippi a Performance Bond, Standard Form 25 and a Payment Bond, Standard Form 25A or equivalent Form from the bidders Bonding Company with good and sufficient surety. Bonds will be in the amount of 100% and in accordance with the Base Bid and/or combination of Bid Items as accepted by the Director, State Purchasing and Contracting and/or Contracting Officer.

8. TIME TO COMPLETE WORK

Bidder to whom contract is awarded must agree to commence the work within ten (10) calendar days after receipt of written notice to proceed and complete the work ready in its entirety within the time stated in Bid Form. This time will include the receipt of all Close Out Documents and final pay request to Director, State Purchasing and Contracting and/or Contracting Officer. If Substantial Completion is necessary and approved, it must be determined prior to the final completion date. Delays through no fault of the Contractor will be taken into consideration by the Director, State Purchasing and Contracting and/or Contracting Officer.

9. INTERPRETATION OF THE CONTRACT DOCUMENTS

It shall be incumbent upon all bidders to understand the provisions of the specifications and to obtain clarification prior to the time and date set for the bid opening. Such clarification will **only** be in the form of a response to a written request and received not less than six (6) working days prior to the bid opening. No clarification will be offered in a response to a telephone request.

If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of plans, specifications, or other contract documents, they should contact the Architect listed on page POI-1/1.

Any interpretations of the proposed documents will be made only by addendum duly issued and a copy of such an addendum will be mailed or delivered to each person receiving a set of such documents. The Owner will not be responsible for any other explanations of the proposed documents.

Addenda modifying the specifications may be issued if time permits. No addendum will be issued within a period of two working days prior to the time and date set for the bid opening. Should it become necessary to issue an addendum within the two-day period to the bid opening, the bid date will be reset giving bidders ample time to answer the addendum. When replying to a bid request on which an addendum has been issued, the bidder shall attach a copy of the addendum signature page with the bid which will indicate the acknowledgement of receipt of that addendum and that the bid is being offered in compliance therewith. **Failure to attach a copy of the addendum signature page may result in the bid being rejected as not being in accordance with the revised specifications**.

10. DISQUALIFICATION OF BIDDER: A Bidder may be disqualified for any of the following reasons:

a. Failure to comply with the bid requirements.
b. Bidder is in arrears on existing Contracts with the Owner or another state agency.
c. Bidder is, or anticipates being, in litigation or arbitration with the Owner or another state agency.
d. Bidder has defaulted on a previous Contract.

11. CERTIFICATION OF RESPONSIBILITY (COR)

a. The Mississippi State Board of Contractors is responsible for issuing Certificates of Responsibility to Contractors. To be awarded a Contract for public work, Sections 31-3-15 and 31-3-21 of the **Mississippi Code 1972 Annotated** requires a Contractor to have a current Certificate of Responsibility at bid time and during the entire length of the job. The Certificate of Responsibility number issued becomes a significant item in all public bidding.

b. **Bids Under $75,000:** If a Bidder submits a bid not exceeding $75,000, no Certificate of Responsibility number is required; however, a notation stating the bid does not exceed $75,000 must appear on the face of the envelope, or a Certificate of Responsibility number. SEE Directions for Mailing Bids DMB section 00 21 13 - 1/1 for example.

c. **Bids Over $75,000:** Each Bidder submitting a bid in excess of $75,000 must show its Certificate of Responsibility number on the bid and on the face of the envelope containing the bid. SEE Directions for Mailing Bids DMB section 00 21 13 - 1/1 for example.

d. **Joint Venture Bid:** When multiple Contractors submit a joint venture bid in excess of $75,000, a *joint venture* Certificate of Responsibility number must be shown on the bid and on the face of the envelope containing the bid. If the Multiple-Contractor joint venture has no *joint venture* Certificate of Responsibility number, each of the Contractors participating in the bid must indicate their individual Certificate of Responsibility numbers on the bid and on the face of the envelope.

12. BID SECURITY-BIDDING REOUIREMENTS

All bids shall be accompanied by a Bid Security in the sum of five percent (5%) of the contract price. Bid Security shall be a cashier's or certified check or a duly executed copy of Bid Bond, using the Mississippi Military Department's Standard Form 24 or equivalent Form from the Bidders Bonding Company. Contractors bidding using Standard Form 24 will be furnished a copy from the Mississippi Military Department, State Purchasing and Contracting Division. (Example shown in Contract Forms BB Section 00 42 13 1/2).

13. CONTRACT BOND

Prior to award of contract, the Contractor will be expected to execute a Performance Bond, Standard Form 25 and a Payment Bond, Standard Form 25-A or equivalent Form from the bidders Bonding Company. When executed, this document will be bound here with final Contract Documents. (Example shown in Contract Forms Section, PeB Section 00 61 13.13 1/2 and PeB Section 00 61 13.16 2/2).

14. NONRESIDENT CONTRACTOR

When a Nonresident Contractor submits a bid for a public project, he/she shall attach thereto one of the following:

a. A copy of his/her resident state's current law pertaining to such state's treatment of Nonresident Contractors. As used in this section, the term "Resident Contractors" includes a nonresident person, firm or corporation that has been qualified to do business in this state and has maintained a permanent full-time office in the State of Mississippi for two (2) years prior to submission of the bid and the subsidiaries and affiliates of such a person, firm or corporation.

b. A statement indicating the State of (Name of the State) has no resident contractor preference law. Any bid submitted by a nonresident contractor which does not include either A or B of Paragraph 14 on page ITB Section 00 20 00 6/7 shall be rejected and not considered for award.

15. PROTEST

Any protest MUST be delivered, in writing, to the Owner within forty-eight (48) hours after the bid opening.

16. CONTRACT AWARD

The contract award will be made on the basis of the lowest and the best overall Base Bid and/or any combination of Bid Items as selected and accepted by the Director, State Purchasing and Contracting and/or Contracting Officer. The Director, State Purchasing and Contracting and/or Contracting Officer reserves the right to reject any and/or all bids and to adjust the contract price within funding on the basis of the quoted bid prices.

17. METHOD OF PAYMENT

Payments shall be made, and remittance information provided electronically as directed by the State of Mississippi Department of Finance and Administration (DFA). These payments shall be deposited into the bank account of the Contractor’s choice. The State of Mississippi DFA may, at its sole discretion, require the Contractor to submit invoices and supporting documentation electronically at any time during the term of this contract. Contractor understands and agrees that the State is exempt from the payment of taxes. All payments shall be in the United States currency.

Contractor shall be advised that in accordance with the Mississippi Code, the Military Department has thirty (30) calendar days to deliver a warrant to the vendor from the date the invoice is due and payable. Due and payable shall be at the time pay request has been received by the Department of Finance Administration (DFA) and has been validated by the Director, State Purchasing and Contracting and/or Contract Officer responsible for the project along with inspection report confirming work has been completed in accordance with plans, specifications and bid documents.

18. E-VERIFY PROGRAM

Contractor shall be advised that prior to Execution of the contract, **Contractor will be required to issue a certification letter to the MMD certifying E-Verify has been completed** and provide the 6-digit Company ID# issued by the Department of Homeland Security to include any Subcontractors Company IDS#'s. The Contractor agrees to comply with the Mississippi Employment Protection Act, Miss, Code Ann. 8 71-1-57, and will register and participate in the status verification system for all newly hired employees, effective for all public contracts executed after 1 Jul 08. The term "employee" as used herein means any person or entity that is hired to perform work within the State of Mississippi and to whom the Contractor is required by Federal or Mississippi law to issue a United States Internal Revenue Service Form W-2 or Form 1099.

As used herein, "status verification system" means the electronic verification of work authorization program of the Illegal Immigration Reform and Immigration Responsibility Act of 1996 that is operated by the United States Department of Homeland Security, also known as the E-Verify Program or any other successor verification system replacing the E-Verify Program. The Contractor agrees to maintain records of such compliance, and upon request of the State, to provide a copy of each such verification to the State. The Contractor agrees that any person assigned to perform services hereunder meets the employment eligibility requirements of all immigration laws of the United States and the State of Mississippi. The Contractor understands and agrees that any breach of these warranties may subject the Contractor to the following: (a) termination of this contract and ineligibility for any state of public contract in Mississippi for up to three years, with notice of such cancellation/termination being made public, or (b) the loss of any license, permit, certification or other document granted to the Contractor by an agency, department or government entity for the right to do business in Mississippi for up to one year, or (c) both, as well as any other penalties authorized by law. In the event of such cancellation/termination, the Contractor will also be liable for any additional cost incurred by the State due to the contract cancellation or loss of license or permit.

(END OF SECTION)

SECTION 00 21 13

DIRECTION FOR MAILING BIDS

ANY BID NOT MARKED ACCORDINGLY WILL BE DISQUALIFIED

ALL BIDS WILL BE PLACED IN SEALED ENVELOPE AND MARKED AS FOLLOWS:

IF BID DOES NOT EXCEED $75,000

NAME/ADDRESS OF CONTRACTOR

THE ADJUTANT GENERAL
STATE OF MISSISSIPPI
ATTN: NGMS-SRC
1410 RIVERSIDE DRIVE
JACKSON, MS 39202-1271

"BID" (Write in Title of Project as listed on specifications)

"ENCLOSED BID DOES NOT EXCEED $75,000"

IF BID DOES EXCEED $75,000

NAME/ADDRESS OF CONTRACTOR

THE ADJUTANT GENERAL
STATE OF MISSISSIPPI
ATTN: NGMS-SRC
1410 RIVERSIDE DRIVE
JACKSON, MS 39202-1271

"BID" (Write in Title of Project as listed on specifications)

"CERTIFICATE OF RESPONSIBILITY NUMBER_____

SECTION 00 40 00

BID FORM

SUBMITTED BY: _____ DATE:_____
(Name of Firm)

TO: The Adjutant General
State of Mississippi
ATTN: NGMS-SRC
1410 Riverside Drive
Jackson, MS 39202-1271

RE: YCA BUILDINGS PHASE II & III

Gentlemen:

In compliance with your advertisement for bids, the undersigned, having become thoroughly familiar with the terms and conditions of the proposed Contract Documents and with local conditions affecting the performance and costs of the work at the site in all particulars, hereby proposes and agrees to fully perform the work within the time stated and in strict accordance with proposed Contract Documents, including furnishing any and all plant, labor, and materials, and to do work required to construct and complete said work in accordance with Contract Documents, for the following sum of money:

BASE BID: All labor, materials, services, and equipment necessary for the completion of the work as indicated on the plans and specifications and other contract documents for the sum of:

_____ DOLLARS AND _____ CENTS
(Words) (Words)

($_____).
(Figures)

ALTERNATES: (Refer to SW/BI Section 00 43 00, Part II in the specification for full description.

ADDITIVE ALTERNATE #1:

Add all labor and materials required for removal / discarding of existing flooring and installation of new flooring at Buildings 103, 123, 124, 125, 126, 128, 130, 131, 323 and 325, as depicted in the drawings and specifications.

_____ DOLLARS AND _____ CENTS
(Words) (Words)

($_____).
(Figures)

ADDITIVE ALTERNATE #2:

Add all labor and materials required for removal / discarding of all existing exterior windows and installation of new exterior storefront system windows at Buildings 103,123,124,125,126,128,130,131,323 and 325, as depicted in the drawings and specifications.

_____ DOLLARS AND _____ CENTS
(Words) (Words)

($_____).
(Figures)

ADDITIVE ALTERNATE #3:

Add total scope for Building 127 – Male Barracks.

_____ DOLLARS AND _____ CENTS
(Words) (Words)

($_____).
(Figures)

ADDITIVE ALTERNATE #4:

Add total scope for Building 129 – Male Barracks.

_____ DOLLARS AND _____ CENTS
(Words) (Words)

($_____).
(Figures)

ADDITIVE ALTERNATE #5:

Add total scope for Building 326 – Female Barracks.

_____ DOLLARS AND _____ CENTS
(Words) (Words)

($_____).
(Figures)

ADDITIVE ALTERNATE #6:

Add total scope for Building 110 – Male Recreation and Fitness.

_____ DOLLARS AND _____ CENTS
(Words) (Words)

($_____).
(Figures)

ADDITIVE ALTERNATE #7:

Add total scope for Building 309 – Chapel and Testing.

_____ DOLLARS AND _____ CENTS
(Words) (Words)

($_____).
(Figures)

1. I understand that the Owner reserves the right to reject this bid and to waive informalities, but that this bid shall remain open and not be withdrawn for a period of **60** days from the date prescribed for its opening.

2. The Bidder further agrees that if awarded the contract, he/she will furnish and deliver to the Owner the *Performance Bond, Labor and Material Payment Bond, Certificate of Insurance Coverage and specified contract forms, all within ten (10) days after Notification of Acceptance of this bid. Bidder further agrees to commence work within ten (10) calendar days of the effective date of the written Notice-to-Proceed and to complete the project on or before **470** calendar days after the effective date of the Notice to Proceed. Completion will include receipt of all Close Out Documents and Final Payment received in the office of NGMS-SRC. In the case of failure on the part of the contractor to complete the work within the time fixed in the contract or any extension thereof, the contractor shall pay to the State as liquidated damages, not as penalty, the sum of **$971.51** per calendar day.

   - Or ONE PAYMENT option (Page ITB Section 00 20 00 - 6/7)

3. Notice of Acceptance, or request for additional information may be addressed to the undersigned at the address set forth below.

4. Security (Bid Bond, GSA Standard Form 24), as required by the Invitation is enclosed, and is to become the property of the Owner in the event the Contract Agreement and associated forms are not executed within the prescribed time as liquidated damages, not as penalty, for the delay and additional expense caused thereby. However, Bid Security will be returned to bidder upon contract award.

5. I agree to complete all work, to include the submission of ALL Close Out Documents and Final Pay Request in the number of consecutive calendar days stated above.

Signed: _____ _____

Title: _____ _____

_____
(Name/Address of Firm Bidding)

_____
(Phone Number of Firm Bidding)

CONTRACTOR'S CERTIFICATE OF RESPONSIBILITY NUMBER _____

The Corporation (if applicable) is chartered under the laws of the State of_____ and the names, title and business addressed of the executive are as follows:

NAMES:	ADDRESSES:
_____ President	_____ Address
_____ Secretary	_____ Address
_____ Treasurer	_____ Address

TO BE FILLED IN IF A PARTNERSHIP:

Our partnership is composed of the following individuals:

NAMES	ADDRESSES
_____	_____
_____	_____
_____	_____
_____	_____

RECEIPT OF THE FOLLOWING ADDENDA IS ACKNOWLEDGED:

ADDENDUM No.	DATED	ADDENDUM No.	DATED	ADDENDUM No.	DATED
_____	_____	_____	_____	_____	_____

END OF PROPOSAL

SECTION 00 43 00

SCOPE OF WORK & DESCRIPTION OF BID ITEMS

PART I - SCOPE OF WORK:

1.01 General Description: The project consists of renovations to 15 buildings as listed in the project title including doors, windows, finishes, plumbing, electrical and data.

PART II - DESCRIPTION OF BID ITEMS:

2.01 Base Bid: Renovations to various buildings at the Youth Challenge Academy as described in the contract drawings and specifications.

2.02 ADDITIVE ALTERNATE #1: Add all labor and materials required for removal / discarding of existing flooring and installation of new flooring at Buildings 103, 123, 124, 125, 126, 128, 130, 131, 323 and 325, as depicted in the drawings and specifications.

2.03 ADDITIVE ALTERNATE #2: Add all labor and materials required for removal / discarding of all existing exterior windows and installation of new exterior storefront system windows at Buildings 103,123,124,125,126,128,130,131,323 and 325, as depicted in the drawings and specifications.

2.04 ADDITIVE ALTERNATE #3: Add total scope for Building 127 – Male Barracks.

2.05 ADDITIVE ALTERNATE #4: Add total scope for Building 129 – Male Barracks.

2.06 ADDITIVE ALTERNATE #5: Add total scope for Building 326 – Female Barracks.

2.07 ADDITIVE ALTERNATE #6: Add total scope for Building 110 – Male Recreation and Fitness.

2.08 ADDITIVE ALTERNATE #7: Add total scope for Building 309 – Chapel and Testing.

PART III – GENERAL:

3.01 - The Owner reserves the right to accept any/or all Bid Items and to make award based upon the lowest and best overall Base Bid and/or any combination of the Bid Items in order to provide the Owner flexibility to award the contract within funding available.

3.02 - Unit Prices shall be used in determining additions to or deductions from the contract amount when authorized changes are directed in the work as shown or specified in the original contract drawings and documents. They will apply only when such changes involve materials, specifications, methods, and designs of the same as those required in like work shown and/or specified. They will not be applied to changes requiring use of materials, specifications, or design of different character from those approved for general use under the contract as originally drawn. Unit Prices shall include the furnishing of all labor and materials, complete in place, unless otherwise noted.

3.03 - Immediately after award of the contract, or as soon thereafter as the Owner has made decision on which, if any, alternates will be selected, thoroughly and clearly advise all necessary personnel and suppliers as to the nature and extent of alternates selected by the Owner. Use all means necessary to alert those personnel and suppliers involved as to all changes in the work caused by the Owner's selection or rejection of alternates.

SECTION 00 52 00

CONTRACT FORMS - OWNER-CONTRACTOR AGREEMENT

The Owner-Contractor Agreement Form for this project will be in the form of State of Mississippi Military Department Construction Contract with Federal and State Clauses, to be executed on behalf of the State of Mississippi Military Department and the Contractor to be awarded the contract. An example of this contract is shown at Pages GC Section 00 70 00 6/33 thru GC Section 00 70 00 33/33 of this Specification Document and has been incorporated and made part of the General Conditions Section of same.

(END OF SECTION)

SECTION 00 65 00

CONDITIONS OF THE CONTRACT - CLOSE-OUT DOCUMENTS

1. The following documents, as a minimum, must be delivered to the Director, State Purchasing and Contracting and/or Contracting Officer prior to final payment and release of any and/or all retainages. The owner, through the Director, State Purchasing and Contracting and/or Contracting Officer, reserves the right to increase or decrease the type, substance and number of documents required for proper close out. Contact the A&E if you need to obtain copies of the AIA Documents as they are American Institution of Architects (AIA) official documents.

a. APPLICATION OF PAYMENT: AIA Document G-702 & G-703 (Continuation sheet).

b. CERTIFICATE OF SUBSTANTIAL COMPLETION: AIA Document G-704.

c. CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS: AIA Documents G-706 and G-706A: The Contractor shall furnish these documents complete with attached notarized statement on letterhead as follows:

"WE HEREBY CERTIFY THAT ALL BILLS FOR LABOR AND MATERIALS INCORPORATED INTO THE PROJECT UNDER OUR CONTRACT NUMBER HAVE BEEN PAID AND THAT THE OWNER IS RELEASED FROM ANY AND ALL CLAIMS AND/OR DAMAGES UNDER THIS CONTRACT."

d. CONSENT OF SURETY COMPANY TO FINAL PAYMENT: AIA Document G-707. To be completed in full by the bonding company.

e. CONTRACTOR'S NOTARIZED STATEMENT: Notarized statement from the Contractor on letterhead that project has been completed in accordance with all Contract Documents.

f. CONTRACTOR'S NOTARIZED STATEMENT OF GUARANTEE/S: Reference page GW Section 00 65 36 1/2 of specifications. Statement will be worded as follows:

"WE HEREBY GUARANTEE ALL WORK PERFORMED BY US ON THE PROJECT CONTRACT NUMBER, TO BE FREE FROM DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR, OR SUCH LONGER PERIOD OF TIME AS MAY BE STIPULATED IN THE CONTRACT DOCUMENTS."

The Contractor will secure guarantees from any and all subcontractors covering work performed by them and deliver same to the owner.

g. OPERATING AND MAINTENANCE MANUALS: All manufacturer's operating instructions and maintenance manuals will be compiled into a digital folder with PDF files and emailed to the project manager.

h. FINAL INSPECTION REPORT: Statement from the Contracting Officer's Representative or the A&E, whichever is applicable, that all punch list items have been completed, final cleaning has been accomplished and the project is ready for close out.

i. AS BUILT DRAWINGS: The Contractor shall furnish the Director, State Purchasing and Contracting and/or Contracting Officer two (2) complete digital PDF sets of "As Built Drawings", signed by the Contractor, depicting the actual construction and all changes incorporated therein.

j. DD FORM 1354: Refer to Section 00 73 01 3/5 item 10 for instructions.

(END OF SECTION)

SECTION 00 65 36

CONDITIONS OF THE CONTRACT - GUARANTEES & WARRANTIES

1. Except as otherwise specified, all work shall be guaranteed by the Contractor, and through him each Subcontractor, against defects resulting from the use of inferior materials, equipment or workmanship for a period of one (1) year from the date of substantial completion. NOTE: See Section 00 73 03, 2017 Supplementary Conditions, Paragraph 9.8 for conditions of Substantial Completion, Partial Occupancy or Use and Final Inspection. A year end warranty inspection will be conducted prior to the one-year end time frame. If any items need correcting, they will be corrected in a timely manner. Once completed, we will send in writing a completion letter of year end warranty items.

2. If, within any guarantee period, repairs or changes are required in connection with guaranteed work which, in the Owner's opinion, are rendered necessary as the result of the use of materials, equipment or workmanship which is inferior, defective or not in accordance with terms of the contract, the Contractor shall promptly, upon receipt of owner's notice in writing, and without expense to the owner, perform the following:

a. Place in satisfactory condition, in every particular, all such guaranteed work and correct all defects therein.

b. Make good all damage to the buildings, site, equipment or building contents which, in the owner's opinion, is the result of the use of materials, equipment or workmanship which is inferior, defective or not in accordance with the terms of the contract.

c. Make good any work or materials, or the equipment and contents of building or site disturbed in fulfilling such guarantee.

3. In any case where fulfilling the requirements of the contract, or any guarantee embraced in or required thereby, the Contractor disturbs any work guaranteed under another's contract, he/she shall restore such disturbed work to a condition satisfactory to the Owner and guarantee such restored work to the same extent as if it was guaranteed under such other contract.

4. If the Contractor, after notice, fails to proceed promptly to comply with terms of the guarantee, the owner may have the defects corrected and the Contractor and his/her surety shall be liable for all expense incurred thereby.

5. All special guarantees applicable to definite parts of the work that may be stipulated in the Specifications, and/or the Contract Documents, shall be subject to the terms herein during the first year of the life of such special guarantees.

6. All guarantees and warranties shall be obtained in the owner's name and evidence thereof shall be promptly delivered to the Director, State Purchasing and Contracting and/or Contracting Officer for transfer to the Owner.

(END OF SECTION)

SECTION 00 70 00

CONDITIONS OF THE CONTRACT - GENERAL CONDITIONS

1. The General Conditions of the contract for the construction of buildings, The American Institute Document, A201 - 2017, Articles 1 through 15, Section 00 73 03 is a part of these contract documents, copy of which can be obtained by the A&E. In the case of a conflict, the Special Conditions, General Conditions, and the owner-Contractor Agreement, as contained herein, shall take precedence over aforementioned AIA Document.

2. INSPECTION

All work will be conducted under the general direction of the Director, State Purchasing and Contracting and/or Contracting Officer and is subject to inspection by his/her appointed inspectors to ensure strict compliance with the terms of the contract. No inspector is authorized to change any provisions of the specifications without written authorization of the Director, State Purchasing and Contracting and/or Contracting Officer, nor shall the presence or absence of an inspector relieve the Contractor from any requirements of the contract. (See GC Section 00 70 00 - 17/33 – 18/33, Paragraph 17 for additional inspection conditions).

3. ACCIDENT PREVENTION

In order to provide safety controls for protection to the life and health of employees and other persons, for prevention of damage of property, materials, supplies and equipment, and for avoidance of work interruptions in the performance of this contract, the Contractor shall comply with all pertinent provisions of Corp of Engineers Manual EM 385-1-1, dated 3 November 2003, entitled General Safety Requirements, as amended and will also take or cause to be taken, such additional measures as the Director, State Purchasing and Contracting and/or Contracting Officer may determine to be reasonably necessary for the purpose. The Contractor will maintain an accurate record of, and will report to the Director, State Purchasing and Contracting and/or Contracting Officer in the manner and on the forms prescribed by the Director, State Purchasing and Contracting and/or Contracting Officer, exposed data and all accidents resulting in death, traumatic injury, occupational disease, and damage to property, materials, supplies and equipment incident to work performed under this contract.

4. USE AND POSSESSION PRIOR TO COMPLETION

The State shall have the right to take possession of or use any completed or partially completed part of the work. Such possession or use shall not be deemed an acceptance of any work not completed in accordance with the contract. While the State is in such possession, the contractor, notwithstanding

the provision of the clause of this contract entitled PERMITS AND RESPONSIBILITY FOR WORK, SHALL BE RELIEVED OF THE RESPONSIBILITY FOR LOSS OR DAMAGES TO THE WORK OTHER THAN THAT RESULTING FROM THE CONTRACTOR'S FAULT OR NEGLIGENCE.

If such prior possession or use by the State delays the progress of the work or causes additional expense to the contractor, an equitable adjustment in the contract price or the time of completion will be made, and the contract shall be modified in writing.

5. PROGRESS CHARTS AND REQUIREMENTS FOR OVERTIME WORK

a. The Contractor shall, within such time as determined by the Director, State Purchasing and Contracting and/or Contracting Officer after the date of the commencement of work, prepare and submit to the Director, State Purchasing and Contracting and/or Contracting Officer for approval, a practicable schedule, showing the order in which the Contractor proposes to carry on the work, the date on which he/she will start the several salient features, and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart, of suitable scale, to indicate proportionally, the percentages of work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress at such intervals as directed by the Director, State Purchasing and Contracting and/or Contracting Officer and shall immediately deliver to the Director, State Purchasing and Contracting and/or Contracting Officer such copies as directed. If the Contractor fails to submit a progress schedule within the time prescribed by the Director, State Purchasing and Contracting and/or Contracting Officer, the Director, State Purchasing and Contracting and/or Contracting Officer may withhold approval of progress payment estimates until such time as the Contractor submits the required progress schedule.

b. If, in the opinion of the Director, State Purchasing and Contracting and/or Contracting Officer, the Contractor falls behind in the progress schedule, the Contractor shall take such steps as may be necessary to improve his/her progress and the Director, State Purchasing and Contracting and/or Contracting Officer may require him/her to increase the number of shifts, or overtime operations, days of work, or the amount of construction plant, or all of them, and to submit for approval such supplementary schedule or schedules as may be deemed necessary to demonstrate the manner in which the agreed rate of progress will be regained, all without additional cost to the State.

c. Failure of the Contractor to comply with the requirements of the Director, State Purchasing and Contracting and/or Contracting Officer under this provision shall be grounds for determination of the Director, State Purchasing and Contracting and/or Contracting Officer that the Contractor is not prosecuting the work with such diligence as will ensure the completion within the time specified. Upon such determination, the Director, State Purchasing and Contracting and/or Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part thereof.

6. DEFINITIONS

a. Wherever in the specifications or upon drawings, the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation" or "prescription" of the Director, State Purchasing and Contracting

and/or Contracting Officer is intended and similarly the words "approved by", "acceptable", "satisfactory" or like words, mean "approved by", "acceptable to" or "satisfactory to" the Director, State Purchasing and Contracting and/or Contracting Officer, unless otherwise stated.

b. Where "as shown", "as indicated", "as detailed" or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word "provided", as used herein, shall be understood to mean "Provided complete in place", that is "furnished and installed".

c. The term "State" shall mean the Mississippi Military Department, the State of Mississippi, Commonwealth, or Territory, which is the party to this Contract.

d. The term "Owner" shall mean the Mississippi Military Department, MSARNG, on behalf of the State of Mississippi.

7. TIME EXTENSIONS

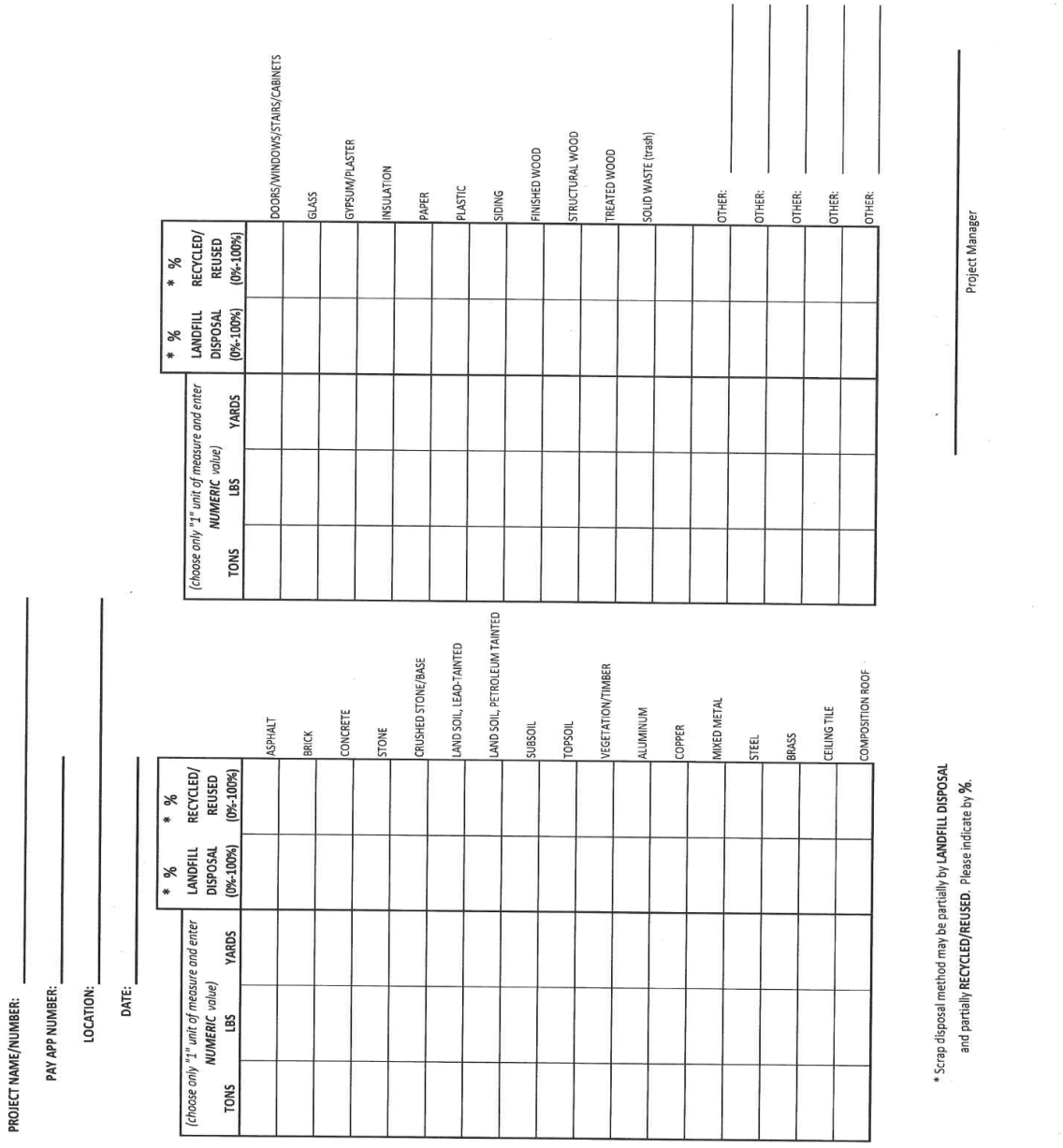
The construction completion number of days required for this Contract as stated on the bid form includes normal anticipated inclement weather as computed from historical weather records for this area, approved holidays and Mississippi Military Department non-workdays. No time extensions will be granted for weather unless it can be documented as exceeding normal/mean weather delays as calculated for the local construction area. Additional time other than normal anticipated weather, materials delays, and any unusual conditions that may delay the completion of this contract will be considered for a time extension on a case by case basis. Contractors must submit their time extension request meeting the criteria for review and recommendation, in writing through the Architect/Engineer or Project Manager and Director, State Purchasing and Contracting and/or Contracting Officer with each pay request submitted.

8. CONSTRUCTION AND DEMOLITION DEBRIS REPORT

The Mississippi Military Department is required to submit to National Guard Bureau a report of offsite removal of solid waste, recyclable materials, etc. for each job site. The Contractor must complete this report and submit with your pay application at the monthly construction meeting. See General Conditions, Section 00 70 00 - 4/33 for an example of the form to be used.

9. ENVIRONMENTAL ISSUES-EROSION CONTROL REMEDIATION

Failure to comply with Erosion Control measures specified by the plans and specifications or in the event of an accident or incident caused by an act of nature, equipment failure, or human negligence that allows silt or contaminants to enter waters of the United States will be contained immediately and repaired within 48 hours. Failure to comply will result in the Mississippi Military Department mobilizing a third-party Contractor to mitigate the non-compliance and back charging the Contractor for actual expenses. In the event the Contractor chooses to forego payment, for the failure to comply, the appropriate bonding company will be notified. There will be no exceptions to this remediation.



C&D Debris Report

PROJECT NAME/NUMBER: _____

PAY APP NUMBER: _____

LOCATION: _____

DATE: _____

(choose only "1" unit of measure and enter NUMERIC value) TONS	LBS	YARDS	* % LANDFILL DISPOSAL (0%-100%)	* % RECYCLED/ REUSED (0%-100%)	
					ASPHALT
					BRICK
					CONCRETE
					STONE
					CRUSHED STONE/BASE
					LAND SOIL, LEAD-TAINTED
					LAND SOIL, PETROLEUM TAINTED
					SUBSOIL
					TOPSOIL
					VEGETATION/TIMBER
					ALUMINUM
					COPPER
					MIXED METAL
					STEEL
					BRASS
					CEILING TILE
					COMPOSITION ROOF

(choose only "1" unit of measure and enter NUMERIC value) TONS	LBS	YARDS	* % LANDFILL DISPOSAL (0%-100%)	* % RECYCLED/ REUSED (0%-100%)	
					DOORS/WINDOWS/STAIRS/CABINETS
					GLASS
					GYPSUM/PLASTER
					INSULATION
					PAPER
					PLASTIC
					SIDING
					FINISHED WOOD
					STRUCTURAL WOOD
					TREATED WOOD
					SOLID WASTE (trash)
					OTHER: _____
					OTHER: _____
					OTHER: _____
					OTHER: _____
					OTHER: _____

* Scrap disposal method may be partially by **LANDFILL DISPOSAL** and partially **RECYCLED/REUSED**. Please indicate by **%**.

_____
Project Manager

C&D Debris Report

PROJECT NAME/NUMBER: REPAIR ROOF / PN: 12345678

PAY APP NUMBER: 6

LOCATION: CAMP SHELBY BLDG 300

DATE: 10/10/20

(choose only "1" unit of measure and enter NUMERIC value) TONS	LBS	YARDS	* % LANDFILL DISPOSAL (0%-100%)	* % RECYCLED/ REUSED (0%-100%)	
					ASPHALT
					BRICK
		3	60 %	40%	CONCRETE
					STONE
					CRUSHED STONE/BASE
					LAND SOIL, LEAD-TAINTED
					LAND SOIL, PETROLEUM TAINTED
					SUBSOIL
					TOPSOIL
					VEGETATION/TIMBER
3				100%	ALUMINUM
					COPPER
					MIXED METAL
					STEEL
					BRASS
	600		100%		CEILING TILE
					COMPOSITION ROOF

(choose only "1" unit of measure and enter NUMERIC value) TONS	LBS	YARDS	* % LANDFILL DISPOSAL (0%-100%)	* % RECYCLED/ REUSED (0%-100%)	
					DOORS/WINDOWS/STAIRS/CABINETS
					GLASS
2.5			100%		GYPSUM/PLASTER
					INSULATION
					PAPER
					PLASTIC
					SIDING
					FINISHED WOOD
					STRUCTURAL WOOD
					TREATED WOOD
					SOLID WASTE (trash)
	1,000		75%	25%	OTHER: HVAC Duct & Units
	150		100%		OTHER: Ceramic Tile
		84sf	100%		OTHER: Asbestos VCT
					OTHER:
					OTHER:

* Scrap disposal method may be partially by **LANDFILL DISPOSAL** and partially **RECYCLED/REUSED**. Please indicate by **%**.

Project Manager

CONTRACT NUMBER **XXXXXXXXXX**

STATE OF MISSISSIPPI MILITARY DEPARTMENT
CONSTRUCTION CONTRACT
WITH
FEDERAL AND STATE CLAUSES

CONTRACTOR AND ADDRESS:

CONTRACT FOR:

AMOUNT:

PLACE:

OWNER: Mississippi Military Department
Bobby M. Ginn, Jr.
Major General, Mississippi National Guard
The Adjutant General of Mississippi

APPROPRIATION DATA: Fund XXXXXX

AGO USE ONLY
REVISED JULY 2025

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CONTRACT FOR CONSTRUCTION

I. THIS CONTRACT, entered into this _____ day of _____, 20 ___, by THE STATE OF MISSISSIPPI (hereinafter called the State), represented by The Adjutant General or designee thereof, executing this contract, with (name of contractor, address and phone no):

*a corporation organized and existing under the laws of the STATE OF MISSISSIPPI

*a professional limited liability company

*a professional limited liability corporation

*a limited liability (company or corporation)

*a partnership consisting of

*an individual trading as

of the city of XXXXXX in the state of XXXXXXXXX, hereinafter called the Contractor, provides that the parties hereto do mutually agree as follows:

II. STATEMENT OF WORK: All labor, materials, services and equipment necessary to XXXXXXXX

GENERAL PROVISIONS

1. RELATIONSHIP OF THE FEDERAL GOVERNMENT - This contract is funded in part by the Federal Government. The Federal Government is not a party to this contract. As a condition to receiving and expending Federal funds, there are certain rights of Federal inspection, Federal approval of contract changes and modifications, and Federal approval of settlements or dispute actions that the Federal Government will exercise prior to authorization of Federal funds. Therefore, no inspection or acceptance, change, modification, settlement, dispute claim payment, or dispute action will be considered binding until the required Federal approval is obtained. The Chief, National Guard Bureau, or his/her designated representative, is the approval authority. This paragraph does not abrogate any rights conferred on the Federal Government by law or other clause required due to the use of Federal funding.

2. SPECIFICATIONS AND DRAWINGS - The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Director, State Purchasing and Contracting and/or Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In the case of differences between drawings and specifications, the specifications shall govern. In any case of difference in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Director, State Purchasing and Contracting and/or Contracting Officer who shall promptly make a determination in writing. Any adjustment by the Contractor without this determination shall be at his/her own risk and expense. The Director, State Purchasing and Contracting and/or Contracting Officer shall furnish from time to time such detail drawings and other information, as he/she may consider necessary, unless otherwise provided.

3. SITE INVESTIGATION - The Contractor acknowledges that he/she has investigated and satisfied himself/herself as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. The Contractor further acknowledges that he/she has satisfied himself/herself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the State, as well as from information presented by the drawings and specifications made a part of this contract. Any failure by the Contractor to acquaint himself/herself with the available information will not relieve him/her from responsibility for estimating properly the difficulty or cost of successfully performing the work. The State assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the State.

4. CHANGES AND EXTRAS - The Director, State Purchasing and Contracting and/or Contracting Officer may at any time, in writing, and without notice to the sureties, order extras or make changes in the drawings and/or specifications of this Contract, providing such extras or changes are within the general scope hereof. If any such extra or change causes an increase or decrease in the amount due under this contract, or in the time required for its performance, an equitable adjustment shall be made, and the contract shall be modified in writing. Federal funding support for any change or extra is subject to prior approval by the Chief, National Guard Bureau, or his duly authorized representative. Any claim of the Contractor for adjustment under this Clause must be asserted in writing, within 30 days after the date of receipt by the Contractor of the notification of extra or change: Provided, however, that the Director, State Purchasing and Contracting and/or Contracting Officer, if he/she decides that the facts justify such action, may receive and act upon any such claim asserted at any time prior to the date of final settlement of the contract. If the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Clause 9 hereof entitled DISPUTES. Nothing provided in this Clause, however, shall excuse the Contractor from proceeding with the prosecution of the work as changed. Except as otherwise herein provided, no charge for any extra work or material will be allowed.

5. CHANGED CONDITIONS – The Contractor shall promptly, and before such conditions are disturbed, notify the Director, State Purchasing and Contracting and/or Contracting Officer in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in this contract. The Director, State Purchasing and Contracting and/or Contracting Officer shall promptly investigate the conditions, and if he/she finds that such conditions do so materially differ and cause an increase or decrease in the cost of (or the time required for), performance of this contract, an equitable adjustment shall be made, and the contract modified in writing. Federal funding support to any change or extra is subject to prior approval by the Chief, National Guard Bureau, or his duly authorized representative. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he/she has given notice as above required: Provided, that the Director, State Purchasing and Contracting and/or Contracting Officer may, if he/she determines the facts so justify, consider and adjust any such claim asserted before the date of final settlement of the contract. If the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Clause 9 hereof entitled DISPUTES.

6. MODIFICATION PROPOSALS-PRICE BREAKDOWN - The Contractor, in connection with any proposal he/she makes for a contract modification, shall furnish an itemized price breakdown, as required by the Director, State Purchasing and Contracting and/or Contracting Officer. Unless otherwise directed, the breakdown shall be in sufficient detail to permit an analysis of all material, labor, equipment, subcontract, and overhead costs, as well as profit, and shall cover all work involved in the modification, whether such work was deleted, added or changed. Any amount claimed for subcontracts shall be supported by a similar price breakdown. In addition, if the proposal includes a time extension, a justification therefore shall also be furnished. The proposal, together with the price breakdown and time extension justification, shall be furnished by the date specified by the Director, State Purchasing and Contracting and/or Contracting Officer.

7. TERMINATION FOR DEFAULT-DAMAGES OR DELAY-TIME EXTENSIONS

a. If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with such diligence as will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within such time, the State may, by written notice to the Contractor, notify the Contractor of delay or non-performance and if not cured in 10 calendar days or any longer time specified in writing by the State, terminate his/her right to proceed with the work or such part of the work as to which there has been delay. In such event the State may take over the work and prosecute the same
to completion, by contract or otherwise, and the Contractor and his/her sureties shall be liable to the State for any excess cost occasioned the State thereby, and for liquidated damages for delay, as fixed in the contract documents or accompanying papers, until such reasonable time as may be required for the final by such delay. If the Contractor's right to proceed is so terminated, the State may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefore.

b. If the State does not terminate the right of the Contractor to proceed, as provided in subparagraph (a) hereof, the Contractor shall continue the work, in which event he/she and his/her sureties shall be liable to the State, in the amount set forth in the contract documents or accompanying papers, for the fixed, agreed, liquidated damages for each calendar day of delay until the work is completed or accepted; or if liquidated damages are not so fixed, any actual damages occasioned by such delay.

c. The right of the Contractor to proceed shall not be terminated, as provided in subparagraph (a) hereof, nor the Contractor charged with liquidated or actual damages, as provided in subparagraph (b), because of any delays in the completion of the work due to causes beyond his/her control which could not reasonably have been anticipated and were without his/her fault or negligence, including, but not restricted to, acts of God, acts of the public enemy, acts of the Government or of the State (either in its sovereign or contractual capacity), acts of another Contractor in the performance of a contract with the State, quarantine restrictions, strikes, freight embargoes, or unusually severe weather; or, delays of Subcontractors or suppliers due to such unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and such Subcontractors or suppliers at any tier: Provided, that the Contractor shall, within 10 days after the beginning of any such delay, unless the Director, State Purchasing and Contracting and/or Contracting Officer shall grant a further period of time prior to the date of final settlement of the contract, notify the Director, State Purchasing and Contracting and/or Contracting Officer in writing of the causes of delay. The Director, State Purchasing and Contracting and/or Contracting Officer shall ascertain the facts and the extent of the delay and extend the time for completing the work when in his/her judgment the findings of fact justify such an extension, and his/her findings of fact thereon shall be final and conclusive on the parties hereto, subject only to appeal as provided in the DISPUTES Clause hereon.

8. TERMINATION FOR CONVENIENCE OF THE GOVERNMENT

a. The State may terminate this Contract at any time and for any cause by a notice in writing from the Director, State Purchasing and Contracting and/or Contracting Officer to the Contractor. Upon receipt of such notice, the Contractor shall, unless the notice directs otherwise, immediately discontinue all work. The Contractor shall also terminate outstanding orders and Subcontractor as they relate to the terminated
work. The Contractor shall settle the liabilities and claims arising out of the termination of Subcontractors and orders connected with the terminated work.

b. If the contract is terminated for the convenience of the State, the Architect-Engineer will be paid promptly for services rendered and expenses incurred up to the date of termination, less any previous payments. Payment is limited to work accepted by the State.

9. DISPUTES - Except as otherwise specifically provided in this contract, and except as otherwise specifically provided by the State procedure for arbitration or other State procedure established by State law, any dispute concerning a question of fact arising under this contract which is not disposed of by mutual agreement shall be decided, within 30 calendar days, by the Director, State Purchasing and Contracting and/or Contracting Officer, who shall reduce his/her decision to writing and send by registered mail, return receipt requested, a copy thereof to the Contractor at his/her address shown herein. Within seven (7) days after the date of receipt of such copy, the Contractor may appeal in writing to The Adjutant General, whose written decision thereon, or that of his/her designated representative or representatives, shall, unless determined by a court of competent jurisdiction to have been fraudulent or capricious or arbitrary or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence, be final and conclusive: Provided, that if no such appeal is taken the decision of the Director, State Purchasing and Contracting and/or Contracting Officer shall be final and conclusive. The Adjutant General may designate an individual or individuals other than the Director, State Purchasing and Contracting and/or Contracting Officer, or a board, as his/her authorized representative to determine appeals under this clause. In connection with any appeal proceeding under this Clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of his/her appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Director, State Purchasing and Contracting and/or Contracting Officer's decision. Any sum or sums allowed to the Contractor under the provisions of this clause or under the State arbitration proceedings or under other State procedure shall be paid subject to approval by the Chief, National Guard Bureau, for the Government's share of the cost of the articles or work herein disputed as deemed to be within the contemplation of this contract.

10. PAYMENTS TO CONTRACTORS

a. Unless otherwise provided in the Contract Documents, partial payments will be made, no more than on a monthly basis, upon estimated percentage of work completed and approved by the Director, State Purchasing and Contracting and/or Contracting Officer. Materials delivered on the site and preparatory work done may be taken in consideration. Payment for stored materials will not be paid unless it is stored properly and Director, State Purchasing and Contracting and/or Contracting Officer

has received inspection report of said materials stored.

b. In making such partial payments there shall be retained 5 percent on the estimated amount of work completed and approved until final completion and acceptance of all work covered by the contract. In accordance with MS Code of 1972 annotated, Section 31-5-33, contracts that total an amount of $250,000.00 or greater, at any time after 50 percent of the work has been completed, and the Director, State Purchasing and Contracting and/or Contracting Officer finds that satisfactory progress is being made and project is on schdule, may return to the Contractor 50 percent of the retainage held to date. However, future retainage shall be withheld at a rate of two and one half (2 ½ %) percent until final completion and acceptance of all work covered by the contract, to include the receipt of all Close-Out Documents as indicated in Section 00 65 00 of the contract documents.

c. Payment shall be made and remittance information provided electronically as directed by the State of Mississippi Department of Finance and Administration (DFA). These payments shall be deposited in the bank account of the Contractor's choice. The State of Mississippi DFA may, at its sole discretion, require the Contractor to submit invoices and supporting documentation electronically at any time during the term of this contract. Contractor understands and agrees that the State is exempt from the payment of taxes. All payments shall be in the United Stated currency.

d. Invoices will be submitted in accordance with instructions given at the Pre-Construction Conference.

e. The Contractor shall be advised that in accordance with the Mississippi Code, the Mississippi Military Department has 30 calendar days to deliver a warrant to the vendor from the date the invoice is due and payable. Due and payable shall mean, when the Director, State Purchasing and Contracting and/or Contracting Officer received invoice certified by A&E and/or Project Manager that the work has been accomplished.

f. All material and work covered by partial payments made shall thereupon become the sole property of the State, but this provision shall not be construed as relieving the Contractor from the sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work, nor as a waiver of the right of the State to require the fulfillment of all of the terms of the contract.

g. Upon completion and acceptance of all work required hereunder, and after the Contractor has furnished the State with all Close-Out Documents, to include, a release of all claims against the State arising under and by virtue of this contract, other than such claims, if any, as may be specifically excepted by the Contractor from the operation of the release, in stated amounts to be set forth therin, the amount due the Contractor under this contract will be paid as stated above in para 10-e. If the Contractor's claim to amounts payable under the contract has been assigned under the Assignment of Claims Act of 1940, as amended (41 U.S.C. § 15), a release may also be required of the assignee at the option of the Director, State Purchasing and Contracting and/or Contracting Officer.

11. MATERIAL AND WORKMANSHIP - Unless otherwise specifically provided for in the Contract Documents, all equipment, materials, and articles incorporated in the work covered by this contract are to be new and of the most suitable grade of their respective kinds for the purpose intended, and all workmanship shall be first class. Where equipment, materials, or articles are referred to in the Contract Documents as "equal to" any particular standard, the Director, State Purchasing and Contracting and/or Contracting Officer shall decide the question of equality. The Contractor shall furnish to the Director, State Purchasing and Contracting and/or Contracting Officer for approval the name of the manufacturer of machinery, mechanical and other equipment which he/she contemplates incorporating in the work, together with their performance capacities and other pertinent information. When required by the Contract Documents, or when called for by the Director, State Purchasing and Contracting and/or Contracting Officer, the Contractor shall furnish to the Director, State Purchasing and Contracting and/or Contracting Officer for approval full information concerning the materials or articles which he/she contemplates incorporating in the work. Samples of materials shall be submitted for approval when so directed. Machinery, equipment, materials, and articles installed or used without such approval shall be at the risk of subsequent rejection. The Director, State Purchasing and Contracting and/or Contracting Officer may in writing require the Contractor to remove from the work site such employee as the Director, State Purchasing and Contracting and/or Contracting Officer deems incompetent, careless, insubordinate, or otherwise objectionable, or whose continued employment on the work site is deemed by the Director, State Purchasing and Contracting and/or Contracting Officer to be contrary to the public interest.

12. HAZARDOUS WASTE MATERIALS – The Contractor is responsible for the removal and disposal of any hazardous waste materials encountered in the performance of the Contract requirements. Hazardous Containing Materials [HCM] include, but are not limited to, Asbestos and Lead Paint and should be identified and removed as a part of the Contract. The absence of details does not relieve the Contractor from the responsibility of removal and disposal; but, a Change Order could be executed in the absence of identified HCM in the documents.

13. CONTRACT DRAWINGS AND SPECIFICATIONS

a. Omissions from the drawings or specifications or the miss-description of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or miss-described details of the work but they shall be performed as if fully correctly set forth and described in the drawings and specifications.

b. The Contractor shall check all drawings furnished him/her immediately upon their receipt and shall promptly notify the Director, State Purchasing and Contracting and/or Contracting Officer of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The Contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby.

14. RIGHTS IN SHOP DRAWINGS - Shop drawings for construction means drawings, submitted to the State by the Construction Contractor, Subcontractor of any lower tier subcontractor pursuant to a Construction Contract, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation i.e., form, fit, and attachment details of materials or equipment. The State may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

15. OPERATIONS AND STORAGE AREAS

a. All operations of the Contractor (including storage of materials) upon state premises shall be confined to areas authorized or approved by the Director, State Purchasing and Contracting and/or Contracting Officer. The Contractor shall hold and save the State, its officers and agents, free and harmless from liability of any nature occasioned by his/her operations.

b. Temporary building (s) (storage sheds, offices, etc.) may be erected by the Contractor only with the approval of the Director, State Purchasing and Contracting and/or Contracting Officer, and shall be built with labor and materials furnished by the Contractor without expense to the State. Such temporary buildings and utilities shall remain the property of the Contractor and shall be removed by him/her at his/her expense upon the completion of the work. With the written consent of the Director, State Purchasing and Contracting and/or Contracting Officer, such buildings and utilities may be abandoned and need not be removed.

c. The Contractor shall, under regulations prescribed by the Director, State Purchasing and Contracting and/or Contracting Officer, use only established roadways or construct and use such temporary roadways as may be authorized by the Director, State Purchasing and Contracting and/or Contracting Officer. Where materials are transported in the prosecution of the manufacturer of the vehicle or prescribed by any federal, state or local law or regulation. When it is necessary to cross curbings or sidewalks, protection against damage shall be provided by the Contractor and any damaged roads, curbings, or sidewalks shall be repaired by, or at the expense of, the Contractor.

16. ENVIRONMENTAL ISSUES-EROSION CONTROL REMEDIATION - Failure to comply with erosion control measures specified by the Contract Documents or in the event of an accident or incident caused by an act of nature, equipment failure, or human negligence that allows silt or contaminants to enter waters of the United States will be contained immediately and repaired within 48 hours. Failure to comply will result in the Mississippi Military Department mobilizing a third-party Contractor to mitigate the non-compliance and back charging the Contractor for actual expenses. In the event the Contractor chooses to forego payment, for the failure to comply, the appropriate bonding company will be notified. There will be no exceptions to this remediation.

17. INSPECTION

a. Except as otherwise provided in subparagraph (d) hereof, all material and workmanship (if not otherwise designated by the Contract Documents) shall be subject to inspection, examination, and testing by representatives of the Director, State Purchasing and Contracting and/or Contracting Officer at any and all times during manufacture and/or construction (and at any and all places where such manufacture and/or construction are carried on). The State shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected material shall be satisfactorily replaced with proper material without charge therefore, and the Contractor shall
promptly segregate and remove the rejected material from the premises. If the Contractor fails to proceed at once with the replacement of rejected material and/or the correction of defective workmanship, the State may, by contract or otherwise, replace such material and/or correct such workmanship and charge the cost thereof to the Contractor; or the State may terminate the right of the Contractor to proceed as provided in Clause 7 of this contract, the Contractor and surety being liable for any damage to the same extent as provided in said Clause 7 for terminations thereunder.

b. The Contractor shall furnish promptly, without additional charge, all reasonable facilities, labor and materials necessary for the safe and convenient inspections and tests that may be required by the Director, State Purchasing and Contracting and/or Contracting Officer. All inspections and tests by the State shall be performed in such manner as not unnecessarily to delay the work, special, full size, and performance tests shall be as described in the Contract Documents. The Contractor shall be charged with any additional cost associated with the inspection, request by the Director, State Purchasing and Contracting and/or Contracting Officer, when material and workmanship is not ready at the time of inspection.

c. Should it be considered necessary or advisable by the State, or by the representatives of the Chief, National Guard Bureau, at any time before final acceptance of entire work to make an examination of work already completed, by removing or tearing out same, the Contractor shall on request promptly furnish all necessary facilities, labor and material. If such work is found to be defective or nonconforming in any material respect due to fault of the Contractor or his/her Subcontractors, he/she shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, an equitable adjustment shall be made in the contract price to compensate the Contractor for the additional reconstruction; and, if completion of work has been delayed thereby, he/she shall, in addition, be granted a suitable extension of time. Federal funding support of the cost for examination and replacement of satisfactorily completed work that requires removal or that is damaged due to inspection requirements is subject to prior approval by the Chief, National Guard Bureau, or his/her duly authorized representative.

d. Inspection of material and finished articles to be incorporated in the work site shall be made at the place of production, manufacture, or shipment, whenever the quantity justifies it, unless otherwise stated in the Contract Documents; and such inspection and acceptance shall be in writing, and unless otherwise stated in the Contract Documents, shall be final, except as regards latent defects, departures

from specific requirements of the contract and the specifications and drawings made a part thereof, damage or loss in transit, fraud, or such gross mistakes as amount to fraud. Subject to the requirement contained
in the preceding sentence, the inspection of material and workmanship for final acceptance as a whole or in part, shall be made at the site. Nothing contained in this paragraph (d) shall in any way restrict the State's rights under any warranty or guarantee.

18. INSPECTORS - The work will be conducted under the general direction of the Director, State Purchasing and Contracting and/or Contracting Officer and is subject to inspection by his/her appointed inspectors to insure strict compliance with the terms of the contract. No inspector is authorized to change any provision of the Contract Documents without written authorization of the Director, State Purchasing and Contracting and/or Contracting Officer, nor shall the presence or absence of an inspector relieve the Contractor from any requirements of the contract.

19. CLEANING UP - The Contractor shall at all times keep the construction area, including storage areas used by him/her free from accumulations of waste material or rubbish and prior to completion of the work remove any rubbish from the premises and all tools, scaffolding, equipment and materials not the property of the State. Upon completion of the construction, the Contractor shall leave the work and premises in a clean, neat and workmanlike condition satisfactory to the Director, State Purchasing and Contracting and/or Contracting Officer.

20. SUPERINTENDENCE BY CONTRACTOR - The Contractor shall have a competent superintendent, satisfactory to the Director, State Purchasing and Contracting and/or Contracting Officer, on the work site at all times while work is underway, with authority to act for him/her.

21. PERMITS AND RESPONSIBILITY FOR WORK - The Contractor shall, without additional expense to the State, obtain any and all licenses and permits required for the prosecution of the work. The Contractor will pay all charges related to the connection of utility services to existing systems. He/She shall be responsible for all damages to persons or properties that occur as a result of his/her fault or negligence in connection with the prosecution of the work. He/She shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. He/She shall also be responsible for all materials delivered and work performed until completion and final acceptance, except for any completed unit thereof which theretofore may have been finally accepted.

22. OTHER CONTRACTS - The State may undertake or award other contracts for additional work, and the Contractor shall fully cooperate with such other Contractors and State Employees and carefully fit his/her own work to such additional work as may be directed by the Director, State Purchasing and Contracting and/or Contracting Officer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor or by State employees.

23. E-VERIFY PROGRAM - Contractor shall be advised that prior to Execution of the contract, Contractor will be required to issue a certification letter to the MMD certifying E-Verify has been completed and provide the 6-digit Company ID# issued by the Department of Homeland Security to

include any Subcontractors Company IDS#'s. The Contractor agrees to comply with the Mississippi Employment Protection Act, Miss, Code Ann. § 8 71-1-57, and will register and participate in the status verification system for all newly hired employees, effective for all public contracts executed after 1 Jul 08. The term "employee" as used herein means any person or entity that is hired to perform work within the State of Mississippi and to whom the Contractor is required by Federal or Mississippi law to issue a United States Internal Revenue Service Form W-2 or Form 1099. As used herein, "status verification system" means the electronic verification of work authorization program of the Illegal Immigration Reform and Immigration Responsibility Act of 1996 that is operated by the United States Department of Homeland Security, also known as the E-Verify Program or any other successor verification system replacing the E-Verify Program. The Contractor agrees to maintain records of such compliance, and upon request of the State, to provide a copy of each such verification to the State. The Contractor agrees that any person assigned to perform services hereunder meets the employment eligibility requirements of all immigration laws of the United States and the State of Mississippi. The Contractor understands and agrees that any breach of these warranties may subject the Contractor to the following: (a) termination of this
contract and ineligibility for any state of public contract in Mississippi for up to three years, with notice of such cancellation/termination being made public, or (b) the loss of any license, permit, certification or other document granted to the Contractor by an agency, department or government entity for the right to do business in Mississippi for up to one year, or (c) both, as well as any other penalties authorized by law. In the event of such cancellation/termination, the Contractor will also be liable for any additional cost incurred by the State due to the contract cancellation or loss of license or permit.

24. ADDITIONAL BOND SECURITY - If any surety upon any bond furnished in connection with this contract becomes unacceptable to the State, or if any such surety shall fail to furnish reports as to his/her financial condition from time to time as requested by the State, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the State or of persons supplying labor or materials in the prosecution of the work contemplated by the contract.

25. COVENANT AGAINST CONTINGENT FEES - The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the State shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration the full amount of such commission, percentage, brokerage, or contingent fee.

26. OFFICIALS TO BENEFIT - No member of or delegate to Congress, or resident commissioner or State official or employee shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

27. CONVICT LABOR - In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment, as provided by Public Law 89-176, September 10, 1965 (18 USC § 4082 (c) (2)) and executive order 11755, December 29, 1973.

28. NONDISCRIMINATION IN EMPLOYMENT - In connection with the performance of work under this contract, the Contractor agrees not to discriminate as follows; and further agrees to insert the foregoing provision in all subcontracts hereunder except subcontracts for standard commercial supplies or for raw materials.

a. On the basis of race, color, or national origin, as provided in Clause 34-Equal Opportunity (Federally Assisted Construction).

b. On the basis of handicap, in Section 504 of the Rehabilitation Act of 1973 (29 U.S.C.§ 794) as implemented by Department of Justice Regulations at 28 CFR part 41 and DOD Regulations at 32 CFR Par 56; and,

c. On the basis of Age, in the Age Discrimination Act of 1975 (42 U.S.C. § 6101 et seq.) as implemented by Department of Health and Human Services Regulations at 45 CFR Part 90.

29. GRATUITIES

a. The State may, by written notice to the Contractor, terminate the right of the Contractor to proceed under this contract if it is found, after notice and hearing, by the Secretary or Governor or the duly authorized representative of either, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the State with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performance, of such contract: Provided, that the existence of the facts upon which the Secretary or Governor or the duly authorized representative of either makes such findings shall be in issue and may be reviewed in any competent court.

b. In the event this contract is terminated as provided in paragraph (a) hereof, the State shall be entitled (1) to pursue the same remedies against the Contractor as it could pursue in the event of a breach of contract by the Contractor, and (2) as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the Secretary or Governor or the duly authorized representative of either) which shall not be less than 3 nor more than 10 times the costs incurred by the Contractor in providing any such gratuities to any such officer or employee.

c. The rights and remedies of the State provided in the Clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

30. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT-OVERTIME COMPENSATION (40 U.S.C. § 327-333) - This contract is subject to the Contract Work Hours and Safety Standards Act and to the applicable rules, regulations, and interpretations of the Secretary of Labor.

a. The Contractor shall not require or permit any laborer or mechanics including apprentices, trainees, watchmen, and guards in any workweek in which he/she is employed on any work site under this contract to work in excess of forty (40) hours in such workweek on work subject to the provisions of the Contract Work Hours and Safety Standards Act unless such laborer or mechanic, including apprentices, trainees, watchmen, and guards, receives compensation at a rate not less than one and one-half times
(1 ½) his basic rate of pay for all such hours worked in excess of forty (40) hours in such workweek.

b. In the event of any violation of the provisions of paragraph (a), the Contractor shall be liable to any affected employee for any amounts due, and to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including an apprentice, trainee, watchmen, or guard, employed in violation of the provisions of paragraph (a) in the sum of **$10** for each calendar day on which such employee was required or permitted to be employed on such work in excess of the standard workweek of forty (40) hours without payment of the overtime wages required by paragraph (a).

31. COPELAND ("ANTI-KICKBACK") ACT-NONREBATE OF WAGES - The regulations of the Secretary of Labor applicable to Contractors and Subcontractors (29 CFR, Part 3), made pursuant to the Copeland Act, as amended (40 U.S.C. § 276c) and to aide in the enforcement of the Anti-Kickback Act (18 U.S.C. § 874) are made a part of this contract by reference. The Contractor will comply with these regulations and any amendments or modifications thereof and the Prime Contractor will be responsible for the submission of affidavits required of Subcontractors thereunder. The foregoing shall apply except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances and exemptions.

32. WITHHOLDINGS OF FUNDS

a. The Director, State Purchasing and Contracting and/or Contracting Officer may withhold or cause to be withheld from the State Prime Contractor so much of the accrued payments or advances as may be considered necessary (i) to pay laborers and mechanics, including apprentices, trainees, watchmen, and guards, employed by the Contractor or any Subcontractor on the work the full amount of wages required by the contract, and (ii) to satisfy any liability of the Contractor and any Subcontractor for liquidated damages under paragraph (b) of the Clause entitled CONTRACT WORK HOURS AND SAFETY STANDARDS ACT-OVERTIME COMPENSATION.

b. If the Contractor or any Subcontractor fails to pay any laborer, mechanic, apprentice, trainee, watchman, or guard employed or working on the site of the work, all or part of the wages required by the contract, the Director, State Purchasing and Contracting and/or Contracting Officer may, after written notice to the State Prime Contractor, take such action as may be necessary to cause suspension of any further payments or advances until such violations have ceased.

33. DEBARMENT AND SUSPENSION

a. The Contractor shall not make any award or permit any award (sub-grant or contract) at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in federal assistance programs under Executive Order 12549 "Debarment and Suspension".

b. The Final Rule, Government-Wide Debarment and Suspension (Non-procurement), issued by the Office of Management Budget and the Department of Defense (32 CFR Part 25) to implement provisions of Executive Order 12549 "Debarment and Suspension", is incorporated by reference and the Contractor covenants and agrees to comply with provisions thereof, including amendments to the Final Rule that may hereafter be issued.

34. LOBBYING

a. The Contractor covenants and agrees that it will not expend any funds appropriated by Congress to pay any person for influencing or attempting to influence an officer or employee of any agency or a member of Congress in connection with any of the following covered Federal actions: The awarding of any Federal Contract; the making of any Federal Grant; the making of any Federal Loan; the entering into of any cooperative agreement; and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. The Final Rule, New Restrictions on Lobbying, issued by the Office of Management and Budget and the Department of Defense (32 CFR Part 28) to implement provisions of Section 319 of Public law 101-121 (31 U.S.C. § 1352) is incorporated by reference and the Contractor agrees to comply with provisions thereof, including amendments to the Interim Final Rule that may hereafter be issued.

35. EOUAL OPPORTUNITY (FEDERALLY ASSISTED CONSTRUCTION) -

The Contractor shall actively promote a workplace free from unlawful discrimination and harassment, and shall take all reasonable steps to ensure equal opportunity in all aspects of employment. This includes, but is not limited to, regularly reviewing its employment practices and policies to identify and address any systemic disparities based on race, ethnicity, gender, sexual orientation, or disability, as directed by Executive Order 14173. The Contractor shall cooperate fully with any agency investigation related to compliance with Executive Order 14173, and shall provide all requested data and documentation in a timely manner. The Contractor acknowledges its obligation to comply with all applicable laws and regulations prohibiting discrimination and promoting equal opportunity.

36. PROTECTION OF EXISTING VEGETATION, STRUCTURES, UTILITIES, AND IMPROVEMENTS

a. The Contractor will preserve and protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site of work which is not to be removed and which does not unreasonably interfere with construction work. Care will be taken in removing trees authorized for removal to avoid damage to vegetation to remain in place. Any limbs or branches of trees broken during such operations or by the careless operation of equipment, or by workmen, shall be trimmed with a clean cut and painted with an approved tree pruning compound as directed by the Director, State Purchasing and Contracting and/or Contracting Officer.

b. The Contractor will protect from damage all existing improvements or utilities at or near the site of the work, the location of which is made known to him, and will repair or restore any damage to such facilities resulting from failure to comply with the requirements of this contract or the failure to exercise reasonable care in the performance of the work. If the Contractor fails or refuses to repair any such damage promptly, the Director, State Purchasing and Contracting and/or Contracting Officer may have the necessary work performed and charge the cost thereof to the Contractor.

37. CERTIFICATION OF NONSEGREGATED FACILITIES - Applicable to contracts, subcontracts, and to agreements with applicants who are themselves performing Federally assisted construction contracts, exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause. By the submission of this bid, the bidder, offeror, applicant or subcontractor certifies that he/she does not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that he/she does not permit his/her employees to perform their services at any location, under his/her control, where segregated facilities are maintained. He/She certifies further that he/she will not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that he/she will not permit his/her employees to perform their services at any location, under his/her control, where segregated facilities are maintained. The bidder, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion or national origin, because of habit, local custom or otherwise. He/She further agrees that (except where he/she has obtained identical certifications from proposed subcontractors for specific time periods) he/she will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause; that he/she will retain such certifications in his/her files; and that he/she will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES. A Certification of Non-segregated Facilities must be submitted prior to award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. § 1001.

38. CLEAN AIR AND WATER - (Applicable only if the contract exceeds $100,000, or the Director, State Purchasing and Contracting and/or Contracting Officer has determined that orders under an indefinite quantity contract in any one year will exceed $100,000, or facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S. C. § 1857c-8 (c) (1)) or the Federal Water Pollution Control Act (33 U.S.C. § 1319(c)) and is listed by EPA, or the contract is not otherwise exempt).

a. The Contractor agrees as follows:

(i) to comply with all the requirements of section 114 of the Clean Air Act, as amended (42 U.S.C. § 1857, et seq., as amended by Public Law 91-604) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. § 1251, as amended by Public Law 92-500), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and
section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract;

(ii) that no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from such listing;

(iii) to use his/her best efforts to comply with clean air standards and clean water standards at the facilities in which the contract is being performed; and

(iv) to insert the substance of the provisions of this Clause in any nonexempt subcontract, including this paragraph (iv).

b. The terms used in this Clause have the following meanings.

(i) The term "Air Act" means the Clean Air Act, as amended (42 U.S.C. § 1857 et seq., as amended by Public Law 91-604).

(ii) The term "Water Act" means the Federal Water Pollution Control Act, as amended (33 U.S.C. § 1251 et seq., as amended by Public Law 92-500).

(iii) The term "clean air standards" means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted pursuant to the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110(d) of the Clean Air Act (42) U.S.C. § 1857c-5(d), an approved implementation procedure or plan under section 111(c) or section 111(d), respectively, of the Air Act (42 U.S.C. § 1857c-6) (c) or (d), or an approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. § 1857c-7(d)).

(iv) The term "Clean Water Standards" means any enforceable limitation, control, requirement which is contained in a permit Protection Agency or authorized by section a local government condition, prohibition, standard or other promulgated pursuant to the Water Act or issued to a discharger by the Environmental by a state under an approved program, as 402 of the Water Act (33 U.S.C. § 1342), or by to ensure compliance with pretreatment regulations as required by section 307 of the Water Act (33 U.S.C. § 1317).

(v) The term "Compliance" means compliance with clean air or water standards. Compliance shall also mean compliance with a schedule or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency or an Air Water Pollution Control Agency in accordance with the requirement of the Air Act or Water Act and regulations issued pursuant thereto.

(vi) The term "Facility" means any building, plant, installation, structure, mine, vessel or other floating craft, location, or site of operations, owned, leased, or supervised by a Contractor, Subcontractor, to be utilized in the performance of a contract or subcontract. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location or site shall be deemed to be facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are collocated in one geographical area.

(vii) The term "Nonexempt Contract or Subcontract" means a contract or subcontract of more than $100,000 which is not otherwise exempted pursuant to the EPA regulations implementing the Air Act and Water Act (40 CFR 15.5), as further implemented in ASPR 1-2302.4 or in FPR 1-1.2302.4 (whichever is applicable) and the procedures of the Department awarding the contract.

39. AUDIT BY DEPARTMENT OF DEFENSE - Insert the following clause in all contracts (except those entered into by formal advertising which are not expected to exceed $100,000).

a . General. The Director, State Purchasing and Contracting and/or Contracting Officer or his representatives shall have the audit and inspection rights described in the applicable paragraphs (b), (c) and (d) below.

b. Examination of Costs. If this is a cost reimbursement type, incentive, time and materials, labor hour, or price re-determinable contract, or any combination thereof, the Contractor shall maintain,

and the Director, State Purchasing and Contracting and/or Contracting Officer or his/her representatives shall have the right to examine books, records, documents, and other evidence and accounting procedures and practices, sufficient to reflect properly all direct and indirect costs of whatever nature claim to have been incurred and anticipated to be incurred for the performance of this contract. Such right of examination shall include inspection at all reasonable times of the Contractor's plants, or such parts, thereof as may be engaged in the performance of this contract.

c. Cost or Pricing Data. If the Contractor submitted cost or pricing data in connection with the pricing of this contract or any change or modification thereto, unless such pricing was based on adequate price completion, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation, the Director, State Purchasing and Contracting and/or Contracting Officer or his/her representatives who are employees of the State shall have the right to examine all books, records, documents and other data of the Contractor related to the negotiation, pricing or performance of such contract, change or modification, for the purpose of evaluating the accuracy, completeness and currency of the cost or pricing data submitted. Additionally, in the case of pricing any change or modification exceeding $100,000 to formally advertised contracts, the Comptroller General of the United States or his/her representatives who are employees of the State shall have such rights. The right of examination shall extend to all documents necessary to permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used therein.

d. Reports. If the Contractor is required to furnish Contractor Cost Data Reports (CCDR), Contract Fund Status Reports (CFSR), or Cost Performance Reports (CPR) the Director, State Purchasing and Contracting and/or Contracting Officer or his/her representatives shall have the right to examine books, records, other documents, and supporting materials, for the purpose of evaluating (i) the effectiveness of the Contractor's policies and procedures to produce data compatible with the objectives of these reports, and (ii) the data reported.

e. Availability. The materials described in (b), (c) and (d) above shall be made available at the office of the Contractor, at all reasonable times, for inspection, audit, or reproduction, until the expiration of three (3) years from the date of final payment under this contract or such lesser time specified in Appendix M Of the Defense Acquisition Regulation and for such longer period, if any, as is required by applicable statute, or by other clauses of this contract, or by (1) and (2) below:

(1) If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for a period of three (3) years from the date of any resulting final settlement.

(2) Records which relate to appeals under the DISPUTES Clause of this contract, or litigation, or the settlement of claims arising out of the performance of this contract, shall be made available until such appeals, litigation, or claims have been disposed of.

f. The Contractor shall insert a clause containing all the provisions of this clause, including this paragraph (f), in all subcontracts exceeding $10,000 hereunder, except altered as necessary for proper identifications of the contracting parties and the Director, State Purchasing and Contracting and/or Contracting Officer under the State prime contract.

40. SUBCONTRACTS-TERMINATION – The Contractor agrees to insert the following clauses of this contract physically in all subcontracts:

Paragraph: 14, 16, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 42 and 46. The term "Contractor" as used in such clauses in any subcontract shall be deemed to refer to the Subcontractor except in the phrase "Prime Contractor".
Subcontracts are between the Contractor and the Sub. It is the sole responsibility of the Contractor to meet the terms of each subcontract and to settle any dispute that may arise.

The Contractor further agrees that a breach of any of the requirements of the aforementioned clauses for the subcontract may be grounds for termination.

41. SUBCONTRACTOR COST OR PRICING DATA-PRICE ADJUSTMENTS - Insert the following clause in all contracts, both formally advertised and negotiated, which exceed $100,000:

a. Paragraphs (b) and (c) of this Clause shall become operative with respect to any modification made pursuant to one or more provisions of this contract which involves aggregate increases and/or decreases in costs plus applicable profits expected to exceed $100,000. The requirements of this Clause shall be limited to such modifications.

b. The Contractor shall require Subcontractors hereunder to submit cost or pricing data under the following circumstances: (i) prior to the award of any subcontract the amount of which is expected to exceed $100,000 when entered into; (ii) prior to the pricing of any subcontract modification which involves aggregate increases and/or decreases in costs plus applicable profits expected to exceed $100,000; except where the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation.

c. The Contractor shall require Subcontractors to certify that to the best of their knowledge and belief the cost and pricing data submitted under (b) above is accurate, complete, and current as of the date of agreement on the negotiated price of the subcontract or subcontract change or modification.

d. The Contractor shall insert the substance of this Clause including this paragraph (d) in each subcontract which exceeds $100,000.

42. BUY AMERICAN ACT

a. Agreement. In accordance with the Buy American Act (41 U.S.C. § lOa-10d), the Contractor agrees that only domestic construction material will be used (by the Contractor, Subcontractors, materialmen, and supplies) in the performance of this contract, except for nondomestic construction material listed in the "Nondomestic Construction Materials" Clause, if any, of this contract.

b. Domestic Construction Material. "Construction Material" means any article, material, or supply brought to the construction site for incorporation in the building or work. An unmanufactured construction
material is a "Domestic Construction Material" if it has been mined or produced in the United States. A manufactured construction material is a "Domestic Construction Material" if it has been manufactured in the United States and if the cost of its components which have been mined, produced, or manufactured in the United States exceed 50 percent of the cost of all its components. "Component" means any article, material, or supply directly incorporated in a construction material.

c. Domestic Component. A component shall be considered to have been "mined, produced, or manufactured in the United States" (regardless of its source in fact) if the article, material, or supply in which it is incorporated was manufactured in the United States and the component is of a class or kind determined by the Government to be not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

43. SUBJECT TO MILITARY CONSTRUCTION COOPERATIVE AGREEMENT
This contract is subject to all terms and conditions in agreement number DAHA N/A dated N/A between the United States of America and the State of Mississippi.

44. DEFINITIONS - As used throughout this contract, the following terms shall have the meaning set forth below:

a. Except for the original signing of this contract, and except as otherwise stated herein, the term “Director, State Purchasing and Contracting and/or Contracting Officer” as used herein, shall mean The Adjutant General of Mississippi duly authorized representative.

b. The term "Government" means the United States and any Department head thereof.

c. The term "State" means the Mississippi Military Department, the State of Mississippi, Commonwealth, or Territory, which is the party to this contract.

d. The term "Governor" means the Governor of the state or his/her duly appointed representative (other than the Director, State Purchasing and Contracting and/or Contracting Officer).

e. The term "USPFO" means the United States Property and Fiscal Officer assigned to the State.

f. The "Contract Documents" means plans, specifications, bid form, contract, schedules, drawings and any other contract documents approved during the term of this contract.

45. APPROVAL - This contract and any subsequent terminations, modifications, or change orders (including those resulting from disputes and settlements of disputes) shall be subject to the written approval of The Adjutant General and/or Chief, National Guard Bureau, or his/her duly authorized representative, and shall not be binding until so approved.

46. DRUG-FREE WORK PLACE

a. The Contractor covenants and agrees that it will comply with provisions of the Drug-Free Work Place Act of 1988 (Public Law 100-690, Title V, Subtitle D; 41 U.S.C. § 701 et. seq.) and will maintain a drug-free work place.

b. The Final Rule, Government-Wide Requirements for Drug-Free Work Place (Grants), issued by the Office of Management and Budget and the Department of Defense (32 CFR Part 28, subpart f) to implement provisions of the Drug-Free Work Place Act of 1988, is incorporated by reference and the Contractor covenants and agrees to comply with provisions thereof , including amendments to the Final Rule that may hereafter be issued.

47. OTHER COMPLIANCES – The Contractor shall comply with all applicable Federal, State and local laws, executive orders, rules and regulations applicable to its performance under this contract.

48. LIQUIDATED DAMAGES - In case of failure on the part of the Contractor to complete the work within the time fixed in the contract or any extensions thereof, the Contractor shall pay to the State as liquidated damages, pursuant to the Clause of this contract entitled TERMINATION FOR DEFAULT-DAMAGES OR DELAY-TIME EXTENSIONS, the sum of **$** _____ for each day of delay.

IV. SIGNATURES:

_____
(Contractor)

WITNESSES:

BY: _____
(Signature)

_____

_____
(Date)

_____
(Name, typed)

Note: If the Contractor is a corporation,
Witnesses are not required, but the annexed
Certificate must be completed

_____
(Title)

Type or print names under all signatures

_____
(Address)

_____
(Phone No.)

_____
(Email Address)

STATE OF MISSISSIPPI

BY: _____
Bobby M. Ginn, Jr.
Major General, Mississippi National Guard
The Adjutant General of Mississippi

_____
(Date)

IN WITNESS WHEREOF, the parties hereto have executed this contract on the Notice to Proceed date of _____ day of _____ , 20 ___.

CERTIFICATE OF CORPORATE AUTHORITY

I, _____ certify that I am the _____ of the Corporation named as Contractor herein; that _____ who signed this contract on behalf of the Contractor, was then the _____ of said Corporation; that said contract duly signed for and in behalf of said Corporation by authority of its governing body, and is within the scope of its corporate powers.

_____
(Signature)
(Corporate Seal)

Note: The Contractor, if a corporation, should cause the above certificate to be executed under its corporate seal, provided that the same officer shall not execute both the contract and the certificate.

Note: In the event that the Contractor is not a corporation, this certificate may be omitted from the contract.

SECTION 00 73 01

CONDITIONS OF THE CONTRACT - SPECIAL CONDITIONS

1. CONFLICTS

In case of conflict these Special Conditions and the Owner Contractor Agreement contained herein, shall take precedence, and prevail over the General Conditions and 2017 SUPPLEMENTARY CONDITIONS SECTION 00 73 03.

2. MEASUREMENTS AND DIMENSIONS

Before ordering any materials or performing any work, the Contractor shall check and verify all dimensions of shop drawings and be responsible for their correctness. Any materials ordered without the prior approval of the Director, State Purchasing and Contracting and/or Contracting Officer shall be at the risk of the Contractor and subject to rejection and replacement at no expense to the owner.

3. PERMITS, TAXES AND ORDINANCES

The Contractor shall be responsible for obtaining all required permits, give legal notices, pay any and all taxes and/or assessments levied in connection with this contract. Building regulations and ordinances of the local municipality or county shall be strictly adhered to and the Contractor shall be responsible for all knowledge thereof.

4. UTILITIES

The Director, State Purchasing and Contracting and/or Contracting Officer shall make all possible arrangements to allow the use of government facilities in connection with water and electrical power used during the construction period. The Contractor will be required to make all connections to existing service lines made available by the Director, State Purchasing and Contracting and/or Contracting Officer. The Contractor is expected to practice all applicable conservation measures and restrict utility usage to that associated with completion of the contract. Should, in the opinion of the Director, State Purchasing and Contracting and/or Contracting Officer, utility usage become excessive, the Director, State Purchasing and Contracting and/or Contracting Officer may terminate any previous arrangements for same.

5. FABRICATION YARD

The Owner shall make available to the Contractor, a site adjacent to the construction project for use as a fabrication yard. The interior arrangement, preparation for work, security and returning the area to its original state, is the responsibility of the Contractor.

6. SANITARY FACILITIES

The Director, State Purchasing and Contracting and/or Contracting Officer will make all possible arrangements for the use of government facilities, where available.

7. TAXPAYER IDENTIFICATION NUMBER

Form W-9, Payer's Request for Tax Identification Number and Certification, shall be completed by any Non-Incorporated Contractors. This document indicates the taxpayer Identification Number, which is the nine (9) digit number (000-00-0000) for individuals or the nine (9) digit (00-0000000) employer identification number. A completed Form W-9 must be furnished to the Director, State Purchasing and Contracting and/or Contracting Officer prior to issuance of the Notice-to Proceed.

MAGIC Supplier Self-Service Reference Guide

Supplier Registration

All suppliers/vendor/contractor must be registered to do business with the State of Mississippi. As a supplier/vendor/contractor, you may register at any point in time. To determine whether you are a registered supplier (converted vendor) in MAGIC, go to the MAGIC Vendor Information page and follow the steps below:

- Enter the first five characters of your Vendor Name or your 11 digit SAAS Vendor Number.
- Click Submit.

If you are a converted vendor, you will see your MAGIC Vendor Number, SAAS Vendor Number, Vendor Name, City, State, and Zip displayed. If your vendor information does not exist in MAGIC, you will see "The query you submitted returned no records."

Converted vendors need to submit an email via mash@dfa.ms.gov to request a MAGIC User ID and Password. Enter "Vendor ID Request" as the email Subject, and include the following information in your email:

- MAGIC Vendor Number
- Vendor Name
- Contact Name
- Contact Email Address
- Contact Phone Number

If you are not a registered supplier/vendor/contractor and you wish to do business with the State of Mississippi, click here to register State of Mississippi Supplier Registration. If you attempt to complete the registration process and you are already a converted vendor in MAGIC, you will receive a duplicate error message. Please call the MMRS Call Center at 601-359-1343, Option 2 for assistance in locating your vendor information.

Please see or call Contracting Officer for new Supplier Registration sheet if you are not already registered in MAGIC. This process should be done if you are submitting a bid through the MAGIC system.

The Supplier Registration link is also located on the Mississippi Management & Reporting System website at http://www.mmrs.state.ms.us/vendors/index.shtml. It is important that the supplier must submit W-9 Form after registering.

8. Progress Payments to Contractor

Partial progress payment will be processed by the state on a monthly basis and payment made within Thirty (30) calendar days after approved by the Director, State Purchasing and Contracting and/or Contracting Officer as prescribed in Title §31-7-303 of the Mississippi Code.

Contractors shall submit monthly certification through the project Architect/Engineer/Project Manager to the Director, State Purchasing and Contracting and/or Contracting Officer indicating payments to Subcontractors have been made in accordance with Title 31-5-27 of the Mississippi Code.

9. Asbestos Containing Products/Materials

Products and materials containing asbestos will not be used or incorporated into any phase, process, finished or installed product covered by the work specifications. To ensure compliance with this requirement, a Material Safety Data Sheet (MSDS) must be attached to all Material Submittals disclosing the content of ingredients.

10. Department of Defense (DD) Form 1354 & Installed Building Equipment List (IBE) Special Records & Submission

At the time of pre-construction conference, the Contractor shall furnish the Director, State Purchasing and Contracting and/or Contracting Officer a copy of the Department of Defense Form 1354 with the preliminary cost for each item filled in. These costs will be based on the Contractor's bid (SEE FORM behind SC Section 00 73 01 -4/5). This Form and assistance with this form will be available from the Facilities Management Office Project Manager. Additionally, prior to Substantial Completion, the Contractor will furnish the Project Manager assigned by the Facilities Management Office and the Director, State Purchasing and Contracting and/or Contracting Officer a copy of Form 1354, and the attached Installed Building Equipment (IBE) list with actual costs to date filled in and any changes of measurement noted, (i.e. building square footage is 1200 on the original DD 1354, but was changed during construction; you should mark through 1200 and add correct measurement). If there are no changes to costs or measurements, this is the final 1354 necessary. However, if there are any changes to costs or measurements prior to contract completion, the Contractor will provide an additional copy with changes noted.

TRANSFER AND ACCEPTANCE OF DoD REAL PROPERTY

Form Approved
OMB No. 0704-0188

PAGE OF PAGES

The public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to the Department of Defense, Washington Headquarters Services, Executive Services Directorate, Information Management Division, 4800 Mark Center Drive, Alexandria,VA 22350-3100 (0704-0188). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR COMPLETED FORM TO THE ABOVE ORGANIZATION.

1. FROM *(Organization Name)*	2. DATE PREPARED *(YYYYMMDD)*	3. PROJECT/JOB NUMBER	4. SERIAL NUMBER	8. TRANSACTION DETAILS
5. TO *(Organization - Installation Code and Name)*	6. RPSUID/SITENAME/ INSTCODE/INSTNAME	7. CONTRACT NUMBER(S)	7a. PLACED-IN-SERVICE DATE *(YYYYMMDD)*	a. METHOD *(X all that apply)*: [ ] ACQUISITION BY CONSTRUCTION; [ ] TRANSFER BETWEEN SERVICES; [ ] CAPITAL IMPROVEMENT; [ ] INVENTORY ADJUSTMENT b. WHEN/EVENT *(X one)*: [X] TOTAL ASSET PLACED-IN-SERVICE; [ ] PARTIAL ASSET PLACED-IN-SERVICE c. TYPE *(X one)*: [ ] DRAFT [X] FINAL [ ] INTERIM

9. ITEM NO.	10a. FACILITY NO.	10b. RPUID	11. CATEGORY CODE	12. CATCODE DESCRIPTION	13. TYPE CODE	14. SUST. CODE	AREA 15. PRIMARY UM	AREA 16. PRIMARY UM QUANTITY	OTHER 17. SECONDARY UM	OTHER 18. SECONDARY UM QUANTITY	19. COST	20. FUND SOURCE	21. FUND ORG	22. INTEREST CODE	23. ITEM REMARKS

24. STATEMENT OF COMPLETION. The facilities listed hereon are in accordance with maps, drawings, and specifications and change orders approved by the authorized representative of the using agency except for the deficiencies listed on the reverse side.

a. TRANSFERRED BY *(Typed Name and Signature)*	b. DATE SIGNED *(YYYYMMDD)*	25a. ACCEPTED BY *(Typed Name and Signature)*	b. DATE SIGNED *(YYYYMMDD)*
c. TITLE *(Area Engr./Base Engr./DPW/Construction Agent)*		c. TITLE *(DPW/RPAO)*	26. PROPERTY VOUCHER NUMBER

DD FORM 1354, AUG 2013 PREVIOUS EDITION MAY BE USED. Adobe Designer 9.0

27. **CONSTRUCTION DEFICIENCIES** *(Attach blank sheet for continuations)*	28. **PROJECT REMARKS** *(Attach blank sheet for continuations)*

INSTRUCTIONS

GENERAL. This form has been designed and issued for use in connection with the transfer of military real property between the military departments and to or from other government agencies. It supersedes ENG Forms 290 and 290B (formerly used by the Army and Air Force) and NAVDOCKS Form 2317 (formerly used by the Navy).

Existing instructions issued by the military departments relative to the preparation of DD Form 1354 are applicable to this revised form to the extent that the various items and columns on the superseded forms have been retained. The military departments may promulgate additional instructions, as appropriate.

For detailed instructions on how to fill out this form, please refer to Unified Facilities Criteria (UFC) 1-300-08, dated 16 April 2009 or later.

SPECIFIC DATA ITEMS.

1. From. Name of the transferring agency.

2. Date Prepared. Date of actual preparation. Enter all dates in YYYYMMDD format (Example: March 31, 2010 = 20100331).

3. Project/Job Number. Project number on a DD Form 1391 or Individual Job Order Number.

4. Serial Number. Sequential serial number assigned by the preparing organization (e.g., 2010-0001).

5. To. Name and address of the receiving installation, activity, and Service of the Real Property Accountable Officer (RPAO).

6. RPSUID/SITENAME/INSTCODE/INSTNAME. Site Unique Identifier and name or installation code and name where the constructed facility is located.

7. Contract Number(s). Contract number(s) for this project.

7a. Placed-In-Service Date. RPA Placed In Service Date. This is the date the asset is actually placed-in-service.

8. Transaction Details.
a. Method of Transaction. Mark (X) as many boxes as apply.
b. When/Event. When or event causing preparation of DD Form 1354. X only one box.
c. Type. Draft, interim, or final DD Form 1354. X only one box.

9. Item Number. Use a separate item number for each facility, no item number for additional usages.

10a. Facility Number. Assigned in accordance with the Installation/Base Master Numbering Plan.

10b. RPUID. Identified in Real Property Inventory.

11. Category Code. The category code describes the facility usage.

12. Catcode Description. The category code name which describes the facility usage.

13. Type. Type of construction: P for Permanent; S for Semi- permanent; T for Temporary.

14. Sustainability Code. Reports whether or not an asset meets the sustainability guidelines set forth in Section 2(g) of Executive Order 13514. Valid values are: 1 (asset meets the guidelines); 2 (asset does not meet the guidelines); 3 (asset not evaluated); 4 (asset not subject to guidelines).

15. Area: UM 1. Area unit of measure; use the unit of measure associated with the category code selected in 11.

16. Total Quantity UM 1. The total area for the measure identified in Item 15. Use negative numbers for demolition.

17. Other: UM 2. Unit of Measure 2 is the capacity or other measurement unit (e.g., LF, MB, EA, etc.).

18. Total Quantity UM 2. The total capacity/other for the measure identified in Item 17.

19. Cost. Cost for each facility; for capital improvements to existing facilities, show amount of increase only. If there is no increase for the capital improvement, enter N/A.

20. Fund Source. Enter the Fund Source Code for this item.

21. Funding Organization. Enter the code for the organization responsible for acquiring this facility.

22. Interest Code. Enter the code that reflects government interest or ownership in the facility.

23. Item Remarks. Remarks pertaining only to the item number identified in Item 9; show cost sharing.

24. Statement of Completion. Typed name, signature, title, and date of signature by the responsible transferring individual or agent.

25. Accepted By. Typed name, signature, title, and date of signature by the RPAO or accepting official.

26. Property Voucher Number. Next sequential number assigned by the RPAO in voucher register.

27. Construction Deficiencies. List construction deficiencies in project during contractor turnover inspection.

28. Project Remarks. Project level remarks and continuation of blocks.

DD FORM 1354 (BACK), AUG 2013

SECTION 00 73 02

CONDITIONS OF THE CONTRACT - SPECIAL INSTRUCTIONS

1. SUBCONTRACTORS

The Prime Contractor, on or before the date of being awarded Prime Contract, will submit to the Director, State Purchasing and Contracting and/or Contracting Officer a list of all subcontracts which sets forth the amount, name, address, and scope of work contemplated for each subcontract. For any subcontract that exceeds $75,000.00, the Subcontractor is required to have a current Certification of Responsibility Number, as issued, and licensed by the Mississippi State Board of Contractors, and the number will also be furnished on the list, as applicable.

2. LIMITATIONS

Any and all types of alcoholic beverages and controlled substances are strictly forbidden from the job site. The Contractor shall be responsible for the knowledge of, and adherence to, any and all Federal, State and local laws and regulations pertaining to the same.

3. PRE-CONSTRUCTION CONFERENCE

The Director, State Purchasing and Contracting and/or Contracting Officer, will conduct a meeting at a time and place designated by the Director, State Purchasing and Contracting and/or Contracting Officer, prior to the Contractor starting work on the project. It is desirable that in addition to the Contractor, the foreman/supervisor and any prime subcontractors for the project attend this meeting. The exact time, date and place of the meeting will be arranged after the issuance of the contract.

4. PRODUCTS AND/OR MATERIAL SUBSTITUTION

Prior to the Pre-Construction Conference the Contractor will submit, for approval, any anticipated changes to the products or materials specified. All submittals must address all specification data, company name and supplier of the product or material that the Contractor wishes to substitute. At the Pre-Construction Conference the Contractor will be given approval/disapproval for the use of alternate items as submitted. Substitutions submitted after the Pre-Construction Conference may not be taken into consideration at the discretion of the Director, State Purchasing and Contracting and/or Contracting Officer.

5. AS BUILT DRAWINGS

Occasionally, during construction, modifications and changes may occur due to site conditions, unforeseen circumstances or problems encountered. This may result in a modification of the construction as originally depicted on the drawings. Upon completion of the project, the Contractor will

furnish the Director, State Purchasing and Contracting and/or Contracting Officer two (2) complete sets of "As Built Drawings", signed by the Contractor, depicting the actual construction and all changes incorporated therein. Contractor shall also provide one (1) set to A&E for conversion to electronic As Built's.

6. INSURANCE

SEE 2017 SUPPLEMENTARY CONDITIONS SECTION 00 73 03, Article 11

7. ARCHITECT/ENGINEER/CONSULTANT

If Project does not specify an A&E/Consultant the Contracting Officer Representative will perform the duties thereof, along with the Director, State Purchasing and Contracting and/or Contracting Officer.

8. MINORITY TRACKING/PARTICIPATION OF SUBCONTRACTORS

The document on next page (SI Section 00 73 02 – 3/4 and 4/4) will serve as a tracking instrument for minority participation in publicly funded construction projects managed by the Owner. This document will aid the Owner in its commitment to encourage minority participation during the bidding process. Your conscientious effort and commitment to help establish good business relations with minority subcontractors, is greatly appreciated.

Contractor will be required to submit to the Owner within seven days from the Notice to Proceed, a completed form, if none, put NONE on the form.

(BLANK)

MISSISSIPPI MILITARY DEPARTMENT

Minority Tracking or Participation Form

Any responses will be deemed public information and may be incorporated into reporting information compiled by the Owner in the following manner: Contractors that listed minority participation, Contractors that did not list minority participation and Contractors that submitted an incomplete (partially filled-out or blank) form.

Section 00 43 00: SCOPE OF WORK
1.01 General Description of work covered by Contract Documents
Section 00 73 02, paragraph 8, page, SI Section 00 73 02 – 2/3

The Prime General Contractor will submit to the Owner within seven (7) days from the Notice to Proceed, a completed *Minority Tracking Form* outlining the use of minority subcontractors that will be used on the project.

Minority - A person who is a citizen or lawful permanent resident of the United States and who is the following: **African American, Hispanic American, Asian American, American Indian or Female**

Project Name, Location and Number: _____

General Contractor: (Name) _____

Check the Following Appropriate Box

☐ **There are NO minority participants included in this bid proposal.**

☐ **There are minority participants included in this bid proposal.** The minority participants may be defined as: Subcontractor(s) or Supplier(s).

List minority participants and their discipline/responsibility per the above or per Construction Specification Institution (CSI) sixteen (16) divisions.

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Page 2 of 2 (Submit if necessary)
Minority Participation Form

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

Name: _____

Division: _____

Amount $ _____

2017 SUPPLEMENTARY CONDITIONS
AIA Document A201 - 2017
SECTION 00 73 03

PART 1 – GENERAL

1.01 **DESCRIPTION**

A. **Owner:** These supplements are necessary because the Owner is an agency, of the State of Mississippi and occupies a different position from that of the usual Owner.

B. **Document:** The following supplements modify, change, delete from, or add to the General Conditions of the Contract, AIA Document A201-2017. When any portion of the General Conditions is modified, changed, deleted from, or added to, by these Supplementary Conditions, the unaltered portions of that Article, Paragraph, Subparagraph, or Clause shall remain in full force and effect.

C. **Architect/Engineer/Consultant:** If Project does not specify an A&E/Consultant, the Contracting Officer Representative (COR) will perform the duties thereof, along with the Director, State Purchasing and Contracting and/or the Contracting Officer (DPC/CO).

Article 1
GENERAL PROVISIONS

1.1 **BASIC DEFINITIONS**

1.1.1 **The Contract Documents**: Delete the last sentence of this Subparagraph and substitute the following sentence:

The Contract Documents include the Advertisement for Bids, Instructions to Bidders, Proposal Form, sample forms, schedules and all portions of addenda issued prior to execution of the Contract.

1.1.9 Add a new Subparagraph as follows:

COMMISSIONING AUTHORITY PROFESSIONAL
A professional independent of the project engineer or architect retained by the owner who manages a quality focused process for enhancing the delivery of the project. The process focuses upon verifying and documenting that the facility and all its systems are planned, designed, installed, tested, operated, and maintained to meet the Owner's project requirements.

1.5 **OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE**

1.5.1 Add a new sentence at the end of this Subparagraph:

This Paragraph in no way supersedes the Owner's document rights set forth in the Agreement Between the Owner and the Professional.

1.5.3 Add a new Subparagraph as follows:

Transparency. In accordance with the Mississippi Accountability and Transparency Act of 2008, §27-104-151, et seq., of the Mississippi Code of 1972, as Amended, the American Accountability and Transparency Act of 200 (P.L.111-5), where applicable, and §31-13 of the Mississippi Code of 1972, as amended, where applicable, a fully Executed copy of the Contract shall be posted by the MS Military Department in the State Accounting System (MAGIC) to meet requirements. This will allow the contract to be posted to the following website: https://www.transparency.mississippi.gov

Article 2

OWNER

2.1 **GENERAL**

2.1.1 Change this Subparagraph to read as follows:

The Owner, as used in these Documents, refers to the Mississippi Military Department, acting for and on behalf of the State of Mississippi and for the benefit of the Agency for which the Work under this Contract is being performed. The Owner's representative, who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization, is the Director, State Purchasing and Contracting and/or the Contracting Officer (DPC/CO) who is the designee of the individual who signed the Construction Contract. Except as otherwise provided in Subparagraph 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized designee. The Construction Manager as referred in the AIA documents shall mean the Contracting Officer's Representative (COR) to the Owner's representative who shall have authority to take any or all action with respect to verify that the contractor perform the technical requirements of the contract in accordance with the contract terms of the contract; Perform or cause to be performed, inspections necessary to ensure performance meets the contract specifications and verify that contractor corrects all deficiencies; Maintains liaison and direct communications with the contractor but is not empowered to award, agree to, or sign any contract or modifications thereto, or in any way obligate the payment of money by the State or U.S. Government.

Article 3
CONTRACTOR

3.3 **SUPERVISION AND CONSTRUCTION PROCEDURES**

3.3.1 Add a new sentence at the end of this Subparagraph:

If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner and Architect shall be responsible for any resulting loss or damage.

3.4 **LABOR AND MATERIALS**

3.4.4 Add the Subparagraph as follows:

Employee Status Verification System *If applicable, the Contractor represents and warrants that it will ensure its compliance with the Mississippi Employment Protection Act, Section 71-11-1, et seq. of the Mississippi Code Annotated (Supp 2008) and will register and participate in the status verification system for all newly hired employees. The term "employee" as used herein means any person that is hired to perform work within the State of Mississippi. As used herein, "status verification system" means the Illegal Immigration Reform and Immigration Responsibility Act of 1996 that is operated by the United States Department of Homeland Security, also known as the E-Verify Program, or any other successor electronic verification system replacing the E-Verify Program. The Contractor agrees to maintain records of such compliance and, upon request of the State and approval of the Social Security Administration or Department of Homeland Security, where required, to provide a copy of each such verification to the State. The Contractor further represents and warrants that any person assigned to perform services hereunder meets the employment eligibility requirements of all immigration laws of the State of Mississippi. The Contractor understands and agrees that any breach of these warranties may subject the Contractor to the following: (a) termination of this Agreement and ineligibility for any state or public contract in Mississippi for up to three (3) years, with notice of such cancellation/termination being made public, or (b) the loss of any license, permit, certification or other document granted to the Contractor by an agency, department or governmental entity for the right to do business in Mississippi for up to one (1) year, or (c) both. In the event of such cancellation/termination, the Contractor would also be liable for any additional costs incurred by the State due to the contract cancellation or loss of license or permit.*

3.4.5 Add a new Subparagraph as follows:

In providing labor for the proper execution and completion of the Work, the Contractor shall comply with the provisions of Section 31-5-17 and Section 31-5-19 of the Mississippi Code of 1972, Annotated.

3.4.6 Add a new Subparagraph as follows:

In providing materials for the proper execution and completion of the Work, the Contractor shall comply with the provisions of Section 31-5-23 of the Mississippi Code of 1972, Annotated.

3.9 **SUPERINTENDENT**

3.9.2 Change the second line in this Subparagraph to read as follows:

The DPC/CO shall, within a reasonable time, notify the Contractor in writing of any objection to the proposed superintendent.

3.15 **CLEANING UP**

3.15.2 Change this Subparagraph to read as follows:

If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 **ACCESS TO WORK**

Change this Paragraph to read as follows:

The Contractor shall provide the Owner, Contracting Officer Representative, Architect, Commissioning Authority Professional, and their authorized representatives access to the Work in preparation and progress wherever located.

3.18 **INDEMNIFICATION**

3.18.3 Modify the Subparagraph as follows:

Indemnification *To the fullest extent allowed by law, Contractor shall indemnify, defend, save and hold harmless, protect, and exonerate the State of Mississippi Military Department, its officers, employees, and representatives from and against all claims, demands, liabilities, suits, actions, damages, losses, and costs of every kind and nature whatsoever, including, without limitation, court costs, investigative fees and expenses, and attorneys' fees, arising out of or caused by Contractor's and/or its partners, principals, agents, employees, and/or subcontractors in the performance of or failure to perform this Agreement. In the State's sole discretion, Contractor may be allowed to control the defense of any such claim, suit, etc. In the event Contractor defends said claim, suit, etc., Contractor shall use legal counsel acceptable to the State; Contractor shall be solely liable for all reasonable costs and/or expenses associated with such defense and the State shall be entitled to participate in said defense. Contractor shall not settle any claim, suit, etc., without the State's concurrence, which the State shall not unreasonably withhold.*

Article 4
ARCHITECT

4.1 **GENERAL**

4.1.2 Change this Paragraph to read as follows:

The Owner shall have a Contracting Officer's Representative (COR) whom is an employee of the Mississippi Military Department. See Article 2, paragraph 2.1.1 for a definition of COR

4.2 **ADMINISTRATION OF THE CONTRACT**

4.2.1 Change the first line of this Subparagraph to read as follows:

The Architect will provide administration of the Contract as directed by the DPC/CO, and will be the Owner's representative, along with the COR, (1) during construction, (2) until the final payment is due and (3) with the Owner's concurrence, during the one-year period for correction of Work described in Section 12.2.

4.2.3 Change this Paragraph to read as follows:

The Contracting Officer Representative (COR) shall visit the work site at any time during the construction period. He/She will determine in general, if the work observed is being performed in accordance with the Contract Documents. COR will work with the Architect/Engineer to keep Contracting Officer informed and to provide reports to the Contracting Officer.

4.2.4 Delete this Subparagraph in its entirety.

4.2.15 Add a new Subparagraph as follows:

The COR will work with the Architect and the DPC/CO in conducting inspections to determine the dates of Substantial Completion and the date of final completion. The DPC/CO will issue Certificates of Substantial Completion once approved pursuant to Section 9.8. Architect in conjunction with the COR will receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Architect will forward to the COR a final application and Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

Article 5
SUBCONTRACTORS

5.2 **AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK**

5.2.1 Change the first sentence of this Subparagraph to read as follows:

Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, prior to award of the Contract by the Owner, shall furnish in writing to the Owner through the Professional, the names, disciplines, and COR #'s of Sub-Contractors over Fifty Thousand Dollars ($75,000.00) (as well as entities who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. Such list shall also include any Mechanical, Plumbing, or Electrical Sub-Contractor listed on Proposal Form regardless of amount.

Article 6
CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

No supplementary conditions.

Article 7
CHANGES IN THE WORK

7.1.2 Delete This Subparagraph in its entirety.

7.2 **CHANGE ORDERS**

7.2.2 Add a new Subparagraph as follows:

The maximum cost included in a Change Order for profit and overhead is limited to twenty percent (20%) of the total of the actual cost for materials, labor and subcontracts. Profit and overhead include: all taxes, fees, permits, insurance, bond, job superintendent, job and home office expense. All Subcontractors shall acquiesce to the same requirements when participating in a Change Order.

7.3 **CONSTRUCTION CHANGE DIRECTIVES**

7.3.1 Change the first sentence of this Subparagraph to read as follows:

A Construction Change Directive is a written order prepared by the DPC/CO after coordination with the Contracting Officers Representative and/or Architect, then is signed by the Owner, directing a change in the work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both.

7.3.9 Delete this Subparagraph in its entirety.

7.3.10 Change this Subparagraph to read as follows:

When the Owner and the Contractor agree with a determination made by the DPC/CO, Contracting Officers Representative and/or the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach an agreement upon the adjustments, such agreement shall be effective immediately and the DPC/CO, with the assistance of the Contracting Officers Representative and/or the Architect shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

7.4 **Minor Changes in the Work**

Change This Subparagraph as follows:

Replace the word "Architect" with the words "COR and/or Architect".

Article 8
TIME

8.1 **DEFINITIONS**

8.1.1 Change This Subparagraph to read as follows;

Unless otherwise provided, Contract Time has been calculated to include calendar days for the receipt of Final Application of Payment and all Close Out Documents. Additional calendar days may be added based on authorized adjustments allotted in the Contract Documents to complete all terms of the contract.

8.1.2 Change this Subparagraph to read as follows:

The date of commencement of the Work is the date established in the Notice to Proceed.

8.1.3 Change this Subparagraph to read as follows;

The date of Substantial Completion is the date certified by the DPC/CO, along with the COR and the Architect in accordance with Section 9.8.

8.2 **PROGRESS AND COMPLETION**

8.2.3 Change this Subparagraph to read as follows;

The Contractor shall proceed expeditiously with adequate forces and shall achieve Completion within the Contract Time

8.3 **DELAYS AND EXTENSIONS OF TIME**

8.3.1 Change this Subparagraph to read as follows:

If the Contractor is delayed at any time in the commencement or progress of the Work by any act of neglect of the Owner or the Architect, or by any employee of either, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or any causes beyond the Contractor's control, or by any other causes which the DPC/CO along with the COR and the Architect determines may justify the delay, then the Contract Time may be extended by Change Order for such reasonable time as the DPC/CO may determine. Any claim for loss or any delay occasioned by any separate Contractor, or Subcontractor, shall be settled between the Contractor and such other separate Contractor, or Subcontractors.

Article 9
PAYMENTS AND COMPLETION

9.2 **SCHEDULE OF VALUES**

Change this Paragraph to read as follows:

Where the Contract is based on a stipulated sum, the Contractor shall submit through the Architect, the COR to the DPC/CO, at least 10 days before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the work and prepared in such form and supported by such data to substantiate its accuracy as the DPC/CO may require. This schedule, unless objected to by the Architect or Owner, shall be used as a basis for reviewing the Contractor's Applications for Payment.

9.3 **APPLICATIONS FOR PAYMENT**

9.3.1 Add a new sentence to the end of this Subparagraph:

The form of Application for Payment will be AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet, or a computer-generated form containing similar data will be used for all Pay Requests submissions. The date established for each progress payment to be submitted will be at the Monthly Construction meeting determined at the Pre-Construction Conference.

9.3.1.1 Delete this Subparagraph in its entirety.

9.3.1.3 Add a new Clause to Subparagraph 9.3.1 as follows:

On any contract as described herein, of which the total amount is Two Hundred Fifty Thousand Dollars ($250,000.00) or greater, or on any contract with a subcontractor, regardless of amount, five percent (5%) shall be retained until the work is at least fifty percent (50%) complete, on schedule and satisfactory in the Owner's, COR and architect's/engineer's opinion, at which time fifty percent (50%) of the retainage held to date shall be returned, subject to consent of surety, to the prime contractor for distribution to the appropriate subcontractors and suppliers; provided, however, that future retainage shall be withheld at the rate of two and one-half percent (2 1/2%). When submitting request for reduction in retainage, the Contractor will include, with the application, a Consent of Surety to Reduction which is AIA Form G707A, and a Power of Attorney.

9.3.1.4 Add a new Clause to Subparagraph 9.3.1 as follows:

The Contractor must submit each month with this Application for Payment a separate letter stating that he is

requesting an extension of time or that he had no need for an extension for that period of time. No payment on a monthly application will be considered due and payable until the letter is received. Complete justification such as weather reports or other pertinent correspondence must be included for each day's request for extension. A Contractor's letter, or statement, will not be considered as adequate justification. The receipt of this request and data by the Owner will not be considered as Owner approval in any way.

9.3.2.1 Add a new Clause to Subparagraph 9.3.2 as follows:

Payment on materials stored at some location other than the building site, may be approved by the Architect and the Owner after the Contractor has submitted the following items:

- *.1 An acceptable Lease Agreement between the General Contractor and the owner of the land, or building, where the materials are stored covering the specific area where the materials are located.*
- *.2 Consent of Surety, or other acceptable Bond, to cover the materials stored off-site.*
- *.3 All Perils Insurance coverage for the full value of the materials stored off-site.*
- *.4 A Bill of Sale from the Manufacturer to the General Contractor for the stored materials.*
- *.5 A complete list and inventory of materials manufactured, stored and delivered to the storage site and of materials removed from the storage site and delivered to the job site.*
- *.6 A review by the Architect of the materials stored off-site prior to release of payment.*
- *.7 Guarantee no storage costs, additional delivery fees, or subsequent costs to the Owner.*

9.4 **CERTIFICATES FOR PAYMENT**

9.4.1 Change this Subparagraph to read as follows:

The A&E will have 5 calendar days from receipt of the Certificate for Payment from the Contractor to review/certify the amount the A&E determines is due the Contractor and submit to the COR. If the Amount due certified by the A&E is different from the amount the Contractor requested or is determined to be withheld in whole, the A&E will provide, in writing, the reasons for withholding the certification in whole or in part and submit to the COR. The COR will have 3 calendar days to review/approve and attach an inspection report to and submit to the DPC/CO. If the request is certified by A&E to be withheld in whole, the COR will forward A&E's documentation for withholding in whole, along with COR concurrence and submit to the DPC/CO. In the aforementioned timeframe.

9.5 **DECISIONS TO WITHHOLD CERTIFICATION**

9.5.1 Change this Subparagraph to read as follows:

The A&E, COR and the DPC/CO may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner as required by Section 9.4.1. If in the A&E, and COR cannot agree on a revised amount or withholding in whole all documentation will be submitted to the DPC/CO for final determination. The A&E or the DPC/CO may also withhold a Certificate for Payment because of subsequently discovered evidence or subsequent observations, may nullify the whole or a part of a Certificate for Payment for Payment previously issued, to such extent as may be necessary in the COR, Architect's or the DPC/CO's opinion to protect the Owner from loss for which theContractor is responsible, including loss resulting from the acts and omissions because of the following:

- ***.1** defective Work not remedied;*
- ***.2** third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;*
- ***.3** failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;*
- ***.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;*
- ***.5** damage to the Owner or a separate contractor;*

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

9.6 **PROGRESS PAYMENTS**

9.6.1 Change the first line of this Subparagraph to read as follows:

After the Architect and COR have reviewed the Certificate for Payment and has certified that payment should be made will forward to the DPC/CO for the processing of Payment. This will be the Date that is considered due and payable. The DPC/CO will process in the manner and within the time provided in the Contract Documents.

9.6.2 Change the first line of this Subparagraph to read as follows:

The Contractor shall pay each Subcontractor, in accordance with Section 31-5-27 of the Mississippi Code 1972, Annotated, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work.

9.6.3 Change this Subparagraph to read as follows:

The DPC/CO will, on request, in writing, furnish to the Subcontractor, a copy of the Payment and Performance Bond if there is a dispute between payments. The Contractor is responsible to the Subcontractor for payment not the Owner as the contract is between the Contractor and the Subcontractor. The DPC/CO may, if practical, give the Subcontractor information regarding percentages of completion or amounts applied for by the Contractor.

9.6.9 Add a new Subparagraph as follows:

The amount retained by the Contractor from each payment to each Subcontractor and material supplier will not exceed the percentage retained by the Owner from the Contractor.

9.6.9.1 Add a new Clause to Subparagraph 9.6.8 as follows:

The Contractors shall submit monthly certification, in accordance with Section 31-5-25 of the Mississippi Code 1972, Annotated, on Owner's "Affidavit Certifying Payment to All Subcontractors" form, to the project engineer or architect indicating payments to subcontractors on prior payment request. (Attached as Exhibit "A" at the end of this Section 00 73 03, herein)

9.7 **FAILURE OF PAYMENT**

Change this Paragraph to read as follows:

The Contractor and the Owner shall be subject to the remedies as prescribed in Section 31-5-25 of the Mississippi Code 1972, Annotated.

9.8 **SUBSTANTIAL COMPLETION**

9.8.1 Add the following sentence to the end this Subparagraph to read as follows:

Commissioning requirements must be complete except for thermographs of electrical systems, trend log monitoring, seasonal testing, near-warranty end activities and verification of training sessions.

9.8.3 Change the first Sentence of this Subparagraph to read as follows;

Upon receipt of the list, the Architect, assisted by the COR and the DPC/CO, will make an inspection to determine whether the Work or designated portion thereof is substantially complete.

Change the last Sentence of this Subparagraph to read as follows;

In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the COR and the DPC/CO, to determine Substantial Completion.

9.8.4 Change the first line this Subparagraph to read as follows:

When the Work or designated portion thereof is substantially complete and affirmed by the Owner, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate and forward through the COR to the DPC/CO for execution thereof.

9.9 **PARTIAL OCCUPANCY OR USE**

9.9.1 Delete first sentence of this Subparagraph

Change third sentence of this Subparagraph to read as follows:

When the Contractor considers a portion substantially complete, the Contractor, Architect and the COR shall jointly prepare a list to the DPC/CO for agreement/non-agreement. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Contractor and the DPC/CO.

9.10 **FINAL COMPLETION AND FINAL PAYMENT**

9.10.1 Change this Subparagraph to read as follows:

When, in the opinion of the Contractor, the Work is ready for final inspection and acceptance by the Owner, the Contractor shall make such notice to the Architect in writing and copy the COR and DPC/CO.

1. *Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance by the Owner, the Architect along with the COR and the DPPC/CO will promptly inspect the Work. The Architect will compile a list of deficiencies. If, in the Architect, COR and DPC/CO's judgment, the Work is not ready for inspection, the inspection will cease and another inspection will be scheduled.*

2. *Once the Architect along with the COR has made inspection and all deficiencies listed by the Architect have been corrected and the Architect along with the COR determines the Work is ready for final inspection, the Architect along with the COR will call for final inspection of the Project with the DPC/CO for the purpose of determining whether the Work is acceptable the Contract Documents.*

3. *The final inspection shall be conducted in the presence of the Owner and a list of defects or discrepancies, if any, will be compiled into a punch list furnished to all parties.*

4. *Once corrections of all punch list items have been confirmed by the Architect and/or COR, the Architect will provide a letter recommending final acceptance of the Work to the Owner.*

9.10.2 Change this Subparagraph to read as follows:

Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the

DPC/CO, through the Architect and COR all documents as called for in the specifications, Section 00 65 00, CONDITIONS OF THE CONTRACT-CLOSE-OUT DOCUMENTS.

9.11 **LIQUIDATED DAMAGES**

9.11.1 Add a new Paragraph as follows:

Time being of the essence and a matter of material consideration thereof, a reasonable estimate in advance is established to cover losses incurred by the Owner if the project is not 100% completed on the date set forth in the Contract Documents. The Contractor and his Surety will be liable for and will pay the Owner the sums stipulated in Paragraph 46 of the Contract Agreement Between the Owner and the Contractor as fixed and agreed as liquidated damages for each calendar day of delay until the work is 100% completed unless circumstances dictate otherwise in the discretion of the Owner.

Article 10
PROTECTION OF PERSONS AND PROPERTY

10.2 **SAFETY OF PERSONS AND PROPERTY**

10.2.5 Change this Subparagraph to read as follows:

The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Clauses 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible for Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Paragraph 3.18.

Article 11
INSURANCE AND BONDS

11.1 **CONTRACTOR'S LIABILITY INSURANCE**

11.1.1 Add this sentence to the end of this Subparagraph:

Certificate of insurance acceptable to the Owner shall be submitted to the DPC/CO prior to issuance of the Notice-To-Proceed and thereafter upon renewal or replacement of each required policy of insurance.

11.1.5 Add a new Subparagraph as follows:

The Contractor's limits of liability shall be written for not less than the following:

.1 GENERAL LIABILITY:
Commercial General Liability
(Including XCU if project is over $500,000.00)
General Aggregate ..... $1,000,000.00 Aggregate
Products & Completed Operations ..... $1,000,000.00 Aggregate
Personal & Advertising Injury ..... $ 500,000.00 Per Occurrence
Bodily Injury & Property Damage ..... $1,000,000.00 Per Occurrence

Fire Damage Liability ..... *$ 50,000.00 Per Occurrence*
Medical Expense ..... *$ 5,000.00 Per Person*

.2 OWNERS & CONTRACTORS PROTECTIVE LIABILITY:
Bodily Injury & Property Damage ..... *$1,000,000.00 Aggregate*
Bodily Injury & Property Damage ..... *$ 500,000.00 Per Occurrence*

.3 AUTOMOBILE LIABILITY:
(Owned, Non-owned & Hired Vehicles)
Contractor Insurance Option Number 1:
Bodily Injury & Property Damage ..... *$ 500,000.00 Per Occurrence*
(Combined Single Limit)
Contractor Insurance Option Number 2:
Bodily Injury ..... *$ 250,000.00 Per Person*
Bodily Injury ..... *$ 500,000.00 Per Accident*
Property Damage ..... *$ 100,000.00 Per Occurrence*

.4 EXCESS LIABILITY:
(Umbrella on projects over $500,000)
Bodily Injury & Property Damage ..... *$ 1,000,000.00 Aggregate*
(Combined Single Limit)

.5 WORKERS' COMPENSATION:
(As required by Statute)
EMPLOYERS' LIABILITY:
Accident ..... *$ 100,000.00 Per Occurrence*
Disease ..... *$ 500,000.00 Policy Limit*
Disease ..... *$ 100,000.00 Per Employee*

.6 PROPERTY INSURANCE:
Builder's Risk ..... *$Equal to Value of Work*
or
Installation Floater ..... *$Equal to Value of Work*

***NOTE**: Builder's Risk Insurance will NOT be required when project is demolition ONLY. It will be required for all other projects including paving…*

11.1.6 Add a new Subparagraph as follows:

If the coverages are provided on a claims-made basis, the policy date or retroactive date shall predate the Contract; the termination date, or the policy, or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment.

11.2 **OWNER'S LIABILITY INSURANCE**

Delete this Paragraph in its entirety and substitute the following:

*The Contractor shall purchase and maintain such insurance as will protect the Owner from his contingent liability to others for damages because of bodily injury, including death, and property damage, which may arise from operations under this Contract and other liability for damages which the Contractor is required to insure under any provision of this Contract. Certificate of this insurance will be filed with the Owner and will be the same limits set forth in 11.1.*5.*

Article 12
UNCOVERING AND CORRECTION OF WORK

12.1.1 Change the first line in this Subparagraph to read as follows:

……contrary to *the Architect, COR and the DPC/CO ……*

12.1.2 Change this Subparagraph to read as follows:

If a portion of the Work has been covered which the Architect, COR and DPC/CO has not specifically requested to observe prior to its being covered, the Architect, COR and DPC/CO may request to see such Work and it shall be uncovered by the Contractor. If such work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's and/or Architects expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense.

12.2 **CORRECTION OF WORK**

12.2.1 **BEFORE OR AFTER SUBSTANTIAL COMPLETION**

Revise the names in this Subparagraph to read as follows:

After Architect, add "COR and DPC and/or CO".

Article 13
MISCELLANEOUS PROVISIONS

13.1 **GOVERNING LAW**

Change this Paragraph to read as follows:

The Contract shall be governed by the laws of the State of Mississippi.

13.3 **RIGHTS AND REMEDIES**

13.3.2 Revise the names in this Subparagraph to read as follows:

"*Architect, COR and DPC and/or CO or Contractor"*

13.4 **TESTS AND INSPECTIONS**

13.4.1 Change the third line of this Subparagraph by adding "*and Commissioning Authority Professional*" after each instance of the word "*Architect*".

13.4.3 Change this Subparagraph by inserting "*and the Commissioning Authority Professional's*" after the word "*Architect*".

13.4.4 Change the last line of this Subparagraph to read as follows:

Documents, be secured by the Contractor and promptly delivered to the Architect or COR for review.

13.4.5 Change this Subparagraph by adding "*and/or the Commissioning Authority Professional*" after each instance of the word "*Architect*".

13.5 **INTEREST**

Delete this Paragraph in its entirety.

13.6 Add this Paragraph title and contents to read as follows:

13.6 **COMMENCEMENT OF STATUTORY LIMITATION PERIOD**

13.6.1 *The Owner and Contractor shall commence all claims and causes of action within the time period specified by applicable state law.*

Article 14
TERMINATION OR SUSPENSION OF THE CONTRACT

Delete this Article in its entirety.

Article 15
CLAIMS AND DISPUTES

Delete this Article in its entirety.

(BLANK)

AFFIDAVIT CERTIFYING PAYMENT TO ALL SUBCONTRACTORS

I acknowledge that, pursuant to Miss. Code Ann. §31-5-25 and H.B. 1562, Laws of 2002, that I am required to submit monthly certification indicating payments to subcontractors on prior payment requests. I, the undersigned Contractor, do hereby certify that I have paid the following amounts to subcontractors for Work which has been performed and incorporated into previous Applications for Payment which were issued, and payment received from the Owner on the project listed below. I understand that this document must be submitted on a monthly basis after the submittal, approval and payment of Application for Payment #1. I understand that the Owner reserves the right to require me, the undersigned, to provide verification of payment and/or additional information.

Section 00 73 03 SUPPLEMENTARY CONDITIONS
Article 9.6 Progress Payments
Article 9.6.8.1
Pursuant to Code §31-5-25 and HB1562, Laws of 2002
. . .Contractors shall submit monthly certification to the project engineer or architect indicating payments to subcontractors on prior payment request. . . .

Project Name and Number: _____

Using Agency: _____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Affidavit Certifying Payment Form

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

Subcontractor: _____ Amount: $_____

(Attach additional list of subcontractors and amounts, if necessary)

Contractor Name and Title: _____

Contractor Certificate of Responsibility Number: _____

Contractor Signature: _____ Date: _____

STATE OF MISSISSIPPI

COUNTY OF _____

SWORN TO AND SUBSCRIBED BEFORE ME, the undersigned notary public, this the _____ day of _____, 20_____.

_____

NOTARY PUBLIC

My Commission Expires:

_____

BID BOND *(See instructions on reverse)*	DATE BOND EXECUTED *(Must not be later than bid opening date)*	OMB NO.:9000-0045

Public reporting burden for this collection of information is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (MVR), Federal Acquisition Policy Division, GSA, Washington, DC 20405.

PRINCIPAL *(Legal name and business address)*	TYPE OF ORGANIZATION *("X" one)* ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☐ CORPORATION STATE OF INCORPORATION

SURETY(IES) *(Name and business address)*

PENAL SUM OF BOND					BID IDENTIFICATION	
PERCENT OF BID PRICE	AMOUNT NOT TO EXCEED				BID DATE	INVITATION NO.
	MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENTS	FOR *(Construction, Supplies, or Services)*	

OBLIGATION:

We, the Principal and Surety(ies) are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS:

The Principal has submitted the bid identified above.

THEREFORE:

The above obligation is void if the Principal - (a) upon acceptance by the Government of the bid identified above, within the period specified therein for acceptance (sixty (60) days if no period is specified), executes the further contractual documents and gives the bond(s) required by the terms of the bid as accepted within the time specified (ten (1 0) days if no period is specified) after receipt of the forms by the principal; or (b) in the event of failure to execute such further contractual documents and give such bonds, pays the Government for any cost of procuring the work which exceeds the amount of the bid.

Each Surety executing this instrument agrees that its obligation is not impaired by any extension(s) of the time for acceptance of the bid that the Principal may grant to the Government. Notice to the surety(ies) of extension(s) are waived. However, waiver of the notice applies only to extensions aggregating not more than sixty (60) calendar days in addition to the period originally allowed for acceptance of the bid.

WITNESS:

The Principal and Surety(ies) executed this bond and affixed their seals on the above date.

PRINCIPAL

SIGNATURE(S)	1. (Seal)	2. (Seal)	3. (Seal)	Corporate Seal
NAME(S) & TITLE(S) (Typed)	1.	2.	3.	

INDIVIDUAL SURETY(IES)

SIGNATURE(S)	1. (Seal)	2. (Seal)
NAME(S) (Typed)	1.	2.

CORPORATE SURETY (IES)

SURETY A	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT ($)
	SIGNATURE	1.	2.	Corporate Seal
	NAME(S) & TITLE(S) (Typed)	1.	2.	

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STANDARD FORM 24 (REV. 10-98)
Prescribed by GSA - FAR (48 CFR) 53.228(a)

SURETY B	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT ($)	Corporate Seal
	SIGNATUR	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY C	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT M	Corporate Seal
	SIGNATURE	1.	2.		
	NAME(S) & TITLE(S) *(Typ9d)*	1.	2.		
SURETY D	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT ($)	Corporate Seal
	SIGNATUR	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY E	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT ($)	Corporate Seal
	SIGNATURE	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY F	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT ($)	Corporate Seal
	SIGNATUR	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY G	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT ($)	Corporate Seal
	SIGNATURE	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		

INSTRUCTIONS

1. This form is authorized for use when a bid guaranty is required. Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3. The bond may express penal sum as a percentage of the bid price. In these cases, the bond may state a maximum dollar limitation (e.g., 20% of the bid price but the amount not to exceed _____ dollars).

4. (a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designed "SURETY(IES)" on the face of the form, insert only the letter identification of the sureties.

(b) Where individual sureties are involved, a completed Affidavit of Individual surety (Standard Form 28), for each individual surety, shall accompany the bond. The Government may require the surety to furnish additional substantiating information concerning its financial capability.

5. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal"; and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction requiring adhesive seals.

6. Type the name and title of each person signing this bond in the space provided.

7. In its application to negotiated contracts, the terms "bid" and "bidder" shall include "proposal". and " offeror."

PERFORMANCE BOND (See instructions on reverse)	DATE BOND EXECUTED *(Must be same or later than date of contract)*	OMB No.: 9000-0045

Public reporting burden for this collection of information is estimated to average 25 minutes per response, including the time for reviewing nstructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimateor any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (MVR), Federal Acquisition Policy Division, GSA, Washington, DC 20405

PRINCIPAL *(Legal name and business address)*	TYPE OF ORGANIZATION *('X' one)* ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☐ CORPORATION STATE OF INCORPORATION
SURETY(IES) *(Name(s) and business address(es)*	PENAL SUM OF BOND MILLIONtS) | THOUSAND(S) | HUNDRED(S) | CENTS CONTRACT DATE | CONTRACT NO.

OBLIGATION:

We, the Principal and Surety(ies), are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS:

The Principal has entered into the contract identified above.

THEREFORE:

The above obligation is void if the Principal -

(a)(1) Performs and fulfills all the undertakings, covenants, terms, conditions, and agreements of the contract during the original term of the contract and any extensions thereof that are granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and (2) performs and fulfills all the undertakings, covenants, terms conditions, and agreements of any and all duly authorized modifications of the contract that hereafter are made. Notice of those modifications to the Suretyfles) are waived.

(b) Pays to the Government the full amount of the taxes imposed by the Government, if the said contract is subject to the Miller Act, (40 U.S.C. 270a-270e), which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which bond is furnished.

WITNESS:

The Principal and Surety(ies) executed this performance bond and affixed their seals on the above date.

PRINCIPAL

SIGNATURE(S)	1 (Seal)	2. (Seal)	3. (Seal)	Corporate Seal
NAME(S) & TITLE(S) *(Typed)*	1.	2.	3.	

INDIVIDUAL SURETY(IES)

SIGNATURE(S)	1. (Seal)	2. (Seal)
NAME(S) *(Typed)*	1.	2.

CORPORATE SURETY(IES)

SURETY A	NAME & ADDRESS		STATE OF INC. / LIABILITY LIMIT $	
	SIGNATURE	1.	2.	Corporate Seal
	NAME(S) & TITLE(S) *(Typed)*	1.	2.	

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STANDARD FORM 25 (REV. 5-96)
Presrribed by GSA - FAR (48 CFR) 53.228(b)
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CORPORATE SURETY(IES) *(Continued)*

NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	
SIGNATURE	1.	2.		*Corporate Seal*
NAME(S) & TITLE(S) *(Typed)*	1.	2.		
NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	
SIGNATURE	1.	2.		*Corporate Seal*
NAME(S) & TITLE(S) *(Typed)*	1.	2.		
NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	
SIGNATURE	1.	2.		*Corporate Seal*
NAME(S) & TITLE(S) *(Typed)*	1.	2.		
NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	
SIGNATURE	1.	2.		Corporate Seal
NAME(S) & TITLEiS) *(Typed)*	1.	2.		
NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	
SIGNATURE	1.	2.		Corporate Seal
NAME(S) & TITLE(S) *(Typed)*	1.	2.		
NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	
SIGNATURE	1.	2.		Corporate Seal
NAME(S) & TITLE(S) *(Typed)*	1.	2.		

BOND PREMIUM	RATE PER THOUSAND ($)	TOTAL ($)

INSTRUCTIONS

1. This form is authorized for use in connection with Government contracts. Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3. (a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designated "SURETY(IES)" on the face of the form, insert only the letter identification of the sureties.

(b) Where individual sureties are involved, a completed Affidavit of Individual Surety (Standard Form 28) for each individual surety, shall accompany the bond. The Government may require the surety to furnish additional substantiating information concerning their financial capability.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal", and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction requiring adhesive seals.

5. Type the name and title of each person signing this bond in the space provided.

PAYMENT BOND *(See* **instructions on** *reverse)*	Date Bond Executed *(Must be same or later than date of contract)*	**OMB NO.:9000-0045**

Public reporting burden for this collection of information is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (MVR), Federal Acquisition Policy Division, GSA, Washington, DC 20405

PRINCIPAL *(Legal name and business* address)	TYPE OF ORGANIZATION (*"X" one)* ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☐ CORPORATION STATE OF INCORPORATION
SURETY(IES) *(Name(s) and business address(es)*	PENAL SUM OF BOND MILLION(S) | THOUSAND(S) | HUNDRED(S) | CENTS CONTRACT DATE | CONTRACT NO.

OBLIGATION:

We, the Principal and Surety(ies), are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS:

The above obligation is void if the Principal promptly makes payment to all persons having a direct relationship with the Principal or a subcontractor of the Principal for furnishing labor, material or both in the prosecution of the work provided for in the contract identified above, and any authorized modifications of the contract that subsequently are made. Notice of those modifications to the Surety(ies) are waived.

WITNESS:

The Principal and Surety(ies) executed this payment bond and affixed their seals on the above date.

PRINCIPAL

SIGNATURE(S)	1 (Seal)	2. (Seal	3. (Seal	Corporate Seal
NAME(S) & TITLE(S) *(Typed)*	1 .	2.	3.	

INDIVIDUAL SURETY(IES)

SIGNATURE(S)	1 . (Seal	2. (Seal)
NAME(S) *(Typed)*	1 .	2.

CORPORATE SURETY(IES)

SURETY A	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE	1 .	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		

Corporate Surety(IES) *(Continued)*					
SURETY B	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY C	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATUR	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY D	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATUR	1.	2.		
	NAME(S) & TITLE(S) *fTyped)*	1.	2.		
SURETY E	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY IF	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY G	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		

INSTRUCTIONS

1. This form, for the protection of persons supplying labor and material, is used when a payment bond is required under the Act of August 24, 1935, 49 Stat. 793 (40 U.S.C. 270a-270e). Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3. (a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed **"CORPORATE SURETY(IES)."** In the space designated "SURETWES)" on the face of the form, insert only the letter identification of the sureties.

(b) Where individual sureties are involved, a completed Affidavit of Individual Surety (Standard Form 28) for each individual surety, shall accompany the bond. The Government may require the surety to furnish additional substantiating information concerning their financial capability.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal", and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction requiring adhesive seals.

5. Type the name and title of each person signing this bond in the space provided.

DIVISON 01
PROCUREMENT, CONTRACTING AND GENERAL REQUIREMENTS

Any modifications other than minor, shall be subject to approval by the Director, State Purchasing and Contracting and/or the Contracting Officer, and be included by addendum only. The technical specification shall be written so as not to exclude comparable equipment of domestic manufacture. Products shall generally be specified in one of five (5) methods.

1. Specification by reference standards or technical performance requirements only. Contractor shall have the option to select any product meeting product standards by any Manufacture. The Owner along with the Project Manager and A&E shall identify critical performance and/or technical details necessary to meet project requirements, but shall not do so in a hyper-technical manner so as to place unnecessary or inconsequential restrictions on providers of otherwise comparable equipment, Further, when utilizing specifications of this nature, The Owner along with the Project Manager and A&E are expected to be certain that such specifications can reasonably be met by more than one product.

2. Specifications by naming a minimum of two (2) or three (3) products or manufactures or equal to. Contractor shall have the option to select any product and Manufacture named. Additionally, Contractor may always submit any product and Manufacturer meeting all product standards as an equal.

3. Specifications by "basis of design". Contractor may select any equivalent product meeting specified reference standards or technical performance requirements as represented by the named products and/or manufactures. The Owner along with the Project Manager and A&E shall identify critical performance and/or technical details necessary to meet project requirements, but shall not do so in a hyper-technical manner so as to place unnecessary to inconsequential restrictions on providers of otherwise comparable equipment, Further, when utilizing specifications of this nature, The Owner along with the Project Manager and A&E are expected to be certain that such specifications can reasonably be met by more than one product.

4. Specification as "brand specific**". Must be approved prior to bidding project by the Director, State Purchasing and Contracting Division**. Project Manager along with A&E will furnish justification to the Director, State Purchasing and Contracting and/or the Contracting Officer, including the following:

a. Description of the product for which approval is being sought
b. Explanation of why the product is the only one that can meet project requirements
c. Estimate of cost for such product
d. Estimate of cost for overall procurement
e. Availability of the product to bidders and/or subcontractors

5. Specification as "sole source". **Must be approved prior to bidding project by the Director, State Purchasing and Contracting Division**. The Project Manager along with the A&E shall furnish written justification for review and approval from the Director, State Purchasing and Contracting and/or the Contract Officer, including the following:

a. Description of the product for which approval is being sought
b. Explanation of why the product is the only one that can meet project requirements
c. Explanation of why the source is the only person or entity that can provide the required product
d. Explanation of why the amount to be expended for the product is reasonable
e. The efforts expended to obtain the best possible price for the product

6. Products proposed to be procured via sole source shall be advertised in the same manner provided in Section 31-7-13(c), Mississippi Code, Annotated. Such advertisement shall be directed to the Director, State Purchasing and Contracting and/or Contracting Officer who shall publish for a minimum of fourteen

(14) days the terms of the proposed sole source procurement including the above items as well as procedures for any person or entity that objects and proposes that the product published is not sole source and can be provided by another person or entity. If no objection is received, the Owner will obtain approval from the Department of Finance and Administration, Office of Purchasing and Travel, Bureau of Buildings (DFA/OPT/BOB).

7. Where sole source procurement is objected to, the DFA/OPT/BOB will follow the following steps:

a. If DFA/OPT/BOB determines after review that the product in the proposed sole source request can be provided by another person or entity, the sole source request will be terminated, and such product be procured in a competitive procurement process.

b. If DFA/OPT/BOB determines after review that there is only one (1) source for the required product, then the Owner may appeal to the DFA/OPT/BOB. The Owner shall have the burden of proving that the product is only provided by one (1) source. If appeal is successful, the Owner will proceed with procurement and document compliance.

c. If DFA/OPT/BOB has any reasonable doubt as to whether the product can only be provided by one (1) source, the Owner will procure the product in a competitive procurement process.

SUBSTITUTIONS AND PRODUCT OPTIONS
SECTION 01630

1.01 **DESCRIPTION**

A. Scope: To set forth the procedure and conditions for substitutions and to give the product options available to the Contractor.

1.02 **PRODUCTS LIST**

A. Within thirty (30) days after the Contract has been signed, the Contractor will submit to the Professional two (2) copies of a complete list of all product proposed for installation.

B. Tabulate the list by Specification sections.

C. For products specified under reference standards, include with listing of each product:

1. Name and address of Manufacturer
2. Trade name
3. Model or catalog designation
4. Manufacturer's data
5. Performance and test data
6. Reference standards

1.03 **CONTRACTOR'S OPTIONS**

A. For products specified by reference standards, technical performance requirements and named consequential respects:

1. Contractor shall select any product that meets all the specified reference standards, technical performance requirements and named consequential respects by any manufacture.

B. For products specified by naming only one (1) product and/or Manufacturer as a "basis of design", an equivalent product will always be accepted if it is equal in all consequential respects.

C. For products specified by naming only one (1) product and Manufacturer and stating no substitution will be accepted:

1. There is no option and no substitutions will be allowed.

2. This option for substitution must have written approval by the Owner **before bidding** to be considered.

1.04 **SUBSTITUTIONS**

A. A product or construction method that varies from a product or construction method specified in one or more consequential characteristics, reference standards, or technical performance requirements shall be considered a substitution.

B. Owner will not consider request for substitutions during bidding.

C. Within thirty (30) days after the contract has been signed, the Owner will consider formal request from the Contractor thru the professional and/or project manager for substitution of products or construction methods in place of those specified. Contractor will submit two (2) copies of the request for the substitutions to the professional and/or project manager and owner for review. Contractor will include in the request:

1. Narrative summarizing characteristics, reference standards or technical performance requirements that product varies from how the proposed product or construction method will meet or exceed project requirements.

2. Substitution Product Information:

a. Product identification including manufacturer's name and address

b. Manufacturer's literature, product description, performance and test data and reference standards.

c. Samples

d. Name and address of similar projects on which products was used and date of installation.

3. For construction methods:

a. Detailed description of proposed method.

b. Drawings illustrating methods.

4. Data relating to any delays to the construction schedule if any will result from proposed substitution.

5. Accurate cost data on proposed substitution if any project cost increases are anticipated or any cost savings are being offered for proposed substitution.

D. In making a request for substitution, the contractor represents:

1. Proposed product or method, has been investigated and determined that it is equal or superior in all respects to that specified.

2. The same or better guarantee and/or warranty will be provided for substitutions product or method specified.

3. Installation of accepted substitutions will be coordinated into the work, making such changes required of work to be complete in all respects at no additional cost to the Owner.

4. All claims for additional cost related to substitution, including any delays to the construction schedule, which consequently become apparent will be waived.

5. Unless specifically identified on substitution submittal and such delay is specifically agreed to by Change Order to the Contact, substitution will not cause any delay to the construction schedule.

E. Substitutions will not be considered if:

1. Indicated or implied on shop drawings or product data submittals without formal request submitted in accordance with this section.

2. Acceptance will require substantial revision of contract documents unless compensation for such additional professional cost are paid by Contractor at no additional cost to the Owner.

3. In the Owner's opinion, the product or material is not equal.

SECTION 01 11 00

SUMMARY OF WORK

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. **Work Covered**: Work covered by the Contract Documents is as shown in drawings and described in words in the Project Manual. The Project Title and location is indicated on the first page of this Project Manual.
   1. **TAX CREDITS: The general contractor is forbidden to take tax credits from this building as be IRS 179 D (Application of Notice 2006-52; Deductions for Energy Efficient Commercial Buildings); bulletin 2008-14, notice 2008-40.** This rule allows energy tax credits for government buildings but only to those responsible for designing the buildings.

B. **Start of Work**: Work shall be started immediately upon issuance of a *Notice to Proceed*. Prior to this, all Contracts and beginning documents will have been executed and insurance in force.

C. **Time of Completion**: The completion of this Work is to be on, or before, the time indicated in the *Standard Form of Agreement Between the Owner and the Contractor*.

D. **Contractor's Duties**:
   1. Except as specifically noted, provide and pay for:
      a. Labor, materials and equipment.
      b. Tools, construction equipment and machinery.
      c. Water, heat and utilities required for construction.
      d. Other facilities and services necessary for proper execution and completion of the Work.
   2. Pay legally required sales, consumer, use, payroll, privilege and other taxes.
   3. Secure and pay for, as necessary for proper execution and completion of work, and as applicable at the time of the receipt of the bids:
      a. Permits.
      b. Government fees.
      c. Licenses.
   4. Give required notices.
   5. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of work.
   6. Promptly submit written notice to Professional of observed variance of Contract Documents from legal requirements. It is not the Contractor's responsibility to make certain that drawings and specifications comply with codes and regulations. Appropriate modifications to Contract Documents will adjust necessary changes. Assume responsibility for work known to be contrary to such requirements, without notice.
   7. Enforce strict discipline and good order among employees. Do not employ or work unfit persons, or persons, not skilled in assigned task.
   8. Provide a written safety plan.

E. **Hazardous Materials**: The Prime General Contractor is responsible for the removal and disposal of any hazardous materials encountered in the performance of the Contract requirements. Hazardous Containing Materials [HCM] include, but are not limited to, Asbestos and Lead Paint and should be identified and removed as a part of the Contract. The absence of details does not relieve the Prime General Contractor from the responsibility of removal and disposal; but a Change Order could be executed in the absence of identified HCM in the documents. Hazardous materials reports are provided

in Section 02 82 00, Hazardous Materials Remediation.

F. **Post-bid Submittals and Subcontractors List:** The Prime General Contractor will submit to the Owner the following items within seven (7) days after written notice of contract award by the Owner:
   1. Designation of the Work to be performed by the Bidder's own forces.
   2. Names of manufacturers, products, and the suppliers of principal items or systems of materials and equipment proposed for the Work.
   3. Names of persons or entities proposed for the principal portions of the Work, including those who are to furnish materials or equipment fabricated to a special design. Those persons or entities proposed by the Prime General Contractor are subject to the following:
      a. The Bidder will be required to establish to the satisfaction of the Owner and Architect the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.
      b. Prior to execution of the Contract, the Architect will notify the Bidder in writing if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, (1) withdraw the Bid or (2) submit an acceptable substitute person or entity with an adjustment in the Base Bid or Alternate Bid to cover the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited by the Bidder.
      c. Persons or entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used in the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

G. **Coordination**: The Prime General Contractor is responsible for the coordination of the total project. All other Prime Contractors and all Subcontractors will cooperate with the Prime General Contractor to facilitate the general progress of the Work. Each trade shall afford all other trades every reasonable opportunity for the installation of their work. Refer to Section 01 41 00 entitled *Project Coordination*.

1.02 CONTRACTS

A. **Contracts**: Construct work under a single Prime General Contract. Refer to Section 00 50 00 entitled *Agreement Form*.

1.03 WORK BY OTHERS

A. **Work by Others:** Work by Others shall be described in each appropriate Project Manual section and noted on the Drawings.

1.04 OWNER-FURNISHED PRODUCTS

A. **Products Furnished by Owner**: Products furnished by Owner may be described in each appropriate Project Manual section and noted on the Drawings.

B. **Products**: Delivered and unloaded at site.

C. **Owner's Duties**:
   1. Schedule delivery date with Supplier in accordance with construction schedule.
   2. Obtain installation drawings and instructions.

3. Submit claims for transportation damages.
4. Arrange Guarantees, Warranties, etc.

D. **Contractor's Duties**:
1. Designate required delivery date for each product in construction schedule.
2. Promptly inspect delivered products, report missing, damaged, or defective items.
3. Handle at site, including uncrating and storage.
4. Protect from exposure to elements and from damage.
5. Repair or replace damaged items resulting from Contractor's operations.
6. Install and make final connections.

1.05 CONTRACTOR'S USE OF PREMISES

A. Confine operations at site to areas permitted by:
1. Law.
2. Ordinances.
3. Permits.
4. Contract Documents.
5. Owner.

B. Do not unreasonably encumber site with materials or equipment.

C. Do not load structure with weight that will endanger structure.

D. Assume full responsibility for protection and safekeeping of products stored on premises.

E. Move any stored products which interfere with operations of Owner or other Contractors.

F. Obtain and pay for use of additional storage or work areas needed for operations.

G. Limit use of site for work and storage to the area indicated in the drawings.

H. The Contractor, all Subcontractors, and all employees thereof shall designate the employee parking area. This designated parking area is not to be used for material storage or staging. The Contractor shall be responsible for keeping this area clean and shall check to ensure such at the end of each day.

I. Material storage and trailers for material storage shall be located within the Construction Limits as indicated on the drawings or as directed by the Owner.

1.06 SUMMARY OF WORK SUPPLEMENT

A. Refer to Section 01 90 00 entitled *Division One Supplement* for Project specific summary of work requirements

1.07 GOVERNING PROVISIONS

A. As required by all provisions listed or shown in these Contract Documents.

END OF SECTION

SECTION 01 21 00

PROJECT MEETINGS

1.01 **DESCRIPTION**

A. **Pre-Construction Meeting**: The Architect will schedule a pre-construction meeting as soon as possible after the award of Contract and the issuance of a *Notice to Proceed*.
   1. **Attendance**:
      a. Owner
      b. Professional and Consultants
      c. General Contractor
      d. Major Subcontractors, including mechanical and electrical
      e. Representatives of governmental, or other regulatory agencies
   2. **Pre-Construction Meeting Minimum Agenda**: (prepared by the Architect)
      a. Distribute and discuss list of major Subcontractors and construction schedule
      b. Critical work sequencing
      c. Designation of responsible personnel
      d. Procedures for maintaining record documents
      e. Use of premises, including office and storage areas
      f. Owner's requirements
      g. Security procedures
      h. Housekeeping procedures
   3. **Utilities**: A written agreement must be reached on how all utilities will be furnished and the rates the Contractor will be charged. This agreement should be resolved at this meeting. Refer to Section 01 50 00 entitled *Construction Facilities and Temporary Controls* of this Project Manual for additional utility requirements.

B. **Progress Meetings**:
   1. The Contractor will schedule regular meetings at the time of the pre-construction conference
   2. **Contractor's Responsibilities**: The General Contractor will administer all progress meetings which include the following:
      a. Prepare agenda
      b. Distribute written notice of meetings seven (7) days in advance
      c. Make physical arrangements for and presiding at the meetings
      d. Record minutes
      e. Distribute copies of the minutes to participants within four (4) days
   3. Hold all meetings as progress of work dictates
   4. **Attendance**:
      a. Owner
      b. Professional and Consultants
      c. General Contractor
      d. Subcontractors, as pertinent to the agenda
   5. **Minimum Agenda**:
      a. Review, approve minutes of the previous meeting
      b. Review work progress since last meeting
      c. Note field reviews, problems and decisions

d. Identify problems which impede planned progress
e. Review off-site fabrication problems
f. Revise construction schedule, as indicated
g. Plan progress during the next work period
h. Review proposed changes
i. Review Submittal Logs, RFI Logs & RFP Logs
j. Review Contractor's Builder's Risk Insurance
k. Review Contract Completion Date
l. Complete other current business

END OF SECTION

SECTION 01 27 00

APPLICATIONS FOR PAYMENT

1.01 **SCOPE**

A. This Section describes procedures for preparing and submitting Applications for Payment by the Contractor.
B. Some Owners have specific requirements for procedures regarding applications for payment. These requirements will be outlined at the Pre-Construction Meeting and are expected to be followed in place of and/or in addition to the requirements listed in this Section.

1.02 **APPLICATIONS FOR PAYMENT**

A. **Format**:
1. Applications for Payments will be prepared on AIA forms G702 - *Application and Certificate for Payment* and G703 - *Continuation Sheet*; or, a computer-generated form containing similar data may be used.

B. **Preparation of Application**:
1. Present required information in typewritten form
2. Execute certification by signature of authorized officer
3. Use data from approved *Schedule of Values*. Provide dollar value in each column for each line item for portion of Work performed and for stored products.
4. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original Item of Work.
5. Prepare Application for Final Payment as specified in Section 01 77 00 entitled *Contract Closeout.*

C. **Submittal Procedures**:
1. Submit five (5) copies of each Application for Payment
2. Submit an updated construction schedule with each Application for Payment as described in Section 01 31 00 entitled *Progress Schedule.* Submit Rain Days Log as required by Section 01 31 00 *Progress Schedules,* paragraph F.
3. Submit requests for payment at intervals agreed upon by the Professional, Owner and Contractor.
4. Submit requests to the Professional at agreed upon times, or as may be directed otherwise.

D. **Substantiating Data**:
1. Submit data justifying dollar amounts in question when such information is needed.
2. Provide one (1) copy of the data with a cover letter for each submittal.
3. Indicate the Application number, date and line-item number and description.

END OF SECTION

SECTION 01 29 00

SCHEDULE OF VALUES

1.01 **DESCRIPTION**

A. **Scope**: Submit a *Schedule of Values* to the Professional at least ten (10) days prior to submitting the first Application for Payment. Upon the Professional's request, the Contractor will provide supportive data substantiating their correctness. Use *Schedule of Values* only as basis for Contractor's Application for Payment.

B. **Form of Submittal**: Submit Schedule of Values on AIA Document G703, or computer-generated form containing similar style, using Table of Contents of these Specifications as basis for format for listing costs of work for sections under Divisions 2-48. Identify each line item with number and title as listed in Table of Contents in these Specifications.

C. **Preparing Schedule of Values**:
1. Itemize separate line-item cost for each of the following general cost items: Performance and Payment Bonds, field supervision and layout, temporary facilities and controls, mobilization and taxes.
2. Itemize separate line-item cost for work required by each Section of these Specifications. Break down installed cost into labor and materials with overhead and profit.
3. For each line item which has installed value of more than $20,000, break down costs to list major products for operations under each item, rounding figures to nearest dollar. Make sum of total costs of all items listed in Schedule equal to total Contract sum.
4. If a value line-item scope of work or material is determined not necessary and removed from the contract, then the Schedule of Values line item will be used as the real cost for that item.

D. **Preparing Schedule of Unit Material Values**:
1. Submit separate Schedule of unit prices for materials to be stored on which progress payments will be made. Make form of submittal parallel to Schedule of Values with each line item identified same as line item in Schedule of Values. Include in unit prices only: cost of material, delivery, unloading at site, and sales tax.
2. Make sure unit prices multiplied by quantities equal material cost of that item in Schedule of Values.

END OF SECTION

SECTION 01 31 00

PROGRESS SCHEDULES

1.01 **DESCRIPTION**

A. **Scope**: Provide projected construction schedules for entire work and revise periodically and at the request of the Architect. The following is a minimum requirement and other type schedules are acceptable with Owner's approval. This type of schedule is acceptable for any Project whose initial Contract award amount if **less than** one (1) million dollars ($1,000,000).

B. **Form of Schedules**: Prepare in form of horizontal bar chart.
1. Provide separate horizontal bar column for each trade or operation.
2. Place in order of the Table of Contents of Specifications.
3. Identify each column by major Specification section number.
4. Identify the first workday of each week by horizontal time scale.
5. Scale and space to allow for updating.

C. **Contents of Schedule**:
1. Provide complete sequence of construction by activity.
2. Indicate dates for beginning and completion of each stage of construction.
3. Identify work of separate floors, separate phases, or other logically grouped activities.
4. Show projected percentage of completion for each item of work as of first day of month.

D. **Updating**:
1. Show all changes occurring since previous submission of updated schedule.
2. Indicate progress of each activity and completion dates.

E. **Submittals**:
1. Submit initial schedules to the Professional within fifteen (15) days after date of Notice to Proceed.
2. Submit to Professional periodically updated schedules accurately depicting progress to first day of each month.
3. Submit two (2) copies, one (1) to be retained by the Professional and the other forwarded to the Owner.

F. **Rain Days:**
1. The General Contractor must keep a rain gauge at the job site and record any measurable rain that occurs to successfully submit for Rain Days. The Contractor can utilize official recordings from the National Weather Service if a nearby weather station is available (within 5 miles). The Contractor shall submit a Ray Days Log with every application for payment. This Log shall include the day and amount of rain received (in inches). If there are zero rain days during a period, the Contractor shall submit the Log with "zero" days listed.
2. The Contractor shall figure the following number of rain days for each month listed below in his schedule: January 7 days; February-6 days; March-7 days; April-5 days; May-6 days; June-6 days; July-9 days; August-7 days; September-6 days; October-4 days; November-5 days; December-7 days.
3. Request for rain days shall not be made unless the number of days per month amounting to 1/10" or more exceeds the number of days on the above chart.

4. Request for rain days shall not be made after the building is "dried in" (air/vapor barrier and/or waterproofing layers for roof and all walls installed per specifications) and conditions are such that work can continue unimpeded by inclement weather.

END OF SECTION

SECTION 01 33 00

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

1.01 **DESCRIPTION**

A. **Scope:** Submit to the Professional shop drawings, product data and samples required by Specification sections.

B. **Shop Drawings:** Original drawings prepared by Contractor, Subcontractor, Supplier, or Distributor which illustrate some portion of the Work; showing fabrication, layout, setting, or erection details.

1. Prepared by a qualified detailer.
2. Identify details by reference to sheet and detail numbers shown on Contract drawings.
3. Minimum sheet size: 8 1/2" x 11"

C. **Product Data**:

1. **Manufacturer's Standard Schematic Drawings**: Modify drawings to delete information which is not applicable to the Project. Supplement standard information to provide additional information applicable to the Project.
2. **Manufacturer's Catalog Sheets, Brochures, Diagrams, Schedules, Performance Charts, Illustrations and Other Standard Descriptive Data**: Clearly mark each copy to identify pertinent materials, products, or models. Show dimensions and clearances required. Show performance characteristics and capacities, wiring diagrams and controls.

D. **Samples**: Physical examples to illustrate materials, equipment or workmanship and to establish standard by which completed work is judged.

1. **Office Samples**: Of sufficient size and quantity to clearly illustrate functional characteristics of products or material with integrally related parts and attachment devices and full range of color samples. After review, samples remain the property of the Professional until completion of the construction project.

E. **Field Samples and Mock-ups**:

1. Erect on project site at location acceptable to Professional. Construct each sample, or mock-up, completely including work of all trades required in finished work.
2. The Superintendent shall get samples of all major materials at full size before ordering the remaining quantities of specified materials. If samples are not approved before the materials are delivered, then the Contractor will be responsible (for the additional time and cost) for replacing non-approved materials with materials that match the approved field sample or mock-up. The mock-up samples will be installed in the size and locations as called for in the drawings. Where mock-ups shown in drawings do not designate size, they shall be 4 ft by 4 by ft min or shall be approved by Architect for size and location. Most mock-up samples will be installed in place but a few will be installed on the ground outside the building for permanent comparison (exemplifying the quality of work expected) to installed work. Any mock-ups required by the specifications that are not shown in the drawings will still abide by the requirements of this Section.

F. **Contractor's Responsibilities**:

1. Review shop drawings, product data and samples prior to submission.
2. Verify field measurements, field construction criteria, catalog numbers and similar data.
3. Coordinate each submittal with requirements of work and of Contract Documents.

4. Contractor's responsibility for errors and omissions in submittals is not relieved by the Professional's review of submittals.
5. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Professional's review of submittals unless Professional gives written acceptance of specific deviations.
6. Notify Professional in writing at the time of submission of deviations in submittals from requirements of Contract Documents.
7. Begin no work requiring submittals until the return of submittals bearing Professional's stamp and initials, or signature indicating review.
8. After Professional's review, distribute copies.

G. **Submission Requirements**:
1. Schedule submission with ample time before dates reviewed submittals will be needed.
2. Preferred media for shop drawings and submittals is PDF format send via e-mail. If electronic submittals are not obtainable, then contractor shall send required number of copies (stated at the pre-construction meeting) on opaque bond paper.
3. Submit number of copies of shop drawings and product data which Contractor requires for distribution, plus one (1) copy to be retained by the Professional. Provide two (2) copies to be retained by the Professional for all submittals seeking a Civil, Structural, Mechanical or Electrical review.
4. Submit number of samples specified in each Specification section.
5. Accompany submittals with transmittal letter, in duplicate, containing date, Project title and number; Contractor's name and address; the number of each shop drawings, product data and samples submitted; notification of deviations from Contract Documents; and other pertinent data.
6. Submittals shall include:
    a. Date and revision dates.
    b. Project title and number.
    c. The names of the Professional, Contractor, Supplier, Manufacturer and separate detailer, when pertinent.
    d. Identification of product, or material.
    e. Relation to adjacent structure, or materials.
    f. Field dimensions clearly identified as such.
    g. Specification section number.
    h. Applicable standards such as ASTM number, or federal specifications.
    i. A blank space (4" x 4") for the Professional's stamp.
    j. Identification of deviations from Contract Documents.
    k. Contractor's stamp, initialed or signed, certifying the review of submittal, verification of field measurements and compliance with Contract Documents.
7. All shop drawings and product submittals shall be provided as soon as possible to prevent dealing with discontinued products and delays in the project. Untimely submission will be considered mismanagement by the Contractor.

H. **Resubmission Requirements**:
1. **Shop Drawings**: Revise initial drawings, as required, and resubmit as specified for initial submittal. Indicate on the drawings any changes which have been made other than those required by the Professional.
2. **Product Data and Samples**: Submit new data and samples, as required, for initial submittal.

I. **Distribution of Submittals After Review**:
   1. Distribute copies of shop drawings and product data which carry Professional's stamp to Contractor's file, job site file, Subcontractor, Supplier and Fabricator.
   2. Distribute samples as directed.

J. **Professional's Duties:**
   1. Review submittals with reasonable promptness.
   2. Review for design concept of Project and information given in Contract Documents.
   3. Review of separate item does not constitute review of an assembly in which item functions.
   4. Affix stamp and initials, or signature, certifying the review of submittal.
   5. Return submittals to Contractor for distribution.

END OF SECTION

SECTION 01 35 00

ALTERNATES

1.01 DESCRIPTION

A. **Scope**: This section describes the changes to be made under each alternate.

B. **General**: The referenced Specification sections contain the pertinent requirements for materials and methods to achieve the work described herein. Coordinate related work and modify surrounding work, as required, to complete the Project under each alternate designated in the Contract.

1.02 DESCRIPTION OF ALTERNATES

A. Refer to Section 01 90 00 entitled *Division One Supplement* for Project specific description of project Alternates.

END OF SECTION

SECTION 01 41 00

PROJECT COORDINATION

1.01 DESCRIPTION

A. **Scope**: To set forth procedures, conditions and responsibility for coordination of the total project.

B. **Project Coordinator**: The General Contractor will designate one (1) individual as Project Coordinator or Superintendent, as referred to in the General Conditions. Prior to beginning the Work, the name and qualifications will be submitted, in writing, to the Professional. Upon the approval of the Professional and the Owner, the Project Coordinator will remain until the Project is completed and cannot be removed during construction without the written consent of the Owner and the Professional.

C. **Superintendent**:
1. The Superintendent will write down all instructions given by Professionals on site reviews and will send copies to the Owner and Architect within 4 working days.
2. The Superintendent shall be accompanied by the Architect during the review of the work at all times. If the Superintendent is not present with a note pad to make notes of issues, then the Architect will leave the job site.
3. The Superintendent must be at the job site at all times during the working day. It is understood that sometime the Superintendent must leave the job for various reasons. When this occurs, the Contractor shall notify the Architect. If the Superintendent must be away from the job site for more than an hour, than the Contractor shall supply a suitable temporary Superintendent to replace him during his absence.

1.02 DUTIES OF PROJECT COORDINATOR

A. **General**:
1. **Coordination**: Coordinate the work of all Subcontractors and Material Suppliers.
2. **Supervision**: Supervise the activities of every phase of work taking place on the Project.
3. **Mechanical/Electrical**: Take special care to coordinate and supervise the work of the plumbing, heating and cooling and electrical Subcontractors.
4. **Communication**: Establish lines of authority and communication at the job site.
5. **Location**: The Project Coordinator must be present on the job all of the time.
6. **Permits**: Assist in obtaining building and special permits required for construction.

B. **Interpretations of Contract Documents**:
1. **Consultation**: Consult with Architects and Engineers to obtain interpretations.
2. **Assistance**: Assist in resolution of any questions.
3. **Transmission**: Transmit written interpretations to concerned parties.

C. **Cessation of Work**: Stop all work not in accordance with the requirements of the Contract Documents.

D. **Division One**: Coordinate and assist in the preparation of all requirements of Division One and specifically as follows:
1. **Cutting and Patching**: Supervise and control all cutting and patching of other trades' work.

2. **Project Meetings**: Schedule and preside at all project meetings. The Contractor must provide complete and comprehensive meeting minutes within 4 working days of any project meetings.
3. **Construction Schedules**: Prepare and submit all construction schedules; supervise work to monitor compliance with schedules.
4. **Shop Drawings, Product Data and Samples**: Administer the processing of all submittals required by the Project Manual.
5. **Schedule of Values**: Assist in preparation and be knowledgeable of each entry in the Schedule of Values.
6. **Testing**: Coordinate all required testing.
7. **Temporary Facilities and Controls**: Allocate, maintain and monitor all temporary facilities.
8. **Substitutions and Product Options**: Administer the processing of all substitutions.
9. **Project Closeout**: Conduct final inspections and assist in collection and preparation of closeout documents.
10. **Cleaning**: Direct and execute a continuing cleaning program throughout construction, requiring each trade to dispose their own debris.
11. **Project Record Documents**: Maintain up-to-date project record documents. These documents are to be presented at all monthly project meetings for review by the Architect.
12. **Safety Measures**: Plan and enforce all safety requirements.

E. **Changes**: Recommend and assist in the preparation of requests to the Professional for any changes in the Contract.

F. **Application for Payment**: Assist in the preparation and be knowledgeable of each entry in the Application and Certificate for Payment.

1.03 **SUBCONTRACTOR'S DUTIES**

A. **General**: The Subcontractor is responsible for coordinating and supervising employees in the work to be accomplished under their part of the Contract.

B. **Schedules**: Conduct work to assure compliance with construction schedules.

C. **Suppliers**: Transmit all instructions to Material Suppliers.

D. **Cooperation**: Cooperate with the Project Coordinator and other Subcontractors.

1.04 **OWNER-PURCHASED PRODUCTS**

A. **General**: Cooperate, accept delivery, arrange storage and protect Owner-purchased products until installation, or final acceptance.

END OF SECTION

SECTION 01 42 00

ABBREVIATIONS AND STANDARDS

PART ONE - GENERAL

1.01 THE CONTRACT DOCUMENTS

A. **DRAWINGS**: The drawings are those enumerated in the list of drawings and identified in the agreement. The drawings, in many instances, are schematic and do not define exact locations of every part and piece of equipment. Items furnished may vary in dimension from the specific item called for in the Contract Documents. In such cases, determine exact position of each part by "on the job" measurements and drawings from equipment suppliers. Coordinate with other Work.

B. **SPECIFICATION SECTIONS**: Each section governs the complete work of the title, along with work related to the title, no matter where such work is shown on the drawings or mentioned in the specifications.

C. **SPECIFICATION FORM**: These specifications are of the abbreviated, simplified or streamlined type and include incomplete sentences. Omission of words or phrases such as "The contractor shall", "in conformity therewith", "shall be", "as noted on the drawings", "per the plans", "a", "the", and "all" are intentional. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the drawings.

D. **ARCHITECT'S AUTHORITY**: Wherever the words "equal", "approved equal", "approved", "satisfactory", "directed", "submitted", "inspected", "selected", or similar words or phrases are used, it shall be assumed that these are actions or opinions of the Architect. An example of such completed phrase is "approved by the Architect."

E. **APPLICABILITY OF WORK AND WORK RESTRICTIONS**: (Unless specifically noted otherwise) The Contractor shall perform all work shown, mentioned or inferred and shall comply with all work restrictions.

1.02 REFERENCE STANDARDS AND INDUSTRY SPECIFICATIONS

A. **MINIMUM SPECIFICATIONS**: Any material or operation specified by reference to published specifications of a manufacturer, a society, an association, a code, or other published standard, shall comply with requirements on the listed document which is current and has been officially published on date of receipt of bids. In cases of a conflict within the Contract Documents or between Contract Documents and Governing Codes the more stringent requirements shall govern.

B. **CERTIFICATION**: The Contractor, when requested, shall furnish an affidavit from the manufacturer certifying that materials and manufacturers products delivered to the job meet requirements specified. However, affidavit shall not relieve the Contractor for responsibility of compliance with any added requirements of Contract Documents.

END OF SECTION

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1.01 DESCRIPTION

A. **Scope**: Work required under this section consists of all temporary construction facilities, services and related items to complete the work indicated on the drawings and described in the Project Manual. All requirements in this Section shall only be in effect if not specifically covered in Division 0. If requirements in this Section conflict with requirements in Division 0, then the requirements in Division 0 shall override the requirements in this Section.

B. **Standards**:
1. Conform to or exceed all temporary construction requirements stated in the current edition of the **International Building Code** [Chapter entitled *Safeguards During Construction*].
2. Refer to Article 10.1.1 in Section 00 70 00 entitled *General Conditions*.

C. **Materials**: All materials required by the Work of this section shall be as specified in the respective sections.

1.02 FACILITIES AND CONTROLS

A. **Access**: The Prime General Contractor shall provide an adequate access and/or roads to the site of the structure, if required for the prosecution of work; and should also provide and maintain at least one (1) temporary, or permanent, access to each working elevation to be permanently occupied. If requested, the Architect will be provided keys to access the site after hours.

B. **Hoisting Facilities**: The Prime General Contractor shall be responsible for providing suitable capacity and hoisting facilities for all people and materials. The use of the hoisting facilities shall be by agreement of the Prime General Contractor and the individual Contractor.

C. **Field Office and Sheds**: always, the Prime General Contractor shall provide and maintain a weatherproof office with telephone, which may also be used by Subcontractors, the Owner and the Professional. Office location will be approved by the Owner. Each general and individual Contractor shall provide suitable watertight/dampproof sheds to house their construction materials.

D. **Sanitation Facilities**: The Prime General Contractor is responsible for furnishing adequate temporary toilet facilities on the job site.

E. **Drinking Water**: The Prime General Contractor shall provide always sanitary drinking water facilities for all workmen on the job including ice, when required, and paper cups, etc.

F. **Fire Protection**: The Prime General Contractor shall provide general temporary fire protection. Subcontractors will be responsible for their own.

G. **Storage**: The Prime General Contractor shall coordinate the allocation of storage areas to the various Subcontractors.

H. **Temporary Heat**: The Prime General Contractor shall provide heat, fuel and services, as necessary, to

protect all work from dampness and cold until final acceptance. If in the late stages of the construction, mechanical and electrical installations will permit, the mechanical and electrical facilities may be used to provide heat and ventilation. However, the Owner is saved harmless of any costs of operation or responsibility as to acceptance of mechanical and/or electrical installations.

I. **Temporary Utilities During Construction**: The Prime General Contractor shall make arrangements for and furnish all water, electricity (lighting and power) and other utilities necessary for construction purposes. Should temporary utilities for construction be tapped off existing (Owner supplied) utilities, then the prime general contractor should propose to the Owner and Architect how these utilities will be furnished. If the Owner's existing utilities must be used to provide these requirements, then a written agreement must be reached on how all utilities (water and electricity) will be furnished and the rates the Contractor will be charged. If the written agreement is not filed with the Owner, the Contractor waives all rights as to the rates charged. The Owner will then determine all utility rates and assess the charges before final payment is rendered.

J. **Permanent Utility Hook-up**:
Water: See Civil and/or Plumbing Drawings
Natural Gas: See Civil and/or Plumbing Drawings
Electricity: See Electrical Drawings

(Note: See Civil and Electrical Drawings for Utility Information and Contact Info if the information is not listed above; if info listed above is different from those listed in Civil and Electrical Drawings then default with info in drawings and call Architect for clarification).

K. **Project Sign**:
1. Not applicable for this project.
2. No other signs shall be displayed on the job site without permission of the Professional. The display of sign advertisements is strictly prohibited.

END OF SECTION

SECTION 01 65 00

STARTING OF SYSTEMS

1.01 GENERAL

A. **Scope**: This Section describes the procedures for startup of all building equipment and systems including necessary demonstration and instructions.

1.02 STARTING SYSTEMS

A. Coordinate Schedule for start-up of various equipment and systems.

B. Notify Professional and Owner seven (7) days prior to start-up of each system.

C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or other conditions which may cause damage.

D. Verify that tests, meter readings and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of responsible Contractors' personnel in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require Manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.03 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of Substantial Completion.

B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

E. Owner Training by the Equipment Manufacturer may be done during NON-BUSINESS HOURS; Manufacturer shall include pricing for overtime pay in the bid associated with training sessions that occur after 5pm, before 8am or during weekends to accommodate the Owner's scheduling.

END OF SECTION

SECTION 01 73 00

CUTTING AND PATCHING

1.01 GENERAL DESCRIPTION

A. **Scope**: To set forth broad, general conditions covering cutting and patching that applies to everyone and everything on the job.

B. Execute cutting including excavating, fitting, or patching of work required to:
1. Make several parts fit properly.
2. Uncover work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to Contract requirements.
5. Install specified work in existing construction.

C. In addition to Contract requirements, upon Professional's written instructions:
1. Uncover work for observation of covered work.
2. Remove samples of installed materials for testing.
3. Remove work to provide alteration of existing work.

D. Do not cut or alter work of another Contractor without permission.

E. **Payment of Costs**: Costs caused by ill-timed, or defective work or work not conforming to Contract Documents will be borne by party responsible for ill-timed, defective work, or non-conforming work.

1.02 MATERIALS/PRODUCTS

A. **Materials for Replacement or Work Removed**: Comply with Specifications for type of work to be accomplished.

1.03 EXECUTION

A. **Inspection**: Inspect existing conditions of work, including elements subject to movement, or damage during cutting and patching.

B. **Preparation Prior to Cutting**: Provide shoring, bracing and support, as required, to maintain structural integrity of the building. Provide protection for other portions of work and protection from the elements.

C. **Performance**:
1. Execute cutting and demolition by methods which prevent damage to other work and will provide surfaces to receive installation of repairs and new work.
2. Execute excavating and backfilling by methods which prevent damage to other work and prevent settlement.
3. Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.

4. Refinish entire surfaces, as necessary, to provide an even finish. Refinish continuous surfaces to the nearest intersection and assemblies entirely.

END OF SECTION

SECTION 01 74 00

CLEANING

1.01 DESCRIPTION

A. **Scope**: Maintain premises and adjacent public properties from accumulations of waste, debris and rubbish caused by operations. At completion of work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials and clean all sight-exposed surfaces; leave Project clean and ready for occupancy.

1.02 PRODUCTS

A. **Materials**: Use only cleaning materials recommended by Manufacturer of surface to be cleaned. Use cleaning materials only on surfaces recommended by the cleaning materials Manufacturer.

1.03 EXECUTION

A. **During Construction**: Execute cleaning to ensure that building, grounds and adjacent public properties are maintained free from accumulations of waste materials and rubbish. The Contractor shall wet down dry materials and rubbish to lay dust and prevent blowing dust. At reasonable intervals during progress of work, the Contractor shall clean site and adjacent public properties and dispose of waste materials, debris and rubbish. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off Owner's property. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights. The Contractor shall schedule cleaning operations so that dust or other contaminants resulting from cleaning process will not fall on wet or newly painted surfaces.

B. **Final Cleaning**: Employ experienced workmen, or professional cleaners, for final cleaning. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces and concealed spaces. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from sight- exposed finishes. Repair, patch and touch up marred surfaces to specified finish to match adjacent surfaces. Broom clean paved surfaces; rake clean other surfaces of grounds. Replace air conditioning filters, if units were operated during construction. Clean ducts, blowers and coils if air conditioning units were operated without filters during construction. Maintain cleaning until Project, or respective portions thereof, is occupied by Owner.

END OF SECTION

SECTION 01 75 00

PROJECT RECORD DOCUMENTS

1.01 **DESCRIPTION**

A. **Scope**: To set forth the procedure and requirements for keeping project record documents.

B. **Maintenance Documents**:
1. Maintain one (1) copy of all the following: Contract drawings, Project Manual, Addenda, Change Order(s), reviewed shop drawings, reviewed submittals, hardware schedules, filed and laboratory test records, equipment brochures, parts list, operating instructions and other modifications to the Contract.
2. Store documents apart from documents used for construction.
3. Maintain documents in clean, dry, legible condition. Do not use record documents for construction purposes.
4. Make documents available, always, for inspection by the Professional and the Owner.

C. **Recording**:
1. **General**: Mark all modifications in red pencil. Keep record documents current. Do not permanently conceal any work until required information has been recorded.
2. **Contract Drawings**: Legibly mark to record actual construction.
   a. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
   b. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
   c. Field changes in dimension and detail.
   d. Changes made by change order(s) or field order(s).
   e. All Subcontractors shall assist the General Contractor in providing the project record documents. This will assist the Owner in maintenance as well as future modifications to the building and site.
3. **Project Manual and Addenda**: Legibly markup each section to record Manufacturer, trade name, catalog number and Supplier of each product and item of equipment installed.
4. **Shop Drawings**: Maintain as record documents. Legibly mark drawings to record changes made after review.
5. **Project Record Drawings in CAD Format**: When required, Contractor is to make project record changes on Architect provided CAD drawings as well. These changes will reflect construction and building systems and shall be as accurate as possible.

D. **Equipment Training:** All training required by the Mechanical, Electrical, etc. specifications of regarding operations of equipment shall be digital video recorded digitally by the General Contractor and distributed to the Owner (via close-out documents), Architect and Engineers.

F. **Submittal**: At completion of Project, deliver two (2) copies of each record document to the Professional, who will transmit both sets to the Owner. The Contractor shall clearly itemize all Project Record Documents on his transmittal.

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

1.01 DESCRIPTION

A. **Scope**: The work required in this Section consists of the final inspections and the submission of all closeout documents and related items to complete the Work indicated on the Drawings and described in the Project Manual. Note that Final Inspection assumes all requirements of Substantial Completion have been met (see *Substantial Completion* in the *A201 Contract General Conditions*).

1.02 FINAL INSPECTIONS

A. **Professional's Inspection**: The Contractor shall make written request for a final inspection to the Professional; notice to be given ten (10) days prior to the inspection. A list of any deficiencies, compiled by the Professional, will be corrected by the Contractor. If, in the Professional's judgment, the Project is not ready for a final inspection, the Professional may schedule another inspection.
   1. If the Contractor's list contains an unreasonable number of items (deemed by the Architect), the Architect will not visit the site for Final Inspection until most of these corrections have been made.

B. **Owner's Inspection**: After the Professional has ascertained the Project to be ready; an Owner's inspection will be scheduled within ten (10) days thereafter. The Contractor will have ten (10) days after the Owner's acceptance to make any corrections of punch list items and to submit closeout documents.

C. **Correction of Work Before Final Payment**: The Contractor shall promptly remove from the Owner's premises all materials condemned for failure to conform to the Contract, whether incorporated in the Work or not, and the Contractor shall, at his own expense, replace such condemned materials with those conforming to the requirements of the Contract. Failure to remedy such defects after ten (10) days written notice will allow the Owner to make good such defects and such costs shall be deducted from the balance due the Contractor or charged to the Contractor in the event no payment is due.

D. **Training:** The Contractor shall coordinate with the Owner all training required by the Specifications. The Contractor will video (at the Contractor's expense) all sessions and provide two (2) copies to the Owner and one (1) to the Architect as part of the Contract Closeout.

1.03 CLOSEOUT DOCUMENTS

Unless otherwise notified, the Contractor shall submit to the Owner through the Professional, three (3) copies of the following before final payment is made:

A. **Request for Final Payment**: AIA Document G702, current edition, completed in full or a computer-generated form having similar data.

B. **Consent of Surety Company to Final Payment**: AIA Document G707, current edition, completed in full by the Bonding company.

C. **Power of Attorney**: Closeout documents should be accompanied by an appropriate Power of Attorney.

D. **Release of Liens and Certification that All Bills Have Been Paid**: AIA Document G706A, current edition, completed in full or a sworn statement and affidavit from the Contractor to the Owner stating that all bills for this job have been paid and that the Owner is released from all claims and/or damages.

E. **Contractor's Affidavit of Payment of Debts and Claims**: AIA Document G706, current edition, completed in full.

F. **Guarantee of Work**: Sworn statement that all work is guaranteed against defects in materials and workmanship for one (1) year from date of Owner's acceptance, except where specified for longer periods.
   1. Word the Guarantee as follows:
      We hereby guarantee all work performed by us on the above captioned Project to be free from defective materials and workmanship for a period of one (1) year or such longer period as may be called for in the Contract Documents for such portions of the Work. Note: The Contractor shall not modify or add additional clauses or amendments to this statement.
   2. All guarantees and warranties shall be obtained in the Owner's name.
   3. Within the Guaranty period, if repairs or changes are requested in connection with guaranteed work which, in the opinion of the Owner, are rendered necessary as a result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the Contract, the Contractor shall promptly, upon receipt of notice from and without expense to the Owner, place in satisfactory condition building, site, equipment or contents thereof. The Contractor shall make good any work, materials, equipment or contents of said buildings or site which may be disturbed by fulfilling any such Guaranty.
   4. If, after notice, the Contractor fails to proceed promptly to comply with the terms of the Guaranty, the Owner may have the defects corrected and the Contractor and his Sureties shall be liable for all expense incurred.
   5. All special guarantees applicable to definite parts of the work stipulated in the Project Manual or other documents forming part of the Contract shall be subject to the terms of this paragraph during the first year of the life of such special guaranty.

G. **Project Record Document**: Furnish all other record documents as set forth in Section 01 75 00 entitled *Project Record Documents*.

H. **Additional Documents Specified Within the Project Manual**: Provide all additional certificates, warranties, guarantees, bonds or documents as called for in the individual sections of the Project Manual. The Contractor is responsible for examining the Project Manual for these requirements.

END OF SECTION

SECTION 01 90 00

DIVISION ONE SUPPLEMENT

PART 1 SUMMARY OF WORK SUPPLEMENT

1.01 WORK SEQUENCE

A. Construct work in stages as follows:
   1. N/A.

PART 2 ALTERNATE SUPPLEMENT

2.01 DESCRIPTION OF ALTERNATES

a. ADDITIVE ALTERNATE #1: Add all labor and materials required for removal / discarding of existing flooring and installation of new flooring at Buildings 103, 123, 124, 125, 126, 128, 130, 131, 323 and 325, as depicted in the drawings and specifications.

b. ADDITIVE ALTERNATE #2: Add all labor and materials required for removal / discarding of all existing exterior windows and installation of new exterior storefront system windows at Buildings 103,123,124,125,126,128,130,131,323 and 325, as depicted in the drawings and specifications.

c. ADDITIVE ALTERNATE #3: Add total scope for Building 127 – Male Barracks.

d. ADDITIVE ALTERNATE #4: Add total scope for Building 129 – Male Barracks.

e. ADDITIVE ALTERNATE #5: Add total scope for Building 326 – Female Barracks.

f. ADDITIVE ALTERNATE #6: Add total scope for Building 110 – Male Recreation and Fitness.

g. ADDITIVE ALTERNATE #7: Add total scope for Building 309 – Chapel and Testing.

PART 3 ALLOWANCE SUPPLEMENT

3.01 DESCRIPTION OF ALLOWANCES

A. N/A.

PART 4 PROJECT SIGN SUPPLEMENT

4.01 PROJECT SIGN REQUIREMENTS: N/A.

END OF SECTION

SECTION 01 94 00

ADDENDA

1.01 **ADDENDA**

Any Addendum issued on this Project will be included in Section 01 94 00 and become a part of the *Standard Form of Agreement Between the Owner and the Contractor*.

END OF SECTION

SECTION 01 95 00

ARCHITECT'S SPECIAL CONDITIONS

PART ONE - GENERAL

1.01 OWNERSHIP OF DRAWING AND SPECIFICATIONS

A. The drawings and specifications and copies thereof furnished by the Architect are his property. All such copies shall be returned to the office of the Architect and shall not be used on any other work. The drawings and specifications are instruments of the Architectural Service rendered.

1.02 VERIFICATION OF DIMENSIONS

A. Before ordering any materials or doing any work, each Contractor shall verify the dimensions and shall be responsible for the accuracy of such dimensions as they affect the work. No extra compensation will be allowed because differences between the dimensions shown on the drawings and actual dimensions.

1.03 PLANS AND SPECIFICATIONS

A. The specifications and the drawings are intended to agree with each other, and to be mutually explanatory. They are also intended to be complementary, and any work or materials called for by either shall be performed and/or furnished as if called for by both.

B. RELATION OF PLANS AND SPECIFICATIONS:
   1. The Architect shall be notified of any discrepancies in the documents.
   2. To be equal authority and priority, should they disagree in themselves, or with each other, **bids shall be based on the most expensive combination of quality and quantity of work indicated**. The appropriate Work, in the event of the above-mentioned disagreement shall be determined by the Architect.
   3. Written dimensions take precedence over scale measurements.
   4. Large scale details take precedence over smaller scale details.
   5. Architectural Drawings take precedence regarding dimensions, when in conflict with Mechanical and Structural Drawings, except for the size of structural members.
   6. Specifically, titled drawings and sections of the specifications take precedence over indication of the item in a collateral way.
   7. Existing conditions take precedence over Drawings and Specifications for dimensions.

1.04 FIRES AND TRASH DISPOSAL

A. No open fires shall be permitted. Trash and construction debris shall be removed from the site and properly disposed of by the Contractor.

1.05 COLOR SCHEDULES

A. Color schedules will be prepared by the Architect after the Contractor has furnished all necessary submittals, samples, and color chips from the actual suppliers and subcontractors. Delivery of these materials to the Architect shall occur within 30 days after the Notice to Proceed.

1.06 WORKMANSHIP

A. All work as described or required shall be executed in a neat, skillful manner, in accordance with the best recognized trade practice. Only competent workmen (including the superintendent) who work and perform their duties satisfactorily shall be employed on the project, and when requested by the Architect, the Contractor shall discharge and shall not re-employ on the project any person who commits trespass or who is, in the opinion of the Architect, dangerous, disorderly, insubordinate, incompetent, or otherwise objectionable. Poor or expedient workmanship and substandard materials will not be tolerated. Craftsmen and subcontractors hired for this Project are expected to be of extraordinary quality who takes pride in their work.

1.07 CERTIFIED DRUG FREE WORKPLACE CERTIFICATION

A. The General Contractor and all Subcontractors shall be enrolled in a certified drug free workplace program that provides periodic and random drug testing to all of employees.

B. Proof of enrollment in a certified drug free workplace program must be submitted within 10 days after the bid opening.

1.08 SAFETY PROGRAM

A. The General Contractor and all Subcontractors shall be enrolled in a certified safety program.

B. Proof of enrollment in a certified safety program must be submitted within 10 days after the bid opening.

1.09 JOB SITE BEHAVIOR

A. The job site shall be maintained as a clean, safe and healthy work environment:
   a. Drug, alcohol, and tobacco use is strictly prohibited.
   b. Foul language and behavior is strictly prohibited.
   c. Workers shall remain fully clad always, including but not limited shirts and shoes.
   d. <u>All workers shall wear identification of their employment affiliation either on their shirts or hard hats always. This includes all general contractors and subcontractors.</u>

1.10 SCHEDULE OF VALUES

A. The Schedule of Values with supporting information for the correct values shall be submitted as per General Conditions of the Contract for Construction (A201-17, Section 9.2). The Schedule of Values, within the course of construction, shall not be changed except by Change Order.

END OF SECTION

SECTION 02 41 16
SELECTIVE DEMOLITION & DEBRIS SALVAGE REMOVAL

PART ONE GENERAL

1.01 SCOPE

A. This Section covers all operations in connection with clearing and demolition. Perform all stripping and demolition and other work necessary for the completion of the work specified herein and as shown on the drawings.

B. The Contractor shall familiarize himself or herself with the existing site conditions in the best manner possible to verify the amount of clearing and demolition that will be performed.

1.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public (where applicable).
   1. Obtain required permits.
   2. Use of explosives is not permitted.
   3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   4. Provide, erect, and maintain temporary barriers and security devices.
   5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   7. Do not close or obstruct roadways or sidewalks without permit.
   8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin demolition until receipt of Notice to Proceed from Owner.

C. Do not begin demolition until built elements to be salvaged or relocated have been removed.

D. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

E. If hazardous materials are discovered during removal operations, stop work and notify Albert & Robinson Architects and the Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

F. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Dismantle existing construction and separate materials.
   2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

1.03 MATERIALS

A. The Contractor shall remove all debris from the building and/or site as defined in the Drawings. Debris shall be considered obviously destroyed building parts, contents, demolition scope, landscape debris, and tree stumps/debris as defined in the Drawings. The building shall be swept clean and site raked/blown at completion of debris removal.

B. Salvage shall be defined as necessary building parts to be reused or to be retained for the purpose of restoration study by the Architect. The Contractor shall remove the building contents and salvage and place them in an area designated by the Owner and Architect for review for storage. All debris, including the salvage not selected for storage, is to be removed from the

site by the Contractor. It is the responsibility of the Contractor to remove all designated debris from the project site by legal means and dispose of debris by approved and legal means.

1.04 PROTECTION OF EXISTING WORK

A. Existing structures and building elements to remain shall be protected throughout the duration of construction.

B. Provide barriers, fences, coverings, bumpers, weatherproofing, and other protection that will minimize damage to existing work.

C. Provide temporary shoring and bracing as necessary.

D. Prevent movement or settlement of adjacent structures.

E. Stop work immediately if adjacent structures appear to be in danger.

F. Repair adjacent construction and finishes damaged during removal work.

G. Perform cutting to accomplish removals neatly and as specified for cutting new work.

1.05 DEMOLITION

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Albert & Robinson Architects before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Demolition shall consist of the removal and disposal of all existing construction required to be removed as per the drawings, including all debris and all rubbish from the designated areas.
   1. Remove items indicated on drawings.

C. Separate areas in which demolition is being conducted from other areas that are still occupied. The Contractor shall maintain a temporary second Means of Egress throughout the entirety of the project, constructed in accordance with OSHA standards. It shall extend from the portion of the building being occupied directly to the exterior of the building. Provide dust proof and sound retardant partitions as required to separate occupied and non-occupied areas.

D. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

E. Ascertain possible hazards during demolition. Remove walls and partitions indicated, without damaging the structural system of the existing building. Work structures by parts and shore against collapse. Chute and load debris directly into trucks when possible. Remove debris as it is produced and do not allow it to accumulate on the site. Constantly restrain dust and water from infiltrating areas not requiring demolition.

F. Within area of new construction, completely remove all existing (found) foundation walls and footings to the extent that they must be removed not to compromise new structural foundations shown for new construction. All foundation elements planned (or decided) to remain are to be documented and reported the structural engineer for approval first. The structural engineer has the final approval of any existing foundation components to remain with in the new construction area.

1.06 EXISTING UTILITIES

A. While underground utility locations are shown within the drawings for reference, it is the ultimate responsibility of the General Contractor to utilize whatever approved means necessary to locate existing undeground utilities on and/or adjacent to the site to fulfill the contract scope of work; this includes, but may not be limited to, the use of ground penetrating radar. The General Contractor shall be responsible for any damage to existing underground utilities throughout the duration of construction due to its failure to properly identify their locations.

B. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

C. Protect existing utilities to remain from damage.

D. Do not disrupt public utilities without permit from authority having jurisdiction.

E. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

F. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

G. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

H. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

I. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

1.07 DISCONNECTING BUILDING SERVICES (INCLUDING BUT NOT LIMITED TO HVAC, PLUBMING, FIRE PROTECTION, ELECTRICAL, AND TELECOMMUNICATIONS)

A. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.

B. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.

C. Verify that abandoned services serve only abandoned facilities before removal.

D. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification. Each subcontractor shall be responsible for the removal of Work that normally is installed under their jurisdiction, unless notified by the General Contractor in advance.

E. When the Scope of Work includes completely new building systems, all existing mechanical, electrical and plumbing systems are to be removed in preparation for new systems. See notes on drawings for additional information.

1.08 PROTECTED AND SECURED BUILDING

A. All buildings are to be secure. The site shall be safe for public habitation during construction. If this cannot be done, then site shall be secured by 6-foot temporary fence to keep public out.

1.09 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 02 82 00

HAZARDOUS MATERIALS REMEDIATION

PART ONE - GENERAL

1.01 CONTRACTOR REQUIREMENTS

A. The Contractor shall be licensed by the State of Mississippi as an asbestos abatement contractor and a lead paint abatement contractor.

B. The Contractor must be covered with general liability insurance including:
   1. Workmen's Compensation
   2. Public Liability
   3. Property Damage
   4. Fire and extended coverage.

C. The Contractor shall submit documentation that the insurance carrier is aware that this project involves the removal of asbestos, lead paint containing materials and pigeon droppings.

1.02 DESCRIPTION

A. The Hazardous Materials are identified in the Hazardous Materials Assessment that is provided by the State of Mississippi Military Department and included in the Contract Documents for reference.

   Items containing lead paint may or may not be removed from the building according to the drawings. The Mississippi Department of Environmental Quality does not monitor lead paint abatement activities within this building type (MDEQ only monitors facilities primarily occupied by children and residential type buildings). Where items containing lead paint are to be abated, the Contractor shall abide by safety guidelines indicated within this specification. Where items containing lead paint are to be stripped or repainted the Contractor shall utilize OSHA procedures to ensure the safety of all workers from contamination.

B. Applicable Standards and Guidelines:
   1. General Requirements
      a. All work under this Contract shall be done in strict accordance with all applicable Federal, State and Local regulations, standards and codes governing asbestos and lead paint abatement and any other trade work done in conjunction with the abatement.
      b. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be utilized.
      c. Copies of all standards, regulations, codes and other applicable documents, including this specification shall be available at the worksite.

   2. Specific requirements
      a. Title 29 Code of Federal Regulations Section 1910.1001 - General Industry Standard for Asbestos.
      b. Title 29 Code of Federal Regulations Section 1910.134 - General Industry Standard for Respiratory Protection.
      c. Title 29 Code of Federal Regulations Section 1926 - Construction Industry.
      d. Title 29 Code of Federal Regulations Section 1910.2 - Access to Employee Exposure and Medical Records.
      e. Title 29 Code of Federal Regulations Section 1910.1200 - Hazard Communication

3. Environmental Protection Agency (EPA)
    a. Title 40 Code of Federal Regulations Section 61 Subparts A and M (Revised Subpart B) - National Emission Standard for Asbestos
    b. Title 40 Code of Federal Regulations Section 763 Subpart G - Asbestos Hazard Emergency Response Act

C. These specifications and any applicable drawings in their entirety are to be a part of any subcontract let by the prime Contractor on this project. The prime Contractor will be held responsible for the whole actions by any of his subcontractors or their employees. All sections and provisions of this specification and any drawings that are a part of this specification are to be adhered to by any subcontractor on this project. The prime Contractor will be responsible for supervising his subcontractors.

1.03 SUBMITTALS AND NOTICES

A. Contractor shall:
1. Prior to Commencement of Work:
    a. The Contractor will send notification in accordance with 40 CFR Part 61.146 of Subpart M, to the appropriate State or Federal air pollution control agency responsible for the enforcement of the National Emission Standard for Asbestos at least ten (10) days prior to the commencement of any on-site project activity. Provide Owner with a copy of the notice.
    b. Submit proof satisfactory to the Owner that required permits, site location and arrangements for transport and disposal of asbestos containing waste materials have been made. Obtain and submit a copy of handling procedures and list of protective equipment utilized for asbestos disposal at the landfill, signed by the landfill Owner.
    c. Submit documentation satisfactory to the Owner that the Contractor's employees, including foreman, supervisors and any other company personnel or agents who may be exposed to airborne asbestos fibers or who may be responsible for any aspects of abatement activities, have received the appropriate licensure from the Mississippi Department of Environmental Quality.
    d. Document NIOSH approval for all respiratory protective devices utilized on-site. Include manufacturer certification of HEPA filtration capabilities for all cartridges and filters.
2. During Abatement Activities
    a. Submit weekly job progress reports detailing abatement activities. Include review of progress with respect to previously established milestones and schedules, major problems and action taken, injury reports, equipment breakdown and bulk material and air sampling results conducted by Contractor's Air Sampling Professional.
    b. Submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos waste materials removed from the work area during the abatement process.
    c. Submit daily, copies of worksite entry logbooks with information on worker and visitor access.
    d. Submit logs documenting filter changes on respirators, HEPA vacuum, negative pressure ventilation units, and other engineering controls.
    e. Submit results of bulk material analysis and air sampling data collected during the course of the abatement including OSHA compliance air monitoring results.
    f. Post in the clean room area of the worker decontamination enclosure a list containing the names, addresses, and telephone numbers of the Contractor, the Owner, the Asbestos Project Officer, the General Superintendent, the Air Sampling Professionals, the testing laboratory and any other personnel who may be required to assist during abatement activities.

g. The Contractor will maintain "ON SITE" and available for inspection at any time by authorized persons: The COPIES of all Accreditation Certificates for each and every person working on this Project, for which accreditation is required.

B. Owner Shall:
   1. Prior to Commencement of Work:
      a. Submit to the Contractor, results of pre-abatement air sampling (if conducted) including location of samples, names of the Air Sampling Professional, equipment utilized and method of analysis.
      b. Provide to the Contractor information concerning access, shutdown and protection requirements of certain equipment and systems in the work area.
   2. During Abatement:
      a. Submit to the Contractor, results of bulk material analysis and air sampling data collected during the course of the abatement. These sample results are for information only. They serve only to monitor Contractor performance during the project and shall not release the Contractor from any responsibility to sample for OSHA compliance.

1.04 SITE SECURITY

A. The work area is to be restricted only to authorized, trained and protected personnel. These may include the Contractor's employees, employees of Subcontractors, Owner employees and representatives, State and Local inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start and posted in the clean room of the worker decontamination facility.

B. Entry into the work area by unauthorized individuals shall be reported immediately to the Owner by the Contractor.

C. A logbook shall be maintained at the job site. Anyone who enters the work area must record name, affiliation, time in, and time out for each entry.

D. Contractor should have control of site security during abatement operations whenever possible, in order to protect work efforts and equipment.

1.05 EMERGENCY PLANNING

A. Emergency planning shall be developed prior to abatement initiation and agreed to by Contractor and Owner.

B. Emergency procedures shall be in written form and prominently posted in the clean change areas and equipment room of the worker decontamination area. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt and understanding of work site layout, location of emergency exits and emergency procedures.

C. Emergency planning shall include written notification of police, fire and emergency medical personnel of planned abatement activities, work schedule and layout of work area, particularly barriers that may affect response capabilities.

D. Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces and heat related injury. Written procedures shall be developed and employee training in procedures shall be provided.

E. Employees shall be trained in evacuation procedures in the event of workplace emergencies.

1. For non-life-threatening situations - employees injured or otherwise incapacitated shall decontaminate following normal procedures with assistance from fellow workers if necessary, before exiting the workplace to obtain proper medical treatment.
2. For life-threatening injury or illness, worker decontamination shall take least priority after measures to stabilize the injured worker, remove him from the workplace and secure proper medical treatment.
3. At least one Supervisory person having a CURRENT Certificate indicating that they have successfully completed an OSHA approved "Standard First Aid Course" as presented by the American Red Cross MUST be ON SITE at the Abatement Site at ANY time there are workers performing any function as part of this Abatement Project. At least one (1) COMPLETE First Aid kit must be on site at all times for the duration of this Abatement Contract.

F. Telephone numbers of all emergency response personnel shall be prominently posted in the clean change area and equipment room, along with the location of the nearest telephone.

1.06 PRE-START MEETING

A. The AAC shall attend a pre-start job meeting which will be coordinated by the Architect. Attending this meeting will be representatives of the Owner and the Owner's agents along with the successful Bidder.

B. The Contractor and supervisory personnel who will provide on-site direction of the abatement activities must attend.

C. At this meeting the Contractor shall provide all submittals as required. In addition he shall be prepared to provide detailed information concerning:
   1. Preparation of work area
   2. Personal protective equipment including respiratory protection and protective clothing.
   3. Employees who will participate in the project, including delineation of experience, training, and assigned responsibilities during the project.
   4. Decontamination procedures for personnel, work area and equipment.
   5. Abatement methods and procedures to be utilized.
   6. Required air monitoring procedures.
   7. Procedures for handling and disposing of waste materials.
   8. Procedures for final decontamination and cleanup.
   9. A sequence of work and performance schedule.
   10. Procedures for dealing with heat stress.
   11. Emergency procedures.

PART TWO - PRODUCTS

2.01 MATERIALS

A. General (all abatement projects)
   1. Deliver all materials in the original packages, containers of bundles bearing the name of the manufacturer and the brand name (where applicable).
   2. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Replacement materials shall be stored outside of the work area until abatement is completed.
   3. Damaged, deteriorating or previously used materials shall not be used and shall be removed from the worksite and disposed of properly.
   4. Polyethylene sheeting shall be a minimum of 4-mil thick
   5. Disposal bags shall be of 6-mil polyethylene, pre-printed with labels as required by EPA regulation 40 CFR 61.152 (b) (l) (iv) or OSHA requirement 29 CFR 1910.1001 (g) (2) (ii). Disposal bags will be "TRANSLUCENT" or "CLEAR", OPAQUE bags not approved.

6. Disposal drums, if used, shall be metal or fiberboard with locking ring tops.
7. Stick-on labels as per EPA or OSHA requirement (see 2.1.2.7) for disposal drums.
8. Warning signs as required by OSHA 29 CFR 1910.1001 (g) (I) (ii) or as proposed in 29 CFR 190.1001 Asbestos Proposed Rule, Federal Register and Vol. 49, Tuesday, April 10, 1984 (recommended).

B. Removal
1. Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethylene ether and polyoxyethylene ester, or equivalent, mixed in a proportion of 1 fluid ounce to 5 gallons of water or as specified by manufacturer. (An equivalent surfactant shall be understood to mean a material with a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM method D1331-56 - "Surface and Interfacial Tension of Solutions of Surface Active Agents.") Where work area temperature may cause freezing of the amended water solution, the addition of ethylene glycol in amounts sufficient to prevent freezing is permitted.

2.02 EQUIPMENT

A. General (all abatement projects)
1. Spectacle kits and eyeglasses must be provided for employees who wear glasses and who must wear full face piece respirators. Respirators shall be provided that have been tested and approved by the National Institute of Occupation Safety and Health for use in asbestos contaminated atmospheres.
2. Full body disposable protective clothing, including head, body and foot coverings (unless using footwear as described in 2.2.1.6.) consisting of material impenetrable by asbestos fibers ("Tyvek" or equivalent) shall be provided to all workers and authorized visitors in sizes adequate to accommodate movement without tearing.
3. Additional safety equipment (e.g. hard hats meeting the requirements of ANSI Standard Z89.1-1981, eye protection meeting the requirements of ANSI Standard z87.1-1979, safety shoes meeting the requirements of ANSI z41.1-1967, disposable PVC gloves), as necessary, shall be provided to all workers and authorized visitors.
4. Non-skid footwear shall be provided to all abatement workers. Disposable clothing shall be adequately sealed to the footwear to prevent body contamination.

B. Removal
1. A sufficient supply of scaffolds, ladders, lifts and hand tools (e.g. scrapers, wire cutters, brushes, utility knives, wire saws, etc.) shall be provided as needed.
2. Sprayers with pumps capable of providing 500 pounds per square inch (psi) at the nozzle tip at a flow rate of two (2) gallons per minute for spraying amended water.
3. Rubber dustpans and rubber squeegees shall be provided for cleanup.
4. Brushes utilized for removing loose asbestos containing material shall have nylon or fiber bristles, not metal.
5. A sufficient supply of HEPA filtered vacuum systems shall be available during cleanup.

PART THREE - EXECUTION

3.01 PREPARATION

A. Work Areas
   1. Post caution signs meeting the specifications of OSHA 29 CFR 1910.101 (g) (l) (ii) at any location and approaches to a location where airborne concentrations of asbestos may exceed ambient background levels. Signs shall be posted at a distance far enough away from the work area to permit an employee to read the sign and take the necessary protective measures to avoid exposure. Additional signs may need to be posted following construction of workplace enclosure barriers.
   2. Provide necessary electric power and access to the electric breakers and switch gear in this work area. Provide temporary power and lighting. Insure safe installation (including ground faulting) of temporary power sources and equipment by compliance with all applicable electrical code requirements and OSHA requirements for temporary electrical systems.
   3. Shut down and lock out all heating, cooling and air conditioning system (HVAC) components that are in, supply or pass through the work area. Appropriate equipment and control measures shall be utilized to prevent contamination of building spaces during this operation. Seal all intake and exhaust vents in the work area with tape and 6-mil polyethylene.
   4. The Contractor shall provide sanitary facilities for abatement personnel outside of the enclosed work area (containment area) and maintain them in a clean and sanitary condition throughout the project.
   5. The Owner will provide water for construction purposes. Contractor shall connect to existing Owner system.
   6. Clean all fixed objects in the work area using HEPA filtered vacuums and/or wet cleaning techniques as appropriate. Careful attention must be paid to machinery behind grilles or gratings where access may be difficult but containment is significant.

B. Isolation of the work area from occupied areas of the building: The AAC shall isolate the work from the other areas of the building by the use of 4-mil polyethylene sheeting and negative air machines.

C. Commencement of work shall not occur until:
   1. All pre-abatement submissions, notifications, postings and permits have been provided and are satisfactory to the Owner.
   2. All equipment for abatement, clean-up and disposal are on hand.
   3. All worker training (and certification) is completed.
   4. Contractor receives permission from Owner to commence abatement.

3.02 WORKPLACE ENTRY AND EXIT PROCEDURES

A. Personnel entry and exit
   1. All personnel who enter the work area must sign the entry log, located in the clean room, upon entry and exit.
   2. All personnel, before entering the work area, shall read and be familiar with all posted regulations, personal protection requirements (including workplace entry and exit procedures) and emergency procedures. A sign-off sheet shall be used to acknowledge that these have been reviewed and understood by all personnel prior to entry.
   3. All personnel shall proceed first to remove all street clothes and appropriately don respiratory protection (as deemed adequate for the job conditions) launderable and/or disposable coveralls, head covering and foot covering. Hard hats, eye protection and gloves shall also be utilized if required. Clean respirators and protective clothing shall be provided and utilized by each person for each separate entry into the work area.
   4. Before leaving the work area all personnel shall remove gross contamination from the outside of respirators and protective clothing by HEPA Vacuum and/or wet wiping procedures.

5. Personnel shall proceed to remove all protective equipment except respirators. Deposit disposable (and launderable) clothing into appropriately labeled containers for disposal (and laundering.)

3.03 PERSONNEL PROTECTION REQUIREMENTS

A. Training
   1. Prior to commencement of abatement activities all personnel who will be required to enter the work area or handle containerized asbestos containing materials must have received adequate training.
   2. Special on-site training on equipment and procedures unique to this job site shall be performed as required.
   3. Training in emergency response and evacuation procedures shall be provided.

B. Respiratory Protection
   1. All respiratory protection shall be provided to workers in accordance with the submitted written respiratory protection program, which includes all items in OSHA 29 CFR 1910.134 (b) (1-11). This program shall be posted in the clean room of the worker decontamination enclosure system.
   2. Workers shall be provided with personally issued, individually identified (marked with waterproof designations) respirators.
   3. Respirators shall be selected that meet the following level of protection requirements: The Contractor is responsible for assuring that the exposure level to the worker within the mask does not exceed .01 fibers/cc. 8 hour TWA.
   4. Fit testing
      a. Workers must perform positive and negative air pressure fit tests each time a respirator is put on, whenever the respirator design so permits. Powered air-purifying respirators shall be tested for adequate flow as specified by the manufacturer.
      b. Workers shall be given a qualitative fit test in accordance with procedures detailed in the OSHA Lead Standard (29 CFR 1910.1025, Appendix D, Qualitative Fit Test Protocols) for all respirators to be used on this abatement project. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.
      c. Documentation of adequate respirator fit must be provided to the Owner.
   5. No one wearing a beard shall be permitted to don a respirator and enter the work area.
   6. Additional respirators (minimum of two (2) of each type) and training on their donning and use must be available at the work site for authorized visitors who may be required to enter the work area.

C. Protective Clothing
   1. Disposable clothing including head, foot and full body protection shall be provided in sufficient quantities and adequate sizes for all workers and authorized visitors. The Owner, his representative and the Air Monitoring Professional will be furnished protective clothing, duct tape, disposable toweling, respirator equipment and respirator wipes and all other required disposables at no additional charge by this Contractor.
   2. Launderable clothing, if required, shall be provided in sufficient quantities and adequate sizes for all workers and authorized visitors.
   3. Hard hats, protective eyewear, gloves, rubber boots and/or other footwear shall be provided as required for workers and authorized visitors. Safety shoes may be required for some activities.

3.04 REMOVAL PROCEDURES

A. Clean and isolate the work area in accordance with 3.01, A.

B. Wet all asbestos containing material with an amended water solution using equipment capable of providing a fine spray mist, in order to reduce airborne fiber concentrations when the material is disturbed. Saturate the material to the substrate; however, do not allow excessive water to accumulate in the work area. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal. Maintain a high humidity in the work area by misting or spraying to assist in fiber settling and reduce airborne concentrations. Wetting procedures are not equally effective on all types of asbestos containing materials but, shall none-the-less be used in all cases.

C. Saturated asbestos containing material shall be removed in manageable sections. Removed material should be containerized before moving to a new location for continuance of work. Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.

D. Material removed from building structures or components shall not be dropped or thrown to the ground. Material should be removed as intact sections or components whenever possible and carefully lowered to the ground.

E. Containers (6-mil polyethylene bags or drums) shall be sealed when full. Wet material can be exceedingly heavy. Double bagging of waste material is usually necessary. A determination of need for single or double bags must be made early in the abatement process and agreed to by the Owner.) Bags shall not be overfilled. They should be securely sealed to prevent accidental opening and leakage by tying tops of bags in an overhand knot or by taping in gooseneck fashion. Do not seal bags with wire or cord. (Bags may be placed in drums for staging and transportation to the landfill. Bags shall be decontaminated on exterior surfaces by wet cleaning and HEPA vacuuming before being placed in clean drums and sealed with locking ring tops).

F. Large components removed intact maybe wrapped in two (2) layers of 6-mil polyethylene sheeting secured with tape for transport to the landfill.

G. Asbestos containing waste with sharp-edged components (e.g. nails, screws, metal lathe, tin sheeting) which would tear the polyethylene bags and sheeting shall be placed into drums for disposal.

H. After completion of all stripping work, surfaces from which asbestos containing materials have been removed shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residues.

3.05 CLEAN-UP PROCEDURE

A. Inspect the work area for visible residue.

B. The work area shall be cleaned until it is in compliance with State and Local requirements and any more stringent criteria agreed upon by the Contractor and Owner prior to initiation of abatement activities (criteria should be in the form of visual inspections and airborne fiber concentrations). Additional cleaning cycles shall be provided, as necessary, at no cost to the Owner until these criteria are met.

3.06 CLEARANCE AIR MONITORING

A. The asbestos abatement contractor shall include in his price quote to the general contractor an allowance for one TEM air clearance test and 1 PCM air clearance tests to be conducted for this project. The owner will select and arrange for a licensed air monitor to perform these clearance tests. The air monitor will then bill the asbestos abatement contractor directly for these clearance tests. If the AAC fails an air test, then the

AAC will be responsible for paying for any additional test required to obtain clearance. If the AAC divides the work up into more containment areas requiring additional clearance tests, then the AAC shall add $1000.00 per extra clearance to his allowance.

3.07 DISPOSAL PROCEDURES

A. As the work progresses, to prevent exceeding available storage capacity on-site, sealed and labeled containers of asbestos containing waste shall be removed and transported to the prearranged disposal location.

B. Disposal must occur at an authorized site in accordance with regulatory requirements of NESHAP and applicable State and Local guidelines and regulations.

C. All dump receipts, trip tickets, transportation manifests or other documentation of disposal shall be delivered to the Owner for his records. A recommended record keeping format utilizes a chain-of- custody form which includes the names and addresses of the Generator (Owner), Contractor, pickup site, and disposal site, the estimated quantity of the asbestos waste and the type of containers used. The form should be signed by the Generator, the Contractor, and the Disposal Site Operator, as the responsibility for the material changes hands. If a separate hauler is employed, his name, address, telephone number and signature should also appear on the form.

D. Transportation to the landfill
   1. Once drums, bags and wrapped components have been removed from the work area, they shall be loaded into an enclosed truck for transportation.
   2. When moving containers, utilize hand trucks, carts and proper lifting techniques to avoid back injuries. Trucks with lift gates are helpful for raising drums during truck loading.
   3. The enclosed cargo area of the truck shall be free of debris and lined with TWO (2) LAYERS OF 6-mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extend up the side walls a minimum of TWENTY FOUR (24) inches. Wall sheeting shall be overlapped and securely taped into place.
   4. Drums shall be placed on level surfaces in the cargo area and packed tightly together to prevent shifting and tipping. Large structural components shall be secured to prevent shifting and bags placed on top. Do not throw containers into truck cargo area.
   5. Personnel loading asbestos containing waste shall be protected by disposable clothing including head, body and foot protection and at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with high efficiency filters.
   6. Any debris or residue observed on containers or surfaces outside of the work area resulting from clean-up or disposal activities shall be immediately cleaned-up using HEPA filtered vacuum equipment and/or wet methods as appropriate.
   7. Large metal dumpsters are sometimes used for asbestos waste disposal. These should have doors or tops that can be closed and locked to prevent vandalism or other disturbance to the bagged asbestos debris and wind dispersion of asbestos fibers. Unbagged material shall not be placed in these containers. These containers shall not be used for non-asbestos waste. Bags shall be placed, not thrown, into these containers to avoid splitting.

E. Disposal at the landfill
   1. Upon reaching the landfill, trucks are to approach the dump location as closely as possible for unloading of the asbestos containing waste.
   2. Bags, drums and components shall be inspected as they are off-loaded at the disposal site. Material in damaged containers shall be repacked in empty drums or bags as necessary. (Local requirements may not allow the disposal of asbestos waste in drums. Check with appropriate agency and institute appropriate alternative procedures.)

3. Waste containers shall be placed on the ground at the disposal site, not pushed or thrown out of trucks (weight of wet material could rupture containers.)
4. Personnel off-loading containers at the disposal site shall wear protective equipment consisting of disposable head, body and foot protection and, at a minimum, half-facepiece, air-purifying, dual cartridge respirators equipped with high efficiency filters.
5. Following the removal of all containerized waste, the truck cargo area shall be decontaminated using HEPA vacuums and/or wet methods to meet the no visible residue criteria. Polyethylene sheeting shall be removed and discarded along with contaminated cleaning materials and protective clothing, in bags or drums at the disposal site.
6. If landfill personnel have not been provided with personal protective equipment for the compaction operation by the landfill operator, Contractor shall supply protective clothing and respiratory protection for the duration of this operation.

3.08 RE-ESTABLISHMENT OF THE WORK AREA AND SYSTEMS

A. Reestablishment of the work area shall only occur following the completion of clean-up procedures and after clearance air monitoring has been performed and documented.

B. At the discretion of the Contractor, mandatory requirements for personal protective equipment may be waived following the removal of all barriers.

C. Re-secure mounted objects removed from their former positions during area preparation activities.

D. Relocate objects that were removed to temporary locations back to their original positions.

E. Reestablish HVAC, mechanical and electrical systems in proper working order. Remove contaminated HVAC system filters and dispose of as asbestos contaminated waste. Decontaminate filter assembly using HEPA vacuums and wet cleaning techniques. Install new filters in HVAC systems. Dispose of old filters as asbestos waste.

F. Repair all areas of damage that occurred as a result of abatement activities.

G. The Contractor will touch up or repaint any and all areas from which paint has been removed or damaged in the process of removing tape or other methods used in attachment of polyethylene sheets or other barriers.

H. The Contractor will remove all traces of materials used to attach barrier material to the building structure. Care must be exercised when attaching barrier materials to porous building materials such as brick or cement block. All evidence of attachment or encapsulant materials must be removed upon completion of project.

3.09 SUPPORT ACTIVITIES AND PERSONNEL

A. Training shall be provided by the Contractor to all employees or agents who may be required to disturb asbestos containing or asbestos contaminated materials for abatement and auxiliary purposes and to all supervisory personnel who may be involved in planning, execution or inspection of abatement projects.

B. Training shall provide, at a minimum, information on the following topics:
   1. The health hazards of asbestos including the nature of various asbestos related diseases, routes of exposure, known dose-response relationships, the synergistic relationship between asbestos exposure and cigarette smoking, latency periods for disease and health basis for standards.
   2. The physical characteristics of asbestos including fiber size, aerodynamic properties, physical appearance and uses.
   3. Employee personal protective equipment including the types and characteristics of respirator classes, limitations of respirators, proper selection, inspection, donning, use, maintenance and storage of

respirators, field testing the face-piece-to-face seal (positive and negative pressure fitting tests), qualitative and quantitative fit testing procedures, variations between laboratory and field fit factors, factors that affect respirator fit (e.g. facial hair), selection and use of disposable clothing, use and handling of launderable clothing, non-skid shoes, gloves, eye protection and hard hats.

4. Medical monitoring requirements for workers including required and recommended tests, reasons for medical monitoring and employee access to records.
5. Air monitoring procedures and requirements for workers including description of equipment and procedures, reasons for monitoring, types of samples and current standards with recommended changes.
6. Work practices for asbestos abatement including purpose, proper construction and maintenance of air-tight plastic barriers, job set-up of airlocks, worker decontamination systems and waste transfer airlocks, posting of warning signs, engineering controls electrical and ventilation system lockout, proper working techniques, waste clean-up, storage and disposal procedures.
7. Personal hygiene including entry and exit procedures for the work area, use of showers and prohibition of eating, drinking, smoking and chewing in the work area.
8. Special safety hazards that may be encountered including electrical hazards, air contaminants (CO, wetting agents, encapsulants, materials for Owner's operation), fire and explosion hazards, scaffold and ladder hazards, slippery surfaces, confined spaces, heat stress and noise.
9. Workshops affording both supervisory personnel and abatement workers the opportunity to see (and experience) the construction of containment barriers and decontamination facilities.
10. Supervisory personnel shall, in addition, receive training or contract specifications, liability insurance and bonding, legal considerations related to abatement, establishing respiratory protection medical surveillance programs, EPA, OSHA (and State) record keeping requirements, and other topics as requested by the Owner.

C. Training must be provided by individuals qualified by virtue of experience and education to discuss the topic areas in 3.10.

D. Training is to have occurred within 12 months prior to the initiation of abatement activities.

E. Contractor must document training by providing date of training, training entity, course outline, and names and qualifications of trainers.

3.10 MEDICAL MONITORING

A. Medical monitoring must be provided by the Contractor to any employee or agent that may be exposed to asbestos in excess of background levels during any phase of the abatement project. (Due to the synergistic effects between smoking and asbestos exposure, it is highly recommended that only non-smokers be employed in positions which may require them to enter asbestos contaminated atmospheres.)

B. Medical monitoring shall include at a minimum:
   1. A work/medical history to elicit symptomatology of respiratory disease.
   2. A chest x-ray (posterior - anterior, 14 x 13 inches) evaluated by a Certified B-reader.
   3. A pulmonary function test, including forced vital capacity (FVC) and forced expiratory volume at one second (FEV)1, administered and interpreted by a certified Pulmonary Specialist.

C. Employees shall be given an opportunity to be evaluated by a physician to determine their capability to work safely while breathing through the added resistance of a respirator. (Examining physician shall be aware of the nature of respiratory protective devices and their contributions to breathing resistance. They shall also be informed of the specific types of respirators the employee shall be required to wear and the work he will be required to perform, as well as special workplace conditions such as high temperatures, high humidity, and chemical contaminants to which he may be exposed.)

3.11 ASBESTOS PROJECT MANAGER

A. The Asbestos Project Manager shall be the Owner or a designated representative paid by the Owner. (Also known as the Clerk-of-the-Works or Competent Person, this person could be an administrator, architect, engineer, industrial hygienist or other individual(s) possessing the qualifications detailed in 3.11, B.)

B. The Asbestos Project Manager shall be able to demonstrate through special education, training, skills, knowledge or experience satisfactory to the Owner to indicate the ability to carry out the following activities as required:
   1. Assist in decision making regarding selection of procedures.
   2. Assist in writing contract specifications for the abatement
   3. Assist in evaluation of bids and selection of a Contractor.
   4. Enforce contract specifications.
   5. Tour work area with the Contractor and agree on pre-abatement conditions of the work area.
   6. Inspect and sign off on barriers and decontamination enclosure systems.
   7. Observe activities at all times during the course of abatement.
   8. Meet with the Contractor daily to review work progress and solve problems or adjust procedures as appropriate.
   9. Perform bulk material or air sampling and all workplace inspection clearance inspections for the Owner.
   10. Report on abatement to the Owner.
   11. Request, review and maintain Contractor submittals.
   12. Provide training and/or respirator fit testing to personnel.

C. The Asbestos Project Manager shall have the authority to stop any job activities if they are not being performed in accordance with applicable regulations or guidelines or the requirements of this specification. These will be reported to the Owner with description of activity, reason for stopping it and alternatives for correcting the problem. (Note: The Asbestos Project Manger should be selected as early as possible prior to selection of the Contractor to enable participation during the pre-bid conference, walk-through, and pre-construction conference.)

3.12 AIR SAMPLING PROFESSIONAL (ASP)

A. The Contractor shall engage the services of an Air Sampling Professional to conduct Air sampling procedures in accordance with all pertinent OSHA, EPA, NIOSH or other regulations.

B. The ASP shall conduct air sampling in accordance with the NIOSH Standard Analytical Method 7400 or other acceptable methods as otherwise agreed upon.

C. The Air Sampling Professional shall be experienced and knowledgeable about the methods for asbestos air sampling and be able to select representative numbers and locations of samples.

D. The Air Sampling Professional shall have adequate liability insurance to protect against errors and omissions in the performance of support activities.

3.13 LABORATORY SERVICES

A. Laboratory utilized for analyzing air samples by NIOSH shall be satisfactory participants in the NIOSH Proficiency Analytical testing (PAT) program asbestos analysis.

B. Laboratories used for bulk material identification shall be satisfactory participants in the EPA quality assurance program for bulk asbestos analysis.

C. The period of time permitted between the collection of air samples and the availability of results shall be less than 24 hours for samples collected during abatement activities.

3.14 PERSONNEL MANAGEMENT:

A. The Contractor shall exercise complete control over all actions of his employees while on the project site or while off site from the start of work to completion of the entire project.
   1. The Contractor shall warn his employees that unauthorized removal from the site of any property owned or controlled by the owner shall result in immediate prosecution by the owner or his authorized representative.
   2. The Contractor will control employee actions and behavior to ensure that there is no unprofessional interaction with the owner's employees or occupants during the entire project.
   3. The Contractor must control all operations and employees to assure that they are limited to the space parameters allowed by the Owner. Employees, equipment, vehicles and supplies are restricted to areas designated by the Owner for the duration of the project.
   4. The special attention of the Contractor is drawn to the following statements. These statements are to be considered prior to bidding on this project.
   5. The following conditions are accepted and agreed to by the Contractor when he signs a contract to provide the services and materials spelled out in this specification.
   6. The Owner or any of his representatives reserve the right to eject from the project site any employee of the Contractor or his subcontractor for adequate reason. The Owners decision will be final with no appeal. In addition the Owner reserves the right to obtain professional assistance in maintaining law and order in or on the Project site. Such reasons include but are not limited to the following:
   7. Intoxication.
   8. Nonprofessional actions.
   9. Theft.
   10. Indications of Drug usage.
   11. Any unlawful action.
   12. Destruction of Owners or other property.
   13. The Contractor MUST advise ALL of his employees and Sub Contractors that SMOKING OR THE USE OF ANY TOBACCO PRODUCT WITHIN THE BUILDING IS PROHIBITED. THE POSSESSION OR USE OF ANY CHEMICAL SUBSTANCE OR ALCOHOLIC BEVERAGE ON THE WORK SITE IS PROHIBITED. Violation of this rule is sufficient cause for IMMEDIATE ejection from the building and the project.
   14. If any person employed or directed by the Contractor elects to smoke on the grounds (if permitted) the Contractor WILL provide appropriate vessels for the placement of waste smoking materials. The Contractor will direct his people to use the vessels and not to dispose of waste material by placement directly on the grounds. The Contractor will dispose of all waste material in an appropriate manner and police the entire Project Area (inside and outside) prior to final inspection of the project.

3.15 PIGEON DROPPING REMOVAL

A. The Contractor shall abate all pigeons and pigeon waster in accordance with the Mississippi Department of Environmental Quality.

3.16 COPY OF THE HAZARDOUS MATERIALS REPORT

A. A copy of the Hazardous Materials Report follows this section.

END OF SECTION

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 103
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on January 6, 2025.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Cove Base	Black	Walls
Floor Tile	Green	Flooring
Window Caulk	Caulk	Windows
Door Caulk	White / Brown	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. Two (2) samples were double layered. One sample was not read due to insufficient quantity. One sample was not read due to previous positive result (positive stop). A total of Fifteen (15) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

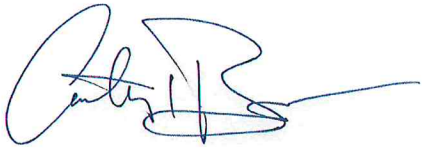
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01222

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 103

Client Number:
25-3107

Laboratory Results

Fax Number:
601-264-5344

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01222-001	1		Off-White/White Brittle; Tan/Light Beige Fibrous; White Pliable to Brittle; Inhomogeneous	NAD	22% Cellulose 5% Fibrous Glass 73% Non-Fibrous
25-01-01222-002	2		Off-White/White Brittle; Tan/Light Beige Fibrous; White Pliable to Brittle; Inhomogeneous	NAD	30% Cellulose 3% Fibrous Glass 67% Non-Fibrous
25-01-01222-003	3		White Brittle; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous
25-01-01222-004	4		White Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01222-005	5			Did Not Analyze (Sample Material Not Present)	

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01222

Project/Test Address: Camps Shelby YCA Building 103

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01222-006A	6	Cove Base	Dark Brown Vinyl-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01222-006B	6	Mastic	Pale Yellow Adhesive; Homogeneous	NAD	3% Cellulose 97% Non-Fibrous
25-01-01222-007A	7	Cove Base	Dark Brown Vinyl-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01222-007B	7	Mastic	Pale Yellow/Yellow Adhesive; Inhomogeneous	NAD	4% Cellulose 1% Synthetic 95% Non-Fibrous
25-01-01222-008	8		Green/Off-White Granular; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous
Insufficient quantity of mastic on flooring sample for analysis of mastic.					
25-01-01222-009	9		Green/Off-White Granular; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous
Insufficient quantity of mastic on flooring sample for analysis of mastic.					
25-01-01222-010	10		White Pliable; Homogeneous	NAD	100% Non-Fibrous
25-01-01222-011	11		White Pliable; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01222

Project/Test Address: Camps Shelby YCA Building 103

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01222-012	12		White Pliable; Homogeneous	NAD	100% Non-Fibrous
25-01-01222-013	13		White Pliable; Homogeneous	NAD	100% Non-Fibrous
25-01-01222-014	14		Pale Gray Brittle; Homogeneous	18% Chrysotile	82% Non-Fibrous
			Total Asbestos:	**18%**	
25-01-01222-015	15			Did Not Analyze (Positive Stop)	

QC Sample: 92-M12022-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Mark Case

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 103		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			01/06/2025	X										Ceiling SR w/Tex
2	2				X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Cove Base
7	7		X		X										"
8	8				X										VCT Green / white
9	9		X		X										"
10	10				X										Door Caulking
11	11		X		X										"
12	12				X										Window Caulking
13	13		X		X										"
14	14				X										Transite Siding
15	15		X		X										"

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: EL CHRISTMAS

Signature:

Date: 1/9/25 Time: 1230 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01222

Due Date:
01/16/2025
(Thursday)
AE

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:		Expiration Date:	
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City: | State: | Zip:

Contact Person: | Tel:

WASTE TRANSPORTER #2

Name:

Address:

City: | State: | Zip:

Contact Person: | Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City: | State: | Zip:

Contact Person: | Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name: | Title:

Authority:

Date of Order (MM/DD/YY): | Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name | (Signature of Owner/Operator) | (Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name | (Signature of Owner/Operator) | (Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 110
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 19, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Window Caulk	Caulk	Windows
Door Caulk	White / Brown	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. One sample was not read due to previous positive result (positive stop). A total of fourteen (14) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

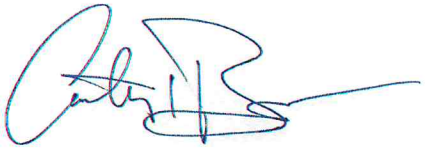
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01234

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 110

Client Number:
25-3107

Laboratory Results

Fax Number:
601-264-5344

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01234-001	1		White Powdery; Brown Fibrous; White Chalky; Inhomogeneous	NAD	20% Cellulose 80% Non-Fibrous
25-01-01234-002	2		White Powdery; Brown Fibrous; White Chalky; Inhomogeneous	NAD	20% Cellulose 80% Non-Fibrous
25-01-01234-003	3		White/Beige Chalky; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01234-004	4		White/Beige Brittle; Inhomogeneous	NAD	100% Non-Fibrous
Sample material appears to be paint					
25-01-01234-005	5		White/Beige Chalky; Beige Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01234
Project/Test Address: Camps Shelby YCA Building 110

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01234-006	6		White Pliable; Beige/Brown Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01234-007	7		White Pliable; Beige/Brown Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01234-008	8		Beige Pliable; Beige Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01234-009	9		Beige Pliable; Beige Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01234-010	10		Gray Cementitious Fibrous; White/Green Paint-Like; Inhomogeneous	15% Chrysotile	85% Non-Fibrous
			Total Asbestos:	**15%**	
Chrysotile present throughout sample					
25-01-01234-011	11			Did Not Analyze (Positive Stop)	

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01234
Project/Test Address: Camps Shelby YCA Building 110

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 95-M22022-3
QC Blank: SRM 1866 Fiberglass
Reporting Limit: 1% Asbestos
Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020
Analyst: Kathy Fletcher

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 110		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

[ ] PLM New York Protocol [ ] PLM New Jersey Protocol [ ] PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM/AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/19/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Door Caulking
7	7		X		X										"
8	8				X										Window Caulking
9	9		X		X										"
10	10				X										Transite Gable
11	11		X		X										"
12															
13															
14															
15															

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: E. Christmas

Signature:

Date: 1/9/25 Time: 1244 [ ] AM [X] PM

[ ] Portal Contact Added

25-01-01234

Due Date: 01/16/2025 (Thursday)

KF AE

11pm

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Greg Mallery

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:		Expiration Date:	
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 123
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 17, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Carpet Glue	Yellow	Floors
Cove Base	Brown	Walls
Window Caulk	Caulk	Windows
Door Caulk	White	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. Two (2) samples were double layered. One sample was not read due to a previous positive reading (Positive Stop). A total of Sixteen (16) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

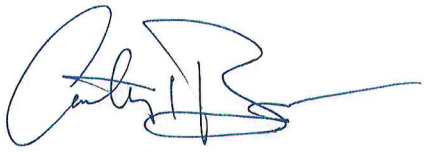
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01244

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 123

Client Number:
25-3107

Fax Number:
601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01244-001	1		Beige Paint-Like; White Powdery; Brwon Fibrous; Gray Chalky; Inhomogeneous	NAD	25% Cellulose 75% Non-Fibrous
25-01-01244-002	2		Beige Paint-Like; White Powdery; Brown Fibrous; Gray Chalky; Inhomogeneous	NAD	25% Cellulose 75% Non-Fibrous
25-01-01244-003	3		Beige Paint-Like; White Powdery; Brown Fibrous; Gray Chalky; Inhomogeneous	NAD	25% Cellulose 75% Non-Fibrous
25-01-01244-004	4		Beige Paint-Like; White Powdery; Brwon Fibrous; Gray Chalky; Inhomogeneous	NAD	25% Cellulose 75% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01244
Project/Test Address: Camps Shelby YCA Building 123

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01244-005	5		Beige Paint-Like; White Powdery; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01244-006A	6	Cove Base	Brown/Red Vinyl-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01244-006B	6	Mastic	Black/Cream Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01244-007A	7	Cove Base	Brown/Red Vinyl-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01244-007B	7	Mastic	Black/Cream Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01244-008	8		Tan Adhesive; Homogeneous	NAD	2% Cellulose 1% Synthetic 97% Non-Fibrous
25-01-01244-009	9		Tan Adhesive; Homogeneous	NAD	2% Cellulose 1% Synthetic 97% Non-Fibrous
25-01-01244-010	10		Beige Paint-Like; White Pliable; Inhomogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01244

Project/Test Address: Camps Shelby YCA Building 123

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01244-011	11		Beige Paint-Like; White Pliable; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01244-012	12		Beige Paint-Like; Off-White Brittle; Inhomogeneous	NAD	1% Talc 99% Non-Fibrous
25-01-01244-013	13		Beige Paint-Like; Off-White Brittle; Inhomogeneous	NAD	1% Talc 99% Non-Fibrous
25-01-01244-014	14		White Paint-Like; Gray Cementitious; Inhomogeneous	18% Chrysotile	82% Non-Fibrous
			Total Asbestos:	**18%**	
Chrysotile present throughout sample.					
25-01-01244-015	15			Did Not Analyze (Positive Stop)	

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01244

Project/Test Address: Camps Shelby YCA Building 123

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 91-M22022-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Keleigh King

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 123		
PO Number	NA	Collected By	Tony Bryant

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/17/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Cove Base
7	7		X		X										"
8	8				X										Carpet Glue
9	9		X		X										"
10	10				X										Door Caulk
11	11		X		X										"
12	12				X										Window Caulk
13	13		X		X										"
14	14				X										Transite
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: ECHRISTMAS

Signature:

Date: 1/9/25 Time: 1256 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01244

Due Date: 01/16/2025 (Thursday) AE

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

Chief, Asbestos & Lead Branch

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:

Address

City:	State:	Zip:	County:

Site Location:	Tel:

Building Size	# of Floors:	Age in Years:

Present Use:	Prior Use:

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:

Address:

City:	State:	Zip:

Contact:	Tel:

ASBESTOS REMOVAL CONTRACTOR:

Address:

City:	State:	Zip:

Contact:	Tel:

Certification Number:	Expiration Date:

OTHER OPERATOR:

Address:

City:	State:	Zip:

Contact:	Tel:

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:

Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 124
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 17, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Carpet Glue	Yellow	Floors
Cove Base	Gray	Walls
Window Caulk	Caulk	Windows
Door Caulk	White	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. Five (5) samples were multiple layered. One sample was not read due to a previous positive reading (Positive Stop). A total of Twenty (20) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

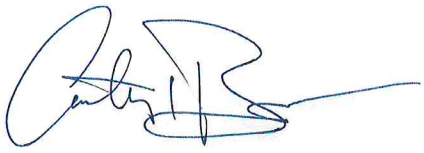
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01247

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/10/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 124

Client Number: 25-3107

Fax Number: 601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01247-001	1		White Powdery; Brown Fibrous; White Textured; Inhomogeneous	NAD	25% Cellulose 1% Fibrous Glass 74% Non-Fibrous
25-01-01247-002	2		White Powdery; Brown Fibrous; White Textured; Inhomogeneous	NAD	25% Cellulose 2% Fibrous Glass 73% Non-Fibrous
25-01-01247-003	3		White Textured; Tan Paint-Like; Inhomogeneous	NAD	2% Cellulose 98% Non-Fibrous
25-01-01247-004	4		White Textured; Tan Paint-Like; Inhomogeneous	NAD	2% Cellulose 98% Non-Fibrous
25-01-01247-005	5		White Textured; Tan Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01247
Project/Test Address: Camps Shelby YCA Building 124

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01247-006A	6	Cove Base	Gray Vinyl; Homogeneous	NAD	100% Non-Fibrous
25-01-01247-006B	6	Mastic	Beige Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01247-007A	7	Cove Base	Gray Vinyl; Homogeneous	NAD	100% Non-Fibrous
25-01-01247-007B	7	Mastic	Beige Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01247-008A	8	Leveling Comp.	White Granular; Homogeneous	NAD	100% Non-Fibrous
25-01-01247-008B	8	Mastic I	Green Adhesive; Homogeneous	NAD	1% Synthetic 99% Non-Fibrous
25-01-01247-008C	8	Mastic II	Tan Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01247-009A	9	Leveling Comp.	White Granular; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01247
Project/Test Address: Camps Shelby YCA Building 124

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01247-009B	9	Mastic I	Green Adhesive; Homogeneous	NAD	2% Synthetic 98% Non-Fibrous
25-01-01247-009C	9	Mastic II	Tan Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01247-010	10		White Pliable; Brown Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01247-011	11		White Pliable; Brown Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01247-012	12		White Brittle; White Paint-Like; White Paint-Like; Inhomogeneous	NAD	1% Talc 99% Non-Fibrous
25-01-01247-013A	13	Caulk	White Pliable; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01247-013B	13	Other *	Brown Granular; Homogeneous	NAD	100% Non-Fibrous
*Granular Material					
25-01-01247-014	14		Gray Cementitious Fibrous; Beige Paint-Like; Inhomogeneous	15% Chrysotile	85% Non-Fibrous
			Total Asbestos:	**15%**	

Chrysotile present throughout sample

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01247
Project/Test Address: Camps Shelby YCA Building 124

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01247-015	15			Did Not Analyze (Positive Stop)	

QC Sample: 100-M12014-2
QC Blank: SRM 1866 Fiberglass
Reporting Limit: 1% Asbestos
Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020
Analyst: Kathy Fletcher

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 124		
PO Number	NA	Collected By	Tony Bryant

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/17/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Cove Base
7	7		X		X										"
8	8				X										Carpet Glue
9	9		X		X										"
10	10				X										Door Caulk
11	11		X		X										"
12	12				X										Window Caulk
13	13		X		X										"
14	14				X										Transite
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By:

Signature:

Date: 1.9.25 Time: 103 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01247

Due Date: 01/16/2025 (Thursday) AE

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010
RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

Chief, Asbestos & Lead Branch

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:

Address

City:	State:	Zip:	County:

Site Location:	Tel:

Building Size	# of Floors:	Age in Years:

Present Use:	Prior Use:

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:

Address:

City:	State:	Zip:

Contact:	Tel:

ASBESTOS REMOVAL CONTRACTOR:

Address:

City:	State:	Zip:

Contact:	Tel:

Certification Number:	Expiration Date:

OTHER OPERATOR:

Address:

City:	State:	Zip:

Contact:	Tel:

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:

Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 125
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 18, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Carpet Glue	Yellow	Floors
Cove Base	Brown	Walls
Window Caulk	Caulk	Windows
Door Caulk	White	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. Two (2) samples were double layered. One sample was not read due to a previous positive reading (Positive Stop). A total of Sixteen (16) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

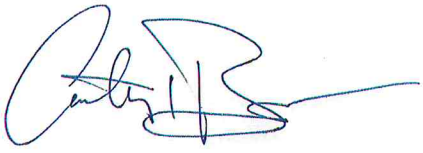
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01249

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 125

Client Number: 25-3107

Fax Number: 601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01249-001	1		Off-White/White Brittle; Tan Fibrous; Beige Pliable to Brittle; Inhomogeneous	NAD	25% Cellulose 3% Fibrous Glass 72% Non-Fibrous
25-01-01249-002	2		Off-White/White Brittle; Tan Fibrous; Beige Pliable to Brittle; Inhomogeneous	NAD	12% Cellulose 5% Fibrous Glass 83% Non-Fibrous
25-01-01249-003	3		White Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01249-004	4		White Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01249-005	5		White Brittle; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01249
Project/Test Address: Camps Shelby YCA Building 125

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01249-006A	6	Cove Base	Brown Vinyl-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01249-006B	6	Mastic	Pale Tan to Dark Gray Adhesive; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous
25-01-01249-007A	7	Cove Base	Brown Vinyl-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01249-007B	7	Mastic	Pale Tan to Dark Gray Adhesive; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous
25-01-01249-008	8		Yellow Adhesive; Homogeneous	NAD	3% Cellulose 97% Non-Fibrous
25-01-01249-009	9		Yellow Adhesive; Homogeneous	NAD	4% Cellulose 96% Non-Fibrous
25-01-01249-010	10		White Pliable; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous
25-01-01249-011	11		White Pliable; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01249

Project/Test Address: Camps Shelby YCA Building 125

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01249-012	12		Off-White Brittle; Homogeneous	NAD	4% Talc 96% Non-Fibrous
25-01-01249-013	13		Off-White Brittle; Homogeneous	NAD	3% Talc 97% Non-Fibrous
25-01-01249-014	14		Pale Gray/Pale Green Brittle; Inhomogeneous	20% Chrysotile	80% Non-Fibrous
			Total Asbestos:	**20%**	
Chrysotile present throughout sample.					
25-01-01249-015	15			Did Not Analyze (Positive Stop)	

QC Sample: 92-M12022-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Mark Case

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 125		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/18/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Cove Base
7	7		X		X										"
8	8				X										Carpet Glue
9	9		X		X										"
10	10				X										Door Caulk
11	11		X		X										"
12	12				X										Window Caulk
13	13		X		X										"
14	14				X										Transite
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: EC CHRISTMAS

Signature:

Date: 1,9,25 Time: 105 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01249

Due Date: 01/16/2025 (Thursday) AE

1 5PM MSE

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

Chief, Asbestos & Lead Branch

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

Chief, Asbestos & Lead Branch

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:		Expiration Date:	
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 126
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 18, 2024 with follow up samples collected on February 4, 2025.

The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Floor Coating	Gray	Floor - Bath
Window Caulk	Caulk	Windows
Door Caulk	White	Doors
Cement Siding	Transite & Lap (Newer)	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Seventeen (17) samples were collected and analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

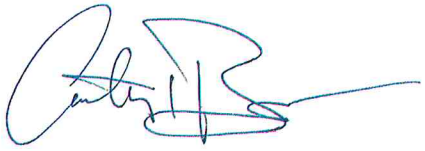
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01180

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 126

Client Number:
25-3107

Laboratory Results

Fax Number:
601-264-5344

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01180-001	1	--	Gray Powdery; White Chalky; Brown Fibrous; Inhomogenous	NAD	18% Cellulose 82% Non-Fibrous
25-01-01180-002	2	--	Gray Powdery; White Chalky; Brown Fibrous; Inhomogenous	NAD	20% Cellulose 80% Non-Fibrous
25-01-01180-003	3	--	White Chalky; Cream Fibrous; Paint; Inhomogenous	NAD	8% Cellulose 92% Non-Fibrous
25-01-01180-004	4	--	White Chalky; Cream Paint; Inhomogenous	NAD	2% Cellulose 98% Non-Fibrous
25-01-01180-005	5	--	White Chalky; Cream Fibrous; Paint; Inhomogenous	NAD	8% Cellulose 92% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01180

Project/Test Address: Camps Shelby YCA Building 126

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01180-006	6	--	Gray Brittle; Cementitious Granular; Homogenous	NAD	100% Non-Fibrous
25-01-01180-007	7	--	Gray Brittle; Cementitious Granular; Homogenous	NAD	100% Non-Fibrous
25-01-01180-008	8	--	Dark Brown/Cream Pliable; Rubbery; Inhomogenous	NAD	100% Non-Fibrous
25-01-01180-009	9	--	Dark Brown/White Pliable; Rubbery; Inhomogenous	NAD	100% Non-Fibrous
25-01-01180-010	10	--	White Pliable; Chalky; Off-White Paint; Inhomogenous	NAD	100% Non-Fibrous
25-01-01180-011	11	--	White Pliable; Chalky; Off-White Paint; Inhomogenous	NAD	100% Non-Fibrous
25-01-01180-012	12	--	Gray Cementitious; Fibrous; White Chalky; Off-White Paint; Inhomogenous	NAD	12% Cellulose 88% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01180

Project/Test Address: Camps Shelby YCA Building 126

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01180-013	13	--	Gray Cementitious; Fibrous; White Chalky; Off-White Paint; Inhomogenous	NAD	12% Cellulose 88% Non-Fibrous
25-01-01180-014	14	--	Gray Cementitious; Fibrous; White Chalky; Off-White Paint; Inhomogenous	NAD	8% Cellulose 92% Non-Fibrous
25-01-01180-015	15	--	Gray Cementitious; Fibrous; White Chalky; Off-White Paint; Inhomogenous	NAD	8% Cellulose 92% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01180

Project/Test Address: Camps Shelby YCA Building 126

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 94-M12018-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Kay Harris

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 126		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/18/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Bathroom Floor
7	7		X		X										"
8	8				X										Door Caulk
9	9		X		X										"
10	10				X										Window Caulk
11	11		X		X										"
12	12				X										Transite S
13	13		X		X										"
14	14				X										Cement Siding (new)
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature: TB

LAB USE ONLY – BELOW THIS LINE

Received By: E CHRISTMAS

Signature:

Date: 1/9/25 Time: 1156 (X) AM ☐ PM

☐ Portal Contact Added

25-01-01180

Due Date:
01/16/2025
(Thursday)
AE

15pm KMH

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010
RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-02-00838

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 02/06/2025
Analyzed Date: 02/06/2025
Reported Date: 02/06/2025

Project/Test Address: Camp Shelby YCA Building 126; Follow Up Transite

Client Number:
25-3107

Fax Number:
601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-02-00838-001	1		Beige Paint-Like; Gray Cementitious Fibrous; Inhomogeneous	16% Chrysotile	84% Non-Fibrous
			Total Asbestos:	**16%**	
Chrysotile present in cementitious fibrous material.					
25-02-00838-002	2		Beige Paint-Like; Gray Cementitious Fibrous; Inhomogeneous	16% Chrysotile	84% Non-Fibrous
			Total Asbestos:	**16%**	
Chrysotile present in cementitious fibrous material.					

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-02-00838

Project/Test Address: Camp Shelby YCA Building 126; Follow Up Transite

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 91-M22022-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Ken Cheng

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camp Shelby YCA Building 126 - Follow up Transite		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: ○ 5 Day ○ 3 Day ◉ 2 Day ○ 1 Day ○ Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			02/04/2025	X										Transite
2	2				X										"
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															

Released By: Tony Bryant Date: 2/5/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: J Sanders

Signature:

Date: 2/6/25 Time: 10:24 ☒ AM ☐ PM

☐ Portal Contact Added

25-02-00838

Due Date: 02/10/2025 (Monday) AE

VC 2025

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010
RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

Chief, Asbestos & Lead Branch

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:

Address

City:	State:	Zip:	County:

Site Location:	Tel:

Building Size	# of Floors:	Age in Years:

Present Use:	Prior Use:

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:

Address:

City:	State:	Zip:

Contact:	Tel:

ASBESTOS REMOVAL CONTRACTOR:

Address:

City:	State:	Zip:

Contact:	Tel:

Certification Number:	Expiration Date:

OTHER OPERATOR:

Address:

City:	State:	Zip:

Contact:	Tel:

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:

Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 127
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 18, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Floor Coating	Gray	Floor - Bath
Window Caulk	Caulk	Windows
Door Caulk	White	Doors
Cement Siding	Transite & Lap (Newer)	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. Two samples were double layered. One sample was not read due to previous positive result (positive stop). A total of sixteen (16) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

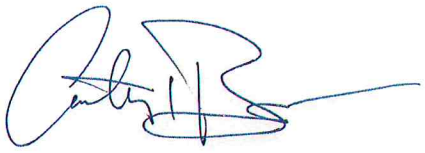
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01242

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/14/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 127

Client Number:
25-3107

Fax Number:
601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01242-001	1		White Powdery; Brown Fibrous; White Chalky; Inhomogeneous	NAD	25% Cellulose 75% Non-Fibrous
25-01-01242-002	2		White Powdery; Brown Fibrous; White Chalky; Inhomogeneous	NAD	45% Cellulose 55% Non-Fibrous
25-01-01242-003	3		White Chalky; Tan Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01242-004	4		White Chalky; Tan Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01242-005	5		White Chalky; Tan Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01242

Project/Test Address: Camps Shelby YCA Building 127

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01242-006	6		Gray Brittle Granular Paint-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01242-007	7		Gray/White bbi Granular Paint-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01242-008	8		White Pliable; Gray Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01242-009	9		White Pliable; Gray Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01242-010	10		White/Clear Pliable; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01242-011	11		White Pliable; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01242-012	12		Gray Cementitious Fibrous; Beige Paint-Like; Inhomogeneous	15% Chrysotile	85% Non-Fibrous
			Total Asbestos:	**15%**	
Chrysotile present throughout sample					
25-01-01242-013	13			Did Not Analyze (Positive Stop)	

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01242
Project/Test Address: Camps Shelby YCA Building 127

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01242-014A	14	Other *	Beige Cementitious Fibrous; Beige Paint-Like; Inhomogeneous	NAD	30% Cellulose 70% Non-Fibrous
*Cement Siding					
25-01-01242-014B	14	Caulk	White Pliable; Homogeneous	NAD	100% Non-Fibrous
25-01-01242-015A	15	Other *	Beige Cementitious Fibrous; Homogeneous	NAD	30% Cellulose 70% Non-Fibrous
*Cement Siding					
25-01-01242-015B	15	Caulk	White Pliable; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01242
Project/Test Address: Camps Shelby YCA Building 127

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 92-M12022-4
QC Blank: SRM 1866 Fiberglass
Reporting Limit: 1% Asbestos
Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020
Analyst: Kathy Fletcher

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 127		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

[ ] PLM New York Protocol [ ] PLM New Jersey Protocol [ ] PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/18/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Bathroom Floor
7	7		X		X										"
8	8				X										Door Caulk
9	9		X		X										"
10	10				X										Window Caulk
11	11		X		X										"
12	12				X										Transite S
13	13		X		X										"
14	14				X										Cement Siding (new)
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: ELCHRISTMAS

Signature:

Date: 1/9/25 Time: 1254 [ ] AM [X] PM

[ ] Portal Contact Added

25-01-01242

Due Date:
01/16/2025
(Thursday)
AE

KF

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

Chief, Asbestos & Lead Branch

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:	Expiration Date:		
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 128
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 19, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Floor Coating	Gray	Floor - Bath
Window Caulk	Caulk	Windows
Door Caulk	Gray	Doors
Cement Siding	Transite & Lap (newer)	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. One sample was not read due to previous positive result (positive stop). A total of fourteen (14) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

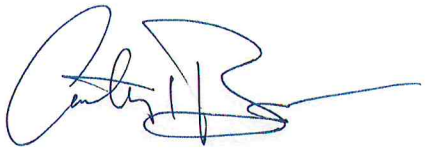
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01235

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 128

Client Number:
25-3107

Fax Number:
601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01235-001	1	--	Gray/White Chalky; Brown Fibrous; White Paint; Inhomogeneous	NAD	25% Cellulose 3% Fibrous Glass 72% Non-Fibrous
25-01-01235-002	2	--	Gray/White Chalky; Brown Fibrous; White Paint; Inhomogeneous	NAD	18% Cellulose 3% Fibrous Glass 79% Non-Fibrous
25-01-01235-003	3	--	White Chalky; White/Beige Paint; Inhomogeneous	NAD	1% Cellulose 99% Non-Fibrous
25-01-01235-004	4	--	White Chalky; White/Beige Paint; Inhomogeneous	NAD	2% Cellulose 98% Non-Fibrous
25-01-01235-005	5	--	White Chalky; White/Beige Paint; Inhomogeneous	NAD	1% Cellulose 99% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01235
Project/Test Address: Camps Shelby YCA Building 128

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01235-006	6	--	Gray/Black/White Paint-like; Inhomogeneous	NAD	100% Non-Fibrous
Unable to cleanly separate materials					
25-01-01235-007	7	--	Gray/Black/White Paint-like; Inhomogeneous	NAD	100% Non-Fibrous
Unable to cleanly separate materials					
25-01-01235-008	8	--	Brown Rubbery; Beige Paint; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01235-009	9	--	Brown Rubbery; Beige Paint; Inhomogeneous	NAD	1% Cellulose 99% Non-Fibrous
25-01-01235-010	10	--	White Rubbery; Off-White Paint; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01235-011	11	--	White Rubbery; Off-White Paint; Inhomogeneous	NAD	1% Cellulose 99% Non-Fibrous
25-01-01235-012	12	--	Gray Cementitious; Off-White Paint; Inhomogeneous	20% Chrysotile	80% Non-Fibrous
			Total Asbestos:	**20%**	
Chrysotile present throughout sample					
25-01-01235-013	13	--		Did Not Analyze (Positive Stop)	

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01235

Project/Test Address: Camps Shelby YCA Building 128

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01235-014	14	--	Gray Fibrous-like; Off-White Paint; Inhomogeneous	NAD	45% Cellulose 55% Non-Fibrous
25-01-01235-015	15	--	Gray Fibrous-like; Off-White Paint; Inhomogeneous	NAD	48% Cellulose 52% Non-Fibrous

QC Sample: 92-M12022-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Joey Rust

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 128		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/19/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Bathroom Flooring
7	7		X		X										"
8	8				X										Door Caulking
9	9		X		X										"
10	10				X										Window Caulking
11	11		X		X										"
12	12				X										Transite Gable Ends
13	13		X		X										"
14	14				X										Cement Gable (new)
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: E CHRISTMAS

Signature:

Date: 1/9/25 Time: 1245 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01235

Due Date:
01/16/2025
(Thursday)
AE

ISPlm JR

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

40693 LIC20240003

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:

Address

City:	State:	Zip:	County:

Site Location:	Tel:

Building Size	# of Floors:	Age in Years:

Present Use:	Prior Use:

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:

Address:

City:	State:	Zip:

Contact:	Tel:

ASBESTOS REMOVAL CONTRACTOR:

Address:

City:	State:	Zip:

Contact:	Tel:

Certification Number:	Expiration Date:

OTHER OPERATOR:

Address:

City:	State:	Zip:

Contact:	Tel:

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:

Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 129
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 18, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Floor Coating / Glue	Glue	Floors
Floor Covering	Black / White Vinyl	Floor - Bath
Window Caulk	Caulk	Windows
Door Caulk	Gray	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. One sample was not read due to previous positive result (positive stop). A total of fourteen (14) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

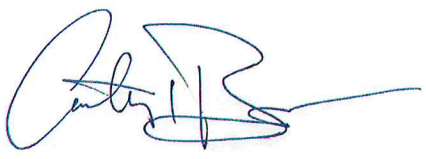
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01213

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/10/2025
Reported Date: 01/13/2025

Project/Test Address: Camps Shelby YCA Building 129

Client Number: 25-3107

Fax Number: 601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01213-001	1	--	Gray Powdery; White Granular; Brown Fibrous; Inhomogeneous	NAD	32% Cellulose 68% Non-Fibrous
25-01-01213-002	2	--	Gray Powdery; White Granular; Brown Fibrous; Inhomogeneous	NAD	32% Cellulose 68% Non-Fibrous
25-01-01213-003	3	--	White Granular; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-004	4	--	White Granular; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-005	5	--	White Granular; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01213

Project/Test Address: Camps Shelby YCA Building 129

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01213-006	6	--	Tan/Red/Black Granular; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-007	7	--	Tan/Red/Black Granular; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-008	8	--	White/Black Vinyl; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-009	9	--	White/Black Vinyl; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-010	10	--	White Pliable; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-011	11	--	White Pliable; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-012	12	--	Tan Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-013	13	--	Tan Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01213-014	14	--	Gray Cementitious; Homogeneous	18% Chrysotile	82% Non-Fibrous
			Total Asbestos:	**18%**	

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01213

Project/Test Address: Camps Shelby YCA Building 129

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01213-015	15	--		Did Not Analyze (Positive Stop)	

QC Sample: 97-M22013-2

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Sami Hosn

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 129		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/18/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Floor Covering (glue)
7	7		X		X										"
8	8				X										Bathroom Floor
9	9		X		X										"
10	10				X										Door Caulk
11	11		X		X										"
12	12				X										Window Caulk
13	13		X		X										"
14	14				X										Transite Sidng
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: E CHRISTMAS

Signature:

Date: 1/9/25 Time: 1221 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01213

Due Date:
01/16/2025
(Thursday)
AE

15 PLM

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

Chief, Asbestos & Lead Branch

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

Chief, Asbestos & Lead Branch

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:

Address

City:	State:	Zip:	County:

Site Location:	Tel:

Building Size	# of Floors:	Age in Years:

Present Use:	Prior Use:

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:

Address:

City:	State:	Zip:

Contact:	Tel:

ASBESTOS REMOVAL CONTRACTOR:

Address:

City:	State:	Zip:

Contact:	Tel:

Certification Number:	Expiration Date:

OTHER OPERATOR:

Address:

City:	State:	Zip:

Contact:	Tel:

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:

Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City: | State: | Zip:

Contact Person: | Tel:

WASTE TRANSPORTER #2

Name:

Address:

City: | State: | Zip:

Contact Person: | Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City: | State: | Zip:

Contact Person: | Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name: | Title:

Authority:

Date of Order (MM/DD/YY): | Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name | (Signature of Owner/Operator) | (Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name | (Signature of Owner/Operator) | (Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 130 CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 18, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Floor Coating	Gray	Floor - Bath
Window Caulk	Caulk	Windows
Door Caulk	Black / Beige	Doors
Cement Siding	Transite & Lap (Newer)	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. One sample was not read due to previous positive result (positive stop). A total of fourteen (14) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01205

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/15/2025

Project/Test Address: Camps Shelby YCA Building 130

Client Number:
25-3107

Fax Number:
601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01205-001	1		White Paint-Like; Brown Fibrous; Gray/White Chalky; Inhomogenous	NAD	20% Cellulose 10% Fibrous Glass 70% Non-Fibrous
25-01-01205-002	2		White Paint-Like; Brown Fibrous; Gray/White Chalky; Inhomogenous	NAD	20% Cellulose 10% Fibrous Glass 70% Non-Fibrous
25-01-01205-003	3		White Paint-Like; White Chalky; Inhomogenous	NAD	100% Non-Fibrous
25-01-01205-004	4		White Paint-Like; White Chalky; Inhomogenous	NAD	100% Non-Fibrous
25-01-01205-005	5		White Paint-Like; White Chalky; Inhomogenous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01205

Project/Test Address: Camps Shelby YCA Building 130

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01205-006	6		Gray Paint-Like; Inhomogenous	NAD	100% Non-Fibrous
25-01-01205-007	7		Gray Paint-Like; Inhomogenous	NAD	100% Non-Fibrous
25-01-01205-008	8		Black Paint-Like; Beige Pliable; Inhomogenous	NAD	100% Non-Fibrous
25-01-01205-009	9		Black Paint-Like; Beige Pliable; Inhomogenous	NAD	100% Non-Fibrous
25-01-01205-010	10		White Paint-Like; Beige Pliable; Gray Soft; Inhomogenous	NAD	2% Talc 98% Non-Fibrous
25-01-01205-011	11		White Paint-Like; Beige Pliable; Gray Soft; Inhomogenous	NAD	2% Talc 98% Non-Fibrous
25-01-01205-012	12		White Paint-Like; Gray Cementitious Fibrous; Inhomogenous	18% Chrysotile	82% Non-Fibrous
			Total Asbestos:	**18%**	
Chrysotile present in the cementitious fibrous layer.					
25-01-01205-013	13			Did Not Analyze (Positive Stop)	

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01205

Project/Test Address: Camps Shelby YCA Building 130

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01205-014	14		Beige Paint-Like; Brown Fibrous; Inhomogenous	NAD	65% Cellulose 35% Non-Fibrous
25-01-01205-015	15		Beige Paint-Like; Brown Fibrous; Inhomogenous	NAD	65% Cellulose 35% Non-Fibrous

QC Sample: 94-M12018-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Ken Cheng

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 130		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM/AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/18/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Bathroom Floor
7	7		X		X										"
8	8				X										Door Caulk
9	9		X		X										"
10	10				X										Window Caulk
11	11		X		X										"
12	12				X										Transite
13	13		X		X										"
14	14				X										Fiber Siding (wood)
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: EL CHRISTMAS

Signature:

Date: 1, 9, 25 Time: 1219 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01205

Due Date: 01/16/2025 (Thursday) AE

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

Chief, Asbestos & Lead Branch

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:	Expiration Date:		
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 131
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 18, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Floor Coating	Gray	Floor - Bath
Window Caulk	Caulk	Windows
Door Caulk	Gray	Doors
Cement Siding	Transite & Lap (Newer)	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. One sample was not read due to previous positive result (positive stop). A total of fourteen (14) layers were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

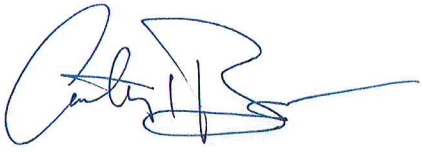
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01187

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 131

Client Number:
25-3107

Laboratory Results

Fax Number:
601-264-5344

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01187-001	1	--	White Textured Paint-Like; White Powery; Off-White/Brwon Fibrous; Gray Chalky; Inhomogeneous	NAD	25% Cellulose 5% Fibrous Glass 70% Non-Fibrous
25-01-01187-002	2	--	White Textured Paint-Like; White Powdery; Off-White/Brwon Fibrous; Gray Chalky; Inhomogeneous	NAD	25% Cellulose 5% Fibrous Glass 70% Non-Fibrous
25-01-01187-003	3	--	White Textured Paint-Like; White Powdery; Tan Adhesive; Off-White/Brown Fibrous; Gray Chalky; Inhomogeneous	NAD	25% Cellulose 5% Fibrous Glass 70% Non-Fibrous

Unable to separate mastic from other materials.

Client Number: 25-3107 **Report Number:** 25-01-01187
Project/Test Address: Camps Shelby YCA Building 131

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01187-004	4	--	White Textured Paint-Like; White Powdery; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01187-005	5	--	White Textured Paint-Like; White Powdery; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01187-006	6	--	Gray/White/Black Brittle-Like; Inhomogeneous	NAD	100% Non-Fibrous
Insufficient quantity of mastic for analysis.					
25-01-01187-007	7	--	Gray/White/Black Brittle-Like; Inhomogeneous	NAD	100% Non-Fibrous
Insufficient quantity of mastic for analysis.					
25-01-01187-008	8	--	Gray/Brown Paint-Like; White Pliable; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01187-009	9	--	Gray/Brown Paint-Like; White Pliable; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01187-010	10	--	White Paint-Like; Off-White Brittle-Like; Inhomogeneous	NAD	2% Talc 98% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01187

Project/Test Address: Camps Shelby YCA Building 131

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01187-011	11	--	White Paint-Like; Off-White Brittle-Like; Inhomogeneous	NAD	2% Talc 98% Non-Fibrous
25-01-01187-012	12	--	White/Green Paint-Like; Gray Cementitious; Inhomogeneous	18% Chrysotile	82% Non-Fibrous
			Total Asbestos:	**18%**	
Chrysotile present throughout sample.					
25-01-01187-013	13	--		Did Not Analyze (Positive Stop)	
25-01-01187-014	14	--	White/Yellow Paint-Like; Gray Cementitious; Inhomogeneous	NAD	25% Cellulose 75% Non-Fibrous
25-01-01187-015	15	--	White/Yellow Paint-Like; Gray Cementitious; Inhomogeneous	NAD	25% Cellulose 75% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01187

Project/Test Address: Camps Shelby YCA Building 131

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 91-M22022-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Keleigh King

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 131		
PO Number	NA	Collected By	Kevin Mitchell

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

[ ] PLM New York Protocol [ ] PLM New Jersey Protocol [ ] PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/18/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Bathroom Floor
7	7		X		X										"
8	8				X										Door Caulk
9	9		X		X										"
10	10				X										Window Caulk
11	11		X		X										"
12	12				X										Transite
13	13		X		X										"
14	14				X										Cement Siding (new)
15	15		X		X										

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – ~~BELOW~~ THIS LINE

Received By: EC MERRISTMAS

Signature:

Date: 1/9/25 Time: 1159 [X] AM [ ] PM

[ ] Portal Contact Added

25-01-01187

Due Date: 01/16/2025 (Thursday)

AE

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

40693 LIC20240003

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:		Expiration Date:	
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 309
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 17, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling & Walls
Ceiling Texture	Skip Trowel	Ceiling
Window Glazing	Gray Putty	Windows
Cove Base / Glue	Black	Various
Vinyl Floor Tile / Mastic	Tan	Entry
Carpet Glue	Yellow	Throughout
Caulk	White Painted	Doors and Various
Cement Siding	New Lap Siding	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Seventeen (17) samples were collected. Four (4) samples were double layered. One (1) sample was not read due to a previous positive reading (Positive Stop). A total of Twenty (20) samples were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Window Glazing	All Windows

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

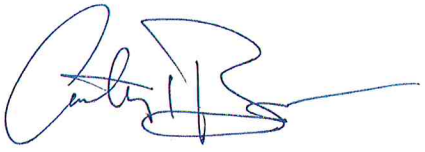
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01248

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/14/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 309

Client Number:
25-3107

Fax Number:
601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01248-001	1		White Powdery; Brown Fibrous; White Chalky; Inhomogeneous	NAD	5% Cellulose 95% Non-Fibrous
25-01-01248-002	2		White Powdery; Brown Fibrous; White Chalky; Inhomogeneous	NAD	5% Cellulose 95% Non-Fibrous
25-01-01248-003	3		White Chalky; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01248-004	4		White Chalky; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01248-005	5		White Chalky; White Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01248
Project/Test Address: Camps Shelby YCA Building 309

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01248-006	6		Gray Granular; Homogeneous	2% Chrysotile	98% Non-Fibrous
			Total Asbestos:	**2%**	
25-01-01248-007	7			Did Not Analyze (Positive Stop)	
25-01-01248-008A	8	Cove Base	Black Vinyl; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-008B	8	Mastic	Yellow Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-009A	9	Cove Base	Black Vinyl; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-009B	9	Mastic	Yellow Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-010A	10	Tile	Tan Vinyl; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-010B	10	Mastic	Yellow Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-011A	11	Tile	Tan Vinyl; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01248

Project/Test Address: Camps Shelby YCA Building 309

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01248-011B	11	Mastic	Yellow Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-012	12		Orange Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-013	13		Orange Adhesive; Homogeneous	NAD	100% Non-Fibrous
25-01-01248-014	14		White Pliable; Gray Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01248-015	15		White Pliable; Gray Paint-Like; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01248-016	16		Beige Granular Fibrous; Homogeneous	NAD	20% Cellulose 80% Non-Fibrous
25-01-01248-017	17		Beige Granular Fibrous; Homogeneous	NAD	20% Cellulose 80% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01248
Project/Test Address: Camps Shelby YCA Building 309

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials

QC Sample: 92-M12022-4
QC Blank: SRM 1866 Fiberglass
Reporting Limit: 1% Asbestos
Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020
Analyst: Kathy Fletcher

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 309		
PO Number	NA	Collected By	Tony Bryant

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/17/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										window glazing (AL)
7	7		X		X										"
8	8				X										Cove Base
9	9		X		X										"
10	10				X										VCT - Entry
11	11		X		X										"
12	12				X										Carpet Glue
13	13		X		X										"
14	14				X										Door Caulk
15	15		X		X										"

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: CHRISTMAS

Signature:

Date: 1/9/25 Time: 10H ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01248

Due Date: 01/16/2025 (Thursday)

KF AE

17 Plm

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Building 309

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
16	16				X										Gable Ends (new)
17	17		X		X										"
18															
19															
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42															
43															
44															
45															

Received By: E. Hipstmos

Signature:

EHS Order #: 61248

Date: 1, 9, 25 Time: 104pm AM PM

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

Chief, Asbestos & Lead Branch

40693 LIC20240003

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:		Expiration Date:	
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 323
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 17, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Window Caulk	Caulk	Windows
Cove Base / Glue	Brown	Walls
Carpet Glue	Yellow	Throughout
Door Caulk	White	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Fifteen (15) samples were collected. Two (2) samples were double layered. Three (3) samples were not read due to a previous positive reading (Positive Stop). A total of Twelve (12) samples were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

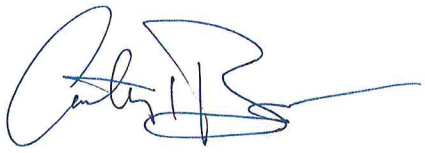
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
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If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01225

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/11/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 323

Client Number:
25-3107

Fax Number:
601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01225-001	1		Off-White/White Brittle; Tan Fibrous; Light Beige Pliable to Brittle; Inhomogeneous	NAD	22% Cellulose 78% Non-Fibrous
25-01-01225-002	2		Off-White/Pale Beige Brittle; Tan Fibrous; Light Beige Pliable to Brittle; Inhomogeneous	NAD	30% Cellulose 70% Non-Fibrous
25-01-01225-003	3		White Brittle; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous
25-01-01225-004	4		White Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01225-005	5		White Brittle; Homogeneous	NAD	1% Cellulose 99% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01225
Project/Test Address: Camps Shelby YCA Building 323

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01225-006A	6	Cove Base	Brown Vinyl-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01225-006B	6	Mastic	Pale Beige to Dark Brown-Gray Adhesive; Homogeneous	NAD	3% Cellulose 97% Non-Fibrous
25-01-01225-007A	7	Cove Base	Brown Vinyl-Like; Homogeneous	NAD	100% Non-Fibrous
25-01-01225-007B	7	Mastic	Pale Beige to Dark Brown-Gray Adhesive; Homogeneous	NAD	4% Cellulose 96% Non-Fibrous
25-01-01225-008	8		Yellow/Light Yellow Adhesive; Inhomogeneous	NAD	4% Cellulose 1% Synthetic 95% Non-Fibrous
25-01-01225-009	9		Yellow/Light Yellow Adhesive; Inhomogeneous	NAD	4% Cellulose 1% Synthetic 1% Hair 94% Non-Fibrous
25-01-01225-010	10		White Pliable to Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01225-011	11		White Pliable to Brittle; Homogeneous	NAD	100% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01225
Project/Test Address: Camps Shelby YCA Building 323

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01225-012	12		White Brittle; Homogeneous	NAD	3% Talc 97% Non-Fibrous
25-01-01225-013	13		Off-White Brittle; Homogeneous	NAD	3% Talc 97% Non-Fibrous
25-01-01225-014	14		Pale Gray Brittle; Homogeneous	18% Chrysotile	82% Non-Fibrous
			Total Asbestos:	**18%**	
25-01-01225-015	15			Did Not Analyze (Positive Stop)	

QC Sample: 91-M22022-4
QC Blank: SRM 1866 Fiberglass
Reporting Limit: 1% Asbestos
Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020
Analyst: Mark Case

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 323		
PO Number	NA	Collected By	Tony Bryant

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/17/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Cove Base
7	7		X		X										"
8	8				X										Carpet Glue
9	9		X		X										"
10	10				X										Door Caulk
11	11		X		X										"
12	12				X										Window Caulk
13	13		X		X										"
14	14				X										Transite
15	15		X		X										"

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: ELMR STMAS

Signature:

Date: 1,9,25 Time: 1232 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01225

Due Date:
01/16/2025
(Thursday)
AE

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality
Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector
Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

40693 LIC20240003

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

Chief, Asbestos & Lead Branch

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number
I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)			
II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)			
III. FACILITY DESCRIPTION (Include building name, number and floor or room number)			
Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		
IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)			
OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:		Expiration Date:	
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):			
WAS ASBESTOS PRESENT? (Yes/No):		Inspection Date:	
Inspector:	Certification Number:	Expiration Date:	
VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:			
VII. QUANTITY OF RACM TO BE REMOVED:			
Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):	
VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:			
Category I:		Category II:	
IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start:		Complete:	
X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start:		Complete:	

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 325
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 17, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Floor Coating	Epoxy	Floors
Window Caulk	Caulk	Windows
Door Caulk	Brown / White	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Thirteen (13) samples were collected. One sample was not read due to a previous positive reading (Positive Stop). A total of Twelve (12) samples were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

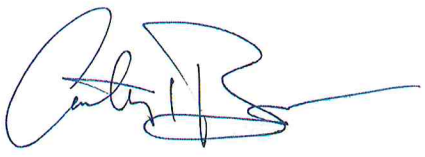
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01221

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/13/2025
Reported Date: 01/14/2025

Project/Test Address: Camps Shelby YCA Building 325

Client Number: 25-3107

Fax Number: 601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01221-001	1	--	Gray Powdery; Brown Fibrous; White Chalky; Inhomogenous	NAD	18% Cellulose 82% Non-Fibrous
25-01-01221-002	2	--	Gray Powdery; Brown Fibrous; White Chalky; Inhomogenous	NAD	18% Cellulose 82% Non-Fibrous
25-01-01221-003	3	--	White Chalky; Tan Paint; Brown Fibrous; Inhomogenous	NAD	10% Cellulose 90% Non-Fibrous
25-01-01221-004	4	--	White Chalky; Tan Paint; Brown Fibrous; Inhomogenous	NAD	10% Cellulose 90% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01221

Project/Test Address: Camps Shelby YCA Building 325

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01221-005	5	--	White Chalky; Tan Paint; Brown Fibrous; Inhomogenous	NAD	10% Cellulose 90% Non-Fibrous
25-01-01221-006	6	--	Gray Brittle; Homogenous	NAD	100% Non-Fibrous
25-01-01221-007	7	--	Gray Brittle; Homogenous	NAD	100% Non-Fibrous
25-01-01221-008	8	--	Dark Brown/White Pliable; Rubbery; Inhomogenous	NAD	100% Non-Fibrous
25-01-01221-009	9	--	Dark Brown/White Pliable; Rubbery; Inhomogenous	NAD	100% Non-Fibrous
25-01-01221-010	10	--	Off-White Brittle to Soft; Homogenous	NAD	2% Talc 98% Non-Fibrous
25-01-01221-011	11	--	Off-White Brittle to Soft; Homogenous	NAD	2% Talc 98% Non-Fibrous
25-01-01221-012	12	--	Gray Cementitious; Fibrous; Off-White Paint; Inhomogenous	15% Chrysotile	85% Non-Fibrous

Total Asbestos: 15%

Chrysotile present throughout.

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01221

Project/Test Address: Camps Shelby YCA Building 325

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01221-013	13	--		Did Not Analyze (Positive Stop)	

QC Sample: 94-M12018-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Kay Harris

Reviewed By Authorized Signatory: Melissa Kanode

Melissa Kanode
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 325		
PO Number	NA	Collected By	Tony Bryant

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/17/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Epoxy Floor
7	7		X		X										"
8	8				X										Door Caulk
9	9		X		X										"
10	10				X										Window Caulk
11	11		X		X										"
12	12				X										Transite
13	13		X		X										"
14															
15															

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: ECHRISTMAS

Signature:

Date: 1/9/25 Time: 1230 ☐ AM ☒ PM

☐ Portal Contact Added

25-01-01221

Due Date:
01/16/2025
(Thursday)
AE

BPM KMH

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

40693 LIC20240003

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

Chief, Asbestos & Lead Branch

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:		
Address:		
City:	State:	Zip:
Contact:		Tel:
ASBESTOS REMOVAL CONTRACTOR:		
Address:		
City:	State:	Zip:
Contact:		Tel:
Certification Number:	Expiration Date:	
OTHER OPERATOR:		
Address:		
City:	State:	Zip:
Contact:		Tel:

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

Specialty Abatement Services, Inc.

ASBESTOS INSPECTION REPORT

BUILDING 326
CAMP SHELBY, MS

260 Rawls Springs Loop Rd.
P. O. Box 15925
Hattiesburg, MS 39404-5925
601-264-5550
601-264-5344 Fax

Purpose of Inspection

The purpose of this inspection was to identify asbestos containing materials (ACM) according to NESHAP (National Emissions Standards for Hazardous Air Pollutants).

Identification of Suspect Materials

A sample collection was performed on December 17, 2024.
The following suspect materials were sampled:

Suspect Material	*Description*	*Location*
Drywall	Drywall with joint cmpd	Ceiling
Ceiling Texture	Skip Trowel	Ceiling
Floor Coating	Epoxy	Floors
Window Caulk	Caulk	Windows
Door Caulk	White	Doors
Cement Siding	Transite	Gables

Sampling Method

The method used to determine asbestos content was to take samples from the suspect materials, seal each sample in a polyethylene container with an appropriate label and send to the testing laboratory for analysis. Thirteen (13) samples were collected. Two samples were not read due to a previous positive reading (Positive Stop). A total of Eleven (11) samples were analyzed. These samples were sent to an independent laboratory for testing by Polarized Light Microscopy (PLM), EPA Method 600/R-93/116.

Laboratory Results

Detailed laboratory results are found in Appendix A of this report.

Findings and Recommendations

The following items are considered ACM (Asbestos Containing Material):

Material	*Location*
Window Caulk	Windows
Cement Siding (Transite)	Gable Ends

It is recommended that a MDEQ licensed contractor be contracted to remove any identified ACM prior to renovation or demolition.

Reporting Requirements

NESHAP requires that MDEQ be notified 10 working days prior to disturbing any asbestos containing material greater that 160 SF or 260 LF in quantity or the demolition of any building covered by the code (see 40 CFR 61 for exemptions). The results of this inspection should be included on the Renovation/ Demolition Notification Form. A copy of this form is provided in Appendix C at the end of this report.

Exclusions and Limitations

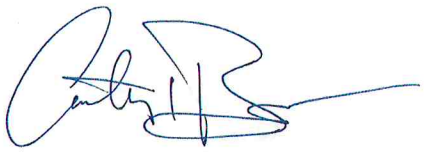
This inspection excluded any other buildings or areas not inspected or areas not accessible. No demolition or disassembly was performed during this inspection. The results of this inspection may not be considered to be a product endorsement by NVLAP or any agency of the U.S. Government.

This inspection was for the presence of any of the six major types of asbestos (Chrysotile, Amosite, Crocidolite, Anthophylite, Tremolite, and Actinolite).

Because the suspect materials were randomly sampled, individual locations may differ from the results of the overall sampling. Because of random sampling, if one sample is shown to contain asbestos, all similar materials not sampled must be considered to contain asbestos until sampled and proved otherwise. No demolition was performed to locate suspect materials. Suspect materials in inaccessible areas not observed or sampled should be assumed to be ACM until tested and proved otherwise.
This report applies only to samples analyzed or assumed to contain asbestos. The liability of Specialty Abatement Services, Inc. and Anthony Bryant is limited to the amount paid by the client for this report. The client assumes all liability for the further distribution of this report and its contents. By making such a distribution the clients agrees to hold Specialty Abatement Services, Inc. and Anthony Bryant harmless against all claims of persons so informed of the contents hereof.

Qualifications of Inspector

Anthony Bryant and Jimmy Kevin Mitchell are accredited as Inspectors through the State of Mississippi Department of Environmental Quality. They have successfully completed Environmental Protection Agency (EPA) approved training in asbestos inspection and removal, and participate in ongoing training offered by accredited associations. They are certified by the Mississippi Department of Environmental Quality to perform asbestos inspections. A copy of these certifications can be found in Appendix B at the end of this report.
If you should have any questions about this asbestos inspection, please contact Mr. Bryant at the letter head address and phone number.



Anthony Bryant , General Manager / Inspector - ABI-00001683
expiration 5/8/2025

Appendix A

Bulk Asbestos Sample Analysis Summary

EHS Laboratories
ENVIRONMENTAL HAZARDS SERVICES, LLC
7469 Whitepine Rd
North Chesterfield, VA 23237
Telephone: 800.347.4010

Asbestos Bulk Analysis Report

Report Number: 25-01-01179

Client: Specialty Abatement Services
P.O. Box 15925
Hattiesburg, MS 39404

Received Date: 01/09/2025
Analyzed Date: 01/14/2025, 01/15/2025
Reported Date: 01/15/2025

Project/Test Address: Camps Shelby YCA Building 326

Client Number: 25-3107

Fax Number: 601-264-5344

Laboratory Results

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01179-001	1		Tan Textured Paint-Like; White Powdery; Brown Fibrous; Gray Chalky; Inhomogeneous	NAD	15% Cellulose 85% Non-Fibrous
25-01-01179-002	2		Tan Textured Paint-Like; White Powdery; Brown Fibrous; Gray Chalky; Inhomogeneous	NAD	15% Cellulose 85% Non-Fibrous
25-01-01179-003	3		Tan Textured Paint-Like; White/Off-White Powdery; Inhomogeneous	NAD	100% Non-Fibrous
25-01-01179-004	4		Tan Textured Paint-Like; White Powdery; Brown Fibrous; Gray Chalky; Inhomogeneous	NAD	15% Cellulose 85% Non-Fibrous

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01179

Project/Test Address: Camps Shelby YCA Building 326

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01179-005	5		Tan Textured Paint-Like; White Powdery; Brown Fibrous; Gray Chalky; Inhomogeneous	NAD	15% Cellulose 85% Non-Fibrous
25-01-01179-006	6		Gray/White/Black Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01179-007	7		Gray/White/Black Brittle; Homogeneous	NAD	100% Non-Fibrous
25-01-01179-008	8		White Pliable; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous
25-01-01179-009	9		White Pliable; Homogeneous	NAD	2% Cellulose 98% Non-Fibrous
25-01-01179-010	10		Gray/Tan Brittle; Homogeneous	2% Chrysotile	98% Non-Fibrous
			Total Asbestos:	**2%**	
25-01-01179-011	11			Did Not Analyze (Positive Stop)	
25-01-01179-012	12		Gray Paint-Like; White Pliable; Green/Gray Cementitious; Inhomogeneous	15% Chrysotile	85% Non-Fibrous
			Total Asbestos:	**15%**	

Unable to cleanly separate materials

Environmental Hazards Services, L.L.C

Client Number: 25-3107 **Report Number:** 25-01-01179

Project/Test Address: Camps Shelby YCA Building 326

Lab Sample Number	Client Sample Number	Layer Type	Lab Gross Description	Asbestos	Other Materials
25-01-01179-013	13			Did Not Analyze (Positive Stop)	

QC Sample: 100-M12014-2, 91-M22022-4

QC Blank: SRM 1866 Fiberglass

Reporting Limit: 1% Asbestos

Method: EPA Method 600/R-93/116, EPA Method 600/M4-82-020

Analyst: Meredith Outlaw

Reviewed By Authorized Signatory: Tasha Eaddy

Tasha Eaddy
QA/QC Clerk

These results are based on a comparative visual estimate. The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Each distinct component in an inhomogeneous sample was analyzed separately and reported as a composite. Results represent the analysis of samples submitted by the client. Sample location, description, area, volume, etc., was provided by the client. This report cannot be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government. This report shall not be reproducec except in full, without the written consent of the Environmental Hazards Service, L.L.C. All information concerning sampling location, date, and time can be found on Chain-of-Custody. Environmental Hazards Services, L.L.C. does not perform any sample collection. . NVLAP #101882-0 VELAP 460172

Environmental Hazards Services, L.L.C. recommends reanalysis by point count (for more accurate quantification) or Transmission Electron Microscopy (TEM), (for enhanced detection capabilities) for materials regulated by EPA NESHAP (National Emission Standards for Hazardous Air Pollutants) and found to contain less than ten percent (<10%) asbestos by polarized light microscopy (PLM). Both services are available for an additional fee.

400 Point Count Analysis, where noted, performed per EPA Method 600/R-93/116 with a Reporting Limit of 0.25%.

LEGEND: NAD = no asbestos detected

ENVIRONMENTAL HAZARDS SERVICES, LLC

Asbestos Chain of Custody Form

Company Name	Specialty Abatement Services, Inc.	Account #	25-3107
Company Address	PO Box 15925	City/State/Zip	Hattiesburg, MS 39404
Phone	601-264-5550	Email	abryant900@comcast.net
Project Name/Test Address	Camps Shelby YCA Building 326		
PO Number	NA	Collected By	Tony Bryant

Turn-Around Time: (●) 5 Day ( ) 3 Day ( ) 2 Day ( ) 1 Day ( ) Same Day / Weekend - Must Call Ahead

☐ PLM New York Protocol ☐ PLM New Jersey Protocol ☐ PLM South Carolina Protocol

LAB NUMBER	Client Sample ID	Homogeneous Area	Positive Stop	Collection Date & Time	BULK				AIR						COMMENTS
					PLM	Point Count 400	Point Count 1000	TEM Bulk	PCM	TEM AHERA	NIOSH 7402	Time In Total Minutes	Flow Rate In L/Min	Volume In Total Liters	
1	1			12/17/2024	X										Ceiling SR w/Tex
2	2		X		X										"
3	3				X										Ceiling Tex
4	4		X		X										"
5	5		X		X										"
6	6				X										Epoxy Floor
7	7		X		X										"
8	8				X										Door Caulk
9	9		X		X										"
10	10				X										Window Caulk
11	11		X		X										"
12	12				X										Transite
13	13		X		X										"
14															
15															

Released By: Tony Bryant Date: 1/8/25 Time:

Signature:

LAB USE ONLY – BELOW THIS LINE

Received By: E CHRISTMAS

Signature:

Date: 1/9/25 Time: 1006 ☐ AM ☐ PM

☐ Portal Contact Added

25-01-01179

Due Date:
01/16/2025
(Thursday)
AE

3pm MO

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix B

Credentials

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Anthony I. Bryant

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00001683
Expiration Date: May 8th, 2025
Training Expires on May 8th, 2025

40693 LIC20240003

State of Mississippi

Department of Environmental Quality

Office of Pollution Control

Certificate of Licensure

In accordance with the Asbestos Abatement Accreditation and Certification Act,
Enacted as 1989 Mississippi Law, Chapter 505

Be it known that

Jimmy K Mitchell

Having submitted acceptable evidence of qualifications and
training and other appropriate information, is hereby granted this

Asbestos Inspector

Certification

Chief, Asbestos & Lead Branch

Certificate No.: ABI-00013137
Expiration Date: Nov 13th, 2025
Training Expires on Nov 13th, 2025

49459 LIC20240003

Appendix C

MDEQ Notification

MISSISSIPPI ASBESTOS DEMOLITION/RENOVATION NOTIFICATION FORM

Mail notification to: **MDEQ Asbestos and Lead Branch, 515 E. Amite Street, Jackson, MS 39201**

MDEQ Use Only: ☐Email ☐Mail ☐ Hand Delivery	Postmark (mail only)	Date Received	AI Number

I. Type of Notification (O=Original R=Revised C=Canceled A= Annual)

II. TYPE OF OPERATION (D=Demo O= Ordered Demo R=Renovation E=Emer. Renovation)

III. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg. Name:			
Address			
City:	State:	Zip:	County:
Site Location:		Tel:	
Building Size	# of Floors:	Age in Years:	
Present Use:	Prior Use:		

IV. FACILITY INFORMATION (Identify owner, asbestos removal contractor, and other operator)

OWNER NAME:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
ASBESTOS REMOVAL CONTRACTOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	
Certification Number:		Expiration Date:	
OTHER OPERATOR:			
Address:			
City:	State:	Zip:	
Contact:		Tel:	

V. WAS SITE INSPECTED TO DETERMINE PRESENCE OF ASBESTOS? (Yes/No):

WAS ASBESTOS PRESENT? (Yes/No):	Inspection Date:	
Inspector:	Certification Number:	Expiration Date:

VI. SUSPECT MATERIALS SAMPLED AND PROCEDURES USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

VII. QUANTITY OF RACM TO BE REMOVED:

Pipes (LN FT):	Surface Area (SQ FT):	Volume of Facility Components (CU FT):

VIII. QUANTITY OF NONFRIABLE ASBESTOS NOT REMOVED:

Category I:	Category II:

IX. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

X. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

XI. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XII. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION OR RENOVATION SITE:

XIII. WASTE TRANSPORTER #1

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

WASTE TRANSPORTER #2

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XIV. WASTE DISPOSAL SITE

Name:

Address:

City:	State:	Zip:
Contact Person:		Tel:

XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name:	Title:

Authority:

Date of Order (MM/DD/YY):	Date Ordered to Begin (MM/DD/YY):

XVI. FOR EMERGENCY RENOVATIONS:

Date and Hour of Emergency (MM/DD/YY):

Description of the sudden unexpected event:

Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASTESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER:

XVIII. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ONSITE DURING THE DEMOLITION OR RENOVATION, AND EVIDENCE THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS.

Type or Print Name	(Signature of Owner/Operator)	(Date)

XIX. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT:

Type or Print Name	(Signature of Owner/Operator)	(Date)

SECTION 03 30 53
INCIDENTAL CONCRETE

PART 1 GENERAL

1.01 GENERAL

A. The following specifications shall apply to any and all items of incidental work with Portland Cement with or without reinforcement, including such items as concrete piers to support cast iron pipe above ground, erosion control bulkheads or structures, cradles and encasement, blocking and the like.

B. All concrete used in the construction of this project shall comply with the requirements herein specified for its particular class and kind.

PART 2 PRODUCTS

2.01 PRODUCTS

A. All materials used in this work shall consist of Portland Cement, Sand, Gravel, and Clean Water.
   1. The cement used shall be domestic manufacture, either "Standard" of "high Early Strength" Portland Cement, which shall meet all the requirements of the current A.S.T.M. Specifications for the type used at the time it is incorporated in the work.
   2. The fine aggregate shall consist of clean, sharp sand, well graded from coarse to fine, consisting of hard, durable particles, free from coarse to fine, consisting of hard, durable particles, free from silt, salt or organic matter. It shall meet all the requirements of the A.S.T.M. Specifications C33, Paragraph 1, 2 and 3, and A.S.T.M. C-40.
   3. The coarse aggregate used shall consist of clean washed gravel, free from particles of wood or lumps of clay. Not more than 10% shall pass the No. 4 sieve, and it shall conform with the requirements of A.S.T.M. Specifications C33, Paragraph 5 to 8 inclusive.
   4. The water used for mixing concrete shall be clear, free from oil, salt, strong acid, alkali organic matter, and shall be approved by the Architect/Engineer.
   5. Reinforcing steel shall conform to the requirements of the "Standard Specifications for Billet-Steel Concrete Reinforcing Bars" of intermediate grade (Serial Designation: A 15-39) or the Standard Specifications for Rail-Steel Concrete Reinforcement Bars (Serial Designation; A-16-35) of the American Society for Testing Materials.

PART 3 EXECUTION

3.01 EXECUTION

A. All concrete materials shall be so handled and stored that they will not become damaged after delivery at the site. The cement shall be thoroughly protected from the weather, and the sand and gravel shall be so stored that they will not become intermixed, and so as to prevent the admixture with either of any foreign materials. Reinforcing steel shall be so stored that it will not come in contact with the ground, shall be protected from the weather, and shall be clean and free from rust when incorporated in the work.

B. Concrete materials shall be mixed in the proportions and in a manner that will produce concrete of the class and strength specified to its use.

C. Unless indicated otherwise, all concrete shall be Class A which shall have a crushing strength of not less than 3,000 pounds per square inch at 28 days, as determined by the Standard Methods for testing concrete materials.

D. Class B concrete, which shall have a crushing strength of not less than 2,500 pounds per square inch at 28 days, and shall be used for erosion control bulkheads and blocking pipelines at bends to prevent blowing off under pressure.

E. Class C concrete which shall have a crushing strength of not less than 2,000 pounds per square inch at 28 days, shall be used for cradles and encasement and may be used for backfill below grade.

F. After concrete has been properly mixed, it shall be deposited in the forms in reasonably uniform layers and in such manner as to prevent segregation of the aggregates. It shall be thoroughly spaded or puddled while being placed to insure maximum density and prevent honey-combing.

G. No concrete shall be deposited when the air temperature is less than 40 degrees F. No material shall be deposited on a frozen sub-grade, nor shall any frozen moisture or material be incorporated into the mixture.

H. No concrete shall be placed in water, nor shall water be permitted to rise on it or to run over it within a period of 24 hours after it has been placed.

I. Unsatisfactory concrete, resulting from failure to observe the above requirements or otherwise, shall be removed and replaced as directed by the Architect/Engineer.

END OF SECTION

SECTION 04 20 00
UNIT MASONRY ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete Block.

B. Mortar and grout.

C. Reinforcement and anchorage.

D. Lintels.

E. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022.

B. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019.

C. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2022.

D. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

E. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2022.

F. ASTM C91/C91M - Standard Specification for Masonry Cement; 2023.

G. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2022.

H. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2022c.

I. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2018.

J. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

K. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2018.

L. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.

M. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2018.

N. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

O. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength; 2022.

P. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry; 2020.

Q. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022.

R. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

B. Consult other trades in advance and make provisions for installation of their work in order to avoid cutting and patching. Build in work specified under other sections of the Contract

Documents as the work progresses. Provide chases and openings required by the Contract Documents.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar.

C. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

D. Maintenance Materials: Furnish the following for Mississippi Military Department's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. General: Contractor to provide adequate numbers of skilled masons who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper installation and performance of the product(s) specified in this Section.

C. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum ten years of documented experience.

D. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials including staining. Deliver any masonry on pallets in original condition until ready for use. Units shall be delivered dry and Contractor shall maintain necessary protection to prevent wetting of delivered untis prior to use.

B. Do NOT store ANY CMU on or near red dirt or any staining substance.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
   2. Nonloadbearing Units: ASTM C129.
      a. Hollow block, as indicated.
      b. Lightweight.

2.02 MORTAR AND GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M, Type N.

B. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
   1. Not more than 0.60 percent alkali.
   2. Hydrated Lime: ASTM C207, Type S.
   3. Mortar Aggregate: ASTM C144.
   4. Grout Aggregate: ASTM C404.

C. Water: Clean and potable.

2.03 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:
   1. Dur-O-Wal: www.dur-o-wal.com.

2. Substitutions; See Section 01 63 00 - Substitutions and Product Options.

B. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.

C. Single Wythe Joint Reinforcement: ASTM A951/A951M.
1. Type: Truss or ladder.
2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.
3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

2.04 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
1. Manufacturers:
a. Dur-O-Wal: www.dur-o-wal.com.
b. Hohmann & Barnard, Inc; #VS-Standard: www.h-b.com.
c. Substitutions; See Section 01 63 00 - Substitutions and Product Options.

B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; as required wide x by maximum lengths available.
1. Manufacturers:
a. Dur-O-Wal: www.dur-o-wal.com.
b. Substitutions; See Section 01 63 00 - Substitutions and Product Options.

C. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.05 MORTAR AND GROUT MIXING

A. Mortar and Grout Mixes to first follow requirements in Structural Drawings and Section 04 22 00 for loadbearing walls and as listed below for other conditions.

B. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
1. Masonry below grade and in contact with earth: Type S.
2. Exterior, non-loadbearing masonry: Type N.
3. Interior, loadbearing masonry: Type N.
4. Interior, non-loadbearing masonry: Type N.

C. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

D. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

E. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

C. Adjacent Surface Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.

B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units (any and all specified herein):
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

D. See Drawings for any required special coursing.

3.05 PLACING AND BONDING

A. Rain Protection: At the end of day, the freshly laid architectural block walls must be covered with plastic having a 18" overlap on each side of the wall to prevent water intrusion. All walls are to remain covered until such time as the roofing system has been attached to the walls.

B. Lighting: Provide adequate lighting for masonry work by placing all lighting a reasonable distance from the wall for even illumination. Do not use trough lighting.

C. Cutting: Make all unit cuts, including those for bonding, holes, boxes, etc. with motor-driven masonry saws, using either an abrasive or diamond blade. Cut neatly and locate for best appearance. Consult with Architect where unsure about best appearance.

D. Install all reinforcing steel as indicated in the Structural Drawings. Fill cells in not greater than four foot lifts.

E. Do NOT wet CMU immediately before or during installation.

F. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

G. Lay hollow masonry units with face shell bedding on head and bed joints.

H. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

I. Remove excess mortar and mortar smears as work progresses.

J. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

K. Interlock intersections and external corners, except for units laid in stack bond.

L. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

M. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

N. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

O. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.

P. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.06 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

3.07 LINTELS

A. Install all lintels over openings as required in the Structural Drawings (any size).

B. Install loose steel lintels over openings in veneer work only; See Structural Drawings for loose steel lintel sizes required. All loose steel lintels are to be galvanized and painted with paint as specified in 09 90 00 Painting and Coating utilizing proper paint for the material.

3.08 GROUTED COMPONENTS

A. All Bond Beams and Masonry Columns are to be reinforced as shown in the Structural Drawings; where differences exist between these specs and the Structural Drawings/Specs regarding load bearing components, the Structural Drawings/Specs shall take precedent.

B. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.09 CONTROL AND EXPANSION JOINTS

A. Locations: Where shown in the Drawings; If not shown, locate within the maximum spacing at logical points near corners, openings, weak points, intersections, columns and joints in the building structure. **All proposed control joint locations shall be submitted to the Architect for review and approval.**
   1. Maximum Spacing: 50'-0" (straight runs).
   2. Spacing Near Corners: Locate a control joint within one-half the maximum spacing in both directions (less than 25'-0" from the corner).

B. Do not continue horizontal joint reinforcement through control or expansion joints.

C. When Drawings do not detail control joints: Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.

D. Install preformed control joint device in continuous lengths when required by Drawings. Seal butt and corner joints in accordance with manufacturer's instructions.

E. Size control joint in accordance with Section 07 90 05 for sealant performance.

F. Form expansion joint as detailed when the project requires expansion joints; see Drawings.

3.10 BUILT-IN WORK

A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.11 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.12 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.13 CLEANING

A. Good workmanship and job housekeeping practices shall be used to minimize the need for cleaning the masonry. Masonry walls shall be dry brushed at the end of each day's work and also after final pointing and shall be left clean and free from mortar droppings. Protect the base of the wall from mud splashes and mortar droppings. Protect the wall by setting scaffolds so that mortar is not deflected onto the wall from mud splashes and mortar droppings, and at the end of each day set the scaffolding boards so that they do not deflect rainfall onto newly laid masonry. The masonry laying technique shall be such that mortar does not run down the face of the wall, or smear the masonry face, after the joints are tooled. Cut off mortar tailings with the trowel and brush excess mortar burrs and dust from the face of the masonry.

B. Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Remove construction debris from protected site and leagally dispose of debris.

C. Remove excess mortar and mortar droppings.

D. Replace defective mortar. Match adjacent work.

E. Clean soiled surfaces with cleaning solution as needed and by using technique outlined above.

F. Use non-metallic tools in cleaning operations.

3.14 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop and site fabricated steel and aluminum items.

B. All misc. items shown in the drawings but not included in the structural drawings or related specifications in other parts of the project manual or exactly specified in the drawings.

1.02 RELATED REQUIREMENTS

A. Section 03 30 53 - Incidental Concrete: Placement of metal fabrications in concrete.

B. Section 09 91 13 - Exterior Painting: Paint finish.

C. Section 09 91 23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2017.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

E. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

G. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing; 2021.

H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

J. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

K. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2022.

L. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2022).

N. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).

O. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

P. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

1.04 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths. Welded connections shall be designed by the fabricator, unless noted otherwise.
2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.
    a. Include the following, as applicable:
        1) Design criteria.
        2) Engineering analysis depicting stresses and deflections.
        3) Member sizes and gauges.
        4) Details of connections.
        5) Support reactions.
        6) Bracing requirements.

1.05 QUALITY ASSURANCE

A. Design any miscellaneous components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in Mississippi.

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M. All exterior lintels are to be galvanized.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, hot-dip galvanized finish.

E. Stainless Steel, General: ASTM A666/A666M, Type 304.

F. Stainless Steel Tubing: ASTM A554, Type 304, 16 gauge, 0.0625 inch minimum metal thickness, 1-1/2 inch diameter.

G. Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304.

H. Slotted Channel Framing: ASTM A653/A653M, Grade 33.

I. Stainless Steel Finish: No. 4 Bright Polished finish.

J. Slotted Channel Fittings: ASTM A1011/A1011M.

K. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

L. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

M. Provide any steel sections, fasteners, bolts, nuts, washers, etc. listed above as galvanized or stainless steel where indicated in the drawings

N. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

O. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

P. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

A. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; galvanized finish.

B. Lintels: As detailed; galvanized finish and painted.

C. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

D. Sill Angles: Steel angles provide at overhead door openings as indicated in drawings; galvanized finish and painted.

2.04 FINISHES - STEEL

A. Prime paint steel items.
   1. Exceptions: Galvanize items to be embedded in concrete or masonry and items specified for exterior painted finish.
   2. Exceptions: Do not prime surfaces in direct contact with concrete or masonry, where field welding is required, and items to be covered with sprayed fireproofing.

B. All exterior exposed steel surfaces must be galvanized and painted as required by Section 09 91 13.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: Prime all steel as required by Section 09 91 23.

E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.05 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components as indicated on shop drawings.

D. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

F. After erection, prime welds, abrasions and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 05 52 13
HANDRAILS AND RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall mounted handrails.

B. Stair railings and guardrails (as designed/shown in the drawings).

C. Traditional profile railings (as designed/shown in the drawings).

D. Steel railings.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Placement of anchors in concrete.

B. Section 09 91 23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2021a.

E. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013.

F. ASTM E985 - Standard Specification for Permanent Metal Railing Systems and Rails for Buildings; 2000 (Reapproved 2006).

G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

1.04 SUBMITTALS

A. See Section 013300 - Shop Drawings, Product Data and Samples for submittal procedures

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths. All welded connections shall be designed by the fabricator, unless noted otherwise.

1.05 QUALITY ASSURANCE

A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in Mississippi, or personnel under direct supervision of such an engineer.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 50 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.

C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.

D. Allow for expansion and contraction of members and building movement without damage to connections or members.

E. Dimensions: See drawings for configurations and heights.

F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
   1. For anchorage to concrete, provide inserts to be cast into concrete, for welding anchors.
   2. For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
   3. For anchorage to stud walls, provide backing plates, for bolting anchors.

G. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL PIPE HANDRAILS AND GUARDRAILS

A. Steel Tube: ASTM A500/A500M Grade B cold-formed structural tubing.

B. Steel Pipe: ASTM A 53/A 53M Grade B Schedule 40, galvanized finish.

C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

D. Exposed Fasteners: No exposed bolts or screws.

E. Straight Splice Connectors: Steel welding collars.

F. Galvanizing: In accordance with requirements of ASTM A123/A123M.

G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints: Provide welded field joints where specifically indicated on shop drawings. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.

F. Interior Components: Continuously seal joined pieces by intermittent welds and plastic filler.

G. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Install railings in compliance with ADA Standards for accessible design at applicable locations.

D. Anchor railings securely to structure.

E. Field weld anchors as indicated on shop drawings. Touch-up welds with primer. Grind welds smooth.

F. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

SECTION 06 10 00.01
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

NOTE: SPECIFICATIONS PROVIDED IN THIS SECTION ARE TO BE UTILIZED WHEN NOT SPECIFICALLY ADDRESSED IN SECTION 06 10 00 (STRUCTURAL), ROUGH CARPENTRY. WHEN PRODUCTS ARE SPECIFIED IN BOTH SECTIONS, THE STRUCTURAL REQUIREMENTS PROVIDED IN SECTION 06 10 00 (STRUCTURAL) SHALL TAKE PRECEDENCE OVER THE INFORMATION PROVIDED WITHIN THIS SECTION.

A. Nonstructural dimension lumber framing.

B. Rough opening framing for doors, windows, and roof openings.

C. Roofing nailers.

D. Fire retardant treated wood materials.

E. Miscellaneous framing and sheathing.

F. Concealed wood blocking, nailers, and supports.

G. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

A. Section 07 62 00 - Sheet Metal Flashing and Trim: Sill flashings.

B. Section 07 92 00 - Joint Sealants.

C. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

B. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2017).

C. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. PS 2 - Performance Standard for Wood Structural Panels; 2018.

E. PS 20 - American Softwood Lumber Standard; 2021.

F. SPIB (GR) - Standard Grading Rules; 2021.

G. AF&PA – National Design Specification for Wood Construction with 2005 Supplement.

H. ALSC – American Lumber Standards Committee: Softwood Lumber Standards.

I. APA – American Plywood Association.

J. AWPA C1 – All Timber Products Preservative Treatment by Pressure Process.

K. AWPA C9 – Plywood - Preservative Treatment by Pressure Process.

L. AWPA C20 – Structural Lumber Fire-Retardant Treatment by Pressure Process.

M. AWPA C27 – Plywood – Fire-Retardant Treatment by Pressure Process.

N. SPIB – Southern Pine Inspection Bureau.

O. WCLIB – West Coast Lumber Inspection Bureau.

P. WWPA – Western Wood Products Association.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. For treated materials, submit certification by treating plant stating chemicals and process used, net amount of preservative retained and conformance with applicable standards.

C. For all dimensioned lumber, submit letters of certificate stating the species and grade of lumber used.

D. For all structural sheathing, submit letters of certificate stating the structural panels meet specified requirements.

E. Submit product data for metal framing anchors, connectors, and construction adhesives.

F. Samples: For rough carpentry members that will be exposed to view, submit two samples, 6by6 inch in size illustrating wood grain, color, and general appearance.

1.05 QUALITY ASSURANCE

A. Comply with National Design Specification for Wood Construction.

B. Perform Work in accordance with the following agencies:
1. Lumber Grading Agency: Certified by ALSC.
2. Plywood Grading Agency: Certified by APA.

C. Identify all wood products by official grade mark, except for wood products exposed to view submit manufacturer's certificate that lumber meets specified requirements.
1. Lumber: Grade stamp to contain symbol of inspection agency, mill number or name, grade of lumber, species or species grouping or combination designation, rules under which graded, where applicable and condition of seasoning at time of manufacture.
2. Structural Panel: Panel grade, span rating, exposure durability classification, product standard thickness, and mill number.

1.06 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Protect the installed work and materials of all other trades.

C. In the advent of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

D. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
1. Species: Southern Pine, unless otherwise indicated.
2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   a. Redwood Inspection Service (RIS).
   b. Southern Pine Inspection Bureau (SPIB).
   c. West Coast Lumber Inspection Bureau (WCLIB).
   d. Western Wood Products Association (WWPA).
   e. National Lumber Grades Authority (NLGA - Canadian)

B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: Kiln-dry or MC15.

D. Stud Framing (2 by 2 through 2 by 6):
   1. Species: Any allowed under referenced grading rules, unless specifically noted in Drawings.
   2. Species: Southern Pine.
   3. Grade: No. 2.

E. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
   1. Species: Any allowed under grading rules, unless specifically noted in Drawings.
   2. Species: Southern Pine.
   3. Grade: No. 1 and Better.

F. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 EXPOSED DIMENSION LUMBER

A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

B. Sizes: Nominal sizes as indicated on drawings, unless specifically noted in Drawings.

C. Surfacing: S4S.

D. Moisture Content: Kiln-dry or MC15.

E. Stud Framing (2 by 2 through 2 by 6):
   1. Species: Southern Pine.
   2. Grade: Select.

F. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
   1. Species: Southern Pine.
   2. Grade: Select Structural.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

B. Sill Flashing: See Section 07 62 00.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

B. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Discard unit of material with defects that might impair quality of work, and units that are too small to fabricate work with minimum joints or optimum joint arrangement.

D. Installer must examine the substrate structure and the conditions under which the carpentry Work is to be installed, and notify the Contractor in writing of conditions detrimental to the Work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

E. Coordinate carpentry Work with other Work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow proper attachment of other Work.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices unless otherwise specifically detailed.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AWC (WFCM) Wood Frame Construction Manual.

E. Install horizontal spanning members with crown edge up and not less than 1-7/8 inches of bearing at each end.

F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

G. Do not notch joists.

H. Provide bridging at joists in excess of 8 feet span at mid-span. Fit solid blocking at ends of members.

I. Frame wall openings with two or more studs at each jamb; support headers on cripple studs. Provide double stud jambs at all openings less than 4'-0" and triple stud jambs at all openings 4'-0" or greater.

J. Headers at openings shall be constructed as follows at minimum:
   1. Spans up to 4'-0": two 2x6s.
   2. Spans up to 6'-0": two 2x8s.
   3. Spans up to 8'-0": two 2x10s.
   4. Spans up to 10'-0": two 2x12s.
   5. Provide additional 2x members and plywood filler plates as required between 2x members to accomodate varying wall thicknesses.
   6. Verify if any specific header requirements are provided in the Drawings.

K. Provide triple wall studs at all corners and intersections.

L. Provide double top plates; overlap at corners.

M. Provide bracing for all walls, ceilings, furr downs, etc. to maintain tolerances for required finishes.

N. Flitch beam plates shall be cold rolled steel ASTM A180 grade and primed.

O. Provide galvanized metal joist hangers or angle clips at all joists to header/beam conditions. If not specified, size hangers to suite joist size, span, and loading. Hangers shall be Simpson Strong-Tie or equal. Provide blocking of joist at ends unless nailed to header or suppported by metal joist hanger.

P. Notch rafters to fit exterior wall plates. Toenail or use galvanized metal anchors, unless noted otherwise in Drawings. Provide double rafters acting as headers that carry more than one rafter. At ridges, place rafters directly opposite each other and nail to ridge or support with galvanized metal hangers. Where ceiling does not follow the bottom of rafters, provide collar

beams at every third pair of rafters, located 1/3 the distance down from the ridge to the ceiling joists.

Q. All framing shall be kept at least 2 inches clear from chimneys and 4 inches clear from fireplace walls.

R. Framing for mechanical Work:
1. Frame members for passage of pipes and ducts to avoid cutting structural members.
2. Reinforce framing members where damaged by cutting.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim. Form to shapes as shown and cut as required for true line and level of Work to be attached. Coordinate location with other Work involved.

B. Attach framing and blocking members to substrate as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise shown. Build into masonry during installation of masonry Work. Where possible, anchor to formwork before concrete placement.

C. Provide permanent grounds of dressed, preservative treated, key bevelled lumber not less than 1 1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

D. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

E. Any wood framing and blocking members concealed within non-combustible assemblies must be fire-treated where indicated in Drawings and/or required by applicable local codes.

F. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

G. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

H. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

I. Where wood furring is required, install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished Work.

J. Provide the following specific non-structural framing and blocking at minimum:
1. Cabinets and shelf supports.
2. Wall brackets.
3. Handrails.
4. Grab bars.
5. Towel and bath accessories.
6. Wall-mounted door stops.
7. Chalkboards and marker boards.
8. Wall paneling and trim.
9. Joints of rigid wall coverings that occur between studs.

3.05 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at each roof opening except where prefabricated curbs are specified and where specifically indicated otherwise; form corners by alternating lapping side members.

3.06 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

C. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.07 CLEANING

A. Site cleaning per Section 01 74 00, Cleaning.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Cabinet hardware for items not shown in drawings.

C. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00.01 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 12 36 00 - Countertops.

1.03 REFERENCE STANDARDS

A. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

B. ANSI A208.1 - American National Standard for Particleboard; 2022.

C. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

E. AWI (QCP) - Quality Certification Program; Current Edition.

F. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

G. AWMAC (GIS) - Guarantee and Inspection Services Program; Current Edition.

H. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

I. BHMA A156.9 - Cabinet Hardware; 2020.

J. GSA CID A-A-1936 - Adhesives, Contact, Neoprene Rubber; 1996a (Validated 2013).

K. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2020.

L. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

M. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes. Scale of drawings is to be 1-1/2 inch equals 1 foot, minimum.

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet substrate and finish.

E. Samples: Submit actual sample items of proposed pulls and hinges, demonstrating hardware design, quality, and finish.

F. Sustainable Design Submittal: Documentation for sustainably harvested wood-based` components.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1. Single Source Responsibility: Provide and install this work from single fabricator.

B. Perform work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Custom quality, unless other quality is indicated for specific items.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.07 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinet Component Construction::
   1. Adjustable Shelf Loading: 50 psf.
      a. Deflection: L/144.
   2. Cabinet Style: As indicated for each location.
   3. Cabinet Doors and Drawer Fronts: As indicated.
   4. Drawer Side Construction: Multiple-dovetailed.
   5. Drawer Construction Technique: Dovetail joints.

2.02 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

B. Hardwood Edgebanding: Use solid hardwood edgebanding matching species, color, grain, and grade for exposed portions of cabinetry.

2.03 LUMBER MATERIALS

A. For Plastic or Metal Laminated Finish Millwork, Medium Density Fiberboard: Pressed wood fiber with resin binder per ANSI A208.2; thicknesses are as follows unless noted otherwise in drawings.
   1. Cabinet Frame: 3/4" MDF.
   2. Exposed Stiles and Rails: 3/4" MDF.
   3. Internal Construction: 3/4" MDF.
   4. Edge Banding: Use solid hardwood edge banding covered with corresponding laminate.

2.04 PANEL MATERIALS

A. For Plastic or Metal Laminated Finish Millwork, Medium Denisty Fiberboard: Pressed wood fiber with resin binder per ANSI A208.2; thicknesses are as follows unless noted otherwise in drawings.
   1. Door and Drawer Fronts: 3/4" MDF
   2. Drawer Construction: 1/2" MDF
   3. Gables and Backs: 1/2" and 1/4" (as shown in drawings) MDF
   4. Shelving: 3/4" MDF
   5. Edge Banding: Use solid hardwood edge banding covered with corresponding laminate.

B. Hardwood Edge Banding: Use solid hardwood edge banding matching species, color, grain, and grade for exposed portions of cabinetry that are stained.

2.05 LAMINATE MATERIALS

A. Plastic Laminate Manufacturers:
   1. Formica Corporation: www.formica.com.
   2. Wilsonart, LLC: www.wilsonart.com.
   3. Substitutions: See Section 01 63 00 - Substitutions and Product Options.

B. Provide specific types as indicated.

C. Plastic Laminate: In accordance with AWI Quality Standards Illustrated, 0.039 inch Post Forming quality; through color, as selected from manufacturer's standard selection pattern, and matte surface texture as selected.

D. Edge Banding: Match color, pattern and finish of corresponding plastic laminate.

E. Laminate Backing Sheet: 0.020 inch Backing Sheet grade, undecorated plastic laminate.

2.06 ACCESSORIES

A. Adhesive: GSA CID A-A-1936 contact adhesive.

B. Fasteners: Size and type to suit application.

C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

D. Concealed Joint Fasteners: Threaded steel.

2.07 HARDWARE

A. Use list of hardware below only if NOT listed or shown in the drawings.

B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.

C. Shelf Brackets: Knape & Vogt # 161LL and 24".

D. ARCHITECTURAL GRADE: Drawer and Door Pulls: Hafele #117.97.663, bar pull, steel, brushed nickel, center to center: 7.56" (160mm), overall length: 8.66" (220mm).

E. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, zinc with bright nickel finish; Hafele # 235.10.621. Install locks on all base and upper cabinet doors.

F. Catches: Magnetic. Hafele # 246.36.300 black double magnetic catch; Hafele #246.29.301 black magnetic catch

G. Drawer Slides: Knape & Vogt #1300
   1. Type: Full extension.
   2. Static Load Capacity: Heavy Duty grade.
   3. Mounting: Side mounted.
   4. Stops: Integral type.

H. Hinges: European style concealed self-closing type, steel with nickel-plated finish.

2.08 FABRICATION

A. Cabinet Style: As indicated for each location.

B. Cabinet Doors and Drawer Fronts: As indicated.

C. Drawer Construction Technique: Dovetail joints.

D. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

E. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

F. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

G. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
   1. Cap exposed plastic laminate finish edges with material of same finish and pattern.

H. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units.

D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

E. Secure cabinets to floor using appropriate angles and anchorages.

F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 07 21 19
FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Foamed-in-place insulation.
   1. At underside of roof decking in unventilated attic installation (closed cell spray foam).
   2. At junctions of dissimilar wall and roof materials (closed cell spray foam).

1.02 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.

B. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2019.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

D. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022a, with Editorial Revision (2023).

E. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).

F. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.

G. FM 4880 - Evaluating the Fire Performance of Insulated Building Panel Assemblies and Interior Finish Materials; 2017.

H. NFPA 275 - Standard Method of Fire Tests for the Evaluation of Thermal Barriers; 2022.

I. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2023.

J. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2019.

K. UL 1040 - Standard for Safety Fire Test of Insulated Wall Construction; Current Edition, Including All Revisions.

L. UL 1715 - Standard for Safety Fire Test of Interior Finish Material; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.04 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data, and Samples, for submittal procedures.

B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.

C. Certificates: Certify that products of this section meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

E. Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

F. Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of all contractor accreditation and installer certification on site during and after installation. Present on-site documentation upon request.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified, with minimum three years documented experience, and approved by manufacturer.

1.06 MOCK-UPS

A. Provide sample mock-up, 4 feet long by 4 feet wide; include insulated roof deck in mock-up.

B. Mock-up may remain as part of work.

1.07 FIELD CONDITIONS

A. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.

PART 2 PRODUCTS

2.01 MATERIALS

A. Foamed-In-Place Insulation: Two-component, medium-density, closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
   1. Regulatory Requirements: Comply with applicable code for flame and smoke, concealment, and fire protection requirements.
      a. Fire Protection: Provide 15-minute thermal barrier of 1/2 inch gypsum board or equivalent material complying with NFPA 275 test method, or foamed-in-place insulation either exposed or with covering that complies with FM 4880, NFPA 286, UL 1040, or UL 1715.
   2. Thermal Resistance: R-value of 6.9, minimum, per 1 inch thickness at 75 degrees F mean temperature when tested in accordance with ASTM C518.
   3. Water Vapor Permeance: Class II Vapor retarder; 1 perms, maximum, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
   4. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
   5. Air Permeance: 0.04 cfm per square foot, maximum, when tested at intended thickness in accordance with ASTM E2178 at 1.57 psf.
   6. Closed Cell Content: At least 90 percent.
   7. Surface Burning Characteristics: Flame spread/smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.
   8. Basis of Design:
      a. Carlisle Spray Foam Insulation; SealTite PRO Closed Cell: www.carlislesfi.com/#sle.
      b. Substitutions: See Section 01 63 00.

2.02 ACCESSORIES

A. Primer: As required by insulation manufacturer.

B. Protective Coating: Intumescent coating of type recommended by insulation manufacturer and as required to comply with applicable codes.
   1. Coating Type: Single component, water-based.
   2. Protected Insulation Type: Spray polyurethane foam (SPF).
   3. Application: Apply using brush, roller, or airless sprayer.
   4. Surface Burning Characteristics: Flame spread/smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.
   5. Color: As indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify work within construction spaces or crevices is complete before insulation application.

B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation adhesion.

3.02 PREPARATION

A. Mask and protect adjacent surfaces from over spray or dusting.

B. Apply primer in accordance with manufacturer's instructions.

3.03 APPLICATION

A. Apply insulation in accordance with manufacturer's instructions.

B. Apply insulation by spray method, to a uniform monolithic density without voids.

C. Apply protective coating monolithically, without voids, to fully cover foam insulation, to achieve fire rating required.

D. Patch damaged areas.

E. Where applied to voids, gaps and crevices, assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

F. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.04 PROTECTION

A. Do not permit subsequent construction work to disturb applied insulation.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 45 00 - Architectural Precast Concrete.

B. Section 04 20 00 - Unit Masonry Assemblies.

C. Section 06 10 00.01 - Rough Carpentry.

D. Section 07 27 27 - Self-Adhered Sheet Membrane Air Barriers, Vapor Permeable.

E. Section 07 30 00 - Roofing Underlayment.

F. Section 07 41 13.16 - Standing-Seam Metal Roof Panels.

G. Section 07 42 13.13 - Formed Metal Wall Panels.

H. Section 07 42 13.19 - Insulated Metal Wall Panels.

I. Section 07 62 00 - Sheet Metal Flashing and Trim.

J. Section 07 65 00 - Flexible Membrane Flashing.

K. Section 08 11 13 - Hollow Metal Doors and Frames.

L. Section 08 33 11 - Overhead Coiling Doors (Insulated).

M. Section 08 43 13 - Aluminum Storefront.

N. Section 08 44 13 - Aluminum Curtain Wall.

O. Section 08 45 23 - Insulated Translucent Fiberglass Wall System.

P. Section 09 21 16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

Q. Section 09 30 00 - Tiling: Sealant between tile and plumbing fixtures and at junctions with other materials and changes in plane.

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).

C. ASTM C834 - Standard Specification for Latex Sealants; 2017.

D. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2022.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

F. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2016.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

H. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

I. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.

J. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2018.

K. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

M. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2022.

N. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

O. UL 263 - Standard for Fire Tests of Building Construction and Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.
3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.
5. Substrates for which use of primer is required.
6. Substrates for which laboratory adhesion and/or compatibility testing is required.
7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
8. Sample product warranty.
9. Certification by manufacturer indicating that product complies with specification requirements.

C. Samples for Verification: Where custom sealant color is specified, obtain directions from Albert & Robinson Architects and submit at least two physical samples for verification of color of each required sealant.

D. Executed warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

C. All sealant installation types shall be included in full wall mockup as specified in Section 01 45 00 - Project Quality Control.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a 5-year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants:
1. Bostik Inc: www.bostik-us.com/#sle.
2. Dow Chemical Company: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.

3. Hilti, Inc: www.us.hilti.com/#sle.
4. Pecora Corporation: www.pecora.com/#sle.
5. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
6. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.

B. Self-Leveling Sealants:
1. Bostik Inc: www.bostik-us.com/#sle.
2. Dow Chemical Company: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
3. Pecora Corporation: www.pecora.com/#sle.
4. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to:
a. Wall expansion and control joints.
b. Joints between door, window, and other frames and adjacent construction.
c. Joints between different exposed materials.
d. Openings below ledge angles in masonry.
e. Other joints indicated below.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
a. Joints between door, window, and other frames and adjacent construction.
b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
c. Other joints indicated below.
3. Do not seal the following types of joints:
a. Intentional weep holes in masonry.
b. Joints indicated to be treated with manufactured expansion joint cover, or some other type of sealing device.
c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
d. Joints where installation of sealant is specified in another section.
e. Joints between suspended panel ceilings/grid and walls.

B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing.
2. Lap Joints between Manufactured Metal Panels: Butyl rubber, non-curing.
3. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.

C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
2. Wall and Ceiling Joints in Wet Areas: Non-sag polyurethane sealant for continuous liquid immersion.
3. Floor Joints in Wet Areas: Non-sag polyurethane "non-traffic-grade" sealant suitable for continuous liquid immersion.
4. Wall, Ceiling, and Floor Joints Where Tamper-Resistance is Required: Non-sag tamper-resistant silyl-terminated polyurethane sealant.
5. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
6. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.

7. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
8. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.

D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.

E. Sound-Rated Assemblies: Walls and ceilings identified as STC-rated, sound-rated, or acoustical.

F. Areas Where Tamper-Resistance is Required: As indicated on drawings.

2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

B. Colors: As indicated on drawings.

2.04 NONSAG JOINT SEALANTS

A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
5. Color: Match adjacent finished surfaces.
6. Cure Type: Single-component, neutral moisture curing.
7. Service Temperature Range: Minus 20 to 180 degrees F.

B. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Cure Type: Single component, neutral moisture curing.
5. Service Temperature Range: Minus 65 to 180 degrees F.

C. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: White.

D. Polymer Sealant: ASTM C920; single component, cured sealant is paintable and mold/mildew resistant, low odor and VOC, and ultraviolet (UV) resistant.
1. Adheres to wet surfaces.
2. Color: White.

E. Hybrid Urethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 35 percent, minimum.
2. Hardness Range: 20 to 40, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Service Temperature Range: Minus 40 to 180 degrees F.

F. Tamper-Resistant, Silyl-Terminated Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 12-1/2 percent, minimum
2. Hardness Range: 25 to 30, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.

4. Service Temperature Range: Minus 40 to 180 degrees F.

G. Hybrid Silane Polyether Sealant: ASTM C920, Grade NS, Uses NT, M, G, A, and O; single component; not expected to withstand continuous water immersion.
   1. Movement Capability: Plus and minus 35 percent.
   2. Hardness Range: 22 to 45, Shore A, when tested in accordance with ASTM C661.
   3. Color: To be selected by Albert & Robinson Architects from manufacturer's standard range.
   4. Service Temperature Range: Minus 40 to 200 degrees F.

H. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 50 percent, minimum.
   2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.
   4. Service Temperature Range: Minus 40 to 180 degrees F.

I. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface .
   1. Movement Capability: Plus and minus 35 percent, minimum.
   2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.
   4. Service Temperature Range: Minus 40 to 180 degrees F.

J. Non-Sag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
   1. Movement Capability: Plus and minus 25 percent, minimum.
   2. Hardness Range: 20 to 30, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.

K. Tamper-Resistant Polyurethane Sealant: ASTM C920, Grade NS, Uses M, G, and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
   2. Hardness Range: 50 to 60, Shore A, when tested in accordance with ASTM C661.
   3. Color: Match adjacent finished surfaces.
   4. Service Temperature Range: Minus 40 to 180 degrees F.

L. Epoxy Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Hardness Range: 65 to 75, Shore D, when tested in accordance with ASTM C661.
   2. Color: Match adjacent finished surfaces.
   3. Service Temperature Range: 40 to 120 degrees F.

M. Acrylic-Urethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; paintable; not expected to withstand continuous water immersion or traffic.
   1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
   2. Hardness Range: 15 to 40, Shore A, when tested in accordance with ASTM C661.
   3. Color: White.
   4. Service Temperature Range: Minus 40 to 180 degrees F.

N. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
   1. Color: Standard colors matching finished surfaces, Type OP (opaque).
   2. Grade: ASTM C834; Grade 32 Degrees F (0 Degrees C).

O. Acrylic Latex Sealant: ASTM C834; for use as acoustical sealant and in firestopping systems for expansion joints and through penetrations.

1. Color: Standard colors matching finished surfaces.
2. Fire Rated System: Complies with UL 263 and ASTM E119 with UL fire resistance classifications.

P. Butyl Sealant: Solvent-based; ASTM C1311; single component, nonsag; not expected to withstand continuous water immersion or traffic.
1. Hardness Range: 10 to 30, Shore A, when tested in accordance with ASTM C661.
2. Color: Match adjacent finished surfaces.
3. Service Temperature Range: Minus 13 to 180 degrees F.

Q. Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.

2.05 SELF-LEVELING JOINT SEALANTS

A. Self-Leveling Silicone Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
2. Hardness Range: 0 to 15, Shore A, when tested in accordance with ASTM C661.
3. Color: Gray.
4. Service Temperature Range: Minus 40 to 180 degrees F.

B. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
3. Color: Gray.
4. Service Temperature Range: Minus 40 to 180 degrees F.

C. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
3. Color: Gray.
4. Service Temperature Range: Minus 40 to 180 degrees F.

D. Flexible Polyurethane Foam: Single-component, gun grade, and low-expanding.
1. Color: White.

E. High Quality Latex-Based Sound Sealant: ASTM C834, Type OP an opaque sealant, and Grade 0, 32 degrees F, meets requirements for low-temperature flexibility.
1. Color: White.

F. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
1. Composition: Multicomponent, 100 percent solids by weight.
2. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
3. Joint Width, Minimum: 1/8 inch.

2.06 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B - Bi-Cellular Polyethylene.
3. Open Cell: 40 to 50 percent larger in diameter than joint width.
4. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated steel frames.

B. Thermally insulated hollow metal doors with frames.

C. Hollow metal borrowed lites glazing frames.

D. Accessories, including glazing.

1.02 RELATED REQUIREMENTS

A. Section 08 71 00 - Door Hardware.

B. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.

C. Section 09 91 13 - Exterior Painting

D. Section 09 91 23 - Interior Painting: Field painting.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; current version.

C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2022.

D. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2020.

E. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2017.

F. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2020.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.

H. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2021a.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

J. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.

K. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

M. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

N. ASTM E413 - Classification for Rating Sound Insulation; 2022.

O. ASTM F2247 - Standard Test Method for Metal Doors Used in Blast Resistant Applications (Equivalent Static Load Method); 2018.

P. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2016.

Q. DHI A115 Series - Specifications for Steel Doors and Frame Preparation for Hardware; Door and Hardware Institute; 2000 (ANSI/DHI A115 Series).

R. ITS (DIR) - Directory of Listed Products; Current Edition.

S. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

T. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2011.

U. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2017.

V. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

W. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.

X. UFC 4-010-01 - DoD Minimum Antiterrorism Standards for Buildings; version referenced in Drawings.

Y. UL (BMD) - Building Materials Directory; current edition.

Z. UL (DIR) - Online Certifications Directory; Current Edition.

AA. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, head and jamb anchor locations and type, and identifying location of different finishes, if any.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

C. Maintain at project site copies of reference standards relating to installation of products specified.

D. Blast Loads: Comply with the requirements of the Unified Facilities Criteria (UFC) UFC 4-010-01 (version as indicated in the drawings) - DoD Minimum Antiterrorism Standards for Buildings.
   1. See Standards 10 and 12.
   2. Provide written documentation that submitted products meet this requirement.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.

4. Door Edge Profile: Manufacturers standard for application indicated.
5. Typical Door Face Sheets: Flush.
6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
9. Finish: Factory primed, for field finishing.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.02 HOLLOW METAL DOORS

A. Exterior Doors: Thermally insulated.
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 2 - Heavy-duty.
   b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
2. Core: Polyurethane with 2.0 density.
3. Door Thermal Resistance: R-Value of 8.7, minimum, for installed thickness of polyurethane.
4. Door Thickness: 1-3/4 inches, nominal.
5. Edge seams are to be fully welded
6. Reinforced and prepared for 3-point latching.
7. Top Closures for Outswinging Doors: Flush with top of faces and edges.
8. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness.
9. Weatherstripping: Refer to Section 08 71 00.
10. Door Finish: Factory primed and field finished.

B. Interior Doors, Non-Fire Rated:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 1 - Standard-duty.
   b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 18 gage, 0.042 inch, minimum.
2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
3. Door Thickness: 1-3/4 inches, nominal.
4. Door Finish: Factory primed and field finished.
5. Interior doors scheduled in Drawings as separating conditioned and non-conditioned spaces shall be insulated; such doors shall be equipped with weather stripping in accordance with Section 08 71 00 unless door is scheduled to receive acoustical gasketing.

2.03 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. General:
   1. Comply with the requirements of grade specified for corresponding door.
      a. Exterior doors to have 14 gauge frames (fully welded).
      b. Interior frames to be 16 gauge.
   2. Finish: Factory primed, for field finishing.
   3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
   4. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

C. Exterior Door Frames: Full profile/continuously welded type.
   1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
   2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
   3. Weatherstripping: Separate, see Section 08 71 00.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
   1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.

E. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

F. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.04 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.05 ACCESSORIES

A. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: As indicated on drawings.

B. Glazing: As specified in Section 08 80 00.

C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

D. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

B. Coat inside of other frames with bituminous coating to a thickness of 1/16 inch.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

C. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

D. Install door hardware as specified in Section 08 71 00.

E. Comply with glazing installation requirements of Section 08 80 00.

F. Coordinate installation of glazing.

G. Coordinate installation of electrical connections to electrical hardware items.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

B. Test sound control doors for force to close, latch, and unlatch; adjust as necessary in compliance with requirements.

3.06 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall-mounted access units.

B. Ceiling-mounted access units.

C. Provide 20 (20) additional ceiling access doors. These doors are above and beyond the doors shown in the plans. Verify with Architect prior to ordering materials.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting: Field paint finish.

1.03 REFERENCE STANDARDS

A. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

A. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

B. Shop Drawings: Indicate exact position of each access door and/or panel unit.

C. Manufacturer's Installation Instructions: Indicate installation requirements.

D. Project Record Documents: Record actual locations of each access unit.

1.05 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire rated access doors.
   1. Provide access doors of fire rating equivalent to the fire rated assembly in which they are to be installed.

B. Provide products listed and labeled by UL as suitable for the purpose specified and indicated.

C. Provide certificate of compliance from authority having jurisdiction indicating approval of fire rated doors.

1.06 PROJECT CONDITIONS

A. Coordinate the work with other work requiring access doors.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

A. Wall-Mounted Units:
   1. Location: As indicated on drawings.
   2. Panel Material: Aluminum extrusions with gypsum board inlay.
   3. Size: 24 by 24 inch, unless otherwise indicated.
   4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
   5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.
   6. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.
   7. Masonry Mounting Criteria: Provide surface-mounted frame with door surface flush with frame surface.

B. Wall-Mounted Units in Wet Areas:
   1. Location: As indicated on drawings.
   2. Panel Material: Steel, hot-dipped zinc, or zinc-aluminum-alloy coated.
   3. Size: 24 by 24 inch, unless otherwise indicated.
   4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

5. Wall Mounting Criteria: Provide surface-mounted face frame and door surface flush with frame surface.
6. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.
7. Masonry Mounting Criteria: Provide surface-mounted frame with door surface flush with frame surface.

C. Ceiling-Mounted Units with Return Air Grille:
1. Location: As indicated on drawings.
2. Panel Material: Aluminum extrusion with gypsum board inlay.
3. Size in Other Ceilings: 24 by 24 inch, unless otherwise indicated.
4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
5. Door/Panel: Hinged, high security, with security keyed locks provided in BARRACKS ceilings only. Standard duty ok for other buildings.

2.02 WALL- AND CEILING-MOUNTED ACCESS UNITS

A. Manufacturers:
1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com/#sle.
a. Multipurpose Access Panel: Activar/JL Industries TM.
b. High-Security (7 ga) Access Panel: Activar/JL Industries HSP. This product is for BARRACKS buildings only.
2. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 FABRICATION

A. Weld, fill, and grind joints to ensure flush and square unit.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to proceeding with this work.

B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

3.03 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

SECTION 08 43 13
ALUMINUM STOREFRONT

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes: Kawneer Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
   1. Types of Kawneer Aluminum Storefront Systems include:
      a. IR 501T Framing System (for exterior installations)
         1) 2-3/4" x 5" nominal dimension.
         2) Thermal.
         3) Center Plane.
         4) Screw Spline Fabrication.

B. Related Sections:
   1. 07 27 27 - Self-Adhered Sheet Membrane Air Barriers, Vapor Permeable.
   2. 07 92 00 - Joint Sealants.
   3. 08 80 00 - Glazing.

1.03 DEFINITIONS

A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

1.04 PERFORMANCE REQUIREMENTS

A. General Performance:
   1. Product to comply with the specified performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction, as determined by testing of glazed aluminum curtain walls representing those indicated for this project.
   2. Aluminum storefront systems shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
   3. Failure includes any of these events:
      a. Thermal stresses transferring to building structure
      b. Glass breakage
      c. Loosening or weakening of fasteners, attachments, and other components
      d. Failure of operating units

B. Delegated Design: Design aluminum storefront systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated below. ALL ENGINEERING TO DETERMINE THAT THE SYSTEMS SELECTED WILL MEET THE PERFORMANCE REQUIREMENTS OF THIS SPECIFICATION AND ANY REINFORCEMENT (IF REQUIRED) IS TO BE PROVIDED BY THE STOREFRONT MANUFACTURER USING THE LOCAL PROJECT CODES AND WIND LOADS. THIS ENGINEERING SHALL BE SUBMITTED TO THE ARCHITECT FOR APPROVAL. THE ENGINEERING SHALL BE STAMPED BY AN ENGINEER LICENSED IN THE STATE OF MISSISSIPPI. PRELIMINARY DESIGN LOADING SHALL BE RUN BY THE MANUFACTURER DURING BIDDING TO VERIFY THAT THE SYSTEMS SELECTED WILL WORK. THE BIDDING CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A STOREFRONT SYSTEM THAT MEETS THE PERFORMANCE REQUIREMENTS OF THIS SPECIFICATION WITHIN THE BID PRICE.

C. Wind Loads:
   1. Provide Storefront system; include anchorage, capable of withstanding wind load design pressures. The design pressures are based on the (IBC) Building Code; **see code review in Drawings for IBC version being utilized for this project**.

D. Air Leakage:
   1. The test specimen shall be tested in accordance with ASTM E 283.
   2. Air infiltration rate shall not exceed 0.06 cfm/ft2 (0.3 l/s · m2) at a static air pressure differential of 6.2 psf (300 Pa).

E. Water Resistance:
   1. The test specimen shall be tested in accordance with ASTM E 331.
   2. There shall be no leakage at a minimum static air pressure differential of 8 psf (383 Pa) as defined in AAMA 501.

F. Uniform Load:
   1. A static air design load of 35 psf (1680 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330.
   2. There shall be no deflection in excess of L/175 of the span of any framing member.
   3. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

G. Seismic:
   1. When tested to AAMA 501.4, system must meet design displacement (elastic) of 0.010 x the story height and ultimate displacement (inelastic) of 1.5 x the design displacement.

H. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures:
   1. Temperature Change (Range): 0 deg F (-18 deg C); 180 deg F (82 deg C).
   2. Test Interior Ambient-Air Temperature: 75 deg F (24 deg C).
   3. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5 for a minimum 3 cycles.

I. Thermal Transmittance (U-factor):
   1. Thermal transmittance test results are based upon 1" (25.4 mm) clear high-performance insulating glass [1/4" (e=0.035, #2), 1/2" warm edge spacer and argon fill gas, 1/4"].
   2. When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:
      a. Glass to interior .41 (low-e) or 0.56 (clear) or project specific Btu/hr/ft2/°F per AAMA 507 or Btu/hr/ft2/°F per NFRC 100.

J. Condensation Resistance Factor (CRF) or Temperature Index (TI):
   1. The glass to exterior CRF, when tested to AAMA Specification 1503, shall not be less than 70_{frame} and 69_{glass} (low-e) or 69_{frame} and 58_{glass} (clear)
   2. The glass to center CRF, when tested to AAMA Specification 1503, shall not be less than 62_{frame} and 68_{glass} (low-e) or 6_{3frame} and 56_{glass} (clear).
   3. The glass to interior CRF, when tested to AAMA Specification 1503, shall not be less than 56_{frame} and 67_{glass} (low-e) or 54_{frame} and 58_{glass} (clear).

K. Sound Transmission Loss:
   1. When tested to ASTM E90 and ASTM E1425, the Sound Transmission Class (STC) and Outdoor/Indoor Transmission Class (OITC) shall not be less than:
      a. STC 31 or OITC 26 based upon 1" (25.4 mm) insulating glass (1/4", 1/2" AS, 1/4").
      b. STC 37 or OITC 30 based upon 1" (25.4 mm) laminated glass (1/4" laminated, 1/2" AS, 1/4" laminated).

L. Windborne-Debris-Impact Resistance Performance:

1. Performance shall be tested in accordance with TAS 201/203, ASTM E 1886 and information in ASTM E1996:
    a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade.
    b. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade.

M. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.

1.05 SUBMITTALS

A. Product Data:
1. For each type of aluminum-framed storefront system indicated, include:
    a. Construction details
    b. Material descriptions
    c. Dimensions of individual components and profiles
    d. Hardware
    e. Finishes
    f. Installation instructions
2. Environmental Product Declaration (EPD):
    a. Include a Type III Product-Specific EPD created from a Product Category Rule.
3. Material Ingredient Reporting:
    a. Include documentation for material reporting that has a complete list of chemical ingredients to at least 100 ppm (0.01%) that covers 100% of the product.

B. Shop Drawings:
1. Plans
2. Elevations
3. Sections
4. Details
5. Hardware
6. Attachments to other work
7. Operational clearances
8. Installation details

C. Samples for Initial Selection:
1. Provide samples for units with factory-applied color finishes.

D. Samples for Verification:
1. Provide a verification sample for each type of exposed finish required.

E. Product Test Reports:
1. Provide test reports for glazed aluminum curtain walls.
2. Test reports must be based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency.
3. Test reports must indicate compliance with performance requirements.

F. Warranty: Special warranty specified in this Section.

G. Fabrication Sample:
1. Provide a fabrication sample of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
    a. Joinery, including concealed welds.
    b. Anchorage.
    c. Expansion provisions.
    d. Glazing.
    e. Flashing and drainage.

1.06 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Installer must have successfully installed the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications:
   1. Manufacturer must be capable of providing aluminum-framed storefront systems that meet or exceed performance the stated performance requirements.
   2. Manufacturer must document this performance by the inclusion of test reports and calculations.

C. Source Limitations:
   1. Obtain aluminum-framed storefront system through one source from a single manufacturer.

D. Product Options:
   1. Information on drawings and in specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
   2. Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated.
   3. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Structural-Sealant Glazing: Comply with ASTM C 1401, “Guide for Structural Sealant Glazing” for design and installation of structural-sealant-glazed systems.

F. Structural-Sealant Joints: Design reviewed and approved by structural-sealant manufacturer.

1.07 PROJECT CONDITIONS

A. Field Measurements:
   1. Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication.
   2. Indicate measurements on shop drawings.

1.08 WARRANTY

A. Manufacturer’s Warranty: Submit, for Owner’s acceptance, manufacturer’s standard warranty.
   1. Warranty Period: Two (2) years from Date of Substantial Completion of the project.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product:
   1. Kawneer Company Inc.
   2. IR 501T (for exterior installations) Framing System (Thermal)
      a. System Dimensions: 2-3/4" x 5" nominal dimension.
      b. Glazing Plane: Center.
      c. Impact resistance required.
      d. Blast mitigation performance required.

B. Substitutions: Per Section 01 63 00.

2.02 MATERIALS

A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" (1.8 mm) wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.

B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum framing members, trim hardware, anchors, and other components.

C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

E. Sealant: For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.03 STOREFRONT FRAMING SYSTEM

A. Brackets and Reinforcements:
   1. Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

B. Fasteners and Accessories:
   1. Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
   2. Where exposes shall be stainless steel.

C. Perimeter Anchors:
   1. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

D. Packing, Shipping, Handling and Unloading:
   1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

E. Storage and Protection:
   1. Store materials protected from exposure to harmful weather conditions.
   2. Handle storefront material and components to avoid damage.
   3. Protect storefront material against damage from elements, construction activities, and other hazards before, during and after storefront installation.

F. Thermal Barrier:
   1. IR 501UT - Kawneer DUAL IsoLock™ Thermal Break with two (2) 1/4" (6.4 mm) separations consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
      a. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

2.04 GLAZING SYSTEMS

A. Glazing: As specified in Division 08 Section “Glazing”.

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

E. Glazing Sealants: For structural-sealant-glazed systems, as recommended by manufacturer for joint type, and as follows:

1. Structural Sealant: ASTM C 1184, single-component neutral-curing silicone formulation that is compatible with system components with which it comes in contact, specifically formulated and tested for use as structural sealant and approved by a structural-sealant manufacturer for use in aluminum-framed systems indicated.
   a. Color: Black
2. Weatherseal Sealant: ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O; single-component neutral-curing formulation that is compatible with structural sealant and other system components with which it comes in contact; recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use.
   a. Color: Matching structural sealant.

2.05 ACCESSORY MATERIALS

A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Division 07 Section “Joint Sealants”.

B. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.

2.06 FABRICATION

A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
   1. Profiles that are sharp, straight, and free of defects or deformations.
   2. Accurately fit joints; make joints flush, hairline and weatherproof.
   3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
   4. Physical and thermal isolation of glazing from framing members.
   5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
   6. Provisions for field replacement of glazing.
   7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

C. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.

D. Storefront Framing: Fabricate components for assembly using manufacturer’s standard installation instructions.

E. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.07 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing:
   1. Kawneer Permafluor (70% PVDF), AAMA 2605, Fluoropolymer Coating.
      a. Color: Per manufacturer's standard selection.
         1) Dove Grey

PART 3 EXECUTION

3.01 EXAMINATION

A. With installer present, examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work:
   1. Verify rough opening dimensions.

2. Verify levelness of sill plate.
3. Verify operational clearances.
4. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components for proper water management.
5. Masonry Surfaces:
   a. Masonry surfaces must be visibly dry and free of excess mortar, sand, and other construction debris.
6. Wood Frame Walls:
   a. Wood frame walls must be dry, clean, sound, well nailed, free of voids, and without offsets at joints.
   b. Ensure that nail heads are driven flush with surfaces in opening and within 3" (76.2 mm) of opening.
7. Metal Surfaces:
   a. Metal surfaces must be dry and clean (free of grease, oil, dirt, rust, corrosion, and welding slag).
   b. Ensure that metal surfaces are without sharp edges or offsets at joints.

B. Proceed with installation only after correcting unsatisfactory conditions.

3.02 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed storefront system, accessories, and other components.

B. Install aluminum-framed storefront system level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, for weather tight construction.

D. Install aluminum framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront system to the exterior.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.03 FIELD QUALITY CONTROL

A. Field Tests:
1. Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured.
2. Conduct tests for air infiltration and water penetration with manufacturer’s representative present.
3. Tests that do not meet the specified performance requirements and units that have deficiencies shall be corrected as part of the contract amount.
4. Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements.
5. Air Infiltration Tests:
   a. Conduct tests in accordance with ASTM E 783.
   b. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft2, whichever is greater.
6. Water Infiltration Tests:
   a. Conduct tests in accordance with ASTM E 1105.
   b. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.2 psf (300 Pa).

B. Manufacturer's Field Services:
1. Provide periodic site visit by manufacturer’s field service representative.

3.04 ADJUSTING, CLEANING, AND PROTECTION

A. Adjusting: Not applicable.

B. Protection:
   1. Protect installed product’s finish surfaces from damage during construction.

C. Cleaning:
   1. Clean glass immediately after installation.
      a. Comply with glass manufacturer's written recommendations for final cleaning and maintenance.
      b. Remove non-permanent labels and clean surfaces.
   2. Clean aluminum surfaces immediately after installation.
   3. Avoid damaging protective coatings and finishes.
   4. Remove excess sealants, glazing materials, dirt, and other substances.
   5. Repair or replace damaged installed products.
   6. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.
   7. Remove construction debris from project site and legally dispose of debris.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for hollow metal doors.

B. Lock cylinders for doors that hardware is specified in other sections.

C. Thresholds.

D. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES.

B. Section 10 14 00 - Signage: Additional signage requirements.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. BHMA (CPD) - Certified Products Directory; Current Edition.

C. BHMA A156.1 - Standard for Butts and Hinges; 2021.

D. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2017.

E. BHMA A156.3 - Exit Devices; 2020.

F. BHMA A156.4 - Door Controls - Closers; 2019.

G. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.

H. BHMA A156.6 - Standard for Architectural Door Trim; 2021.

I. BHMA A156.7 - Template Hinge Dimensions; 2016.

J. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.

K. BHMA A156.12 - Interconnected Locks; 2018.

L. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2017.

M. BHMA A156.15 - Release Devices - Closer Holder, Electromagnetic and Electromechanical; 2021.

N. BHMA A156.16 - Auxiliary Hardware; 2018.

O. BHMA A156.17 - Self Closing Hinges & Pivots; 2019.

P. BHMA A156.18 - Materials and Finishes; 2020.

Q. BHMA A156.21 - Thresholds; 2019.

R. BHMA A156.22 - Standard for Gasketing; 2021.

S. BHMA A156.23 - Electromagnetic Locks; 2017.

T. BHMA A156.25 - Electrified Locking Devices; 2018.

U. BHMA A156.26 - Standard for Continuous Hinges; 2021.

V. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems; 2018.

W. BHMA A156.29 - American National Standard for Exit Locks, Exit Alarms, Alarms for Exit Devices; 2017.

X. BHMA A156.30 - High Security Cylinders; 2020.

Y. BHMA A156.36 - Auxiliary Locks; 2020.

Z. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2016.

AA. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

BB. DHI (H&S) - Sequence and Format for the Hardware Schedule; 2019.

CC. DHI (KSN) - Keying Systems and Nomenclature; 2019.

DD. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.

EE. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.

FF. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

GG. ITS (DIR) - Directory of Listed Products; Current Edition.

HH. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.

II. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

JJ. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.

KK. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

LL. UL (DIR) - Online Certifications Directory; Current Edition.

MM. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

NN. UL 437 - Standard for Key Locks; Current Edition, Including All Revisions.

OO. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:
   1. Albert & Robinson Architects.
   2. Installer's Architectural Hardware Consultant (AHC).
   3. Hardware Installer.
   4. Owner's Security Consultant.

D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

E. Keying Requirements Meeting:
   1. Schedule meeting at project site prior to General Contractor occupancy.
   2. Attendance Required:
      a. General Contractor.
      b. Mississippi Military Department.
      c. Installer's Architectural Hardware Consultant (AHC).
   3. Agenda:
      a. Establish keying requirements.
      b. Verify locksets and locking hardware are functionally correct for project requirements.
      c. Verify that keying and programming complies with project requirements.
      d. Establish keying submittal schedule and update requirements.
   4. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
      a. Access control requirements.
      b. Key control system requirements.

c. Schematic diagram of preliminary key system.
d. Flow of traffic and extent of security required.

5. Record minutes and distribute copies within two days after meeting to participants, with two copies to Albert & Robinson Architects, Mississippi Military Department, participants, and those affected by decisions made.
6. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
3. List groups and suffixes in proper sequence.
4. Provide complete description for each door listed.
5. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
6. Include account of abbreviations and symbols used in schedule.

D. Samples for Verification:
1. Submit minimum size of 2 by 4 inch for sheet samples, and minimum length of 4 inch for other products.
2. Submit one (1) sample of hinge, latchset, lockset, and closer illustrating style, color, and finish.
3. Return full-size samples to Contractor.
4. Submit product description with samples.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

F. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

G. Keying Schedule:
1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

H. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

I. Maintenance Materials and Tools: Furnish the following for Mississippi Military Department's use in maintenance of project.
1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Lock Cylinders: Ten for each master keyed group.
3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE

A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Albert & Robinson Architects and General Contractor.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.

D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Mississippi Military Department's name and register with manufacturer.
   1. Closers: Five years, minimum.
   2. Exit Devices: Three years, minimum.
   3. Locksets and Cylinders: Three years, minimum.
   4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
   1. Applicable provisions of federal, state, and local codes.
   2. Accessibility: ADA Standards and ICC A117.1.
   3. Applicable provisions of NFPA 101.
   4. Fire-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
   5. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
   6. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
      a. Air Leakage Rate: Tested in accordance with UL 1784, with air leakage rate not to exceed 3.0 cfm/sf of door opening at 0.10 inch of water for both ambient and elevated temperature tests.
   7. Listed and certified compliant with specified standards by BHMA (CPD).
   8. Auxiliary Hardware: BHMA A156.16.
   9. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
   10. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
   11. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

D. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. Refer to Shop Drawing submittal of Door Hardware Schedule.

E. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.

b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.

2. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
3. Fire-Rated Applications: Comply with NFPA 80.
   a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
   b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.
4. Concealed Fasteners: Do not use through or sex bolt type fasteners on door panel sides indicated as concealed fastener locations, unless otherwise indicated.

F. Where indicated door hardware is generic in nature, see section Hardware Schedule in Part 3 for Basis of Design hardware selections.

2.02 LOCKS AND LATCHES

A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
1. If no hardware set is indicated for a swinging door provide an office lockset.
2. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
3. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.

B. Lock Cylinders: Manufacturer's standard tumbler type, seven-pin interchangeable core.
1. Provide cams and/or tailpieces as required for locking devices required.

C. Keying: Per Owner Requirements.

D. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

2.03 HINGES

A. Hinges: Comply with BHMA A156.1, Grade 1.
1. Self Closing Hinges: Comply with BHMA A156.17.
2. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
   a. Provide hinge width required to clear surrounding trim.
3. Continuous Hinges: Comply with BHMA A156.26.
4. Provide hinges on every swinging door.
5. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
6. Provide ball-bearing hinges at each door with closer.
7. Provide non-removable pins on exterior outswinging doors.
8. Provide non-removable pins on interior outswinging doors at locations as indicated.
9. Provide following quantity of butt hinges for each door:
   a. Doors up to 60 inches High: Two hinges.
   b. Doors From 60 inches High up to 90 inches High: Three hinges.
   c. Doors 90 inches High up to 120 inches High: Four hinges.
   d. Doors over 120 inches High: One additional hinge per each additional 30 inches in height.
   e. Dutch Doors: Two hinges each leaf.

2.04 EXIT DEVICES

A. Exit Devices: Comply with BHMA A156.3, Grade 1.
1. Lever design to match lockset trim.
2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.

5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.

2.05 LOCK CYLINDERS

A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
   1. Provide high security mechanical type cylinders, Grade 1, with seven-pin core in compliance with BHMA A156.30 or UL 437 at locations indicated.
   2. Provide cylinders from same manufacturer as locking device.
   3. Provide cams and/or tailpieces as required for locking devices.

2.06 MORTISE LOCKS

A. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.
   1. Latchbolt Throw: 3/4 inch, minimum.
   2. Deadbolt Throw: 1 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Finish: To match lock or latch.

2.07 AUXILIARY LOCKS (DEADLOCKS)

A. Auxiliary Locks (Deadlocks): Comply with BHMA A156.36, Grade 1.
   1. Type: Bored (cylindrical).
   2. Application: Bored.
   3. Backset: 2-3/4 inch, unless otherwise indicated.
   4. Bolt Throw: 1/2 inch, with latch made of hardened steel.
   5. Provide strike that matches frame.

2.08 DOOR PULLS AND PUSH PLATES

A. Door Pulls and Push Plates: Comply with BHMA A156.6.
   1. Pull Type: Straight, unless otherwise indicated.
   2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
      a. Edges: Beveled, unless otherwise indicated.
   3. Material: Aluminum, unless otherwise indicated.
   4. Provide door pulls and push plates on doors without a lockset, latchset, exit device, or auxiliary lock unless otherwise indicated.
   5. On solid doors, provide matching door pull and push plate on opposite faces.

2.09 CLOSERS

A. Closers: Comply with BHMA A156.4, Grade 1.
   1. Type: Surface mounted to door.
   2. Provide door closer on each exterior door.
   3. Provide door closer on each fire-rated and smoke-rated door.
      a. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
   4. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
   5. At corridor entry doors, mount closer on room side of door.
   6. At outswinging exterior doors, mount closer on interior side of door.

2.10 PROTECTION PLATES

A. Protection Plates: Comply with BHMA A156.6.

B. Metal Properties: Stainless steel material.
   1. Metal, Standard Duty: Thickness 0.050 inch, minimum.

C. Edges: Beveled, on four sides unless otherwise indicated.

D. Fasteners: Countersunk screw fasteners.

E. Drip Guard: Provide at head of exterior doors unless covered by roof or canopy.

2.11 KICK PLATES

A. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
   1. Size: 8 inch high by 2 inch less door width (LDW) on push side of door.

2.12 FLOOR STOPS

A. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Provide floor stops when wall surface is not available; be cautious not to create a tripping hazard.
   2. Type: Manual hold-open, with dome floor stop.
   3. Material: Brass housing with rubber insert.

2.13 WALL STOPS

A. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Provide wall stops to prevent damage to wall surface upon opening door.
   2. Type: Bumper, concave, wall stop.
   3. Material: Brass housing with rubber insert.

2.14 THRESHOLDS

A. Thresholds: Comply with BHMA A156.21.
   1. Provide threshold at interior doors for transition between two different floor types, and over building expansion joints, unless otherwise indicated.
   2. Provide threshold at each exterior door, unless otherwise indicated.
   3. Type: Flat surface.
   4. Material: Aluminum.
   5. Threshold Surface: Fluted horizontal grooves across full width.
   6. Field cut threshold to profile of frame and width of door sill for tight fit.
   7. Provide non-corroding fasteners at exterior locations.
   8. Set all thresholds in a continuous bed of sealant.

2.15 WEATHERSTRIPPING AND GASKETING

A. Weatherstripping and Gasketing: Comply with BHMA A156.22.
   1. Head and Jamb Type: Adjustable.
   2. Door Sweep Type: Encased in retainer.
   3. Material: Aluminum, with brush weatherstripping.
   4. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
   5. Provide door bottom sweep on each exterior door, unless otherwise indicated.
   6. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.16 SILENCERS

A. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
   1. Single Door: Provide three on strike jamb of frame.
   2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
   3. Material: Rubber, gray color.

2.17 FIRE DEPARTMENT LOCK BOX

A. Manufacturers:

1. Knox Company; Knox-Box Rapid Entry System, _____: www.knoxbox.com/#sle.
2. Substitutions: Per Section 01 63 00.

B. Fire Department Lock Box:
1. Heavy-duty, surface mounted, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers and tamper alarm.
2. Capacity: Holds 10 keys.
3. Finish: Manufacturer's standard silver.

2.18 FINISHES

A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
1. Primary Finish: 630; satin stainless steel, with stainless steel 300 series base material (former US equivalent US32D); BHMA A156.18. For exterior installations.
2. Secondary Finish: 626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D); BHMA A156.18. For interior installations.
3. Exceptions:
a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.
b. Hinges for Fire-Rated Doors: Steel base material with plated finish, in compliance with NFPA 80.
c. Door Closer Covers and Arms: Color as selected by Albert & Robinson Architects from manufacturer's standard colors unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

B. Verify that electric power is available to power operated devices and of correct characteristics.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.

C. Install hardware for smoke and draft control doors in accordance with NFPA 105.

D. Use templates provided by hardware item manufacturer.

E. Do not install surface mounted items until application of finishes to substrate are fully completed.

F. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list, unless noted otherwise on drawings.
1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
2. For Aluminum-Framed Storefront Doors and Frames: See Section 08 43 13.
3. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
4. Mounting heights in compliance with ADA Standards:
a. Locksets: 40-5/16 inch.
b. Push Plates/Pull Bars: 42 inch.
c. Deadlocks (Deadbolts): 48 inch.
d. Exit Devices: 40-5/16 inch.
e. Door Viewer: 43 inch; standard height 60 inch.

G. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 01 40 00 - Quality Requirements.

B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

A. Adjust work under provisions of Section 01 70 00 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION

A. Protect finished Work under provisions of Section 01 70 00 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

3.07 HARDWARE SCHEDULE

A. See Hardware Schedule on following pages:

END OF SECTION

Hardware Set 1

Doors: 103-101, 103-112, 110-105A, 110-105B, 123-101A, 123-102, 124-101A, 124-102, 125-101A, 125-102, 126-101A, 126-101B, 127-101A, 127-101B, 128-101A, 128-101B, 129-101A, 129-101B, 130-101A, 130-101B, 131-101A, 131-101B, 309-102, 309-105B, 323-101A, 323-102, 325-101A, 325-101B, 326-101A, 326-101B

Each to receive:

1	EA	Continuous Hinge	CFS83CP-HD1	Pemko
1	EA	Rim Exit Device	ED5200 N957ET 630 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Surface Closer	DC8210 A4 M54 689	Corbin Russwin
1	EA	Kick Plate	K1050 8" x 34" US32D	Rockwood
1	EA	Threshold	2005AV x 36"	Pemko
1	EA	Gasketing	303AV x 36" x 84" TKSP	Pemko
1	EA	Rain Guard	346C x 40" TKSP	Pemko
1	EA	Sweep	345AV x 36" TKSP	Pemko

Hardware Set 2

Doors: 103-115, 126-106, 127-106, 128-106, 129-106, 130-106, 131-106, 309-109, 325-106, 326-106

Each to receive:

1	EA	Continuous Hinge	CFS83CP-HD1	Pemko
1	EA	Mortise Lock Storeroom Lock	ML2057 NSA 626 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Surface Closer	DC8210 A5 M54 689	Corbin Russwin
1	EA	Kick Plate	K1050 8" x 34" US32D	Rockwood
1	EA	Threshold	2005AV x 36"	Pemko
1	EA	Gasketing	303AV x 36" x 84" TKSP	Pemko
1	EA	Rain Guard	346C x 40" TKSP	Pemko
1	EA	Sweep	345AV x 36" TKSP	Pemko

Hardware Set 3

Doors: 103-103, 103-104, 103-105, 103-111, 103-113, 103-114, 110-106, 309-106B

Each to receive:

3	EA	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2" US26D	McKinney
1	EA	Mortise Lock Entrance Lock	ML2053 NSA 626 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Wall Stop	409 US32D	Rockwood
3	EA	Silencer	608-RKW	Rockwood

Hardware Set 4

Doors: 103-110

Each to receive:

3	EA	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2" US26D	McKinney
1	EA	Mortise Lock Classroom Lock	ML2055 NSA 626 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Wall Stop	409 US32D	Rockwood
3	EA	Silencer	608-RKW	Rockwood

Hardware Set 5

Doors: 103-109

Each to receive:

3	EA	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2" US26D	McKinney
1	EA	Mortise Lock Privacy Lock	ML2030 NSA 626 M19V	Corbin Russwin
1	EA	Surface Closer	DC8200 M54 689	Corbin Russwin
1	EA	Kick Plate	K1050 8" x 34" US32D	Rockwood
1	EA	Wall Stop	409 US32D	Rockwood
3	EA	Silencer	608-RKW	Rockwood

Hardware Set 6

Doors: 110-101, 110-105C, 309-101, 309-105A

Each to receive:

2	EA	Continuous Hinge	CFS83CP-HD1	Pemko
1	EA	Mullion	CR972BKM 7'2"	Corbin Russwin
2	EA	Rim Exit Device	ED5200 N957ET 630 CT6B	Corbin Russwin
3	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Cylinder Kit	CRMCK1 626 CT6B	Corbin Russwin
2	EA	Surface Closer	DC8210 A4 M54 689	Corbin Russwin
2	EA	Kick Plate	K1050 8" x 32" US32D	Rockwood
1	EA	Threshold	2005AV x 72"	Pemko
2	EA	Gasketing	303AV x 36" x 84" TKSP	Pemko
1	EA	Rain Guard	346C x 72" TKSP	Pemko
2	EA	Sweep	345AV x 36" TKSP	Pemko

Hardware Set 7

Doors: 110-107

Each to receive:

2	EA	Continuous Hinge	CFS83CP-HD1	Pemko
2	EA	Flush Bolt	555 US26D	Rockwood
1	EA	Mortise Lock Storeroom Lock	ML2057 NSA 626 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
2	EA	Surface Closer	DC8210 A5 M54 689	Corbin Russwin
2	EA	Kick Plate	K1050 8" x 28" US32D	Rockwood
1	EA	Threshold	2005AV x 72"	Pemko
1	EA	Gasketing	303AV x 72" x 84" TKSP	Pemko
1	EA	Rain Guard	346C x 64" TKSP	Pemko
2	EA	Sweep	345AV x 36" TKSP	Pemko

Hardware Set 8

Doors: 110-108

Each to receive:

2	EA	Continuous Hinge	CFS83CP-HD1	Pemko
2	EA	Flush Bolt	555 US26D	Rockwood
1	EA	Mortise Lock Storeroom Lock	ML2057 NSA 626 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
2	EA	Surface Closer	DC8200 M54 689	Corbin Russwin
1	EA	Threshold	171A x 72"	Pemko
1	EA	Gasketing	303AV x 72" x 84" TKSP	Pemko
2	EA	Sweep	345AV x 36" TKSP	Pemko

Hardware Set 9

Doors: 110-103, 110-104, 309-103, 309-104

Each to receive:

3	EA	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2" US26D	McKinney
1	EA	Mortise Lock Privacy Lock	ML2030 NSA 626 M19V	Corbin Russwin
1	EA	Surface Closer	DC8210 M54 689	Corbin Russwin
1	EA	Kick Plate	K1050 8" x 34" US32D	Rockwood
1	EA	Wall Stop	409 US32D	Rockwood
3	EA	Silencer	608-RKW	Rockwood

Hardware Set 10

Doors: 123-101B, 124-101B, 125-101B, 323-101B

Each to receive:

3	EA	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2" US26D	McKinney
1	EA	Mortise Lock Classroom Lock	ML2055 NSA 626 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Surface Closer	DC8210 M54 689	Corbin Russwin
1	EA	Kick Plate	K1050 8" x 34" US32D	Rockwood
1	EA	Wall Stop	409 US32D	Rockwood
1	EA	Gasketing	PK33BL 18'	Pemko

Hardware Set 11

Doors: 309-106A

Each to receive:

1	EA	Continuous Hinge	CFS83CP-HD1	Pemko
1	EA	Mortise Lock Entrance Lock	ML2053 NSA 626 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Surface Closer	DC8210 A4 M54 689	Corbin Russwin
1	EA	Kick Plate	K1050 8" x 34" US32D	Rockwood
1	EA	Threshold	2005AV x 36"	Pemko
1	EA	Gasketing	303AV x 36" x 84" TKSP	Pemko
1	EA	Rain Guard	346C x 40" TKSP	Pemko
1	EA	Sweep	345AV x 36" TKSP	Pemko

Hardware Set 12

Doors: 309-107

Each to receive:

1	EA	Continuous Hinge	CFS83CP-HD1	Pemko
1	EA	Mortise Lock Hotel Lock	ML2029 NSA 626 M19V CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Surface Closer	DC8210 A4 M54 689	Corbin Russwin
1	EA	Kick Plate	K1050 8" x 34" US32D	Rockwood
1	EA	Threshold	2005AV x 36"	Pemko
1	EA	Gasketing	303AV x 36" x 84" TKSP	Pemko
1	EA	Rain Guard	346C x 40" TKSP	Pemko
1	EA	Sweep	345AV x 36" TKSP	Pemko

Hardware Set 13

Doors: 309-108

Each to receive:

3	EA	Hinge, Full Mortise	TA2714-MCK 4-1/2" x 4-1/2" US26D	McKinney
1	EA	Mortise Lock Storeroom Lock	ML2057 NSA 626 CT6B	Corbin Russwin
1	EA	Interchangeable Core	CR8000 626	Corbin Russwin
1	EA	Surface Overhead Holder/Stop Surface Overhead Stop	1547S US26D	Sargent
3	EA	Silencer	608-RKW	Rockwood

SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glazing Units:
   1. Blast-rated/Impact resistant, insulated Glazing Units for Aluminum Curtainwall and/or Storefront Systems
   2. Glass for Hollow Metal Doors and Frames.

B. Glass Types:
   1. Annealed Float Glass.
   2. Fully Tempered Float Glass.
   3. Heat-Strenghtened Float Glass.
   4. Laminated Safety Glass.

C. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.

B. Section 08 11 13 - HOLLOW METAL DOORS AND FRAMES: Glazed lites in doors and borrowed lites.

C. Section 08 12 13 - Hollow Metal Frames: Glazed borrowed lites.

D. Section 08 43 13 - ALUMINUM STOREFRONT & DOORS: Glazing provided as part of storefront assembly.

E. Section 08 83 00 - Mirrors.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

E. ASTM C1036 - Standard Specification for Flat Glass; 2021.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

G. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2019.

H. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).

I. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

J. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

K. GANA (SM) - GANA Sealant Manual; 2008.

L. GANA (LGRM) - Laminated Glazing Reference Manual; 2019.

M. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data on Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 12 by 12 inch in size of glass units.

E. Certificate: Certify that products of this section meet or exceed specified requirements.

F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Mississippi Military Department's name and registered with manufacturer.

1.06 MOCK-UPS

A. Provide on-site glazing mock-up with the specified glazing components. See Section 01 45 00 where applicable.

B. Locate where directed by Architect..

1.07 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

C. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
   1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
   2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
   3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
   4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
   1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class A or 16 CFR 1201 - Category II impact test requirements.
   2. Polyvinyl Butyral (PVB) Interlayer: 0.060 inch thick, minimum.

2.02 INSULATING GLASS UNITS

A. Manufacturers:
   1. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
   2. Substitutions: See Section 01 63 00.

B. Insulating Glass Units: Types as indicated.

1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Metal-Edge Spacers: Aluminum, bent and soldered corners.
4. Spacer Color: Black.
5. Edge Seal:
   a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
6. Color: Black.
7. Purge interpane space with dry air, hermetically sealed.

C. Type IG-1 - Blast-resistant/Impact-resistant Insulating Glass Units: Vision glass, double glazed, Low-E coating.
1. Applications: Exterior glazing used in conjunction with curtain wall and/or storefront systems where indicated to be blast-resistant/impact-resistant, or as otherwise noted in the Drawings.
2. Blast-resistance: Glazing as specified is in compliance with UFC 04-010.01, Standard 10 and is not required to be designed or constructed for blast resistance.
3. Impact-resistance: Insulated Glazing Units shall meet the Large Missile Impact Resistance required by ASTM E 1996.
4. Space between lites filled with air.
5. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
   a. Tint: **Gray.**
   b. Coating: PPG Solarban 60, Low-E (passive type), on #2 surface.
6. Inboard Lite: Laminated safety glazing, 9/16 inch thick, minimum.
   a. Tint: **Clear.**
   b. Glass Pane 1: Heat-strengthened float glass, 1/4 inch thick, minimum.
   c. Interlayer: 0.060 inch polyvinyl butyral (PVB).
   d. Glass Pane 2: Heat-strengthened float glass, 1/4 inch thick, minimum.
7. Total Thickness: 1-5/16 inch.
8. Thermal Transmittance (U-Value), Winter - Center of Glass: 29, nominal.
9. Visible Light Transmittance (VLT): 35 percent, nominal.
10. Solar Heat Gain Coefficient (SHGC): 25, nominal.
11. Visible Light Reflectance, Outside: 6 percent, nominal.
12. Visible Light Reflectance, Inside: 10 percent, nominal.
13. Light to Solar Gain (LSG): 1.40, nominal.
14. Glazing Method: Dry glazing method, gasket glazing.

2.03 GLAZING UNITS

A. Type G-1 - Laminated Safety Glazing: Non-fire-rated.
1. Applications:
   a. Glazed lites in doors, except fire doors.
   b. Glazed sidelights to doors, except in fire-rated walls and partitions.
   c. Other locations requried by applicable federal, state and local codes and regulations.
   d. Other locations indicated on drawings.
2. Glass Type: Laminated safety glass as specified.
3. Tint: Clear.
4. Thickness: 5/16 inch, nominal. Two layers of 1/8 inch glazing with 0.060 inch polyvinyl butyral (PVB) interlayer.
5. Safety Glazing Certification: CPSC 16 CFR 1201 Category II
6. Glazing Method: Dry glazing method, gasket glazing.

2.04 GLAZING COMPOUNDS

A. Type GC-2 - Butyl Sealant: Single component; ASTM C920 Grade NS Class 12-1/2 Uses M and A, Shore A hardness of 10 to 20; black color.

B. Type GC-5 - Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.05 ACCESSORIES

A. Setting Blocks: Neoprene, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
   1. Width: As required for application.
   2. Thickness: As required for application.
   3. Spacer Rod Diameter: As required for application.

D. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that the minimum required face and edge clearances are being provided.

C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

D. Verify that sealing between joints of glass framing members has been completed effectively.

E. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

B. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

C. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

D. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

E. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, and paint.

3.04 INSTALLATION - DRY GLAZING METHOD (TAPE AND TAPE)

A. Application - Interior Glazed: Set glazing infills from the interior of the building.

B. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.

C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

D. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.

E. Place glazing tape on free perimeter of glazing in same manner described above.

F. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

G. Carefully trim protruding tape with knife.

3.05 INSTALLATION - WET/DRY GLAZING METHOD (TAPE AND SEALANT)

A. Application - Interior Glazed: Set glazing infills from the interior of the building.

B. Cut glazing tape to length and install against permanent stops, projecting 1/16 inch above sight line.

C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

D. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.

E. Install removable stops, spacer shims inserted between glazing and applied stops at 24 inch intervals, 1/4 inch below sight line.

F. Fill gaps between pane and applied stop with butyl type sealant to depth equal to bite on glazing, to uniform and level line.

G. Carefully trim protruding tape with knife.

3.06 INSTALLATION - BUTT JOINT GLAZING METHOD (SEALANT ONLY)

A. Application - Exterior Glazed: Set glazing infills from exterior side of building.

B. Temporarily brace glass in position for duration of glazing process; mask edges of glass at adjoining glass edges and between glass edges and framing members.

C. Temporarily secure a small diameter nonadhering foamed rod on back side of joint.

D. Apply sealant to open side of joint in continuous operation; thoroughly fill joint without displacing foam rod, and then tool sealant surface smooth to concave profile.

E. Permit sealant to cure then remove foam backer rod, and then apply sealant to opposite side, tool smooth to concave profile.

F. Remove masking tape.

3.07 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.08 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

3.09 SCHEDULES

A. Aluminum-Framed Storefront Glazing: Glass Type IG-1, install glass using dry method, and with glass thickness as required to comply with performance requirements indicated in Section 08 43 13.

B. Hollow Metal Steel Frames, Interior Glazing: Glass Type IG-1, install glass using wet method with Type GC-2 & 5 glazing compound. Use silicon clear glazing sealant on glass to glass connections or butt joints.

C. Steel Door Glazing:
   1. Interior and Exterior: Glass Type G-1, 1/4 inch thick, install glass using dry method with Type GC- 2 glazing compound. Utilize door supplied light kits where applicable.

END OF SECTION

SECTION 08 83 00
MIRRORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass mirrors.

1.02 REFERENCE STANDARDS

A. ASTM C1036 - Standard Specification for Flat Glass; 2021.

B. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2018.

C. GANA (TIPS) - Mirrors: Handle with Extreme Care (Tips for the Professional on the Care and Handling of Mirrors); 2011.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data on Mirror Types: Submit structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

1.04 QUALITY ASSURANCE

A. Fabricate, store, transport, receive, install, and clean mirrors in accordance with manufacturer's recommendations.

1.05 FIELD CONDITIONS

A. Do not install mirrors when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide five year manufacturer warranty for reflective coating on mirrors and replacement of same.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mirror Design Criteria: Select materials and/or provide supports as required to limit mirror material deflection to 1/200, or to the flexure limit of glass, with full recovery of glazing materials, whichever is less.

B. Mirror Glass; Type MG: ASTM C1036, Type 1 - Transparent Flat, Class 1 - Clear, Quality - Q1 (high-quality mirrors); silvering, protective coating, and quality requirements in compliance with ASTM C1503.
   1. Thickness: 1/4 inch.
   2. Size: As indicated on drawings.

2.02 ACCESSORIES

A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness.

C. Glazing Tape: Preformed butyl compound; 10 to 15 Shore A durometer hardness; on release paper.

D. Glazing Clips: Manufacturer's standard type.

E. Mirror Adhesive: Silicone pre-polymer based, chemically compatible with mirror coating and wall substrate.

F. Channel Frame: One piece, channel frame, stainless steel, Type 430, satin finish, 1/2 inch by 1/2 inch by 3/8 inch deep with welded frame corners, ground and polished smooth.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings for mirrored glazing are correctly sized and within tolerance.

B. Verify that surfaces of mirror frames or recesses are clean, free of obstructions, and ready for installation of mirrors.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

3.03 INSTALLATION

A. Install mirrors in accordance with manufacturer's recommendations.

B. Set mirrors plumb and level, and free of optical distortion.

C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.

D. Installation in Frames:
1. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
2. Place setting blocks at one-quarter points with edge block no more than 6 inches from corners.
3. Rest mirrors on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
4. Place glazing tape on free perimeter of mirrors in same manner described above.
5. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
6. Trim protruding tape edge.

3.04 CLEANING

A. Remove labels after work is complete.

B. Clean mirrors and adjacent surfaces.

3.05 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste.

END OF SECTION

SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Thin-set ceramic tile and stone tile.

B. Preparation of existing concrete floor slabs for installation of floor coverings.

C. Testing of concrete floor slabs for moisture and alkalinity (pH).

D. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. General Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under General Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

E. Smoothing Compound, Leveling Compound, Patching Compound.

F. Remedial floor coatings.

G. Remedial floor treatment.

H. Remedial floor sheet membrane.

1.02 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens); 2021.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2022.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2011.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.04 SUBMITTALS

A. Smoothing Compound, Leveling Compound, Patching Compound, Adhesive, and Floor Covering Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Manufacturer's required moisture limits and test methods.
   2. Manufacturer's required alkalinity (pH) limits and test methods.
   3. Manufacturer's required substrate surface absorption/porosity test methods.
   4. Manufacturer's required concrete surface profile.
   5. Manufacturer's required bond/compatibility test procedure.

B. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
   1. Manufacturer's qualification statement.

2. Certificate: Manufacturer's certification of compatibility with types of flooring applied over remedial product.
3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
4. Manufacturer's installation instructions.
5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

C. Testing Agency's Report:
1. Description of areas tested; include floor plans and photographs if helpful.
2. Summary of conditions encountered.
3. Moisture and alkalinity (pH) test reports.
4. Copies of specified test methods.
5. Recommendations for remediation of unsatisfactory surfaces.
6. Product data for recommended remedial coating.
7. Submit report to Albert & Robinson Architects.
8. Submit report to Contractor.
9. Submit report not more than two business days after conclusion of testing.

D. Adhesive Bond and Compatibility Test Report.

E. Floor Moisture Testing Technician Certificate: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician- Grade I certificate.

F. Copy of RFCI (RWP).

1.05 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by General Contractor.

B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.

C. General Contractor's Responsibility Relating to Independent Agency Testing:
1. Coordinate scheduling of all cleaning to allow adequate slab drying prior to any testing or installation.
2. Coordinate scheduling of all testing to allow adequate slab hydration and acclimatization prior to any testing or installation.
3. Provide access for and cooperate with testing agency.
4. Confirm date of start of testing at least 10 days prior to actual start.
5. Allow at least 4 business days on site for testing agency activities.
6. Achieve and maintain specified ambient conditions.
7. Notify Albert & Robinson Architects when specified ambient conditions have been achieved and when testing will start.

D. Floor Moisture Testing Technician Qualifications: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician Certification- Grade I.

E. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer’s instructions and recommendations.

B. Deliver materials in manufacturer’s packaging; include installation instructions.

C. Keep materials from freezing.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

1.08 WARRANTY

A. Manufacturer's Warranty: Provide manufacturer's standard limited warranty.

PART 2 PRODUCTS

2.01 MATERIALS

A. Smoothing Compound, Leveling Compound, Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
   3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
   4. Compound suitable for substrate conditions, and compatible with adhesive and floor covering
   5. Products:
      a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com/#sle.
      b. Substitutions: See Section 01 63 00.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
   1. Thickness: As required for application and in accordance with manufacturer's installation instructions. **ADA compliance must be maintained at flooring transitions.**
   2. Provide resistance to up to 100 percent relative humidity per ASTM F2170 and 25 pounds moisture vapor transmission per ASTM F1869.
   3. Provide resistant to alkalinity level of pH 14.
   4. Use product recommended by testing agency.

D. Remedial Floor Sheet Membrane: Pre-formed multi-ply sheet membrane installed over concrete subfloor and intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
   1. Thickness: 28 mil (0.028 inch).
   2. Tape: Types recommended by underlayment manufacturer to install membrane and cover seams.
   3. Products:
      a. GCP Applied Technologies; Kovara MBX: www.gcpat.com/#sle.
      b. Substitutions: See Section 01 63 00.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
   1. Preliminary cleaning.
   2. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
   3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
   5. Specified remediation, if required.
   6. Patching, smoothing, and leveling, as required.
   7. Other preparation specified.
   8. Adhesive bond and compatibility test.
   9. Protection.

B. Remediations:
   1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
   2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
   3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.03 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.04 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.05 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the General Contractor's convenience.
   1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
   2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
   3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.

C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.06 SUBSTRATE SURFACE ABSORPTION (POROSITY) TESTING

A. Test in accordance with ASTM F3191.

B. Follow the appropriate installation instructions for the substrate surface porosity conditions. If the selected material is not compatible with the substrate surface profile, select a different material compatible with substrate surface porosity conditions and flooring material.

3.07 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with recommendations of testing agency.

C. Comply with requirements and recommendations of floor covering manufacturer.

D. Verify appropriate concrete surface profile is present for material to be installed.

E. Verify appropriate floor flatness is present based on recommendations of floor covering manufacturer.

F. Unless otherwise indicated by product manufacturer, do not install any material unless the following conditions are present:
   1. Substrate surface is clean.
   2. Substrate surface is dry.
   3. Substrate temperature is not less than 65 degrees F (18 degrees C) and no greater than 85 degrees F (29 degrees C) during and after installation.
   4. Substrate surface is at least 5 degrees F (2.8 degrees C) above dew point.
   5. Issues with moisture and alkalinity have been addressed.

G. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

H. Do not fill expansion joints, isolation joints, or other moving joints.

3.08 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.09 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.10 APPLICATION OF REMEDIAL FLOOR TREATMENT

A. Comply with requirements and recommendations of treatment manufacturer.

3.11 INSTALLATION OF REMEDIAL FLOOR SHEET MEMBRANE

A. Install in accordance with sheet membrane manufacturer's instructions.

3.12 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Acoustic insulation.

E. Gypsum wallboard.

F. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00.01 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 07 21 00 - THERMAL INSULATION: Acoustic insulation.

C. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).

B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.

D. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2022.

E. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

F. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

G. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2020.

H. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

I. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

J. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2017.

K. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2018.

L. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2017.

M. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

N. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

O. GA-216 - Application and Finishing of Gypsum Panel Products; 2021.

P. GA-600 - Fire Resistance and Sound Control Design Manual; 2021.

Q. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

R. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of gypsum board assemblies with size, location, and installation of service utilities.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

1.05 SYSTEM DESCRIPTION

A. Acoustic Attenuation for Interior Partitions Indicated as Acoustic: STC of 45-49 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.

1.06 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Product Data: Provide data on metal framing, gypsum board, glass mat faced gypsum board, accessories, and joint finishing system.
   1. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

C. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.07 QUALITY ASSURANCE

A. Perform in accordance with ASTM C 840. Comply with requirements of GA-600 for fire-rated assemblies.
   1. Maintain one copy of standards at project site.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.

B. Store metal products to prevent corrosion.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.
   1. See PART 3 EXECUTION for finishing requirements.

B. Schedule for Product Use as defined in Paragragh "BOARD MATERIALS" below:
   1. Where installed for normal exposed conditions for finishing: **Mold-Resistant Gypsum Board.**
   2. Where installed in HVAC closets or HVAC rooms: **Mold and Mildew Resistant "Green Board".**
   3. Where installed on walls above ceilings, ceilings or walls in non-conditioned areas, fire rated wall or surfaces in non-conditioned areas and/or as defined in the drawings: **Glass Mat Faced Gypsum Board.**
   4. Where installed behind tile installations in showers or other wet areas: **Backing Board for Wet Areas.**
   5. Where installed behind tile installations in normal or dry areas: **Backing Board for Non-Wet Areas.**

6. Where installed on non-rated exposed ceiling installations for normal conditioned areas: **Ceiling Board.**
7. Where installed on fire-rated walls or ceilings in normally conditioned areas: **Fire Resistant Board.**

2.02 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. ClarkDietrich; ____: www.clarkdietrich.com/#sle.
   2. Dietrich Metal Framing: www.dietrichindustries.com.
   3. Substitutions: See Section 01 63 00 - Substitutions and Product Options

B. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
   1. Exception: The minimum metal thickness and section properties requirements of ASTM C645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E72 using assemblies specified by ASTM C754.
   2. Studs: C-shaped with knurled or embossed faces.
   3. Runners: U shaped, sized to match studs.
   4. Ceiling Channels: C shaped.
   5. Furring: Hat-shaped sections, minimum depth of 7/8 inch and 1-1/2 inches as shown on drawings.

C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
   2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.
   3. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   1. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
   2. Gold Bond Building Products, LLC provided by National Gypsum Company; ____: www.goldbondbuilding.com/#sle.
   3. USG Corporation: www.usg.com/#sle.

B. Gypsum Wallboard: Glass Mat faced gypsum panels as defined in ASTM C1396/C1396M or ASTM C1658/C1658M; sizes to minimize joints in place; ends square cut.
   1. **NO PAPER-FACED GYPSUM BOARD PRODUCTS ARE PERMITTED.**
   2. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
   4. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   5. Thickness:
      a. Vertical Surfaces: 5/8 inch.
      b. Ceilings: 1/2 inch.
   6. Mold Resistant Gypsum Board:
      a. Georgia-Pacific Gypsum; ToughRock Mold-Guard: www.gpgypsum.com/#sle.

b. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard: www.gpgypsum.com/#sle.
c. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond XP Gypsum Board: www.goldbondbuilding.com/#sle.
d. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond XP Fire-Shield Gypsum Board: www.goldbondbuilding.com/#sle.
e. USG Corporation; Sheetrock Brand EcoSmart Panels Mold Tough Firecode X 5/8 in. (15.9 mm): www.usg.com/#sle.
f. USG Corporation; Sheetrock Brand Mold Tough Firecode SCX Panels 5/8 in. (15.9 mm): www.usg.com/#sle.
g. USG Corporation; Sheetrock Brand Mold Tough Ultracode Core Panels 3/4 in. (19.1 mm): www.usg.com/#sle.
h. USG Corporation; Sheetrock Brand UltraLight Panels Mold Tough 1/2 in. (12.7 mm): www.usg.com/#sle.

7. Glass Mat Faced Gypsum Board:
a. Georgia-Pacific Gypsum; DensArmor Plus: www.gpgypsum.com/#sle.
b. Georgia-Pacific Gypsum; DensArmor Plus Fireguard C: www.gpgypsum.com/#sle.
c. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Interior Extreme Fire-Shield Gypsum Panel: www.goldbondbuilding.com/#sle.
d. USG Corporation; Sheetrock Brand Glass-Mat Panels Mold Tough Regular 1/2 in. (12.7 mm): www.usg.com/#sle.
e. USG Corporation; Sheetrock Brand Glass-Mat Panels Mold Tough Regular 5/8 in. (15.9 mm): www.usg.com/#sle.

C. Backing Board For Wet Areas:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
a. Regular Type: Thickness 1/2 inch.
b. Fire-Resistance-Rated Type: Type X core, thickness 5/8 inch.
c. Products:
1) Georgia-Pacific Gypsum; DensShield Tile Backer: www.gpgypsum.com/#sle.
2) Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Fire-Shield Tile Backer: www.goldbondbuilding.com/#sle.
3) USG Corporation; Durock Brand Glass-Mat Tile Backerboard 1/2 in. (12.7 mm): www.usg.com/#sle.
4) USG Corporation; Durock Brand Glass-Mat Tile Backerboard 5/8 in. (15.9 mm): www.usg.com/#sle.
5) USG Corporation; Durock Brand Glass-Mat Tile Backerboard SGX 5/8 in. (15.9 mm): www.usg.com/#sle.

D. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
1. Application: Vertical surfaces behind thinset tile, except in wet areas.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Type: Regular and Type X, in locations indicated.
5. Type X Thickness: 5/8 inch.
6. Regular Board Thickness: 1/2 inch.
7. Edges: Tapered.
8. Products:

a. Georgia-Pacific Gypsum; ToughRock Mold-Guard Gypsum Board: www.gpgypsum.com/#sle.
b. Georgia-Pacific Gypsum; DensArmor Plus: www.gpgypsum.com/#sle.
c. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond XP Fire-Shield Gypsum Board: www.goldbondbuilding.com/#sle.

E. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings, unless otherwise indicated.
2. Thickness: 1/2 inch.
3. Edges: Tapered.
4. Products:
a. Georgia-Pacific Gypsum; ToughRock Span 24 Ceiling Board: www.gpgypsum.com/#sle.
b. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond High Strength LITE Gypsum Board: www.goldbondbuilding.com/#sle.
c. USG Corporation; Sheetrock Brand UltraLight Panels 1/2 in. (12.7 mm): www.usg.com/#sle.

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Locate in ALL wall cavaties in the project. Thickness to match wall thickness in all cases.

B. Acoustic Sealant: As specified in Section 07 92 00.

C. Corner Beads: Galvanized steel.

D. Reveals: Sizes and types as shown in Drawings by Fry Reglet or equal.

E. J-moldings: Sizes as shown on drawings by Fry Reglet or equal.

F. Edge Trim: Bead type(s) as detailed.

G. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.

H. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

I. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

J. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

K. Screws: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C1007AISI S220 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
1. Level ceiling system to a tolerance of 1/1200.
2. Laterally brace entire suspension system.
3. Install bracing as required at exterior locations to resist wind uplift.

C. Studs: Space studs at 16 inches on center.
1. Extend partition framing to structure in all locations.

2. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

E. Standard Wall Furring: Install at masonry walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
1. Orientation: Horizontal.
2. Spacing: As indicated.

F. Blocking: Install blocking for support of door frames, wall mounted door hardware, wall mounted accessories, and wall or ceiling mounted A/V equipment.

G. Blocking: Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, wood frame openings, toilet accessories, and hardware. Bolt or screw steel channels to studs.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
1. Place one bead continuously on substrate before installation of perimeter framing members.
2. Place continuous bead at perimeter of each layer of gypsum board.
3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.04 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Double-Layer, Nonrated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.

D. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

E. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
1. Not more than 30 feet apart on walls and ceilings over 50 feet long. Request Architect's approval for all control joint location before installation.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.06 JOINT TREATMENT

A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 0: Temporary partitions or surfaces indicated to be finished in a later stage of the project.
   2. Level 1: Wall areas above finished ceilings, whether or not accessible in the completed construction.
   3. Level 2: In utility areas, behind cabinetry and other millwork, and on backing board to receive tile finish.
   4. Level 3: Walls to receive textured wall finish.
   5. Level 4: Walls and ceilings to receive flat or eggshell paint finish or wall coverings, unless otherwise indicated.
   6. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish, where severe lighting conditions exist, and at other areas specifically indicated.

C. Levels of gypsum board finish (ASTM C840):
   1. Level 0: No taping, finishing, or accessories required.
   2. Level 1: All joints and interior angles shall have tape set in joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
   3. Level 2: All joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Fastener heads and accessories shall be covered with a coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.
   4. Level 3: All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. One additional coat of joint compound shall be applied over all joints and interior angles. Fastener heads and accessories shall be covered with two separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges.
   5. Level 4: All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Two separate coats of joint compound shall be applied over all flat joints and one separate coat of joint compound shall be applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compound shall be smooth and free of tool marks and ridges.
   6. Level 5: All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife leaving a thin coating of joint compound over all joints and interior angles. Two separate coats of joint compound shall be applied over all flat joints and one separate coat of joint compound shall be applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. A thin skim coat of joint compound trowel applied, or a material manufactured especially for this purpose and applied in accordance with manufacturer's recommendations, applied to the entire surface. The surface shall be smooth and free of tool marks and ridges.

D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.
   2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
   3. Taping, filling, and sanding are not required at base layer of double-layer applications.

E. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

F. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.08 PROTECTION

A. Protect installed gypsum board assemblies from subsequent construction operations.

END OF SECTION

SECTION 09 30 00
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.

B. Tile for wall applications.

C. Waterproofing for shower floor and wall applications.

D. Ceramic accessories.

E. Ceramic trim.

F. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

C. Section 09 21 16 - Gypsum Board Assemblies: Tile backer board.

1.03 REFERENCE STANDARDS

A. ANSI A108/A118/A136.1 - Specifications for the Installation of Ceramic Tile; 2020.
   1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2017.
   2. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 2017.
   3. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar; 1999 (Reaffirmed 2021).
   4. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.
   5. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2019.
   6. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar; 2021.
   7. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 1999 (Reaffirmed 2019).
   8. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2019).
   9. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 1999 (Reaffirmed 2019).
   10. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017.
   11. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar; 1999 (Reaffirmed 2019).
   12. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).
   13. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method

Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.

14. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.
15. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2019.
16. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2019.
17. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2014 (Reaffirmed 2019).

B. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2019).

C. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2019.

D. ASTM C847 - Standard Specification for Metal Lath; 2018.

E. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel; 2018.

F. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2022.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

D. Product Data: Provide instructions for using grouts .

E. Samples: Provide sample tiles as requested by Architect for color selection from standard color line.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

H. Maintenance Materials: Furnish the following for Mississippi Military Department's use in maintenance of project.
   1. Extra Tile: 20 square feet of each size, color, and surface finish combination.

1.06 QUALITY ASSURANCE

A. Maintain one copy of and ANSI A108/A118/A136.1 and TCNA (HB) on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

C. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.

1.07 MOCK-UPS

A. Construct a dry layout of all tile for Architect's approval before installation.

B. Minimum size of mock-up as indicated on drawings, otherwize mockup size shall be 8'x8'.

C. Approved mock-up may remain as part of work.

1.08 PRE-INSTALLATION MEETING

A. Convene one week before starting work of this section.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.10 FIELD CONDITIONS

A. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

1.11 EXTRA MATERIALS

A. Provide 20 sq. ft of each size, color, and surface finish of tile specified.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: Various manufacturers as specified in the finish schedule.
   1. Substitutions: See Section 01 63 00 - Substitutions and Product Options.

B. Wall Tile : ANSI A137.1, and as follows:
   1. Manufacturer and product as selected in drawings.
   2. Size and Shape: Various, as shown in the drawings.
   3. Edges: Various, as shown in the drawings.
   4. Surface Finish: Various, as shown in the drawings.
   5. Colors: Various, as shown in the drawings.
   6. Pattern: Various, as shown in the drawings.
   7. Trim Units: Matching bullnose, cove, base, and curb shapes in sizes coordinated with field tile. Use these shapes only as directed in the drawings.

C. Floor Tile: ANSI A137.1, and as follows:
   1. Manufacturer and product as selected in drawings.
   2. Size and Shape: as shown in drawings.
   3. Edges: Various as selected in the drawings.
   4. Surface Finish: Various, as selected in the drawings.
   5. Colors: As scheduled in drawings.
   6. Pattern: Various, as shown in drawings.
   7. Trim Units: Matching various shapes in sizes coordinated with field tile. Trim units, if they exist, are specified or shown in the drawings.

2.02 TRIM AND ACCESSORIES

A. Tile Accessories: See drawings for selected finish, same color and finish as adjacent field tile; same manufacturer as tile.

B. Tile Trim: Matching bullnose, cove base, and cove shapes in sizes coordinated with field tile.
   1. Applications:
      a. Open Edges: Bullnose. Use only where shown in the drawings.
      b. Inside Corners: Coved. Use only where shown in the drawings.
      c. Floor to Wall Joints: Cove base. Use only where shown in the drawings.
   2. Manufacturers: Same as for tile.

C. Non-Ceramic Trim: As indicated in the Drawings., style and dimensions to suit application, for setting using tile mortar or adhesive.
   1. Applications:
      a. Transitions at open edges of floor tile: "RENO-U" floor trim by Schluter-Systems. H=1/2 inch; L=(length as shown in drawings).

1) Finish:
(a) Brushed stainless steel

b. Outside 90 degree wall corners: "Quadec" by by Schluter-Systems; 1/2 inch square metal trim extending from floor to top of tile installation.
1) Finish:
(a) Texture color-coated aluminum; color to be selected from manufacturer's full color line to correspond with adjacent tile color.

c. Transition at open edges of wall tile: "Quadec" by by Schluter-Systems; 1/2 inch square metal trim extending entire length of exposed edge.
1) Finish:
(a) Texture color-coated aluminum; color to be selected from manufacturer's full color line to correspond with adjacent tile color.

d. Transition between floor finishes of different heights.

e. Borders and other trim as indicated on drawings.

2. Manufacturers:
a. Schluter-Systems: www.schluter.com/#sle.
b. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same manufacturer.

B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4 or ANSI A118.15.
1. Applications: Use this type of bond coat where indicated and where no other type of bond coat is indicated.
2. Products:
a. LATICRETE International, Inc; LATICRETE 254 Platinum: www.laticrete.com/#sle.
b. Substitutions: See Section 01 63 00.

C. Mortar Bed Materials: Pre-packaged mix of Portland cement, sand, latex additive, and water.
1. Products:
a. LATICRETE International, Inc; LATICRETE 3701 Fortified Mortar Bed: www.laticrete.com/#sle.
b. Substitutions: See Section 01 63 00.

2.04 GROUTS

A. Provide setting and grout materials from same manufacturer.

B. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As selected by Albert & Robinson Architects from manufacturer's full line.
4. Products:
a. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
b. Substitutions: See Section 01 63 00.

2.05 MAINTENANCE MATERIALS

A. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
1. Composition: Water-based colorless silicone.

2.06 THICK-BED MATERIALS

A. Metal Lath: ASTM C 847, Flat diamond mesh, of weight to suit application, galvanized finish.
1. Color: As selected.

2.07 ACCESSORY MATERIALS

A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
   1. Crack Resistance: No failure at 1/16 inch gap, minimum.
   2. Fluid or Trowel Applied Type:
      a. Thickness: 20 mils, maximum.
      b. Products:
         1) LATICRETE International, Inc; LATICRETE Blue 92 Anti-Fracture Membrane: www.laticrete.com/#sle.
         2) Substitutions: See Section 01 63 00.

B. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
   1. Crack Resistance: No failure at 1/16 inch gap, minimum; comply with ANSI A118.12.
   2. Fluid or Trowel Applied Type:
      a. Thickness: 25 mils, minimum, dry film thickness.
      b. Products:
         1) LATICRETE International, Inc; LATICRETE HYDRO BAN: www.laticrete.com/#sle.
         2) Substitutions: See Section 01 63 00.

C. Waterproofing Membrane at Showers and Tiled Tubs: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
   1. Fluid or Trowel Applied Type:
      a. Material: Synthetic rubber.
      b. Thickness: 25 mils, minimum, dry film thickness.
      c. Products:
         1) LATICRETE International, Inc; LATICRETE HYDRO BAN: www.laticrete.com/#sle.
         2) Substitutions: See Section 01 60 00 - Product Requirements.

D. Backer Board: As specified in Section 09 21 16 Gypsum Board Assemblies.

E. Thresholds: As shown in the drawings .

F. Joint Control System: Provide joint control system for tile installations as indicated in floor and wall installation methods (3.04 and 3.05).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09 05 61.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION - GENERAL

A. Install tile and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19 , manufacturer's instructions, and TCNA (HB) recommendations.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Place thresholds at exposed tile edges.

D. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

E. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

F. Form internal angles square and external angles bullnosed.

G. Install tile accessories rigidly in prepared openings.

H. Install non-ceramic trim in accordance with manufacturer's instructions.

I. Sound tile after setting. Replace hollow sounding units.

J. Keep control and expansion joints free of mortar, grout, and adhesive.

K. Keep expansion joints free of adhesive or grout. Apply sealant to joints.

L. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

M. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

N. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

O. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

A. Floor tiles shall be installed with 1/16" joints as made possible by using tile joint control system by Raimondi (Raimondi Lippage or Leveling System or equal).

B. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.

C. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.

3.05 INSTALLATION - FLOORS - MORTAR BED METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F111, with cleavage membrane, unless otherwise indicated.
   1. Where waterproofing membrane is indicated, with standard grout or no mention of grout type, install in accordance with TCNA (HB) Method F121.

B. Cleavage Membrane: Lap edges and ends.

C. Waterproofing Membrane: Install as recommended by manufacturer and as specified in the section in which the product is specified.

D. Mortar Bed Thickness: 2 inch sloped to drain as shown on drawings. , unless otherwise indicated.

3.06 INSTALLATION - SHOWERS AND BATHTUB WALLS

A. At tiled shower receptors install in accordance with TCNA (HB) Method B415, mortar bed floor, and W244, thin-set over cementitious backer unit walls.

B. Grout with standard grout as specified above.

C. Seal joints between tile work and other work with sealant Type Bathtub/Tile Sealant specified in Section 07 92 00.

3.07 INSTALLATION - WALL TILE

A. Wall tiles shall be installed with 1/16" joints as made possible by using tile joint control system by Raimondi (Raimondi Lippage or Leveling System or equal).

B. Over gypsum wallboard/tile backer, as specified in Section 09 21 16 - Gypsum Board Assemblies, on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.
   1. Where cementitious backer board is indicated, install in accordance with TCNA Method W244.

3.08 CLEANING

A. Clean tile and grout surfaces.

3.09 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Suspended Lay-In Acoutical Ceiling Tiles.

1.02 RELATED REQUIREMENTS

A. Section 07 21 00 - THERMAL INSULATION: Acoustical insulation.

B. Section 07 92 00 - Joint Sealants.

1.03 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2022.

B. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2022.

C. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

E. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2022.

F. ASTM E1414/E1414M - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum; 2021a.

G. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2019.

H. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.04 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning.

C. Product Data: Provide data on suspension system components and acoustical units.

D. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.

E. Samples: Submit two samples each, 6 inches long, of suspension system main runner.

F. Maintenance Materials: Furnish the following for Mississippi Military Department's use in maintenance of project.
   1. See Section 01 33 00, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to 5 percent of total installed of each type of ceiling tile installed.

1.05 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

1.07 PROJECT CONDITIONS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Install acoustical units after interior wet work is dry.

1.08 EXTRA MATERIALS

A. See Section 01 60 00 - Product Requirements, for additional provisions.

B. Provide 5% percent of total acoustical unit area of each type of acoustical unit for the Owner's use in maintenance of project.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. USG: www.usg.com.
   3. Substitutions: See Section 01 63 00.

B. Suspension Systems:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. USG: www.usg.com.
   3. Substitutions: See Section 01 63 00.

2.02 ACOUSTICAL UNITS

A. Acoustical Units - General: ASTM E1264, Class A.

B. Acoustic Tile Type LAT-1:
   1. Dune 1775 by Armstrong.
   2. Sizes: As indicated in Drawings.
   3. Edge Profile: Square.
   4. Suspension System Type: A.

2.03 SUSPENSION SYSTEM(S)

A. Manufacturers:
   1. Armstrong World Industries, Inc: www.armstrong.com.
   2. Substitutions: See Section 01 63 00.

B. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
   1. Materials:
      a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.

C. Exposed Steel Suspension System Type A: Formed steel, commercial quality cold rolled; Intermediate-duty.
   1. Profile: Tee; 15/16 inch wide face.
   2. Construction: Double web.
   3. Finish: White painted.
   4. Products:
      a. Prelude XL.
      b. Substitutions: See Section 01 63 00.

D. Exposed Aluminum Suspension System Type B: Extruded aluminum; intermediate-duty.
   1. Profile: Tee; 15/16 inch wide face.
   2. Finish: White aluminum.
   3. Products:

a. Prelude Plus XL.
b. Substitutions: See Section 01 63 00.

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Acoustical Insulation: ASTM C665 friction fit type unfaced batts.
1. Thickness: 2 inch, unless noted otherwise in drawings.

D. Acoustical Sealant For Perimeter Moldings: Specified in Section 07 92 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

A. Install suspension system in accordance with ASTM C 636, ASTM E 580, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Locate system on room axis according to reflected plan.

D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
1. Use longest practical lengths.
2. Overlap and rivet corners.

E. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

I. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - TILES

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:

1. Cut to fit irregular grid and perimeter edge trim.
2. Make field cut edges of same profile as factory edges.

G. Oversized tiles shall be used where ceiling tiles measure to be 6 inches or less at intersections with walls.

H. Where round obstructions occur, provide preformed closures to match perimeter molding.

I. Install hold-down clips on panels within 20 ft of an exterior door.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.06 CLEANING

A. Clean surfaces.

B. Replace damaged or abraded components.

3.07 SCHEDULE

A. See Finish Schedule in Drawings.

END OF SECTION

SECTION 09 65 00
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring (Luxury Vinyl Tile).

B. Resilient base.

C. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2019a, with Editorial Revision (2020).

B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

C. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2020.

D. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.

E. ASTM F2169 - Standard Specification for Resilient Stair Treads; 2015 (Reapproved 2020).

F. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.04 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Selection Samples: Submit manufacturer's complete set of color samples for Albert & Robinson Architects's initial selection.

D. Verification Samples: Submit two samples, 12 by 12 inch in size illustrating color and pattern for each resilient flooring product specified.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect roll materials from damage by storing on end.

B. Do not double stack pallets.

1.07 FIELD CONDITIONS

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.08 EXTRA MATERIALS

A. Provide 2% of flooring, 2% lineal feet of base, of each type and color specified.

1.09 WARRANTY

A. Manufacturer's Materials Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
   1. Warranty: 1 year limited warranty commencing on Date of Substantial Completion covering both materials and labor.

PART 2 PRODUCTS

2.01 TILE FLOORING

A. Luxury Vinyl Tile: Product Specified in Drawings.
   1. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
   2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648, NFPA 253, ASTM E 648, or NFPA 253.
   3. Slip Resistance: ASTM C 1028; ADA Compliant; Dry 0.68; Wet 0.66.
   4. Wear Layer Thickness: 03 inch. (30 mil)
   5. Total Thickness: 0.125 inch.
   6. Size: As indicated on drawings.
   7. Color: As indicated on drawings.
   8. Manufacturers:
      a. As indicated on drawings.
      b. Substitutions: See Section 01 63 00.

2.02 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
   1. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E 648, NFPA 253, ASTM E 648, or NFPA 253.
   2. Height: As indicated in Drawings.
   3. Thickness: 0.125 inch.
   4. Finish: Satin.
   5. Length: Roll.
   6. Color: As indicated on Drawings. If no color is indicated, color to be selected by Albert & Robinson Architects from manufacturer's full range.
   7. Accessories: Premolded external corners and internal corners.
   8. Manufacturers:
      a. Johnsonite -Tarkett Commercial: www.commercial.tarkett.com
      b. Flexco Corporation: www.flexcofloors.com
      c. Substitutions: See Section 01 63 00.

2.03 ACCESSORIES

A. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.
   1. Single-Source Responsibility: Resilient products and primers/adhesives shall be from a single supplier.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

3.02 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 09 05 61.

B. Clean substrate.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.
   2. Fit joints and butt seams tightly.
   3. Set flooring in place, press with heavy roller to attain full adhesion.

D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

3.04 INSTALLATION - TILE FLOORING

A. Install in accordance with manufacturer's instructions.

B. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Set flooring in place, press with heavy roller to attain full adhesion.

E. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.

F. Install tiles with grain direction rotating 90 degrees every other tile. Verify installation lay-out method before installing.

G. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.

H. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

I. Install feature strips and floor markings where indicated. Fit joints tightly.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Protect installed products and finish surfaces from damage throughout the duration of construction.

END OF SECTION

SECTION 09 65 66

RESILIENT ATHLETIC FLOORING

1. Part 1 – GENERAL

1.1 SUMMARY

1.1.1. Products Supplied

A. Resilient athletic flooring.
B. Accessories required for installation, maintenance and repair.

1.1.2. Related Requirements

A. Section 09 05 61 – Common Work Results for Flooring Preparation

1.2 REFERENCES

1.2.1 ASTM International (ASTM)

A. ASTM D412: Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
B. ASTM D2047: Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as measured by the James Machine.
C. ASTM D2240: Standard Test Method for Rubber Property (Durometer Hardness).
D. ASTM D3389: Standard Test Method for Coated Fabrics Abrasion Resistance (Rotary Platform Abrader).
E. ASTM E492: Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine.
F. ASTM E648: Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
G. ASTM E1643: Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
H. ASTM E1745: Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
I. ASTM E2180: Standard Test Method for Determining the Activity of Incorporated Antimicrobial Agent(s) In Polymeric or Hydrophobic Materials.
J. ASTM F386: Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces.
K. ASTM F710: Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
L. ASTM F925: Standard Test Method for Resistance to Chemicals of Resilient Flooring.
M. ASTM F970: Standard Test Method for Measuring Recovery Properties of Floor Coverings after Static Loading.
N. ASTM F1514: Standard Test method for Measuring Heat Stability of Resilient Flooring by Color Change.
O. ASTM F1515: Standard Test Method for Measuring Light Stability of Resilient Flooring by Color Change.
P. ASTM F1869: Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
Q. ASTM F2170: Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

1.3 SUBMITTALS

1.3.1 Action Submittals

A. Provide copies of Original Equipment Manufacturer (OEM)'s ISO 9001 certification.
B. Provide current printed data sheets for all Products Supplied.
C. Provide samples, 6 inches x 6 inches, for verification of such characteristics as color and surface texture for each Manufactured Product specified.
D. As necessary, provide shop drawings prepared for project illustrating layouts, details, dimensions and other pertinent data.

1.3.2 Informational Submittals

A. Provide Manufacturer's current printed substrate surface preparation guidelines.
B. Provide Manufacturer's current printed installation guidelines for Products Supplied.

1.3.3 Closeout Submittals

A. Provide Manufacturer's current printed maintenance guidelines for Manufactured Product.
B. Provide Manufacturer's current printed standard warranty for Manufactured Product.

1.3.4 Maintenance Material Submittals

A. Provide extra stock materials from original dye lots, for use in facility operations and maintenance (approximately 2% of the total floor surface for each color, surface texture and format of Manufactured Product specified).

1.4 QUALITY ASSURANCE

A. Manufacturer must have ISO 9001, ISO 14064 and ISO 50001 certifications.
B. Manufacturer must have a minimum of fifteen (15) years of experience in the manufacturing of prefabricated resilient rubber flooring.
C. Manufactured Product must have undergone a vulcanization process; factory lamination should not be accepted as equivalent.
D. Surfacing Contractor to be recognized and approved by the Manufacturer.
E. Surfacing Contractor shall be fully acquainted with the existing facility and utilities and shall fully understand the difficulties and restrictions attending the execution of the work under contract. Surfacing Contractor to advise the Owner of any restrictions or anticipated difficulty, in writing and before submitting bids.
F. Installer must be approved by the Surfacing Contractor and must have performed installations of the same scale in the last three (3) years.

1.5 DELIVERY, STORAGE AND HANDLING

A. Products supplied must be delivered in Manufacturer's original, unopened and undamaged packaging with identification labels intact.
B. Products supplied must be protected from exposure to harmful weather conditions and must be safely stored on a clean, dry, flat surface. Store rolls of resilient athletic flooring upright; store tiles of resilient athletic flooring on a flat surface, carefully protecting corners and edges.

C. Climate controlled storage is recommended. Storage temperature must not be below 40°F and must not exceed 100 °F. Materials must be delivered to site a minimum of 24 hours before work is scheduled to begin so that they may acclimate.
D. Avoid storing Manufactured Product for extended periods of time or additional material trimming may be required.
E. Products supplied need not suffer damage during delivery, storage and handling (i.e. dents/scratches, excessive compression or warping, chipped edges, etc.).

1.6 SITE CONDITIONS

A. The General Contractor or Construction Manager shall be responsible for ensuring all site conditions meet the requirements of the Manufacturer, as referenced herein at sections 3.2 and 3.3. Refer to current version of ASTM F710 for additional information.
B. Concrete slabs, on or below grade, must be installed over a permanent effective vapor retarder, respecting current versions of the standard practice ASTM E1643 and the standard specification ASTM E1745. The vapor retarder must be placed directly underneath the concrete slab, above the granular fill, per Manufacturer's instructions. The vapor retarder must have a perm rating of 0.1 or less and must have a minimum thickness of 10 mil (0.010 in).
C. No sealers or curing compounds are applied to or mixed into the concrete (refer to Section 03 05 00 – Common Work Results for Concrete of Division 3).
D. Installation of the resilient athletic flooring to be carried out no sooner than the specified curing time of the concrete (normal density concrete curing time is approximately 28 days for development of design strength, having a minimum 3500 psi or 25 MPa in compressive strength).
E. Substrate surface must be free of all contaminants that can inhibit bond (paint, wax, dust, oil or grease, sealer, curing compound, solvent, asphalt, old adhesive residues, etc.). All contaminants must be removed from the surface via mechanical abatement. Use of abatement chemicals is not recommended.
F. Concrete must have a smooth finish, proper density and be highly compacted with a tolerance of 1/8th of an inch in a 10-foot radius (3.2 mm in 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.
G. Moisture and alkalinity tests must be performed on all concrete substrates, under in-service conditions. It is recommended to turn on the HVAC unit prior to performing moisture testing, in order to ensure stable testing conditions and accurate results. The concrete's surface pH should be between 7 and 10. Relative humidity of the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with the current version of ASTM F2170 (in situ probes). Moisture vapor emissions from the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with the current version of ASTM F1869 (anhydrous calcium chloride).
H. Maintain stable room and substrate temperatures prior to moisture testing and flooring installation, during the flooring installation, as well as a minimum of 48 hours after the flooring has been completely installed. Recommended ambient temperature range is between 65°F and 86°F (18°C and 30°C) and recommended ambient humidity range is between 35% and 55%.
I. Installation of resilient athletic flooring will not commence until the building is enclosed and all other trades have completed their work. It is the General Contractor or Construction Manager's responsibility to maintain a secure and clean working area before, during and after the installation of the resilient athletic flooring.

1.7 WARRANTY

A. The resilient athletic flooring is warranted to be free from manufacturing defects for a period of one (1) year from the date that is 30 days from shipment from the Manufacturer, per the terms and conditions of the Manufacturer's written Limited Warranty.
B. For standard applications, the resilient athletic flooring is warranted against excessive wear under normal usage for a period of ten (10) years from the date that is 30 days from shipment from the Manufacturer, per the terms and conditions of the Manufacturer's written Limited Warranty. For applications in ice arenas/ice skate use, the resilient athletic flooring is warranted against excessive wear under normal usage for a period

of five (5) years from the date that is 30 days from shipment from the Manufacturer, per the terms and conditions of the Manufacturer's written Limited Warranty.

C. Refer to current copy of Manufacturer's written Limited Warranty for all terms and conditions, which shall be obtained directly from Manufacturer. In no event shall any warranties provided by any third parties (including distributors, insurance and/or private label providers) be considered valid.

2 PART 2 – PRODUCTS

2.1 MANUFACTURED PRODUCT

2.1.1 Manufacturer

A. Mondo

B. Substitutions Permitted

2.1.2 Description

A. Ramflex is prefabricated resilient athletic flooring, calendared and vulcanized, with a base of natural and synthetic rubbers, stabilizing agents and pigmentation, as manufactured by Mondo Luxembourg S.A. or approved equal.

B. Dual durometer construction, vulcanized into a single prefabricated sheet/tile for optimal performance and durability. The Shore hardness of the top layer (wear layer) will be greater than that of the bottom layer (backing); Shore hardness of layers to be recommended by the Manufacturer and to respect limits specified.

C. Thickness: 0.394" (10 mm).

D. Colors: Provided in standard, solid background colors with random marbleization throughout the wear layer's entire depth.

E. Surface Texture: Hammered.

F. Formats: Available in sheets that are 6'1" (1.86 m) wide and 29'6" (9 m) long [min. 19'8" (6 m)/max. 36'1" (11 m)]; available in tiles that are 36" x 36" (91.35 cm x 91.35 cm).

2.1.3 Performance

A. Performance of the Manufactured Product to conform to the following criteria:

Performance Criterion	Test Method	Requirement	Result*
Elongation at Break	ASTM D412	≥100%	≥180%
Tensile Strength	ASTM D412	≥300 psi	≥525 psi
Static Coefficient of Friction (neolite & leather heels)	ASTM D2047	≥0.50 (dry)	≥0.95 (dry)
Hardness of Top Layer (Shore A)	ASTM D2240	75 ± 5	75
Hardness of Bottom Layer (Shore A)	ASTM D2240	60 ± 10	60
Abrasion Resistance (H18 wheel, 1000 g, 1000 cycles)	ASTM D3389	≤1.0 g	≤0.63 g
Impact Insulation Class	ASTM E492	-	≈ 59 dB (IIC)
Critical Radiant Flux	ASTM E648	≥0.22 W/cm^2 (Class 2)	≥0.45 W/cm^2 (Class 1)
Reduction of Bacterial Activity - *MRSA (ATC 43300)*	ASTM E2180	-	≥99.99% reduction
Thickness	ASTM F386	10 mm (±0.2 mm) 0.394" (±0.008")	Compliant
Resistance to Chemicals	ASTM F925	≤Slight Change	Compliant **
Static Loading (Tested at 250psi)	ASTM F970	≤0.008 in	0.007 in
Heat Resistance	ASTM F1514	ΔE ≤8.0	Compliant
Light Resistance	ASTM F1515	ΔE ≤8.0	Compliant
Reduction of Bacterial Activity - *MRSA (ATC 43300)*	ISO 22196	-	≥99.999% reduction
Indoor Air Quality (IAQ) Certifications			
CA Section 01350	CA: V1.1-2010	-	Compliant
Greenguard Gold	Greenguard	-	Compliant
Greenguard Certification	Greenguard	-	Compliant
French Decree № 2011-321	ISO 16000-9	-	Compliant (Class A+)

*Results obtained from manufacturing controls can vary between production lots and do not constitute representations or warranties as to any particular production lot. Mondo reserves the right to modify product design and/or specifications at any time without notice.

**For complete list of chemicals tested, concentration and contact time, please communicate with Mondo's Technical Department.

2.1.4 Limitations

A. For areas subject to surface impacts, such as designated free weight areas, it is recommended to adhere the resilient athletic flooring directly to the concrete substrate for optimal performance. Whenever possible, avoid installing resilient athletic flooring on weaker surfaces that may offer less resistance to continuous impacts.

2.1.5 Materials

A. Provide Ramflex rubber flooring manufactured by Mondo Luxembourg S.A. or approved equal.

B. Provide Manufactured Product as specified in section 2.1.2 Description.

2.2 ACCESSORIES

A. Adhesive certified by Manufacturer: Mondo PU 105 (polyurethane) or Mondo PU300 (epoxy-polyurethane) for installations over concrete and wood substrates. For suitability, recommendations, and use, please refer to the specified adhesive's current printed technical data sheet. For acceptable installations over a Mondo Everlay product (where surface impacts and heavier dynamic loads are not a concern), default to Mondo PU 300 or communicate with Mondo's Technical Department for assistance. High moisture adhesives are available, please contact Mondo's Technical Department for assistance.

B. Portland cement-based patching or leveling compound to be supplied or recommended/approved by Manufacturer.

3 PART 3 – EXECUTION

3.1 INSTALLERS

A. Refer to section 1.4 of this document for information on installers.

3.2 EXAMINATION

A. Prior to resilient athletic flooring installation, ensure substrate is ready to receive resilient flooring and has been prepared according to Manufacturer's current substrate surface preparation guidelines. Refer to current version of ASTM F710 for additional information.
B. Ensure that concrete slabs, on or below grade, are installed over a permanent effective vapor retarder, respecting current versions of the standard practice ASTM E1643 and the standard specification ASTM E1745. The vapor retarder must be placed directly underneath the concrete slab, above the granular fill, per Manufacturer's instructions. The vapor retarder must have a perm rating of 0.1 or less and must have a minimum thickness of 10 mil (0.010 in).
C. Ensure that no concrete sealers or curing compounds have been applied to or mixed into the concrete (refer to Section 03 05 00 – Common Work Results for Concrete of Division 3).
D. Installation of the resilient athletic flooring to be carried out no sooner than the specified curing time of the concrete (normal density concrete curing time is approximately 28 days for development of design strength, having a minimum 3500 psi or 25 MPa in compressive strength).
E. Ensure that concrete surface is free of any contaminant that could inhibit bond (paint, wax, dust, oil or grease, sealer, curing compound, solvent, asphalt, old adhesive residues, etc.). All contaminants must be removed from the surface via mechanical abatement. Use of abatement chemicals is not recommended.
F. Confirm concrete has a smooth finish, proper density and is highly compacted with a tolerance of 1/8th of an inch in a 10-foot radius (3.2 mm in a 3.05 m radius). Floor Flatness (FF) and Floor Levelness (FL) numbers are not recognized.
G. Moisture and alkalinity tests must be performed on all concrete substrates, under in-service conditions. It is recommended to turn on the HVAC unit prior to performing moisture testing, in order to ensure stable testing conditions and accurate results. The concrete's surface pH should be between 7 and 10. Relative humidity of the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with the current version of ASTM F2170 (in situ probes). Moisture vapor emissions from the concrete slab must not exceed the tolerance of the adhesive specified, in accordance with the current version of ASTM F1869 (anhydrous calcium chloride).
H. Ensure room and substrate temperatures are maintained prior to moisture testing and flooring installation, during the flooring installation, as well as a minimum of 48 hours after the flooring has been completely installed. Recommended ambient temperature range is between 65^{o}F and 86^{o}F (18^{o}C and 30^{o}C) and recommended ambient humidity range is between 35% and 55%.
I. Installation of resilient athletic flooring will not commence until the building is enclosed and all other trades have completed their work. It is the General Contractor or Construction Manager's responsibility to ensure that a secure and clean working area is maintained before, during and after the installation of the resilient athletic flooring.

3.3 PREPARATION

A. Prepare substrate surface in accordance with Manufacturer's current printed guidelines.

3.4 INSTALLATION

A. Install sheets of resilient athletic flooring following Manufacturer's current printed guidelines.
B. Install all accessories following Manufacturer's current printed guidelines.

3.5 REPAIR

A. Refer to section 1.3.4 for extra stock materials. Repair material must come from the same original dye lot as the Manufactured Product initially installed.
B. Repairs are to be performed by Surfacing Contractor's qualified installers/technicians only.

3.6 CLEANING

A. Always wait at least a minimum of 72 hours after the resilient athletic flooring has been completely installed before performing initial maintenance. Always maintain the resilient athletic flooring following Manufacturer's current printed guidelines.

3.7 PROTECTION

A. As needed, protect resilient athletic flooring with 1/8" Masonite during and after the installation, prior to its acceptance by the Owner.
B. Preserve the integrity of the installation and protect against direct sunlight/UV exposure; always ensure that windows and glass doors have inherent UV protection and/or are fitted with blinds/UV film.

END OF SECTION

SECTION 09 68 13
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED REQUIREMENTS

A. Section 09 05 61 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

A. CRI (CIS) - Carpet Installation Standard; Carpet and Rug Institute; 2011.

B. CRI (GLA) - Green Label Testing Program - Approved Adhesive Products; Carpet and Rug Institute; Current Edition.

1.04 SUBMITTALS

A. See Section 01 33 00 for submittal procedures.

B. Shop Drawings: Indicate layout of joints, direction of carpet pile, and location of edge moldings.

C. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

E. Manufacturer's Installation Instructions: Indicate special procedures.

F. Manufacturer's Qualification Statement.

G. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

H. Maintenance Materials: Furnish the following for Mississippi Military Department's use in maintenance of project.

1. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience and approved by carpet tile manufacturer.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:

1. As defined in drawings and specifications.
2. Substitutions: See Section 01 63 00.

2.02 MATERIALS

A. Tile Carpeting: See Drawings and Finish Schedule for exact carpet manufacturer, style and color, manufactured in one color dye lot.

B. Provide 5% extra materials of each product color.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Embossed aluminum, color as selected.

C. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

D. Adhesives: Acceptable to carpet tile manufacturer, compatible with materials being adhered; maximum VOC of 50 g/L; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance is acceptable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09 05 61.
   2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
   3. Follow moisture and alkalinity remediation procedures in Section 09 05 61.

D. Verify that concrete sub-floor surfaces are dry enough and ready for flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F710; obtain instructions if test results are not within limits recommended by carpet tile manufacturer and adhesive materials manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set aligned as indicated on shop drawings. See installation method for each type of carpet listed above.

F. Fully adhere carpet tile to substrate.

G. Trim carpet tile neatly at walls and around interruptions.

H. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, and varnishes.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non-metallic roofing and flashing.
   6. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead.
   7. Marble, granite, slate, and other natural stones.
   8. Floors, unless specifically indicated.
   9. Ceramic and other types of tiles.
   10. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
   11. Glass.
   12. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - METAL FABRICATIONS: Shop-primed items.

B. Section 09 91 23 - Interior Painting.

1.03 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2012.

C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2012).

D. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; current edition, www.paintinfo.com.

F. SSPC-SP 1 - Solvent Cleaning; 2015.

G. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

H. SSPC-SP 6 - Commercial Blast Cleaning; Society for Protective Coatings; 2007.

I. SSPC-SP 13 - Surface Preparation of Concrete; Society for Protective Coatings; 2003 (Reaffirmed 2015).

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Samples: Submit One paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with The Architect and Owner before preparing samples, to eliminate sheens definitely not required.
   3. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, siding, factory finished metals, and wood doors, have been approved.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Maintenance Materials: Furnish the following for The Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.
   4. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information” report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum Five years’ experience and approved by manufacturer.

1.07 MOCK-UP

A. See Section 01 40 00 - Quality Requirements, for general requirements for mock-up.

B. Provide panel, 8 feet long by 8 feet wide, illustrating paint color, texture, and finish.

C. Locate where directed by Architect.

D. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for exterior, unless required otherwise by manufacturer's instructions.

F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by the Architect and Owner is obtained using the specified procedures for substitutions.

B. Paints:
   1. Sherwin-Williams Company: www.sherwin-williams.com.

C. Transparent Finishes:
   1. Sherwin-Williams Company: www.sherwin-williams.com.

D. Stains:
   1. Sherwin-Williams Company: www.sherwin-williams.com.

E. Primer Sealers: Same manufacturer as top coats.

F. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES – GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   4. Supply each paint material in quantity required to complete entire project's work from a single production run.
   5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
      b. Architectural coatings VOC limits of State in which the project is located.

2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by the Architect and Owner from the manufacturer's full line.

E. Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by the Architect and Owner after award of contract.
2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to The Owner.
3. Extend colors to surface edges; colors may change at any edge as directed by The Architect and Owner.

2.03 PAINT SYSTEMS – EXTERIOR: NOTE, ALL PAINT CONDITIONS ARE SHOWN FOR QUALITY, REFER TO DRAWINGS FOR QUANTITY OF EACH PAINT CONDITION REQUIRED IN THIS PROJECT. SOME PAINT TYPES MAY NOT BE REQUIRED IF CONDITION REQUIRING PAINT TYPE DOES NOT EXIST IN DRAWINGS.

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, brick, cement board, primed wood, and primed metal.
1. Two top coats and one coat primer.
2. Top Coat(s): Exterior Latex.
   a. Products:
      1) A-100 Exterior Latex (A6,A82,A8) Series
      2) Substitutions: Section 01 60 00 - Product Requirements.
3. Top Coat(s): Exterior Light Industrial Coating, Water Based.
   a. Products:
      1) Pro Industrial Acrylic (B66-600,650,660) Series
      2) Substitutions: Section 01 60 00 - Product Requirements.
4. Top Coat(s): Exterior Alkyd Enamel.
   a. Products:
      1) Pro Industrial Urethane Alkyd Enamel (b54-150) Series
      2) Substitutions: Section 01 60 00 - Product Requirements.
5. Top Coat(s): Exterior Pigmented Elastomeric, Water Based.
   a. Products:
      1) ConFlex XL High Build Coating (CF11-50) Series
      2) Substitutions: Section 01 60 00 - Product Requirements.
6. Top Coat(s): Textured Latex Coating.
   a. Products:
      1) UltraCrete Texture Coating (CF12-800) Series
      2) Substitutions: Section 01 60 00 - Product Requirements.
7. Top Coat(s): Siloxane Water Repellent.
   a. Products:
      1) Loxon 7% Siloxane Water Repellant (CF31T7)
      2) Substitutions: Section 01 60 00 - Product Requirements.
8. Top Coat(s): Aluminum Paint, Solvent Based.
   a. Products:
      1) Silver-Brite Aluminum (B59S11)
      2) Substitutions: Section 01 60 00 - Product Requirements.
9. Top Coat(s): Hi Build Acrylic Coating
   a. Products:
      1) Loxon XP Masonry Coating, (LX11, LX21) Series
      2) Substitutions: Section 01 60 00 - Product Requirements.

10. Top Coat(s): Self Cleaning Acrylic Coating
    a. Products:
        1) Loxon Self Cleaning Acrylic Coating, (LX13, LX14) Series
        2) Substitutions: Section 01 60 00 - Product Requirements.
11. Top Coat(s): WaterBased Alkyd Urethane (B53-1050, B53-1150, B53-1250)Series
    a. Products:
        1) S-W Pro Industrial WaterBased Alkyd Urethane.
        2) Substitutions: Section 01 60 00 - Product Requirements.
12. Primer: As recommended by top coat manufacturer for specific substrate.

B. Paint E-OP-FL - Concrete Floors and Wood Decks to be Painted.
1. Two top coats and one coat primer.
2. Top Coat(s): High Build Acrylic Deck and Floor Coating.
    a. Products:
        1) SuperDeck Exterior Deck & Dock Elastomeric Coating (SD9) Series
        2) Substitutions: Section 01 60 00 - Product Requirements.
3. Top Coat(s): Latex Floor Paint, Low Gloss.
    a. Products:
        1) Porch & Floor Enamel Int/Ext Acrylic Satin (A32-200) Series
        2) Substitutions: Section 01 60 00 - Product Requirements.
4. Top Coat(s): Latex Floor Paint, Gloss.
    a. Products:
        1) ArmorSeal TreadPlex Water Based Coating (B90) Series
        2) Substitutions: Section 01 60 00 - Product Requirements.
5. Primer: As recommended by top coat manufacturer for specific substrate.

C. Paint E-TR-W - Stain on Wood:
1. Two coats stain.
2. Stain: Exterior Solid Stain for Wood, Water Based.
    a. Products:
        1) SuperDeck Exterior Waterborne Solid Color Stain (SD7) Series
        2) Substitutions: Section 01 60 00 - Product Requirements.
3. Stain: Exterior Semi-Transparent Stain for Wood, Water Based.
    a. Products:
        1) SuperDeck Exterior Waterborne Semi-Transparent Stain (SD3T215)
        2) Substitutions: Section 01 60 00 - Product Requirements.

D. Paint E-TR-C - Transparent Finish on Concrete Floors:
1. 1 coat stain.
2. Stain: Semi-Transparent Stain for Concrete Floors.
    a. Products:
        1) H&C Infusion Water-Based Semi-Transparent Decorative Stain
        2) Substitutions: Section 01 60 00 - Product Requirements.
3. Stain: Solid Color Stain for Concrete.
    a. Products:
        1) H&C Colortop Solid Color Stain, Water Based
        2) Substitutions: Section 01 60 00 - Product Requirements.
4. Sealer: Water Based for Concrete Floors.
    a. Products:
        1) H&Concrete Clarishield Sealer Wet Look Water-Based
        2) Substitutions: Section 01 60 00 - Product Requirements.

E. Paint WE-OP-3L - Wood, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Gloss: Two coats of latex enamel; A-100 Exterior Latex Gloss (A8 Series)

3. Satin: Two coats of latex enamel; A-100 Exterior Latex Satin (A82 Series)

F. Paint WE-TR-V - Wood, Transparent, Varnish, No Stain:
1. One coat sealer; .
2. Gloss: One coat of varnish; .
3. Satin: One coat of varnish.
4. Flat: One coat of varnish.

G. Paint WE-TR-VS - Wood, Transparent, Varnish, Stain:
1. One coat of stain.
2. One coat sealer.
3. Gloss: One coat of varnish.
4. Satin: One coat of varnish.

H. Paint WE-TR-S - Wood, Transparent, Sealer, Optional Stain:
1. One coat of stain.
2. One coat of clear sealer.

I. Paint CE-OP-3L - Masonry/Concrete, Opaque, Latex, 3 Coat:
1. One coat of block filler; Pro Industrial Block Filler, (B42W150).
2. Satin: Two coats of latex enamel; A-100 Exterior Latex Satin (A82 Series)
3. Flat: Two coats of latex enamel; A-100 Exterior Latex Flat (A6 Series)

J. Paint GE-OP-3L - Exterior Gypsum Board and Exterior Plaster, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer; ProBlock Latex Int/Ext Primer/Sealer, (B51 Series).
2. Flat: Two coats of latex; A-100 Exterior Latex Flat (A6 Series)

K. Paint ME-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:
1. One coat of latex primer; Pro Industrial ProCryl Universal Acrylic Metal Primer, (B66-300).
2. Gloss: Two coats of latex enamel; Pro Industrial Acrylic Gloss (B66-600 Series)
3. Semi-gloss: Two coats of latex enamel; Pro Industrial Acrylic S/G (B66-650 Series)

L. Paint MgE-OP-3L - Galvanized Metals, Latex, 3 Coat:
1. One coat galvanize primer; Pro Industrial ProCryl Universal Acrylic Metal Primer, (B66-300).
2. Gloss: Two coats of latex enamel; Pro Industrial Acrylic Gloss (B66-600 Series)
3. Semi-gloss: Two coats of latex enamel; Pro Industrial Acrylic S/G (B66-650 Series)

M. Paint MaE-OP-3A - Aluminum and Copper, Unprimed, Alkyd, 3 Coat:
1. One coat etching primer; DTM Wash Primer, (B71Y1).
2. Gloss: Two coats of alkyd enamel; Pro Industrial Urethane Alkyd Enamel (B54-150 Series)
3. Semi-gloss: Two coats of alkyd enamel; DTM Alkyd S/G (B55 Series)

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Alkali Resistant Water Based Primer.
a. Products:
1) Loxon Masonry Primer (LX2W50)
2) Substitutions: Section 01 60 00 - Product Requirements.
2. Interior/Exterior Latex Block Filler.
a. Products:
1) Loxon Block Surfacer (LX1W200)
2) Substitutions: Section 01 60 00 - Product Requirements.
3. Anti-Corrosive Alkyd Primer for Metal.
a. Products:
1) Kem Kromik Universal Metal Primer (B50Z Series)

2) Substitutions: Section 01 60 00 - Product Requirements.

4. Interior/Exterior Quick Dry Alkyd Primer for Metal.
   a. Products:
      1) Kem Bond HS Universal Metal Primer (B50Z Series)
      2) Substitutions: Section 01 60 00 - Product Requirements.
5. Alkyd Primer for Galvanized Metal.
   a. Products:
      1) Galvite Primer (B50WZ30)
      2) Substitutions: Section 01 60 00 - Product Requirements.
6. Water Based Primer for Galvanized Metal.
   a. Products:
      1) Pro Industrial Pro-Cryl Universal Acrylic Primer (B66-310 Series)
      2) Substitutions: Section 01 60 00 - Product Requirements.
7. Rust-Inhibitive Water Based Primer.
   a. Products:
      1) Pro Industrial Pro-Cryl Universal Acrylic Primer (B66-310 Series)
      2) Substitutions: Section 01 60 00 - Product Requirements.
8. Interior/Exterior Quick Dry Primer for Aluminum.
   a. Products:
      1) Pro Industrial Pro-Cryl Universal Acrylic Primer (B66-310 Series)
      2) Substitutions: Section 01 60 00 - Product Requirements.
9. Stain Blocking Primer.
   a. Products:
      1) PrepRite ProBlock Primer/Sealer Latex (B51-620 Series)
      2) Substitutions: Section 01 60 00 - Product Requirements.
10. Latex Primer for Exterior Wood.
    a. Products:
       1) Exterior Latex Wood Primer (B42W8041)
       2) Substitutions: Section 01 60 00 - Product Requirements.
11. Alkyd/Oil Primer for Exterior Wood.
    a. Products:
       1) Exterior Oil-Based Wood Primer (Y24W8020)
       2) Substitutions: Section 01 60 00 - Product Requirements.
12. Bonding Primer, Water Based.
    a. Products:
       1) PrepRite ProBlock Primer/Sealer Latex (B51-620 Series)
       2) Substitutions: Section 01 60 00 - Product Requirements.
13. Acrylic Surface Conditioner; Masonry.
    a. Products:
       1) Loxon Conditioner (LX3 Series)
       2) Substitutions: Section 01 60 00 - Product Requirements.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

C. If substrate preparation is the responsibility of another installer, notify The Architect and Owner of unsatisfactory preparation before proceeding.

D. Test shop-applied primer for compatibility with subsequent cover materials.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Exterior Plaster and Stucco: 12 percent.
   2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   3. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
   4. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Clean surfaces with pressurized water. Use pressure range of 1500 to 4000 psi at 6 to 12 inches. Allow to dry.
   3. Clean concrete according to ASTM D4258. Allow to dry.
   4. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

H. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.
   3. Clean surfaces with pressurized water. Use pressure range of 600 to 1500 psi at 6 to 12 inches. Allow to dry.

I. Exterior Gypsum Board: Fill minor defects with exterior filler compound. Spot prime defects after repair.

J. Exterior Plaster: Fill hairline cracks, small holes, and imperfections with exterior patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

K. Asphalt, Creosote, or Bituminous Surfaces: Remove foreign particles to permit adhesion of finishing materials. Apply latex based sealer or primer.

L. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

M. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

N. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

O. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

P. Ferrous Metal:
   1. Solvent clean according to SSPC-SP1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

Q. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

R. Exterior Wood to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior calking compound after sealer has been applied. Prime concealed surfaces.

S. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.

C. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

D. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

E. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

F. Apply each coat to uniform appearance.

G. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.

H. Sand wood and metal surfaces lightly between coats to achieve required finish.

I. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

J. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

K. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, and varnishes.

C. Materials for backpriming woodwork.

D. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Elevator pit ladders.
   3. Surfaces inside cabinets.
   4. Prime surfaces to receive wall coverings.
   5. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.

E. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, and lead items.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Ceramic and other tiles.
   9. Brick, architectural concrete, cast stone, integrally colored plaster and stucco.
   10. Glass.
   11. Acoustical materials, unless specifically indicated.
   12. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - METAL FABRICATIONS: Shop-primed items.

B. Section 09 91 13 - Exterior Painting.

1.03 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2012.

C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2012).

D. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 2007.

E. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; current edition, www.paintinfo.com.

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H. SSPC-SP 6 - Commercial Blast Cleaning; Society for Protective Coatings; 2007.

I. SSPC-SP 13 - Surface Preparation of Concrete; Society for Protective Coatings; 2003 (Reaffirmed 2015).

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.

C. Samples: Submit One paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with The Architect and Owner before preparing samples, to eliminate sheens definitely not required.
   3. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, factory finished metals, wood cabinets, and wood doors, have been approved.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Manufacturer's Instructions: Indicate special surface preparation procedures.

F. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

G. Maintenance Materials: Furnish the following for The Owner's use in maintenance of project.
   1. See Section 01 60 00 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.
   4. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams “Custodian Project Color and Product Information” report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum Five years' experience and approved by manufacturer.

1.07 MOCK-UP

A. See Section 01 40 00 - Quality Requirements, for general requirements for mock-up.

B. Provide panel, 8 feet long by 8 feet wide, illustrating paint color, texture, and finish.

C. Locate where directed by Architect.

D. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior, unless required otherwise by manufacturer's instructions.

F. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by The Architect and Owner is obtained using the specified procedures for substitutions.

B. Paints:
   1. Sherwin-Williams Company: www.sherwin-williams.com.

C. Transparent Finishes:
   1. Sherwin-Williams Company: www.sherwin-williams.com.

D. Stains:
   1. Sherwin-Williams Company: www.sherwin-williams.com.

E. Primer Sealers: Same manufacturer as top coats.

F. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 PAINTS AND FINISHES – GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   4. Supply each paint material in quantity required to complete entire project's work from a single production run.
   5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
      b. Architectural coatings VOC limits of State in which the project is located.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by The Architect and Owner from the manufacturer's full line.

E. Colors: To be selected from manufacturer's full range of available colors.
   1. Selection to be made by The Architect and Owner after award of contract.
   2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to The Owner.
   3. Extend colors to surface edges; colors may change at any edge as directed by The Architect and Owner.
   4. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
   5. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

2.03 PAINT SYSTEMS – INTERIOR: NOTE, ALL PAINT CONDITIONS ARE SHOWN FOR QUALITY, REFER TO DRAWINGS FOR QUANTITY OF EACH PAINT CONDITION REQUIRED IN THIS PROJECT. SOME PAINT TYPES MAY NOT BE REQUIRED IF CONDITION REQUIRING PAINT TYPE DOES NOT EXIST IN DRAWINGS.

A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry units, brick, wood, plaster, uncoated steel, shop primed steel, galvanized steel, and aluminum.
   1. Two top coats and one coat primer.
   2. Top Coat(s): High Performance Architectural Interior Latex. (Epoxy)(High Traffic Areas)
      a. Products:
         1) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Eg-Shel, K45-1150 Series. (MPI #139)
         2) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Semi-Gloss, K46-1150 Series. (MPI #141)
         3) Substitutions: Section 01 60 00 - Product Requirements.

3. Top Coat(s): Interior Latex. (Normal Conditions)
   a. Products:
      1) Sherwin-Williams Harmony Interior Acrylic Latex, Flat, B5-1050 Series. (MPI #53)
      2) Sherwin-Williams Harmony Interior Acrylic Latex, Semi-Gloss, B10-1050 Series. (MPI #54)
      3) Sherwin-Williams Harmony Interior Acrylic Latex, Eg-Shel, B9-1050 Series. (MPI #44)
      4) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Flat, B30-2650 Series.
      5) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Semi-Gloss, B31-2650 series. (MPI #43)
      6) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Low Sheen, B24-2650 Series. (MPI #44)
      7) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Eg-Shel, B20-2650 Series. (MPI #52)
      8) Substitutions: Section 01 60 00 - Product Requirements.
4. Top Coat(s) Latex Microbicidal topcoat
   a. Products:
      1) Sherwin Williams Paint Shield Microbicidal Interior Latex Paint, D12-50 Series.
5. Top Coat Sheen:
   a. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
   b. Velvet: MPI gloss level 2; use this sheen at all locations.
   c. Eggshell: MPI gloss level 3; use this sheen at all locations.
   d. Satin: MPI gloss level 4; use this sheen for items subject to frequent touching by occupants, including door frames and railings.
   e. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
   f. Gloss: MPI gloss level 6; use this sheen at all locations.
6. Primer: As recommended by top coat manufacturer for specific substrate.

B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
   1. Medium duty applications include doors, door frames, railings, handrails, guardrails, and balustrades.
   2. Two top coats and one coat primer.
   3. Top Coat(s): Interior Epoxy-Modified Latex. (High Performance Upgrade)
      a. Products:
         1) Sherwin-Williams Pro Industrial Waterbased Catalyzed Epoxy, Gloss. (MPI #115)
         2) Sherwin-Williams Waterbased Catalyzed Epoxy, B73-360 Series EgshelSemi-Gloss.
         3) Sherwin-Williams Waterbased Catalyzed Epoxy, B73-300 Series Gloss.
         4) Substitutions: Section 01 60 00 - Product Requirements.
   4. Top Coat(s): High Performance Architectural Interior Latex. (Epoxy)(High Traffic Areas)
      a. Products:
         1) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Eg-Shel, K45-1150 Sereis. (MPI #139)
         2) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Semi-Gloss, K46-1150 Series. (MPI #141)
         3) Substitutions: Section 01 60 00 - Product Requirements.
   5. Top Coat(s): Interior Light Industrial Coating, Water Based. (Normal Conditions)
      a. Products:
         1) Sherwin-Williams Pro Industrial Acrylic Coating, Semi-Gloss, B66-650 Series. (MPI #153)

2) Sherwin-Williams Pro Industrial Acrylic Coating, Gloss, B66-600 Series. (MPI #154)
3) Substitutions: Section 01 60 00 - Product Requirements.

6. Top Coat(s): Interior Alkyd,. (Normal Conditions
   a. Products:
      1) Sherwin-Williams ProMar 200 Alkyd, Eg-Shel, B33-250 Series.
      2) Sherwin-Williams ProMar 200 Alkyd, Gloss, B35-250 Series.
      3) Sherwin-Williams ProMar 200 Alkyd, Semi-Gloss, B34-250 Series.
      4) Substitutions: Section 01 60 00 - Product Requirements.
7. Top Coat(s): Interior Waterbased Acrylic-Alkyd
   a. Products:
      1) Sherwin Williams ProMar 200 Waterbased acrylic alkyd, Egshel, B33-8250 Series.
      2) Sherwin Williams ProMar 200 Waterbased acrylic alkyd, Semigloss, B34-8250 Series
      3) Sherwin Williams Pro Mar 200 Waterbased acrylic alkyd, Gloss, B35-8250 Series
      4) Substitutions: Section 01 06 00 – Product Requirements
8. Top Coat Sheen:
   a. Eggshell: MPI gloss level 3; use this sheen at all locations.
   b. Satin: MPI gloss level 4; use this sheen at all locations.
   c. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
   d. Gloss: MPI gloss level 6; use this sheen at all locations.
9. Primer: As recommended by top coat manufacturer for specific substrate.

C. Paint I-OP-MD-WC - Medium Duty Vertical and Overhead: Including gypsum board, plaster, concrete, concrete masonry units, uncoated steel, shop primed steel, galvanized steel, and aluminum.
   1. Two top coats and one coat primer.
   2. Top Coat(s): Interior Epoxy-Modified Latex. (High Performance Upgrade)
      a. Products:
         1) Sherwin-Williams Pro Industrial Waterbased Catalyzed Epoxy, Gloss. (MPI #115)
         2) Sherwin-Williams Waterbased Catalyzed Epoxy, B73-300 Gloss.
         3) Sherwin-Williams Waterbased Catalyzed Epoxy, B73-360 EgshelSemi-Gloss.
   3. Top Coat(s): High Performance Architectural Interior Latex. (High Traffic Areas)
      a. Products:
         1) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45-1150 Series Eg-Shel. (MPI #139)
         2) Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, K46-1150 series Semi-Gloss. (MPI #141)
         3) Sherwin-Williams Pro Industrial Acrylic Coating, B66-660 Series Eg-Shel.
         4) Sherwin-Williams Pro Industrial Acrylic Coating, B66-650 Series Semi-Gloss. (MPI #141)
         5) Substitutions: Section 01 60 00 - Product Requirements.
   4. Top Coat(s): Institutional Low Odor/VOC Interior Latex. (Normal Conditions)
      a. Products:
         1) Sherwin-Williams Pro Industrial Acrylic Coating, B66-660 Series Eg-Shel.
         2) Sherwin-Williams Pro Industrial Acrylic Coating, B66-600 Series Gloss. (MPI #148)
         3) Sherwin-Williams Pro Industrial Acrylic Coating, B66-650 Series Semi-Gloss. (MPI #147)

4) Sherwin-Williams Harmony Interior Acrylic Latex, B9-1050 Series Eg-Shel. (MPI #144)
5) Sherwin-Williams Harmony Interior Acrylic Latex, B5-1050 Series Flat. (MPI #143)
6) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, B30-2650 Series Flat.
7) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, B24-2650 Series Low Sheen. (MPI #144)
8) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, B31-2650 Series Semi-Gloss.
9) Substitutions: Section 01 60 00 - Product Requirements.

5. Top Coat Sheen:
   a. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
   b. Velvet: MPI gloss level 2; use this sheen at all locations.
   c. Eggshell: MPI gloss level 3; use this sheen at all locations.
   d. Satin: MPI gloss level 4; use this sheen at all locations.
   e. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
   f. Gloss: MPI gloss level 6; use this sheen at all locations.
6. Primer: As recommended by top coat manufacturer for specific substrate.

D. Paint I-OP-DF - Dry Fall: Metals; exposed structure and overhead-mounted services in utilitarian spaces, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, and galvanized piping.
1. Shop primer by others.
2. One top coat.
3. Top Coat: Alkyd Dry Fall.
   a. Products:
      1) Sherwin-Williams Dryfall Flat, B48W60. (MPI #55)
      2) Sherwin-Williams Super Save-Lite Dryfall, B47W62 Semi-Gloss. (MPI #89)
      3) Sherwin-Williams Super Save-Lite Dryfall, Gloss VOC Complying.
      4) Substitutions: Section 01 60 00 - Product Requirements.
4. Top Coat: Latex Dry Fall.
   a. Products:
      1) Sherwin-Williams Pro Industrial Waterborne Acrylic Dryfall, B42-180 Series Flat. (MPI #118)
      2) Sherwin-Williams Pro Industrial Waterborne Acrylic Dryfall, Eg-Shel, B42W822. (MPI #155, 226)
      3) Sherwin-Williams Pro Industrial Waterborne Acrylic Dryfall, B42W83 Semi-Gloss. (MPI #226)
      4) Substitutions: Section 01 60 00 - Product Requirements.
5. Top Coat Sheen:
   a. Flat: MPI gloss level 1; use this sheen at all locations.
   b. Eggshell: MPI gloss level 3; use this sheen at all locations.
   c. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
   d. Gloss: MPI gloss level 6; use this sheen at all locations.
6. Primer: As recommended by top coat manufacturer for specific substrate.

E. Paint I-OP-FL - Concrete and Wood Floors to be Painted.
1. Two top coats and one coat primer.
2. Top Coat(s): Latex Floor Paint, Low Gloss.
   a. Products:
      1) Sherwin-Williams Porch and Floor Enamel, A32-250 Series.
      2) Sherwin-Williams Tread-Plex Acrylic Floor Coating, B90-100 Series. (MPI #60)
      3) Substitutions: Section 01 60 00 - Product Requirements.
3. Top Coat Sheen:

a. Eggshell: MPI gloss level 3; use this sheen at all locations.
b. Satin: MPI gloss level 4; use this sheen at all locations.
c. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
d. Gloss: MPI gloss level 6; use this sheen at all locations.

4. Primer: As recommended by top coat manufacturer for specific substrate.

F. Paint I-TR -W - Transparent Finish on Wood.
1. Stain: Semi-Transparent Stain for Wood.
a. Products:
1) Sherwin-Williams Minwax Performance Series Tintable Wood Stain, 250 VOC. (MPI #90)
2) Sherwin-Williams Minwax Performance Series Tintable Wood Wood Classics Interior Oil Stain. (MPI #90)
3) Substitutions: Section 01 60 00 - Product Requirements.
2. Sealer: Alkyd, Sanding Sealer, Clear.
a. Products:
1) Sherwin-Williams Wood ClassicsMinwax Performance Series FastDry Sanding Sealer. (MPI #102)
2) Substitutions: Section 01 60 00 - Product Requirements.
3. Top Coat(s): Polyurethane Varnish, Oil Modified.
a. Products:
1) Sherwin-Williams Minwax Fast Drying Polyurethane Varnish, Satin. (MPI #57)
2) Substitutions: Section 01 60 00 - Product Requirements.
4. Top Coat(s): Alkyd Varnish
a. Products:
1) Sherwin-Williams Minwax Performance Series FastDry Varnish, Satin. (MPI #73)
2) Sherwin-Williams Minwax Performance Series FastDry Varnish, Gloss. (MPI #75)
3) Substitutions: Section 01 60 00 - Product Requirements.
5. Top Coat(s): Clear Water Based Varnish.
a. Products:
1) Rodda Waterborne Alkyd Urethane Varnish, 593 Series. (MPI #128, 129, 130)
2) Sherwin-Williams Minwax Polycrylic Waterborne Polyurethane Varnish, Gloss. (MPI #130)
3) Sherwin-Williams Minwax Polycrylic Waterborne Polyurethane Varnish, Satin.
4) Substitutions: Section 01 60 00 - Product Requirements.
6. Top Coat Sheen:
a. Flat: MPI gloss level 1; use this sheen at all locations.
b. Eggshell: MPI gloss level 3; use this sheen at all locations.
c. Satin: MPI gloss level 4; use this sheen at all locations.
d. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
e. Gloss: MPI gloss level 6; use this sheen at all locations.

G. Paint I-TR-FL - Transparent Finish on Wood Floors:
1. Top coats over stain.
2. Stain: Semi-Transparent Stain for Wood.
a. Products:
1) Sherwin-Williams Minwax Performance Series Tintable Wood Stain 250 VOC. (MPI #90)
2) Sherwin-Williams Minwax Performance Series Tintable Wood Stain. (MPI #90)
3) Substitutions: Section 01 60 00 - Product Requirements.
3. Top Coat(s): Polyurethane Varnish, Oil Modified.
a. Products:

1) Sherwin-Williams Minwax Fast Dry Polyurethane Varnish, Gloss. (MPI #56)
2) Substitutions: Section 01 60 00 - Product Requirements.

4. Top Coat Sheen:
   a. Satin: MPI gloss level 4; use this sheen at all locations.
   b. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
   c. Gloss: MPI gloss level 6; use this sheen at all locations.

H. Paint I-TR-SC - Transparent Finish on Concrete Floors. Use this Product where called for "sealed concrete"
1. 1 coat stain.
2. Sealer: Water Based for Concrete Floors.
   a. Products:
      1) H&C Colortop Solvent Based Stain (stain & sealer): color to be selected.
      2) Substitutions: Section 01 60 00 - Product Requirements.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Alkali Resistant Water Based Primer.
   a. Products:
      1) Loxon Concrete & Masonry Primer: LX2W50
      2) Substitutions: Section 01 60 00 - Product Requirements.
2. Interior Institutional Low Odor/VOC Primer Sealer.
   a. Products:
      1) Pro Mar 200 0 VOC Primer: B28W2600
      2) Substitutions: Section 01 60 00 - Product Requirements.
3. Interior/Exterior Latex Block Filler.
   a. Products:
      1) Loxon Block Surfacer: LX1W200.
      2) Substitutions: Section 01 60 00 - Product Requirements.
4. Interior Latex Primer Sealer.
   a. Products:
      1) PrepRite ProBlock Primer Sealer B51-620 Series
      2) Substitutions: Section 01 60 00 - Product Requirements.
5. Interior Drywall Primer Sealer.
   a. Products:
      1) Pro Mar 200 0 VOC Primer: B28W2600
      2) Substitutions: Section 01 60 00 - Product Requirements.
6. Anti-Corrosive Alkyd Primer for Metal; MPI #79.
   a. Products:
      1) Kem Kromik Universal Metal Primer: B50Z Series
      2) Substitutions: Section 01 60 00 - Product Requirements.
7. Interior Rust-Inhibitive Water Based Primer;
   a. Products:
      1) Pro Industrial Pro-Cryl Universal Acrylic Primer: B66-310 Series.
      2) Substitutions: Section 01 60 00 - Product Requirements.
8. Interior/Exterior Quick Dry Alkyd Primer for Metal; MPI #76.
   a. Products:
      1) Kem Bond HS Universal Alkyd Primer: B50WZ4
      2) Substitutions: Section 01 60 00 - Product Requirements.
9. Interior Water Based Primer for Galvanized Metal.
   a. Products:
      1) Pro Industrial Pro-Cryl Universal Acrylic Primer: B66-310 Series

2) Substitutions: Section 01 60 00 - Product Requirements.

10. Alkyd Primer for Galvanized Metal.
    a. Products:
        1) Galvite HS: B50WZ30
        2) Substitutions: Section 01 60 00 - Product Requirements.
11. Interior/Exterior Quick Dry Primer for Aluminum.
    a. Products:
        1) Pro Industrial Pro-Cryl Universal Acrylic Primer: B66-310 Series
        2) Substitutions: Section 01 60 00 - Product Requirements.
12. Interior Latex Enamel Undercoat.
    a. Products:
        1) Premium Wall & Wood Primer: B28W8111
        2) Substitutions: Section 01 60 00 - Product Requirements.
13. Stain Blocking Primer.
    a. Products:
        1) PrepRite ProBlock Primer Sealer B51-620 Series
        2) Substitutions: Section 01 60 00 - Product Requirements.
14. Stain Blocking Primer, Water Based.
    a. Products:
        1) PrepRite ProBlock Primer Sealer B51-620 Series
        2) Substitutions: Section 01 60 00 - Product Requirements.
15. Latex Primer for Interior Wood.
    a. Products:
        1) Premium Wall & Wood Primer: B28W8111
        2) Substitutions: Section 01 60 00 - Product Requirements.
16. Bonding Primer, Water Based.
    a. Products:
        1) PrepRite ProBlock Primer Sealer B51-620 Series
        2) Substitutions: Section 01 60 00 - Product Requirements.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify The Architect and Owner of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
    1. Gypsum Wallboard: 12 percent.
    2. Plaster and Stucco: 12 percent.
    3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
    4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

5. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete:
1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
2. Clean surfaces with pressurized water. Use pressure range of 1500 to 4000 psi at 6 to 12 inches. Allow to dry.
3. Clean concrete according to ASTM D4258. Allow to dry.
4. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

H. Masonry:
1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
2. Prepare surface as recommended by top coat manufacturer.
3. Clean surfaces with pressurized water. Use pressure range of 600 to 1500 psi at 6 to 12 inches. Allow to dry.

I. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

J. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

K. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

L. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

M. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

N. Galvanized Surfaces:
1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
2. Prepare surface according to SSPC-SP 2.

O. Ferrous Metal:
1. Solvent clean according to SSPC-SP1.
2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

P. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

Q. Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

R. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

S. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

G. Sand wood and metal surfaces lightly between coats to achieve required finish.

H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

I. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

J. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 10 14 00
SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Room and door signs.

B. Building identification signage.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.03 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.

1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
2. When content of signs is indicated to be determined later, request such information from Mississippi Military Department through Albert & Robinson Architects at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
3. Submit for approval by Mississippi Military Department through Albert & Robinson Architects prior to fabrication.

D. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

E. Verification Samples: Submit samples showing colors specified.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
   1. Sign Type: Flat signs with engraved panel media as specified.
   2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
   3. Character Height: 1 inch.
   4. Sign Height: 6 inches, unless otherwise indicated.
   5. Office Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section for replaceable occupant name.
   6. Conference and Meeting Rooms: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.
   7. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
   8. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers to be determined later, and braille. Utilize HC symbols on the signs as well.

C. Building Identification Signage:
   1. Provide aluminum signs as indicated in the drawings. The general mounting locations are indicated on the drawings; final mounting location shall be confirmed by Owner and Architect.
      a. If drawings do not show any signage, then provide a minimum of 5 numbers 8 inches high for each individual building shown in the documents to be mounted per owner or architect direction on the building.
      b. Aluminum material shall be premium grade with a minimum thickness of 0.080".
      c. Aluminum shall have optically clear, UV protective laminate coating.

D. Exterior Aluminum Signage:
   1. Provide aluminum signs as indicated in the drawings. The general mounting locations are indicated on the drawings; final mounting location shall be confirmed by Owner and Architect.
      a. Aluminum material shall be premium grade with a minimum thickness of 0.080".

2.02 SIGN TYPES

A. Flat Signs: Signage media without frame.
   1. Edges: Square.
   2. Corners: Square.
   3. Wall Mounting of One-Sided Signs: Concealed or exposed screws.

B. Color and Font: Unless otherwise indicated:
   1. Character Font: Helvetica, Arial or other sans serif font.
   2. Character Case: Upper case only.
   3. Background Color: As indicated in Drawings.
   4. Character Color: Contrasting color.

2.03 TACTILE SIGNAGE MEDIA

A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:
   1. Total Thickness: 1/16 inch.

2.04 ACCESSORIES

A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.

B. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.

D. Locate signs where indicated:
   1. Room and Door Signs: Locate on wall at latch side of door with centerline of sign at 60 inches above finished floor.
   2. If no location is indicated obtain Mississippi Military Department's instructions.

E. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

END OF SECTION

SECTION 10 21 13.19
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Solid plastic toilet compartments. NOTE THAT A FULL SYSTEM IS NOT REQUIRED; PANELS AND DOOR HARDWARE ARE REQUIRED FOR CUSTOM SIZE DOORS AS SHOWN IN THE DRAWINGS.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00.01 - Rough Carpentry: Blocking and supports.

B. Section 10 28 00 - Toilet, Bath, and Laundry Accessories.

1.03 REFERENCE STANDARDS

A. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

C. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth; 2019.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.05 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Product Data: Provide data on panel construction, hardware, and accessories.

C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall and ceiling supports, door swings.

D. Samples: Submit two samples of partition panels, 2 x 3 inch in size illustrating panel finish, color, and sheen.

E. Manufacturer's Installation Instructions: Indicate special procedures.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 years experience in manufacture of phenolic toilet compartments with products in satisfactory use under similar service conditions.

B. Installer Qualifications: Minimum 5 years experience in work of this section.

1.07 WARRANTY

A. Provide manufacturer's 25 year warranty against breakage, corrosion, and delamination under normal conditions.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Solid Plastic Toilet Compartments:
   1. Substitutions: Section 01 63 00 - Substitutions and Product Options.

2.02 PLASTIC TOILET COMPARTMENTS

A. Hiney Hiders Solid Plastic Toilet Partitions:
   1. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), floor-mounted headrail-braced.
      a. Color: As indicated in Drawings.

b. Texture: As indicated in drawings.

2. Doors:
   a. Thickness: 1 inch.
   b. Width(s): As shown on the Drawings. If not indicated on Drawings, doors shall be 24 inches wide.
   c. Width for Handicapped Use: 36 inch, out-swinging.
   d. Height: 55 inch.
   e. Mounting Height: Top of door set at 5'-9" AFF and bottom of door set at 1'-2" AFF, unless noted otherwise in drawings.
   f. Door & Pilaster Edge: Standard.
3. Panels:
   a. Thickness: 1 inch.
   b. Height: 55 inch.
   c. Depth: As indicated on drawings.
   d. Mounting Height: Top of panel set at 5'-9" AFF and bottom of panel set at 1'-2" AFF, unless noted otherwise in drawings.
   e. Slotted on one edge to accept wall bracket.
4. Pilasters:
   a. Thickness: 1 inch.
   b. Width: As required to fit space; minimum 3 inch.
   c. Height: 6'-10", unless noted otherwise in drawings.
5. Pilaster Shoes: 3 inches, 20 gauge stainless steel. Secured to pilasters with a stainless steel tamper resistant Torx head sex bolt.
6. Headrail: Heavy-duty extruded 6463-T5 alloy aluminum with anti-grip design. Finish to be clear anodized. Fastened to headrail brackets with stainless steel tamper resistant Torx head sex bolt, and fastened at the top of the pilaster with stainless steel tamper resistant Torx head screws.
   a. Headrail Brackets: 20 gauge stainless steel with satin finish. Secured to the wall with stainless steel tamper resistant Torx head screws.
7. Wall Brackets:
   a. Stainless Steel Brackets: Stainless steel type 304.
   b. Type: Continuous.
   c. Brackets are fastened to pilasters with stainless steel tamper resistant Torx head screws and fastened to the panels with stainless steel tamper resistant Torx head sex bolts.
8. Door Hardware:
   a. Vault Hinge: Heavy-duty 304 stainless steel hinge having gravity-acting cams with a brushed finish and wrap around flanges; two per door.
   b. Latch Mechanism: Occupancy Indicator Latch and Housing:
      1) Material: Satin stainless steel.
      2) Occupancy indicators: Green for occupied and red not occupied.
      3) Slide bolt and button.
   c. Doors supplied with one coat hook/bumper and door pull made of chrome plated Zamak.
   d. Equip outswing handicapped doors with second door pull and door stop.

B. Privacy Screens: Compartments without doors; all features to match standard toilet compartments; wall brackets and vertical support/bracing same as toilet compartments.

C. Urinal Screens: To match toilet compartments; mounted to wall with brackets same as toilet compartments.
   1. Thickness: 1 inch.
   2. Depth: 18 inch.
   3. Height: 55 inch.

4. Mounting Height: Top of panel set at 5'-7" AFF and bottom of panel set at 1'-0" AFF, unless noted otherwise in drawings.
5. Color: To match partitions.
6. Texture: To match partitions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify correct spacing of and between plumbing fixtures.

C. Verify correct location of built-in framing, anchorage, and bracing.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Examine areas to receive toilet partitions, screens, and shower compartments for correct height and spacing of anchorage/blocking and plumbing fixtures that affect installation of partitions. Report discrepancies to the architect.

3.03 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions and approved shop drawings.

B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.

C. No evidence of cutting, drilling, and/or patching shall be visible on the finished work.

D. Finished surfaces shall be cleaned after installation and be left free of imperfections.

3.04 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.

B. Maximum Variation From Plumb: 1/8 inch.

3.05 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

C. Adjust adjacent components for consistency of line or plane.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 10 28 00
TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Commercial shower and bath accessories.

C. Institutional ligature-resistant toilet accessories.

D. Under-lavatory pipe supply covers.

E. Accessories for toilet rooms, showers, and utility rooms. (Note: Balance of Accessories will be Vendor Provided)

F. Grab bars.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00.10 - Rough Carpentry (Architectural): Concealed supports and blocking for accessories.

B. Section 08 83 00 - Mirrors: Other mirrors.

C. Section 09 21 16 - Gypsum Wallboard Assemblies.

D. Section 09 30 00 - Tiling: Ceramic washroom accessories.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures; 2011 (Reaffirmed 2022).

C. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

D. ASTM C1822 - Standard Specification for Insulating Covers on Accessible Lavatory Piping; 2021.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023.

F. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. Bobrick: www.bobrick.com.

2. ASI - American Specialties, Inc: www.americanspecialties.com.
3. Bradley Corporation: www.bradleycorp.com.

B. Provide products of each category type by single manufacturer.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
1. Grind welded joints smooth.
2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.

B. Stainless Steel Sheet: ASTM A666/A666M, Type 304.

C. Fasteners, Screws, and Bolts: Stainless Steel; tamper-proof; security type.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

2.04 COMMERCIAL TOILET ACCESSORIES

A. Toilet Paper Dispenser: Double roll, surface-mounted, stainless steel unit with pivot hinge, tumbler lock.
1. Products:
a. Bobrick B-4288 Surface-Mounted Multi-roll Toilet Tissue Dispenser..
b. Substitutions: Section 01 63 00 - Substitutions and Product Options.

B. Paper Towel Dispenser: Folded paper type, stainless steel, surface-mounted, with viewing slots on sides as refill indicator and tumbler lock.
1. Capacity: 300 C-fold minimum.

C. Soap Dispenser (installed where there are no counters): Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator, tumbler lock.
1. Minimum Capacity: 40 ounces.
2. Products:
a. Bobrick B-2111 Surface-Mounted Soap Dispenser
b. Substitutions: See Section 01 63 00.

D. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
2. Frame: 0.05 inchangle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
3. Products:
a. Bobrick B-290 24x36.
b. Substitutions: Section 01 63 00 - Substitutions and Product Options.

E. Grab Bars: Stainless steel, satin-finish, slip-resistant surface.
1. Standard Duty Grab Bars:
a. Push/Pull Point Load: 250 pound-force, minimum.
b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
c. Length and Configuration: As indicated on drawings.
d. Products:
1) Bobrick B-5800 Series Two-Wall Compartment Bar.
2) Substitutions: Section 01 63 00 - Substitutions and Product Options.

F. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.
1. Receptacle Liner: Removable, leak-proof molded polyethylene.

2. Capacity: 1.2-gal.
3. Shall be equipped with international graphic symbols identifying sanitary napkin disposal.
4. Products:
    a. Bobrick B-254 Surface-Mounted Sanitary Napkin Disposal..
    b. Substitutions: Section 01 63 00 - Substitutions and Product Options.

2.05 INSTITUTIONAL SECURITY AND LIGATURE-RESISTANT TOILET AND BATH ACCESSORIES

A. Mirrors: Stainless steel framed, Type 400 polished stainless steel mirror; exposed front mount.
    1. Framed Size: 11-1/4 inches by 17-1/4 inches.

2.06 COMMERCIAL SHOWER AND BATH ACCESSORIES

A. Grab Bars: See Commercial Toilet Accessories Section.

B. Shower Curtain Rod: Type-304, stainless steel tube, 1-1/4 inch outside diameter, 0.05 inch wall thickness, satin-finished, with 3 inch outside diameter, minimum 0.04 inch thick satin-finished stainless steel flanges, for installation with exposed fasteners, countersunk.
    1. Contractor to coordinate mounting height with Owner provided shower curtains.
    2. Products:
        a. Bobrick B-6047 Extra-Heavy-Duty Shower Curtain Rod. Length as required for shower width..
        b. Substitutions: Section 01 63 00 - Substitutions and Product Options.

C. Shower Curtain:
    1. Material: Opaque vinyl, 0.008 inch thick, matte finish, with antibacterial treatment, flameproof and stain-resistant.
    2. Size: 36 by 72 inches, hemmed edges.
    3. Grommets: Stainless steel; pierced through top hem on 6 inch centers.

D. Folding Shower Seat: Wall-mounted surface; welded tubular seat frame, structural support members, swing-down legs, hinges, and mechanical fasteners of Type 304 stainless steel, L-shaped seat.
    1. Seat: One-piece, 1/2 inch thick, solid phenolic with matte finish, antique white-colored, melamine surfaces and black phenolic-resin core (cannot delaminate). Integral slots for water drainage. Secured to frame with stainless steel carriage bolts and acorn nuts. Seat shall be reversable for left- or right-hand installation in field.
    2. Frame: Type-304 stainless steel with satin finish. 16-gauage, 1-1/4" square tubing at seat and 18-gauge, 1" diameter seamless tubing for supports.
    3. Size: ADA Standards compliant.
    4. Products:
        a. Bobrick B-5181 Reversable Solid Phenolic Folding Shower Seat.
        b. Substitutions: Section 01 63 00 - Substitutions and Product Options.

E. Robe Hook: Heavy-duty stainless steel, single-prong, rectangular-shaped bracket and backplate for concealed attachment, satin finish.
    1. Products:
        a. Bobrick B-983 Vandal-Resistant Clothes Hook.
        b. Substitutions: Section 01 63 00 - Substitutions and Product Options.

2.07 UNDER-LAVATORY PIPE AND SUPPLY COVERS

A. Under-Lavatory Pipe and Supply Covers:
    1. Insulate exposed drainage piping, including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
    2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
    3. Construction: 1/8 inch flexible PVC.
        a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
        b. Comply with ASTM C1822, type indicated.

c. Comply with ASME A112.18.9.
d. Comply with ICC A117.1.
e. Microbial and Fungal Resistance: Comply with ASTM G21.

4. Color: White.
5. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces.

2.08 UTILITY ROOM ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
   1. Drying rod: Stainless steel, 1/4 inch diameter.
   2. Hooks: Three, 0.06 inch stainless steel rag hooks at shelf front.
   3. Mop/broom holders: Four spring-loaded rubber cam holders at shelf front.
   4. Length: 36 inches.
   5. Products:
      a. Bobrick B-224 Utility Shelf with Mop/Broom Holders and Rag Hook.
      b. Substitutions: Section 01 63 00 - Substitutions and Product Options.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. Verify that field measurements are as indicated on drawings.

D. See Section 09 21 16 for installation of blocking, reinforcing plates, and concealed anchors in walls.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
   1. Grab Bars: As indicated on drawings.
   2. Other Accessories: As indicated on drawings.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10 44 16
FIRE EXTINGUISHER CABINETS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguisher cabinets.

B. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00.01 - Rough Carpentry: Wood blocking product and execution requirements.

B. Section 09 21 16 - Gypsum Board Assemblies: Roughed-in wall openings.

1.03 REFERENCE STANDARDS

A. FM (AG) - FM Approval Guide; Current Edition.

B. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

C. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 PERFORMANCE REQUIREMENTS

A. Conform to NFPA 10.

B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

1.05 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. **Fire Extinguisher and Fire Extinguisher Cabinets must be coordinated so that one fits inside the other perfectly before purchasing.**

C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

D. Product Data: Provide extinguisher operational features.

E. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.06 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Larsen's Manufacturing Co: www.larsensmfg.com.
   2. Substitutions: See Section 01 63 00.

B. Fire Extinguisher Cabinets and Accessories:
   1. Larsen's Manufacturing Co; Architectural Series: www.larsensmfg.com.
   2. Substitutions: See Section 01 63 00.

2.02 FIRE EXTINGUISHER CABINETS

A. Cabinet Configuration: Semi-recessed type. Use where marked as "**FE#2**" on plans.
   1. Size to accommodate accessories.
   2. Trim: Flat, with 5/16 inch wide face.

B. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with roller type catch. Hinge doors for 180 degree opening with two butt hinge.

C. Door Glazing: Tempered glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.

D. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.

E. Fabrication: Weld, fill, and grind components smooth.

F. Finish of Cabinet Exterior Trim and Door: No. 4 Stainless Steel.

G. Finish of Cabinet Interior: White colored enamel.

2.03 ACCESSORIES

A. Extinguisher Brackets: Formed steel, chrome-plated for use where marked as "**FE#1**" on plans.

B. Cabinet Signage: Vertical letters, red in color, down face of glass.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Secure rigidly in place.

C. Place extinguishers in cabinets and on wall brackets.

END OF SECTION

SECTION 10 73 00
METAL CANOPIES

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. Work in this section includes furnishing and installation of roll-formed aluminum overhead hanger rod style canopies, labeled in drawings as ‘Aluminum Canopy’ equal to the ‘Lumishade Canopy’ manufactured by Mapes Industries Inc.

1.02 SUBMITTALS

A. Products meeting these specifications established standard of quality required as manufactured by Mapes Industries, Inc. Lincoln, Nebraska 1-800-228-2391.

B. Product Data:
   1. Manufacturer's data sheets on each product to be used.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Typical installation methods.
   5. Include information for factory finish, accessories and other required components.
   6. Include color charts for finish indicating manufacturer's standard colors available for selection.

C. Verification Samples: Samples of Aluminum finishes for roof panels and all support structures will be provided as needed.

D. Drawings: Details of materials, construction and finish. Include relationship with adjacent construction. Layout of each canopy or shelter, showing location of supporting members. Include elevations and details.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
   1. Designer Qualifications: Engineer experienced in design of this type of work and licensed in State in which Project is located.
      a. Comply with applicable code for submission of design calculations, reviewed shop and erection drawings as required for acquiring permits.
      b. Cooperate with regulatory agency or authorities having jurisdiction, and provide data as requested.

B. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience with projects of similar scope and complexity.

C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

1.04 FIELD MEASUREMENT

A. Confirm dimensions prior to preparation of shop drawings.

B. Supply manufacturer’s standard literature and specifications for canopies.

C. Submit shop drawings showing structural component locations/positions, material dimensions and details of construction and assembly.

1.05 PERFORMANCE REQUIREMENTS

A. Canopy must conform to local building codes.

1.06 DELIVER, STORAGE, HANDLING

A. Deliver materials to project site ready for installation whenever possible.

B. Store and handle in strict compliance with manufacturer's written instructions and recommendations.

C. Protect from damage due to weather, excessive temperature, and construction operations.

PART 2PRODUCTS

2.01 MANUFACTURER

A. Mapes Industries, Inc., Lincoln, Nebraska, Phone: 1-800-228-2391, Fax: 1-800-737-6756.

B. Substitutions: Refer to Section 01 63 00.

2.02 MATERIALS

A. Decking shall consist of an interlocking roll-formed 2-1/2 W style pan (minimum .040 aluminum.)

B. Intermediate framing members shall be extruded aluminum, alloy 6063-T6, in profile and thickness shown in current Mapes brochures.

C. Hanger rods and attachment hardware shall be powder coated.
1. Manfacturer is responsible for the design of the canopy connections to the structure.
2. The canopy installation for this project is supported by load-bearing CMU construction. The interior face of the CMU will serve as the finished condition at the interior face of the wall. Anchoring of the hanger rods shall be designed to be embedded within the CMU wall. **Exposed anchors on the interior face of the wall will not be permissable.** The General Contractor is to coordinate with the canopy manufacturer to ensure the wall conditions are properly prepared for the installation of the canopy system (e.g. solid filled cores of CMU for anchoring).

D. Fascia shall be constructed of minimum 0.125" aluminum in the profile selected below:
1. 8" extruded J style trim.

2.03 FINISHES

A. Provide samples of manufacturer’s standard two-coat Kynar colors. Finish shall be 70% fluoropolymer meeting AAMA 2605 specifications. Finish shall be warrantied for a period of 10 years from the Date of Substantial Completion.

2.04 FABRICATION

A. All Lumishade canopies are shipped in preassembled sections for ease of installation.

B. All connections shall be mechanically assembled utilizing 3/16 fasteners with a minimum shear stress of 350 lb. Pre-welded or factory-welded connections are not acceptable.

C. Decking shall be designed with interlocking roll-formed aluminum members.

D. Concealed drainage. Water shall drain from covered surfaces into intermediate trough; water shall be directed to:
1. The front for front drainage.

PART 3EXECUTION

3.01 INSPECTION

A. Confirm that surrounding area is ready for the canopy installation.

B. Installer shall confirm dimensions and elevations to be as shown on drawings provided by Mapes Industries.

C. Erection shall be performed by an approved installer and scheduled after all concrete, masonry and roofing in the area is completed

3.02 INSTALLATION

A. Installation shall be in strict accordance with manufacturer s shop drawings. Particular attention should be given to protecting the finish during handling and erection.

3.03 CLEANING

A. After installation, entire system shall be left in a clean condition.

END OF SECTION

SECTION 12 21 13
HORIZONTAL LOUVER BLINDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Horizontal slat louver blinds.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the placement of concealed blocking to support blinds. See Section 06 10 00.01.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating physical and dimensional characteristics.

C. Shop Drawings: Indicate opening sizes, tolerances required, method of attachment, clearances, and operation.

D. Samples: Submit two samples, 6 inch long illustrating slat materials and finish, cord type and color.

E. Manufacturer's Installation Instructions: Indicate special procedures.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Horizontal Louver Blinds:
   1. Hunter Douglas: www.hunterdouglas.com.
   2. Levolor Contract: www.levolorcontract.com.
   3. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 BLINDS

A. Description: Horizontal slat louvers hung from full-width headrail with full-width bottom rail.

B. Blinds: Horizontal slat louvers hung from full-width headrail with full-width bottom rail; manual control of raising and lowering by cord with full range locking; blade angle adjustable by control wand; complying with WCMA A100.1.

C. Wood Slats: kiln-dried hardwood species, square slat corners.
   1. Width: 2 inch.
   2. Thickness: 125 inch.
   3. Pre-finished, color as selected by Architect.

D. Slat Support: Woven polypropylene cord, ladder configuration.

E. Head Rail: Pre-finished, formed steel box, with end caps; internally fitted with hardware, pulleys, and bearings for operation; same depth as width of slats.
   1. Height: 1.375 inches.
   2. Color: Same as slats.

F. Bottom Rail: Pre-finished, formed steel with top side shaped to match slat curvature; with end caps.
   1. Color: Same as headrail.

G. Lift Cord: Braided nylon; continuous loop; complying with WCMA A100.1.
   1. Free end looped through wall mounted spring tensioned pulley.
   2. Color: As selected by Architect.

H. Tilting Mechanism: Permanently lubricated die-cast worm and gear type tilter gear mechanism in flly enclosed housing.

I. Control Wand: Extruded hollow plastic; hexagonal shape.
   1. Length of window opening height less 3 inch.
   2. Color: As selected by Architect.

J. Headrail Attachment: As required for installation at specific conditions.

K. Accessory Hardware: Type recommended by blind manufacturer.

2.03 FABRICATION

A. Determine sizes by field measurement.

B. Fabricate blinds to fit within openings with uniform edge clearance of .25 inch.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings are ready to receive the work.

B. Ensure structural blocking and supports are correctly placed. See Section 06 10 00.01.

3.02 INSTALLATION

A. Install blinds in accordance with manufacturer's instructions.

B. Secure in place with flush countersunk fasteners.

3.03 TOLERANCES

A. Maximum Variation of Gap at Window Opening Perimeter: 1/4 inch.

B. Maximum Offset From Level: 1/8 inch.

3.04 ADJUSTING

A. Adjust blinds for smooth operation.

3.05 CLEANING

A. Clean blind surfaces just prior to occupancy.

END OF SECTION

SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

A. Section 06 41 00 - Architectural Wood Casework: Use Section 06 41 00 for specification vanity, and countertop brackets and supports.

1.03 SUBMITTALS

A. See Section 01 33 00 - Shop Drawings, Product Data and Samples, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

C. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.

D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

E. Installation Instructions: Manufacturer's installation instructions and recommendations.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

B. Fabricator Qualifications: Same fabricator as for cabinets on which tops are to be installed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Solid Surfacing Countertops: Solid surfacing sheet over continuous substrate.
   1. Flat Sheet Thickness: 1/2 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
   3. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
   4. Finish on Exposed Surfaces: As indicated on drawings.
   5. Color and Pattern: As indicated on drawings.
   6. Other Components Thickness: 1/2 inch, minimum.
   7. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; marine edge.
   8. Back and End Splashes: Same sheet material, radiused top; minimum 4 inches high.

9. Fabricate in accordance with manufacturer's standard requirements.

B. Solid Surfacing for Window Sills: Solid surfacing sheet or plastic resin casting over continuous substrate.
   1. Flat Sheet Thickness: 1/2 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
   3. Exposed Edge Treatment: Built up to dimension indicated in Drawings.
   4. Color: As indicated on Finish Schedule.

2.02 MATERIALS

A. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

B. Joint Sealant: Mildew-resistant silicone sealant, white.

2.03 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
   4. All joint locations must be approved by Architect.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 4 inches, unless otherwise indicated.

C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Albert & Robinson Architects of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 21 13 13

WET PIPE SPRINKLER SYSTEMS, FIRE PROTECTION
08/20

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B16.1	(2020) Gray Iron Pipe Flanges and Flanged Fittings Classes 25, 125, and 250
ASME B16.3	(2021) Malleable Iron Threaded Fittings, Classes 150 and 300
ASME B16.4	(2021) Gray Iron Threaded Fittings; Classes 125 and 250
ASME B16.21	(2021) Nonmetallic Flat Gaskets for Pipe Flanges

AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE)

ASSE 1013	(2021) Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies
ASSE 1015	(2021) Performance Requirements for Double Check Backflow Prevention Assemblies

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA C104/A21.4	(2022) Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
AWWA C110/A21.10	(2021) Ductile-Iron and Gray-Iron Fittings
AWWA C111/A21.11	(2023) Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
AWWA C203	(2020) Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot-Applied
AWWA M14	(2024) Manual: Recommended Practice for Backflow Prevention and Cross-Connection Control

ASTM INTERNATIONAL (ASTM)

ASTM A47/A47M	(1999; R 2022; E 2022) Standard Specification for Ferritic Malleable Iron Castings

ASTM A53/A53M	(2024) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A135/A135M	(2021) Standard Specification for Electric-Resistance-Welded Steel Pipe
ASTM A153/A153M	(2023) Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A183	(2014; R 2020) Standard Specification for Carbon Steel Track Bolts and Nuts
ASTM A536	(2024) Standard Specification for Ductile Iron Castings

FM GLOBAL (FM)

FM APP GUIDE	(updated on-line) Approval Guide https://www.approvalguide.com/

INTELLIGENCE COMMUNITY STANDARD (ICS)

ICS 705-1	(2010) Physical and Technical Security Standard for Sensitive Compartmented Information Facilities

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-71	(2018) Gray Iron Swing Check Valves, Flanged and Threaded Ends

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 13	(2024) Standard for the Installation of Sprinkler Systems
NFPA 13R	(2025) Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies
NFPA 24	(2025) Standard for the Installation of Private Fire Service Mains and Their Appurtenances
NFPA 101	(2024) Life Safety Code
NFPA 291	(2025) Recommended Practice for Fire Flow Testing and Marking of Hydrants

NATIONAL INSTITUTE FOR CERTIFICATION IN ENGINEERING TECHNOLOGIES (NICET)

NICET 1014-7	(2012) Program Detail Manual for Certification in the Field of Fire Protection Engineering Technology (Field

	Code 003) Subfield of Automatic Sprinkler System Layout

UL SOLUTIONS (UL)

UL 199	(2020) UL Standard for Safety Automatic Sprinklers for Fire-Protection Service
UL 262	(2004; Reprint Jul 2023) Gate Valves for Fire-Protection Service
UL 312	(2022) UL Standard for Safety Check Valves for Fire-Protection Service
UL 405	(2013; Bul. 2020) UL Standard for Safety Fire Department Connection Devices
UL 668	(2004; Reprint Oct 2021) UL Standard for Safety Hose Valves for Fire-Protection Service
UL 789	(2004; Reprint May 2024) UL Standard for Safety Indicator Posts for Fire-Protection Service
UL Fire Prot Dir	UL Product IQ (updated online) at https://productiq.ulpropsector.com/en

1.2 SYSTEM DESCRIPTION

Provide wet pipe sprinkler system(s) in all areas of the building. Except as modified herein, the system must meet the requirements of NFPA 13. Pipe sizes which are not indicated on the Contract drawings must be determined by hydraulic calculations.

1.2.1 Hydraulic Design

1.2.1.1 Basis for Calculations

A waterflow test was performed on 03/21/2025 at 2nd Street, near the project site and resulted in a static pressure of 63.7 psi with a residual pressure of 57.2 psi while flowing 920 gpm. Perform a fire hydrant flow test prior to shop drawing submittal in accordance with NFPA 291. Results must include hydrant elevations relative to the building and hydrant number/identifiers for the tested hydrants, including which were flowed, which had a gauge. This information must be presented in a tabular form if multiple hydrants were flowed. The results must be included with the hydraulic calculations. Hydraulic calculations must be based on flow test noted in this paragraph, unless approved by Contracting Officer. Hydraulic calculations must be based upon the Hazen-Williams formula with a "C" value noted in NFPA 13 for piping, for existing underground piping. The minimum residual pressure in a service lateral (lead-in) at the design flow rate must be 20 psi at the inlet to the backflow preventer.

1.2.1.2 Hydraulic Calculations

a. Water supply curves and system requirements must be plotted on semi-logarithmic graph (N^1.85) paper so as to present a summary of the complete hydraulic calculation.

b. Provide a summary sheet listing sprinklers in the design area and their respective hydraulic reference points, elevations, minimum discharge pressures and minimum flows. Elevations of hydraulic reference points (nodes) must be indicated.

c. Documentation must identify each pipe individually and the nodes connected thereto. Indicate the diameter, length, flow, velocity, friction loss, number and type fittings, total friction loss in the pipe, equivalent pipe length and Hazen-Williams coefficient for each pipe.

d. Where the sprinkler system is supplied by interconnected risers, the sprinkler system must be hydraulically calculated using the hydraulically most demanding single riser. The calculations must not assume the simultaneous use of more than one riser.

e. All calculations must include the backflow preventer manufacturer's stated friction loss at the design flow or 12 psi for reduced pressure backflow preventer, whichever is greater.

f. All calculations must be performed back to the actual location of the flow test, taking into account the direction of flow in the service main at the test location.

g. For gridded systems, calculations must show peaking of demand area friction loss to verify that the hydraulically most demanding area is being used. A flow diagram indicating the quantity and direction of flows must be included.

1.2.1.3 Design Criteria

Hydraulically design the system to discharge a minimum density as indicated on the drawings. Hydraulic calculations must be in accordance with the Area/Density Method of NFPA 13. Add an allowance for exterior hose streams of 250 gpm to the sprinkler system demand at the point of connection to the existing water system.

1.2.2 Sprinkler Coverage

Sprinklers must be uniformly spaced on branch lines. Provide coverage throughout 100 percent of the building. This includes, but is not limited to, telephone rooms, electrical equipment rooms (regardless of the fire resistance rating of the enclosure), boiler rooms, switchgear rooms, transformer rooms, attached electrical vaults and other electrical and mechanical spaces. Coverage per sprinkler must be in accordance with NFPA 13. Provide sprinklers below all obstructions in accordance with NFPA 13. Exceptions are as follows:

a. Sprinklers may be omitted from small rooms which are exempted for specific occupancies in accordance with NFPA 101.

b. Facilities that are designed in accordance with NFPA 13R.

1.2.3 Qualified Fire Protection Engineer (QFPE)

An individual who is a licensed professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveying (NCEES)

and has relevant fire protection engineering experience. Services of the QFPE must include:

a. Reviewing SD-02, SD-03, and SD-05 submittal packages for completeness and compliance with the provisions of this specification. Working (shop) drawings and calculations must be prepared by, or prepared under the immediate supervision of, the QFPE. The QFPE must affix their professional engineering stamp with signature to the shop drawings, calculations, and material data sheets, indicating approval prior to submitting the shop drawings to the DFPE.

b. Provide a letter documenting that the SD-02, SD-03, and SD-05 submittal package has been reviewed and noting all outstanding comments.

c. Performing in-progress construction surveillance prior to installation of ceilings (rough-in inspection).

d. Witnessing pre-Government functional performance testing and performing a final installation review.

e. Signing applicable certificates under SD-07.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Partial submittals and submittals not fully complying with NFPA 13 and this specification section must be returned disapproved without review. SD-02, SD-03 and SD-05 must be submitted simultaneously.

Shop drawings (SD-02), product data (SD-03) and calculations (SD-05) must be prepared by the designer and combined and submitted as one complete package. The QFPE must review the SD-02/SD-03/SD-05 submittal package for completeness and compliance with the Contract provisions prior to submission to the Government. The QFPE must provide a Letter of Confirmation that they have reviewed the submittal package for compliance with the contract provisions. This letter must include their professional engineer stamp and signature. Partial submittals and submittals not reviewed by the QFPE must be returned disapproved without review.

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Qualified Fire Protection Engineer (QFPE); G

Sprinkler System Designer; G

Sprinkler System Installer; G

SD-02 Shop Drawings

Shop Drawing; G

SD-03 Product Data

Contractor must provide record (AS-BUILT) drawings indicating final routing, depths, valve locations, and hydrant locations.

Pipe; G

Fittings; G

Valves, including gate, check, butterfly, and globe; G

Relief Valves; G

Sprinklers ; G

Pipe Hangers and Supports ; G

Sprinkler Alarm Switch; GValve Supervisory (Tamper) Switch; G

Fire Department Connection; G

Backflow Prevention Assembly; G

Air Vent; G

Hose Valve; G

Nameplates; G

SD-05 Design Data

Hydraulic Calculations; G

SD-06 Test Reports

Test Procedures; G

SD-07 Certificates

Verification of Compliant Installation; G

Request for Government Final Test; G

SD-10 Operation and Maintenance Data

Operating and Maintenance (O&M) Instructions; G

Spare Parts Data; G

SD-11 Closeout Submittals

As-built drawings; G

1.4 QUALITY ASSURANCE

1.4.1 Preconstruction Submittals

Within 36 days of contract award but no less than 14 days prior to commencing work on site, the prime Contractor must submit the following for review and approval. SD-02, SD-03 and SD-05 submittals received prior to the review and approval of the qualifications will be returned Disapproved Without Review.

1.4.1.1 Shop Drawing

2 copies of the shop drawings, no later than 28 days prior to the start of system installation. Working drawings conforming to the requirements prescribed in NFPA 13 and must be no smaller than the Contract Drawings. Each set of drawings must include the following:

a. A descriptive index with drawings listed in sequence by number. A legend sheet identifying device symbols, nomenclature, and conventions used in the package.

b. Floor plans drawn to a scale not less than 1/8-inch equals 1-foot clearly showing locations of devices, equipment, risers, and other details required to clearly describe the proposed arrangement.

c. Actual center-to-center dimensions between sprinklers on branch lines and between branch lines; from end sprinklers to adjacent walls; from walls to branch lines; from sprinkler feed mains, cross mains and branch lines to finished floor and roof or ceiling. A detail must show the dimension from the sprinkler and sprinkler deflector to the ceiling in finished areas.

d. Longitudinal and transverse building sections showing typical branch line and cross main pipe routing, elevation of each typical sprinkler above finished floor and elevation of "cloud" or false ceilings in relation to the building ceilings.

e. Plan and elevation views which establish that the equipment will fit the allotted spaces with clearance for installation and maintenance.

f. Riser layout drawings drawn to a scale of not less than 1/2-inch equals 1-foot to show details of each system component, clearances between each other and from other equipment and construction in the room.

g. Details of each type of riser assembly, pipe hanger, and restraint of underground water main at point-of-entry into the building, and electrical devices and interconnecting wiring. The dimension from the edge of vertical piping to the nearest adjacent wall(s) must be indicated on the drawings when vertical piping is located in stairs or other portions of the means of egress.

h. Details of each type of pipe hanger and related components.

1.4.1.2 Product Data

2 copies of annotated catalog data to show the specific model, type, and size of each item. Catalog cuts must also indicate the NRTL listing. The data must be highlighted to show model, size, options, and other pertinent information, that are intended for consideration. Data must be adequate to demonstrate compliance with all contract requirements. Product data for all equipment must be combined into a single submittal.

1.4.1.3 Hydraulic Calculations

Calculations must be as outlined in NFPA 13 except that calculations must be performed by computer using software intended specifically for fire protection system design using the design data shown on the drawings. Calculations must include isometric diagram indicating hydraulic nodes and

pipe segments.

1.4.1.4 Operating and Maintenance (O&M) Instructions

Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA as supplemented and modified by this specification section.

Provide 2 manuals and one pdf version on electronic media. The manuals must include the manufacturer's name, model number, parts list, list of parts and tools that should be kept in stock by the owner for routine maintenance, troubleshooting guide, and recommended service organization (including address and telephone number) for each item of equipment. Each service organization submitted must be capable of providing 4-hour on-site response to a service call on an emergency basis.

Submit spare parts data for each different item of material and equipment specified. The data must include a complete list of parts and supplies, and a list of parts recommended by the manufacturer to be replaced after 1-year and 3 years of service. Include a list of special tools and test equipment required for maintenance and testing of the products supplied.

1.4.2 Qualifications

1.4.2.1 Sprinkler System Designer

The sprinkler system designer must be certified as a Level III Technician by National Institute for Certification in Engineering Technologies (NICET) in the Water-Based Systems Layout subfield of Fire Protection Engineering Technology in accordance with NICET 1014-7.

1.4.2.2 Sprinkler System Installer

The sprinkler system installer must be regularly engaged in the installation of the type and complexity of system specified in the contract documents, and must have served in a similar capacity for at least three systems that have performed in the manner intended for a period of not less than 6 months.

1.4.3 Regulatory Requirements

Equipment and material must be listed or approved. Listed or approved, as used in this Section, means listed, labeled or approved by a Nationally Recognized Testing Laboratory (NRTL) such as UL Fire Prot Dir or FM APP GUIDE. The omission of these terms under the description of an item or equipment described must not be construed as waiving this requirement. All listings or approvals by testing laboratories must be from an existing ANSI or UL published standard. The recommended practices stated in the manufacturer's literature or documentation are mandatory requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

Protect all equipment delivered and placed in storage from the weather, excessive humidity and temperature variations, dirt and dust, or other contaminants. All pipes must be either capped or plugged until installed.

1.6 EXTRA MATERIALS

Spare sprinklers and wrench(es) must be provided as spare parts in

accordance with NFPA 13.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 Standard Products

Provide materials, equipment, and devices listed for fire protection service when so required by NFPA 13 or this specification. Select material from one manufacturer, where possible, and not a combination of manufacturers, for a classification of material. Material and equipment must be standard products of a manufacturer regularly engaged in the manufacture of the products for at least 2 years prior to bid.

2.1.2 Nameplates

Major components of equipment must have the manufacturer's name, address, type or style, model or serial number, catalog number, date of installation, installing Contractor's name and address, and the contract number provided on a new name plate permanently affixed to the item or equipment. Nameplates must be etched metal or plastic, permanently attached by screws to control units, panels or adjacent walls.

2.1.3 Identification and Marking

Pipe and fitting markings must include name or identifying symbol of manufacturer and nominal size. Pipe must be marked with ASTM designation. Valves and equipment markings must have name or identifying symbol of manufacturer, specific model number, nominal size, name of device, arrow indicating direction of flow, and position of installation (horizontal or vertical), except if valve can be installed in either position. Markings must be included on the body casting or on an etched or stamped metal nameplate permanently on the valve or cover plate.

2.1.4 Pressure Ratings

Valves, fittings, couplings, alarm switches, and similar devices must be rated for the maximum working pressures that can be experienced in the system, but in no case less than 175 psi.

2.2 UNDERGROUND PIPING COMPONENTS

2.2.1 Pipe

Pipe must comply with NFPA 24. Minimum pipe size is 6 inches. Piping more than 5 feet outside the building walls must comply with Section 33 11 00 WATER UTILITY DISTRIBUTION PIPING. A continuous section of welded stainless steel fire water service piping from a point outside the building perimeter to a flanged fitting at least 1-foot above the finished floor within the building is acceptable.

2.2.2 Fittings and Gaskets

Fittings must be ductile-iron conforming to AWWA C110/A21.10 with cement mortar lining conforming to AWWA C104/A21.4. Gaskets must be suitable in design and size for the pipe with which such gaskets are to be used. Gaskets for ductile-iron pipe joints must conform to AWWA C111/A21.11.

2.2.3 Gate Valve and Indicator Posts

Installation must comply with NFPA 24. Gate valves for use with indicator post must conform to UL 262. Indicator posts must conform to UL 789. Provide each indicator post with one coat of primer and two coats of red enamel paint.

2.2.4 Valve Boxes

Except where indicator posts are provided, for each buried valve, provide a cast-iron, ductile-iron, or plastic valve box of a suitable size. Plastic boxes must be constructed of acrylonitrile-butadiene-styrene (ABS) or inorganic fiber-reinforced black polyolefin. Provide cast-iron, ductile-iron, or plastic cover for valve box with the word "WATER" cast on the cover. The minimum box shaft diameter must be 5.25 inches. Coat cast-iron and ductile-iron boxes with bituminous paint applied to a minimum dry-film thickness of 10 mils.

2.2.5 Buried Utility Warning and Identification Tape

Provide detectable aluminum foil plastic backed tape or detectable magnetic plastic tape manufactured specifically for warning and identification of buried piping. Tape must be detectable by an electronic detection instrument. Provide tape, 3 inches minimum width, color coded for the utility involved with warning and identification imprinted in bold block letters continuously and repeatedly over the entire tape length. Warning and identification must read "CAUTION BURIED WATER PIPING BELOW" or similar wording. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material.

2.3 ABOVEGROUND PIPING COMPONENTS

2.3.1 Steel Piping Components

2.3.1.1 Steel Pipe

Except as modified herein, steel pipe must be black as permitted by NFPA 13 and conform to the applicable provisions of ASTM A53/A53M, ASTM A135/A135M or ASTM A153/A153M.

Steel pipe must be Schedule 40 only. Steel piping with wall thickness less than Schedule 40 must not be threaded.

2.3.1.2 Fittings

Fittings must be welded, threaded, or grooved-end type. Threaded fittings must be cast-iron conforming to ASME B16.4, malleable-iron conforming to ASME B16.3 or ductile-iron conforming to ASTM A536. Plain-end fittings with mechanical couplings, fittings that use steel gripping devices to bite into the pipe, steel press fittings and field welded fittings are not permitted. Fittings, mechanical couplings, and rubber gaskets must be supplied by the same manufacturer. Threaded fittings must use Teflon tape or manufacturer's approved joint compound. Reducing couplings are not permitted except as allowed by NFPA 13.

2.3.1.3 Grooved Mechanical Joints and Fittings

Joints and fittings must be designed for not less than 175 psi service and the product of the same manufacturer. Field welded fittings must not be

used. Fitting and coupling housing must be malleable-iron conforming to ASTM A47/A47M, Grade 32510; ductile-iron conforming to ASTM A536, Grade 65-45-12. Rubber gasketed grooved-end pipe and fittings with mechanical couplings are permitted in pipe sizes 2 inches and larger. Gasket must be the flush type that fills the entire cavity between the fitting and the pipe. Nuts and bolts must be heat-treated steel conforming to ASTM A183 and must be cadmium-plated or zinc-electroplated.

2.3.1.4 Flanges

Flanges must conform to NFPA 13 and ASME B16.1. Gaskets must be non-asbestos compressed material in accordance with ASME B16.21, 1/16-inch thick, and full face or self-centering flat ring type.

2.3.2 Flexible Sprinkler Hose

The use of flexible hose is not permitted.

2.3.3 Pipe Hangers and Supports

Provide galvanized pipe hangers and supports in accordance with NFPA 13.

2.3.4 Valves

Provide valves of types approved for fire service. Valves must open by counterclockwise rotation.

2.3.4.1 Control Valve

Manually operated sprinkler control/gate valve must be outside stem and yoke (OS&Y) type and must be listed.

2.3.4.2 Check Valves

Check valves must comply with UL 312. Check valves 4 inches and larger must be of the swing type, have a clear waterway and meet the requirements of MSS SP-71, for Type 3 or 4. Inspection plate must be provided on valves larger than 6 inches.

2.3.4.3 Hose Valve

Valve must comply with UL 668.

2.3.5 Riser Check Valves

Provide riser check valve, pressure gauges and main drain.

2.4 ALARM INITIATING AND SUPERVISORY DEVICES

2.4.1 Sprinkler Alarm Switch

Vane or pressure-type flow switch(es). Connection of switch must be by the fire alarm installer. Vane type alarm actuating devices must have mechanical diaphragm controlled retard device adjustable from 10 to 60 seconds and must instantly recycle.

2.4.2 Valve Supervisory (Tamper) Switch

Switch must be integral to the control valve or suitable for mounting to

the type of control valve to be supervised open. The switch must be tamper resistant and contain SPDT (Form C) contacts arranged to transfer upon removal of the housing cover or closure of the valve of more than two rotations of the valve stem.

2.5 BACKFLOW PREVENTION ASSEMBLY

Double-check valve assembly backflow preventer complying with ASSE 1013, ASSE 1015 and AWWA M14. Each check valve must have a drain. Backflow prevention assemblies must have current "Certificate of Approval from the Foundation for Cross-Connection Control and Hydraulic Research, FCCCHR List" and be listed for fire protection use. Listing of the specific make, model, design, and size in the FCCCHR List is acceptable as the required documentation.

2.5.1 Backflow Preventer Test Connection

Test connection must consist of a series of listed hose valves with 2 1/2-inch National Standard male hose threads with cap and chain.

2.6 FIRE DEPARTMENT CONNECTION

Fire department connection must be projecting type with cast-brass body, matching wall escutcheon lettered "Auto Spkr" with a polished-brass finish. The connection must have individual self-closing clappers, caps with drip drains and chains. Female inlets must have 2 1/2-inch diameter. Comply with UL 405.

2.7 SPRINKLERS

Sprinklers must comply with UL 199 and NFPA 13. Sprinklers with internal O-rings are not acceptable. Sprinklers in high heat areas including attic spaces or in close proximity to unit heaters must have temperature classification in accordance with NFPA 13. Extended coverage sprinklers are permitted for loading docks, residential occupancies and high-piled storage applications only.

2.7.1 Pendent Sprinkler

Pendent sprinkler must be quick-response type with nominal K-factor of 5.6. Pendent sprinklers must have a polished chrome finish. Assembly must include an integral escutcheon.

2.7.2 Upright Sprinkler

Upright sprinkler must be brass quick-response type and have a nominal K-factor of 5.6. Upright sprinklers shall be provided in concealed attic space.

2.7.3 Concealed Sprinkler

Concealed sprinkler must be white polyester quick-response type and have a nominal K-factor of 5.6. Coverplate must be white.

2.8 ACCESSORIES

2.8.1 Sprinkler Cabinet

Provide spare sprinklers in accordance with NFPA 13 and must be placed in

a suitable metal or plastic cabinet of sufficient size to accommodate all the spare sprinklers and wrenches in designated locations. Spare sprinklers must be representative of, and in proportion to, the number of each type and temperature rating of the sprinklers installed as required by NFPA 13. At least one wrench of each type required must be provided.

2.8.2 Pendent Sprinkler Escutcheon

Escutcheon must be one-piece metallic type with a depth of less than 3/4-inch and suitable for installation on pendent sprinklers. The escutcheon must have a factory finish that matches the pendent sprinkler.

2.8.3 Pipe Escutcheon

Provide split hinge metal plates for piping entering walls, floors, and ceilings in exposed spaces. Provide polished stainless steel plates or chromium-plated finish on copper alloy plates in finished spaces. Provide paint finish on metal plates in unfinished spaces.

2.8.4 Sprinkler Guard

Listed guard must be a steel wire cage designed to encase the sprinkler and protect it from mechanical damage. Guards must be provided on sprinklers located in the attic space.

2.8.5 Relief Valve

Relief valves must be listed and installed at the riser in accordance with NFPA 13.

2.8.6 Air Vent

Air vents must be of the automatic type and piped to drain to the building exterior.

2.8.7 Identification Sign

Valve identification sign must be minimum 6 inches wide by 2 inches high with enamel baked finish on minimum 18 gage steel or 0.024-inch aluminum with red letters on a white background or white letters on red background. Wording of sign must include, but not be limited to "main drain", "auxiliary drain", "inspector's test", "alarm test", "alarm line", and similar wording as required to identify operational components. Where there is more than one sprinkler system, signage must include specific details as to the respective system.

PART 3 EXECUTION

3.1 VERIFYING ACTUAL FIELD CONDITIONS

Before commencing work, examine all adjoining work on which the contractor's work that is dependent for perfect workmanship according to the intent of this specification section, and report to the Contracting Officer's Representative a condition that prevents performance of first class work. No "waiver of responsibility" for incomplete, inadequate or defective adjoining work will be considered unless notice has been filed before submittal of a proposal.

3.2 INSTALLATION

The installation must be in accordance with the applicable provisions of NFPA 13, NFPA 24 and publications referenced therein. Locate sprinklers in a consistent pattern with ceiling grid, lights, and air supply diffusers. Install sprinkler system over and under ducts, piping and platforms when such equipment can negatively affect or disrupt the sprinkler discharge pattern and coverage.

a. Piping offsets, fittings, and other accessories required must be furnished to provide a complete installation and to eliminate interference with other construction.

b. Wherever the contractor's work interconnects with work of other trades the Contractor must coordinate with other Contractors to insure all Contractors have the information necessary so that they may properly install all necessary connections and equipment. Identify all work items needing access (dampers and similar equipment) that are concealed above hung ceilings by permanent color coded pins/tabs in the ceiling directly below the item.

c. Provide required supports and hangers for piping, conduit, and equipment so that loading will not exceed allowable loadings of structure. Submittal of a bid must be a deemed representation that the contractor submitting such bid has ascertained allowable loadings and has included in his estimates the costs associated in furnishing required supports.

3.2.1 Waste Removal

At the conclusion of each day's work, clean up and stockpile on site all waste, debris, and trash which may have accumulated during the day as a result of work by the contractor and of his presence on the job. Sidewalks and streets adjoining the property must be kept broom clean and free of waste, debris, trash and obstructions caused by work of the contractor, which will affect the condition and safety of streets, walks, utilities, and property.

3.3 UNDERGROUND PIPING INSTALLATION

The fire protection water main must be laid, and joints anchored, in accordance with NFPA 24. Minimum depth of cover must be 3 feet or the frost line, whichever is deeper. The supply line must terminate inside the building with a flanged piece, the bottom of which must be set not less than 1-foot above the finished floor. A blind flange must be installed temporarily on top of the flanged piece to prevent the entrance of foreign matter into the supply line. A concrete thrust block must be provided at the elbow where the pipe turns up toward the floor. In addition, joints must be anchored in accordance with NFPA 24. Buried steel components must be provided with a corrosion protective coating in accordance with AWWA C203. Piping more than 5 feet outside the building walls must meet the requirements of Section 33 11 00 WATER UTILITY DISTRIBUTION PIPING.

3.4 ABOVEGROUND PIPING INSTALLATION

The methods of fabrication and installation of the aboveground piping must fully comply with the requirements and recommended practices of NFPA 13 and this specification section.

3.4.1 Piping in Exposed Areas

Install exposed piping without diminishing exit access widths, corridors or equipment access. Exposed horizontal piping, including drain piping, must be installed to provide maximum headroom.

3.4.2 Piping in Finished Areas

In areas with suspended or dropped ceilings and in areas with concealed spaces above the ceiling, piping must be concealed above ceilings. Piping must be inspected, hydrostatically tested and approved before being concealed. Risers and similar vertical runs of piping in finished areas must be concealed.

3.4.3 Pendent Sprinklers

a. Drop nipples to pendent sprinklers must consist of minimum 1-inch pipe with a reducing coupling into which the sprinkler must be threaded.

b. Where sprinklers are installed below suspended or dropped ceilings, drop nipples must be cut such that sprinkler ceiling plates or escutcheons are of a uniform depth throughout the finished space. The outlet of the reducing coupling must not extend below the underside of the ceiling.

c. Recessed pendent sprinklers must be installed such that the distance from the sprinkler deflector to the underside of the ceiling must not exceed the manufacturer's listed range and must be of uniform depth throughout the finished area.

d. Pendent sprinklers in suspended ceilings must be located in the center of the tile (plus or minus 2 inches).

3.4.4 Upright Sprinklers

Riser nipples or "sprigs" to upright sprinklers must contain no fittings between the branch line tee and the reducing coupling at the sprinkler.

3.4.5 Pipe Joints

Pipe joints must conform to NFPA 13, except as modified herein. Not more than four threads must show after joint is made up. Welded joints will be permitted, only if welding operations are performed as required by NFPA 13 at the Contractor's fabrication shop, not at the project construction site. Flanged joints must be provided where indicated or required by NFPA 13. Grooved pipe and fittings must be prepared in accordance with the manufacturer's latest published specification according to pipe material, wall thickness and size. Grooved couplings, fittings and grooving tools must be products of the same manufacturer. For copper tubing, pipe and groove dimensions must comply with the tolerances specified by the coupling manufacturer. The diameter of grooves made in the field must be measured using a "go/no-go" gauge, vernier or dial caliper, narrow-land micrometer, or other method specifically approved by the coupling manufacturer for the intended application. Groove width and dimension of groove from end of pipe must be measured and recorded for each change in grooving tool setup to verify compliance with coupling manufacturer's tolerances.

3.4.6 Reducers

Reductions in pipe sizes must be made with one-piece tapered reducing fittings. When standard fittings of the required size are not manufactured, single bushings of the face or hex type will be permitted. Where used, face bushings must be installed with the outer face flush with the face of the fitting opening being reduced. Bushings cannot be used in elbow fittings, in more than one outlet of a tee, in more than two outlets of a cross, or where the reduction in size is less than 1/2-inch.

3.4.7 Pipe Penetrations

a. Cutting structural members for passage of pipes or for pipe-hanger fastenings will not be permitted. Pipes that must penetrate concrete or masonry walls or concrete floors must be core-drilled and provided with pipe sleeves. Each sleeve must be Schedule 40 galvanized steel, ductile-iron or cast-iron pipe and extend through its respective wall or floor and be cut flush with each wall surface. Sleeves must provide required clearance between the pipe and the sleeve per NFPA 13. The space between the sleeve and the pipe must be firmly packed with mineral wool insulation.

b. Where pipes and sleeves penetrate fire walls, fire partitions, or floors, pipes/sleeves must be firestopped in accordance with Section 07 84 00 FIRESTOPPING.

c. In penetrations that are not fire-rated or not a floor penetration, the space between the sleeve and the pipe must be sealed at both ends with plastic waterproof cement that will dry to a firm but pliable mass or with a mechanically adjustable segmented elastomer seal.

d. All penetrations through the boundary of rooms/areas identified as secure space area must meet ICS 705-1.

3.4.8 Escutcheons

Escutcheons must be provided for pipe penetration in finished areas of ceilings, floors and walls. Escutcheons must be securely fastened to the pipe at surfaces through which piping passes.

3.4.9 Inspector's Test Connection

Unless otherwise indicated, the test connection must consist of 1-inch pipe connected at the riser as a combination test and drain valve; a test valve located approximately 7 feet above the floor; a smooth bore brass outlet equivalent to the smallest orifice sprinkler used in the system; and a painted metal identification sign affixed to the valve with the words "Inspector's Test". All test connection piping must be inside of the building and penetrate the exterior wall at the location of the discharge orifice only. The discharge orifice must be located outside the building wall no more than 2 feet above finished grade, directed so as not to cause damage to adjacent construction or landscaping during full flow discharge, or to the sanitary sewer. Discharge to the exterior must not interfere with exiting from the facility. Water discharge or runoff must not cross the path of egress from the building. Do not discharge to the roof. Discharge to floor drains, janitor sinks or similar fixtures is not permitted.

Provide concrete splash blocks at all drain and inspector's test

connection discharge locations if not discharging to a concrete surface. Splash blocks must be large enough to mitigate erosion and not become dislodged during a full flow of the drain. Ensure all discharged water drains away from the facility and does not cause property damage.

3.4.10 Backflow Preventer

Locate within the building or in a heated enclosure in locations subject to freezing. For heated enclosures, provide a low temperature supervisory alarm connected to the facility fire alarm system. Heat trace is not permitted to be used.

Install backflow preventers so that the bottom of the assembly is a minimum of 6 inches above the finished floor/grade. Install horizontal backflow preventers so that the bottom of the assembly is no greater than 24 inches above the finished floor/grade. Install vertical backflow preventers so that the upper operating handwheel is no more than 6 feet above the finished floor/grade. Clearance around control valve handles must be minimum 6 inches above grade/finished floor and away from walls.

3.4.10.1 Test Connection

Provide downstream of the backflow prevention assembly UL 668 hose valves with 2.5-inch National Standard male hose threads with cap and chain. Provide one valve for each 250 gpm of system demand or fraction thereof. Provide a permanent sign in accordance with paragraph entitled "Identification Signs" which reads, "Test Valve". Indicate location of test header. If an exterior connection, provide a control valve inside a heated mechanical room to prevent freezing.

3.4.11 Drains

a. Main drain piping must be provided to discharge at a safe point outside the building, no more than 2 feet above finished grade. Provide a concrete splash block at drain outlet. Discharge to the exterior must not interfere with exiting from the facility. Water discharge or runoff must not cross the path of egress from the building.

b. Auxiliary drains must be provided as required by NFPA 13. Auxiliary drains are permitted to discharge to a floor drain if the drain is sized to accommodate full flow (min 40 gpm). Discharge to service sinks or similar plumbing fixtures is not permitted.

3.4.12 Installation of Fire Department Connection

Connection must be mounted on the exterior wall approximately 3 feet above finished grade. The piping between the connection and the check valve must be provided with an automatic drip in accordance with NFPA 13 and piped to drain to the outside or a floor drain within the same room.

3.4.13 Identification Signs

Signs must be affixed to each control valve, inspector test valve, main drain, auxiliary drain, test valve, and similar valves as appropriate or as required by NFPA 13. Main drain test results must be etched into main drain identification sign. Hydraulic design data must be etched into the nameplates and permanently affixed to each sprinkler riser as specified in NFPA 13. Provide labeling on the surfaces of all feed and cross mains to

show the pipe function (e.g., "Sprinkler System", "Fire Department Connection", "Standpipe") and normal valve position (e.g. "Normally Open", "Normally Closed"). For pipe sizes 4-inch and larger provide white painted stenciled letters and arrows, a minimum of 2 inches in height and visible from at least two sides when viewed from the floor. For pipe sizes less than 4-inch, provide white painted stenciled letters and arrows, a minimum of 0.75-inch in height and visible from the floor.

3.5 ELECTRICAL

Except as modified herein, electric equipment and wiring must be in accordance with Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

3.6 PAINTING

Color code mark piping red.

3.7 FIELD QUALITY CONTROL

3.7.1 Test Procedures

Submit detailed test procedures, prepared and signed by the NICET Level III or IV Fire Sprinkler Technician, and the representative of the installing company, and reviewed by the QFPE 60 days prior to performing system tests. Detailed test procedures must list all components of the installed system. Test procedures must include sequence of testing, time estimate for each test, and sample test data forms. The test data forms must be in a check-off format (pass/fail with space to add applicable test data; similar to the forms in NFPA 13). The test procedures and accompanying test data forms must be used for the pre-Government testing and the Government final testing.

a. Provide space to identify the date and time of each test. Provide space to identify the names and signatures of the individuals conducting and witnessing each test.

3.7.2 Pre-Government Testing

3.7.2.1 Verification of Compliant Installation

Conduct inspections and tests to ensure that equipment is functioning properly. Tests must meet the requirements of paragraph entitled "Minimum System Tests" and "System Acceptance" as noted in NFPA 13. The Contractor and QFPE must be in attendance at the pre-Government testing to make necessary adjustments. After inspection and testing is complete, provide a signed Verification of Compliant Installation letter by the QFPE that the installation is complete, compliant with the specification and fully operable. The letter must include the names and titles of the witnesses to the pre-Government tests. Provide all completion documentation as required by NFPA 13 and the test reports noted below.

a. NFPA 13 Aboveground Material and Test Certificate

b. NFPA 13 Underground Material and Test Certificate

3.7.2.2 Request for Government Final Test

When the verification of compliant installation has been completed, submit a formal request for Government final test to the Contracting Officers

Designated Representative (COR). Government final testing will not be scheduled until the DFPE has received copies of the request for Government final testing and Verification of Compliant Installation letter with all required reports. Government final testing will not be performed until after the connections to the building fire alarm system have been completed and tested to confirm communications are fully functional. Submit request for test at least 15 calendar days prior to the requested test date.

3.7.3 Correction of Deficiencies

If equipment was found to be defective or non-compliant with contract requirements, perform corrective actions and repeat the tests. Tests must be conducted and repeated if necessary until the system has been demonstrated to comply with all contract requirements.

3.7.4 Government Final Tests

The tests must be performed in accordance with the approved test procedures in the presence of the DFPE. Furnish instruments and personnel required for the tests. The following must be provided at the job site for Government Final Testing:

a. The manufacturer's technical representative.

b. b. The contractor's Qualified Fire Protection Engineer (QFPE).

c. Marked-up red line drawings of the system as actually installed.

Government Final Tests will be witnessed by the Contracting Officer, Qualified Fire Protection Engineer (QFPE). At this time, all required tests noted in the paragraph "Minimum System Tests" must be repeated at their discretion.

3.8 MINIMUM SYSTEM TESTS

The system, including the underground water mains, and the aboveground piping and system components, must be tested to ensure that equipment and components function as intended. The underground and aboveground interior piping systems and attached appurtenances subjected to system working pressure must be tested in accordance with NFPA 13 and NFPA 24.

3.8.1 Underground Piping

3.8.1.1 Flushing

Underground piping must be flushed at a minimum of 10 fps in accordance with NFPA 24.

3.8.1.2 Hydrostatic Test

New underground piping must be hydrostatically tested in accordance with NFPA 24.

3.8.2 Aboveground Piping

3.8.2.1 Hydrostatic Test

Aboveground piping must be hydrostatically tested in accordance with

NFPA 13. There must be no drop in gauge pressure or visible leakage when the system is subjected to the hydrostatic test. The test pressure must be read from a gauge located at the low elevation point of the system or portion being tested.

3.8.2.2 Backflow Prevention Assembly Forward Flow Test

Each backflow prevention assembly must be tested at system flow demand, including all applicable hose streams, as specified in NFPA 13. The Contractor must provide all equipment and instruments necessary to conduct a complete forward flow test, including 2.5-inch diameter hoses, playpipe nozzles or flow diffusers, calibrated pressure gauges, and pitot tube gauge. The Contractor must provide all necessary supports to safely secure hoses and nozzles during the test. At the system demand flow, the pressure readings and pressure drop (friction loss) across the assembly must be recorded. A metal placard must be provided on the backflow prevention assembly that lists the pressure readings both upstream and downstream of the assembly, total pressure drop, and the system test flow rate determined during the preliminary testing. The pressure drop must be compared to the manufacturer's data and the readings observed during the final inspections and tests.

3.8.3 Main Drain Flow Test

Following flushing of the underground piping, a main drain test must be made to verify the adequacy of the water supply. Static and residual pressures must be recorded on the certificate specified in paragraph SUBMITTALS.

3.9 SYSTEM ACCEPTANCE

Following acceptance of the system, as-built drawings and O&M manuals must be delivered to the Contracting Officer for review and acceptance. Submit six sets of detailed as-built drawings. The drawings must show the system as installed, including deviations from both the project drawings and the approved shop drawings. These drawings must be submitted within two weeks after the final acceptance test of the system. At least one set of as-built (marked-up) drawings must be provided at the time of, or prior to the final acceptance test.

a. Provide operating and maintenance (O&M) instructions.

3.10 ONSITE TRAINING

Conduct a training course for the responding fire department and operating and maintenance personnel as designated by the Contracting Officer. Training must be performed on two separate days (to accommodate different shifts of Fire Department personnel) for a period of 4 hours of normal working time and must start after the system is functionally complete and after the final acceptance test. The on-site training must cover all of the items contained in the approved Operating and Maintenance Instructions.

-- End of Section --

SECTION 22 00 00

PLUMBING, GENERAL PURPOSE
05/24, CHG 1: 11/24

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z21.22/CSA 4.4	(2015; R 2020) Relief Valves for Hot Water Supply Systems

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ANSI/ASHRAE 18	(2008; R 2013) Methods Of Testing For Rating Drinking Water Coolers With Self-Contained Mechanical Refrigeration

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME A112.1.2	(2012; R 2017; R 2022) Air Gaps in Plumbing Systems (For Plumbing Fixtures and Water-Connected Receptors)
ASME A112.6.1M	(1997; R 2017) Floor Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use
ASME A112.6.3	(2022) Floor Drains
ASME A112.14.1	(2003; R 2017; R 2022) Backwater Valves
ASME A112.19.2/CSA B45.1	(2024) Standard for Vitreous China Plumbing Fixtures and Hydraulic Requirements for Water Closets and Urinals
ASME A112.19.3/CSA B45.4	(2022) Stainless Steel Plumbing Fixtures
ASME A112.36.2M	(2022) Cleanouts
ASME B16.5	(2020) Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard
ASME B16.18	(2021) Cast Copper Alloy Solder Joint Pressure Fittings
ASME B16.21	(2021) Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.22	(2021) Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

ASME B16.34	(2021) Valves - Flanged, Threaded and Welding End
ASME B16.50	(2021) Wrought Copper and Copper Alloy Braze-Joint Pressure Fittings
ASME B31.1	(2024) Power Piping
ASME B31.5	(2022) Refrigeration Piping and Heat Transfer Components
ASME B31.9	(2020) Building Services Piping
ASME B40.100	(2022) Pressure Gauges and Gauge Attachments
ASME BPVC SEC IV	(2017) BPVC Section IV-Rules for Construction of Heating Boilers
ASME BPVC SEC IX	(2017; Errata 2018) BPVC Section IX-Welding, Brazing and Fusing Qualifications
ASME CSD-1	(2021) Control and Safety Devices for Automatically Fired Boilers

AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE)

ASSE 1001	(2021) Performance Requirements for Atmospheric Type Vacuum Breakers
ASSE 1003	(2020) Performance Requirements for Water Pressure Reducing Valves for Domestic Water Distribution Systems - (ANSI approved 2010)
ASSE 1010	(2021) Performance Requirements for Water Hammer Arresters
ASSE 1011	(2017) Performance Requirements for Hose Connection Vacuum Breakers
ASSE 1012	(2023) Performance Requirements for Backflow Preventer with an Intermediate Atmospheric Vent
ASSE 1013	(2021) Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies
ASSE 1018	(2023) Performance Requirements for Trap Seal Primer Valves - Potable Water Supplied (ANSI Approved 2002
ASSE 1019	(2023) Performance Requirements for Wall Hydrant with Backflow Protection and Freeze Resistance
ASSE 1020	(2020) Performance Requirements for

	Pressure Vacuum Breaker Assemblies
ASSE 1070	(2020) Performance Requirements for Water Temperature Limiting Devices
ASSE 1072	(2020) Performance Requirements for Barrier Type Trap Seal Protection for Floor Drains

AMERICAN WATER WORKS ASSOCIATION (AWWA)

AWWA 10084	(2017) Standard Methods for the Examination of Water and Wastewater
AWWA B300	(2024) Hypochlorites
AWWA B301	(2024) Liquid Chlorine
AWWA C203	(2020) Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot-Applied
AWWA C651	(2023) Standard for Disinfecting Water Mains
AWWA C652	(2019) Disinfection of Water-Storage Facilities

AMERICAN WELDING SOCIETY (AWS)

AWS A5.8/A5.8M	(2019) Specification for Filler Metals for Brazing and Braze Welding
AWS B2.2/B2.2M	(2016) Specification for Brazing Procedure and Performance Qualification

ASTM INTERNATIONAL (ASTM)

ASTM A105/A105M	(2023) Standard Specification for Carbon Steel Forgings for Piping Applications
ASTM A193/A193M	(2024a) Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service and Other Special Purpose Applications
ASTM A515/A515M	(2017; R2022) Standard Specification for Pressure Vessel Plates, Carbon Steel, for Intermediate- and Higher-Temperature Service
ASTM A516/A516M	(2017) Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service
ASTM B32	(2020) Standard Specification for Solder Metal
ASTM B88	(2022) Standard Specification for Seamless

	Copper Water Tube
ASTM B117	(2019) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B306	(2020) Standard Specification for Copper Drainage Tube (DWV)
ASTM B370	(2022) Standard Specification for Copper Sheet and Strip for Building Construction
ASTM B813	(2024) Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
ASTM C564	(2020a) Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
ASTM C920	(2018; R 2024) Standard Specification for Elastomeric Joint Sealants
ASTM D2564	(2020) Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
ASTM D2665	(2014) Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
ASTM D2855	(2020) Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets
ASTM D3138	(2004; R 2016) Standard Specification for Solvent Cements for Transition Joints Between Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Non-Pressure Piping Components
ASTM D3311	(2017) Standard Specification for Drain, Waste, and Vent (DWV) Plastic Fittings Patterns
ASTM D4586/D4586M	(2007; R 2018) Asphalt Roof Cement, Asbestos-Free
ASTM E1	(2014) Standard Specification for ASTM Liquid-in-Glass Thermometers
ASTM F409	(2022) Standard Specification for Thermoplastic Accessible and Replaceable Plastic Tube and Tubular Fittings
ASTM F493	(2022) Standard Specification for Solvent Cements for Chlorinated Poly (Vinyl

	Chloride) (CPVC) Plastic Pipe and Fittings
ASTM F891	(2024) Standard Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe with a Cellular Core
ASTM F1760	(2016; R 2020) Standard Specification for Coextruded Poly(Vinyl Chloride) (PVC) Non-Pressure Plastic Pipe Having Reprocessed-Recycled Content
ASTM F2389	(2024a) Standard Specification for Pressure-rated Polypropylene (PP) Piping Systems

COPPER DEVELOPMENT ASSOCIATION (CDA)

CDA A4015	(2016; 14/17) Copper Tube Handbook

INTERNATIONAL CODE COUNCIL (ICC)

ICC A117.1	(2017) Standard And Commentary Accessible and Usable Buildings and Facilities
ICC IPC	(2024) International Plumbing Code

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-25	(2018) Standard Marking System for Valves, Fittings, Flanges and Unions
MSS SP-58	(2018) Pipe Hangers and Supports - Materials, Design and Manufacture, Selection, Application, and Installation
MSS SP-67	(2022) Butterfly Valves
MSS SP-70	(2011) Gray Iron Gate Valves, Flanged and Threaded Ends
MSS SP-71	(2018) Gray Iron Swing Check Valves, Flanged and Threaded Ends
MSS SP-72	(2010a) Ball Valves with Flanged or Butt-Welding Ends for General Service
MSS SP-78	(2011) Cast Iron Plug Valves, Flanged and Threaded Ends
MSS SP-80	(2019) Bronze Gate, Globe, Angle and Check Valves
MSS SP-85	(2011) Gray Iron Globe & Angle Valves Flanged and Threaded Ends
MSS SP-110	(2010) Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 90A	(2024) Standard for the Installation of Air Conditioning and Ventilating Systems

NSF INTERNATIONAL (NSF)

NSF 372	(2022) Drinking Water System Components - Lead Content
NSF/ANSI 14	(2023) Plastics Piping System Components and Related Materials
NSF/ANSI/CAN 61	(2024) Drinking Water System Components - Health Effects

PLASTIC PIPE AND FITTINGS ASSOCIATION (PPFA)

PPFA Fire Man	(2016) Firestopping: Plastic Pipe in Fire Resistive Construction

PLUMBING AND DRAINAGE INSTITUTE (PDI)

PDI WH 201	(2010) Water Hammer Arresters Standard

SOCIETY OF AUTOMOTIVE ENGINEERS INTERNATIONAL (SAE)

SAE J1508	(2023) Hose Clamp Specifications

U.S. DEPARTMENT OF ENERGY (DOE)

Energy Star	(1992; R 2006) Energy Star Energy Efficiency Labeling System (FEMP)

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

PL 93-523	(1974; A 1999) Safe Drinking Water Act

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 141.80	National Primary Drinking Water Regulations; Control of Lead and Copper; General Requirements

UL SOLUTIONS (UL)

UL 174	(2004; Reprint Nov 2024) UL Standard for Safety Household Electric Storage Tank Water Heaters
UL 399	(2017; Reprint May 2019) UL Standard for Safety Drinking Water Coolers
UL 499	(2014; Reprint May 2023) UL Standard for Safety Electric Heating Appliances

1.2 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Plumbing System; G

SD-03 Product Data

Backflow Prevention Assemblies; G

Fixtures

Shower Faucets; G

Flush Valve Water Closets

WaterSense Label for Flush Valve Water Closet; S

Flush Valve Urinals

WaterSense Label for Urinal; S

Countertop Lavatories

WaterSense Label for Lavatory Faucet; S

Kitchen Sinks

WaterSense Label for Showerhead; S

Water Heaters; G

Energy Star Label for Gas Storage Water Heater; S

Welding

Vibration-Absorbing Features; G

Plumbing System

Thermostatic Mixing Valves

Point-Of-Use Mixing Valve

SD-06 Test Reports

Tests, Flushing and Disinfection

Test of Backflow Prevention Assemblies; G.

SD-07 Certificates

Materials and Equipment

Bolts

SD-10 Operation and Maintenance Data

Plumbing System; G

1.3 SHOP DRAWINGS

Submit Plumbing System Detail drawings consisting of schedules, performance charts, instructions, diagrams, and other information to illustrate the requirements and operations of systems that are not covered by the Plumbing Code. Submit Plumbing System Detail drawings for the complete plumbing system including piping layouts and locations of connections; dimensions for roughing-in, foundation, and support points; schematic diagrams and wiring diagrams or connection and interconnection diagrams. Detail drawings must indicate clearances required for maintenance and operation. Where piping and equipment are to be supported other than as indicated, details must include loadings and proposed support methods. Mechanical drawing plans, elevations, views, and details, must be drawn to scale.

1.4 STANDARD PRODUCTS

Specified materials and equipment must be standard products of a manufacturer regularly engaged in the manufacture of such products. Specified equipment must essentially duplicate equipment that has performed satisfactorily at least 2 years prior to bid opening. Standard products must have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use must include applications of equipment and materials under similar circumstances and of similar size. The product must have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

Where equipment is specified to conform to requirements of the ASME Boiler and Pressure Vessel Code, the design, fabrication, and installation must conform to the code and a certificate must be submitted for the equipment.

1.4.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.

1.4.2 Service Support

The equipment items must be supported by service organizations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations must be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.4.3 Manufacturer's Nameplate

Each item of equipment must have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be

acceptable.

1.4.4 Modification of References

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "must" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the Contracting Officer.

1.4.4.1 Definitions

For the International Code Council (ICC) Codes referenced in the contract documents, advisory provisions must be considered mandatory, the word "should" must be interpreted as "must." Reference to the "code official" must be interpreted to mean the "Contracting Officer." For Navy owned property, references to the "owner" must be interpreted to mean the "Contracting Officer." For leased facilities, references to the "owner" must be interpreted to mean the "lessor." References to the "permit holder" must be interpreted to mean the "Contractor."

1.4.4.2 Administrative Interpretations

For ICC Codes referenced in the contract documents, the provisions of Chapter 1, "Administrator," do not apply. These administrative requirements are covered by the applicable Federal Acquisition Regulations (FAR) included in this contract and by the authority granted to the Officer in Charge of Construction to administer the construction of this project. References in the ICC Codes to sections of Chapter 1, must be applied appropriately by the Contracting Officer as authorized by his administrative cognizance and the FAR.

1.5 DELIVERY, STORAGE, AND HANDLING

Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.6 PERFORMANCE REQUIREMENTS

1.6.1 Welding

Piping must be welded in accordance with qualified procedures using performance-qualified welders and welding operators. Submit a copy of qualified procedures and a list of names and identification symbols of qualified welders and welding operators. Procedures and welders must be qualified in accordance with ASME BPVC SEC IX. Welding procedures qualified by others, and welders and welding operators qualified by another employer, may be accepted as permitted by ASME B31.9, unless temperature and pressure limits specified then may be accepted as permitted by ASME B31.1. The Contracting Officer must be notified 24 hours in advance of tests, and the tests must be performed at the work site if practicable. Welders or welding operators must apply their assigned symbols near each weld they make as a permanent record.

1.7 REGULATORY REQUIREMENTS

Unless otherwise required herein, plumbing work must be in accordance with

ICC IPC.

1.8 PROJECT/SITE CONDITIONS

The Contractor must become familiar with details of the work, verify dimensions in the field, and advise the Contracting Officer of any discrepancy before performing any work.

1.9 INSTRUCTION TO GOVERNMENT PERSONNEL

Furnish the services of competent instructors to give full instruction to the designated Government personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the specified equipment or system. Instructors must be thoroughly familiar with all parts of the installation and must be trained in operating theory as well as practical operation and maintenance work. Submit Plumbing System Operation and Maintenance Data in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

Instruction must be given during the first regular work week after the equipment or system has been accepted and turned over to the Government for regular operation. The number of man-days (8 hours per day) of instruction furnished must be as specified in the individual section. When more than 4 man-days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system. When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

1.10 ACCESSIBILITY OF EQUIPMENT

Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install concealed valves, expansion joints, controls, dampers, and equipment requiring access, in locations freely accessible through access doors.

PART 2 PRODUCTS

2.1 MATERIALS

Materials for various services must be in accordance with TABLES I and II. Pipe schedules must be selected based on service requirements. Pipe fittings must be compatible with the applicable pipe materials. Plastic pipe, fittings, and solvent cement must meet NSF/ANSI 14 and must be NSF listed for the service intended. Plastic pipe, fittings, and solvent cement used for potable hot and cold water service must bear the NSF seal "NSF-PW." Material or used in any potable water system intended for human consumption be certified in accordance with NSF 372 with the exception of brazing materials. In line devices such as water meters, building valves, check valves, meter stops, valves, fittings and back flow preventers must comply with PL 93-523 and NSF/ANSI/CAN 61, Section 8. End point devices such as drinking water fountains, lavatory faucets, kitchen and bar faucets, residential ice makers, supply stops and end point control valves used to dispense water for drinking must meet the requirements of NSF/ANSI/CAN 61, Section 9. Plastic pipe must not be installed in air plenums. Plastic pipe must not be installed in a pressure piping system in buildings greater than three stories including any basement levels.

2.1.1 Pipe Joint Materials

Solder containing lead must not be used with copper pipe. Cast iron soil pipe and fittings must be marked with the collective trademark of the Cast Iron Soil Institute. Joints and gasket materials must conform to the following:

a. Flange Gaskets: Gaskets must be made of non-asbestos material in accordance with ASME B16.21. Gaskets must be flat, 1/16 inch thick, and contain Aramid fibers bonded with Styrene Butadiene Rubber (SBR) or Nitro Butadiene Rubber (NBR). Gaskets must be the full face or self centering flat ring type. Gaskets used for hydrocarbon service must be bonded with NBR.

b. Brazing Material: Brazing material must conform to AWS A5.8/A5.8M, BCuP-5.

c. Brazing Flux: Flux must be in paste or liquid form appropriate for use with brazing material. Flux must be as follows: lead-free; have a 100 percent flushable residue; contain slightly acidic reagents; contain potassium borides; and contain fluorides.

d. Solder Material: Solder metal must conform to ASTM B32.

e. Solder Flux: Flux must be liquid form, non-corrosive, and conform to ASTM B813, Standard Test 1.

f. PTFE Tape: PTFE Tape, for use with Threaded Metal or Plastic Pipe.

g. Solvent Cement for Transition Joints between ABS and PVC Nonpressure Piping Components: ASTM D3138.

h. Plastic Solvent Cement for PVC Plastic Pipe: ASTM D2564 and ASTM D2855.

i. Plastic Solvent Cement for CPVC Plastic Pipe: ASTM F493.

j. Flanged fittings including, but not limited to, flanges, bolts, nuts and bolt patterns must be in accordance with ASME B16.5 class 150 and must have the manufacturer's trademark affixed in accordance with MSS SP-25. Flange material must conform to ASTM A105/A105M. Blind flange material must conform to ASTM A516/A516M cold service and ASTM A515/A515M for hot service. Bolts must be high strength or intermediate strength with material conforming to ASTM A193/A193M. Submit written certification by the bolt manufacturer that the bolts furnished comply with the specified requirements.

k. Copper tubing must conform to ASTM B88, Type K, L or M.

l. Heat-fusion joints for polypropylene piping: ASTM F2389.

2.1.2 Miscellaneous Materials

Miscellaneous materials must conform to the following:

a. Water Hammer Arrester: PDI WH 201. Water hammer arrester must be diaphragm or piston type.

b. Copper, Sheet and Strip for Building Construction: ASTM B370.

c. Asphalt Roof Cement: ASTM D4586/D4586M.

d. Hose Clamps: SAE J1508.

e. Supports for Off-The-Floor Plumbing Fixtures: ASME A112.6.1M.

f. Metallic Cleanouts: ASME A112.36.2M.

g. Plumbing Fixture Setting Compound: A preformed flexible ring seal molded from hydrocarbon wax material. The seal material must be nonvolatile nonasphaltic and contain germicide and provide watertight, gastight, odorproof and verminproof properties.

h. Coal-Tar Protective Coatings and Linings for Steel Water Pipelines: AWWA C203.

i. Hypochlorites: AWWA B300.

j. Liquid Chlorine: AWWA B301.

k. Gauges - Pressure and Vacuum Indicating Dial Type - Elastic Element: ASME B40.100.

l. Thermometers: ASTM E1. Mercury must not be used in thermometers.

2.1.3 Pipe Insulation Material

Insulation must be as specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

2.2 PIPE HANGERS, INSERTS, AND SUPPORTS

Pipe hangers, inserts, and supports must conform to MSS SP-58.

2.3 VALVES

Valves must be provided on supplies to equipment and fixtures. Valves 2-1/2 inches and smaller must be bronze with threaded bodies for pipe and solder-type connections for tubing. Valves 3 inches and larger must have flanged iron bodies and bronze trim. Pressure ratings must be based upon the application. Grooved end valves may be provided if the manufacturer certifies that the valves meet the performance requirements of applicable MSS standard. Valves must conform to the following standards:

Description	Standard
Butterfly Valves	MSS SP-67
Cast-Iron Gate Valves, Flanged and Threaded Ends	MSS SP-70
Cast-Iron Swing Check Valves, Flanged and Threaded Ends	MSS SP-71
Ball Valves with Flanged Butt-Welding Ends for General Service	MSS SP-72

Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends	MSS SP-110
Cast-Iron Plug Valves, Flanged and Threaded Ends	MSS SP-78
Bronze Gate, Globe, Angle, and Check Valves	MSS SP-80
Steel Valves, Socket Welding and Threaded Ends	ASME B16.34
Cast-Iron Globe and Angle Valves, Flanged and Threaded Ends	MSS SP-85
Backwater Valves	ASME A112.14.1
Vacuum Relief Valves	ANSI Z21.22/CSA 4.4
Water Pressure Reducing Valves	ASSE 1003
Water Heater Drain Valves	ASME BPVC SEC IV, Part HLW-810: Requirements for Potable-Water Heaters Bottom Drain Valve
Trap Seal Primer Valves	ASSE 1018
Temperature and Pressure Relief Valves for Hot Water Supply Systems	ANSI Z21.22/CSA 4.4
Temperature and Pressure Relief Valves for Automatically Fired Hot Water Boilers	ASME CSD-1 Safety Code No., Part CW, Article 5

2.3.1 Wall Hydrants (Frostproof)

ASSE 1019 with vacuum-breaker backflow preventer must have a recessed box, with locking cover. A brass or bronze operating rod must be provided within a galvanized iron casing of sufficient length to extend through the wall so that the valve is inside the building, and the portion of the hydrant between the outlet and valve is self-draining. A brass or bronze valve with coupling and union elbow having metal-to-metal seat must be provided. Valve rod and seat washer must be removable through the face of the hydrant. The hydrant must have 3/4 inch exposed hose thread on spout and 3/4 inch male pipe thread on inlet.

2.3.2 Relief Valves

Water heaters and hot water storage tanks must have a combination pressure and temperature (P&T) relief valve. The pressure relief element of a P&T relief valve must have adequate capacity to prevent excessive pressure buildup in the system when the system is operating at the maximum rate of heat input. The temperature element of a P&T relief valve must have a relieving capacity which is at least equal to the total input of the heaters when operating at their maximum capacity. Relief valves must be rated according to ANSI Z21.22/CSA 4.4. Relief valves for systems where the maximum rate of heat input is less than 200,000 Btuh must have 3/4 inch minimum inlets, and 3/4 inch outlets. Relief valves for systems where the maximum rate of heat input is greater than 200,000 Btuh must have 1 inch minimum inlets, and 1 inch outlets. The discharge pipe from the relief valve must be the size of the valve outlet.

2.3.3 Thermostatic Mixing Valves

Each valve must be constructed to control the mixing of hot and cold water and to deliver water at a desired temperature regardless of pressure or input temperature changes. The control element must be of an approved type. The body must be of heavy cast bronze, and interior parts must be brass, bronze, corrosion-resisting steel or copper. The valve must be equipped with necessary stops, check valves, unions, and sediment strainers on the inlets.

2.3.4 Point-of-Use Mixing Valve

Provide a point-of-use mixing valve in accordance with ASSE 1070 at lavatories, hand-wash sinks, and washfountain locations. Point-of-use mixing valve must limit the tempered water to not greater than 110 degrees F.

2.4 FIXTURES

Submit list of fixtures with manufacturer, model, and flow rate. Water closet replacements in major renovations may have a flush valve of up to 1.6 GPF to accommodate existing plumbing capacity. Fixtures for use by the physically handicapped must be in accordance with ICC A117.1. Vitreous China, nonabsorbent, hard-burned, and vitrified throughout the body must be provided. No fixture will be accepted that shows cracks, crazes, blisters, thin spots, or other flaws. Fixtures must be equipped with appurtenances such as traps, faucets, stop valves, and drain fittings. Each fixture and piece of equipment requiring connections to the drainage system, except grease interceptors, must be equipped with a trap. Brass expansion or toggle bolts capped with acorn nuts must be provided for supports, and polished chromium-plated pipe, valves, and fittings must be provided where exposed to view. Fixtures with the supply discharge below the rim must be equipped with backflow preventers. Internal parts of flush valves and flushometer valves, shower mixing valves, shower head face plates, pop-up stoppers of lavatory waste drains, and pop-up stoppers and overflow tees and shoes of bathtub waste drains may contain acetal resin, fluorocarbon, nylon, acrylonitrile-butadiene-styrene (ABS) or other plastic material, if the material has provided satisfactory service under actual commercial or industrial operating conditions for not less than 2 years. Plastic in contact with hot water must be suitable for 180 degrees F water temperature.

2.4.1 Lavatories

Vitreous china lavatories must be provided with two integral molded lugs on the back-underside of the fixture and drilled for bolting to the wall in a manner similar to the hanger plate.

2.4.2 Flush Valve Water Closets

2.4.2.1 Flush Valve Water Closet Type and Mount

ASME A112.19.2/CSA B45.1, white vitreous china, elongated bowl, floor-mounted, floor outlet. Top of toilet seat height above floor must be 14 to 15 inches, except 17 to 19 inches for wheelchair water closets. Provide wax bowl ring including plastic sleeve. Provide white solid plastic elongated open-front seat.

2.4.2.2 Flush Valve Water Closet Flush and Flow

Water flushing volume of the water closet and flush valve combination must not exceed 1.28 gallons per flush. Water closets must meet the EPA WaterSense product definition and must be EPA WaterSense labeled products. Provide data identifying WaterSense label for flush valve water closet. Fixtures that require the WaterSense label but are located in countries where the label is unavailable, see table below or see https://uwla.eu/for WaterSense label substitutes.

2.4.2.3 Flush Valve Water Closet Control Valve

Provide large diameter flush valve including angle control-stop valve, vacuum breaker, tail pieces, slip nuts, and wall plates; exposed to view components must be chromium-plated or polished stainless steel. Flush valves must be nonhold-open type. Mount flush valves not less than 11 inches above the fixture. Mounted height of flush valve must not interfere with the hand rail in ADA stalls.

2.4.3 Flush Valve Urinals

ASME A112.19.2/CSA B45.1, white vitreous china, wall-mounted, wall outlet, siphon jet, integral trap, and extended side shields. Provide urinal with the rim 24 inches above the floor. Water flushing volume of the urinal and flush valve combination must not exceed 0.5 gallons per flush. Urinals must be EPA WaterSense labeled products. Provide data identifying WaterSense label for urinal. Fixtures that require the WaterSense label but are located in countries where the label is unavailable, see table below or see https://uwla.eu/for WaterSense label substitutes.

Provide ASME A112.6.1M concealed chair carriers with vertical steel pipe supports. Provide large diameter flush valve including angle control-stop valve, vacuum breaker, tail pieces, slip nuts, and wall plates; exposed to view components must be chromium-plated or polished stainless steel. Flush valves must be nonhold-open type. Mount flush valves not less than 11 inches above the fixture.

2.4.4 Wall Hung Lavatories

ASME A112.19.2/CSA B45.1, white vitreous china, ledge back type, minimum dimensions of 19 inches wide by 17 inches front to rear, with supply openings for use with top mounted centerset faucets, and openings for concealed arm carrier installation. Provide aerator with faucet. Provide

lavatory faucets and accessories meeting the flow rate and product requirements of the paragraph LAVATORIES. Provide ASME A112.6.1M concealed chair carriers with vertical steel pipe supports and concealed arms for the lavatory. Mount lavatory with the front rim 34 inches above floor and with 29 inches minimum clearance from bottom of the front rim to floor. Provide top mounted washerless centerset lavatory faucets. Provide piping covers for P-traps, valves, and exposed drain piping per ADA requirement.

2.4.5 Kitchen Sinks

ASME A112.19.3/CSA B45.4, single compartment, 20 gage stainless steel with integral mounting rim for flush installation, minimum dimensions of 25 inches wide by 22 inches front to rear, with undersides fully sound deadened, with supply openings for use with top mounted washerless sink faucets with hose spray, and with 3.5 inch drain outlet. Provide aerator with faucet. Water flow rate must not exceed 2.2 gpm when measured at a flowing water pressure of 60 psi. Provide stainless steel drain outlets and stainless steel cup strainers. Provide separate 1.5 inch P-trap and drain piping to vertical vent piping from each compartment. Provide top mounted washerless sink faucets with hose spray.

2.4.6 Wheelchair Drinking Water Cooler

ANSI/ASHRAE 18, UL 399, NSF/ANSI/CAN 61, ADA and ICC A117.1. Single and Dual height water cooler with more than a single thickness of metal between the potable water and the refrigerant in the heat exchanger, wall-mounted bubbler style with ASME A112.6.1M concealed chair carrier, air-cooled condensing unit, 4.75 gph minimum capacity and 8 gph minimum capacity, stainless steel splash receptor, and all stainless steel cabinet, with 27 inch minimum knee clearance from front bottom of unit to floor and 36 inch maximum spout height above floor for ADA side and bottle filler vandal resistant touchless control filter cane apron. Bubblers must also be controlled by push levers, by push bars, or touch pads one on each side or one on front and both sides of the cabinet.

2.4.7 Shower Faucets

Provide prefabricated stainless steel shower unit consisting of the pressure balancing shower valve with single bronze stem, stainless steel balancing piston & bottom access integral service stops. Standard with 1/2" copper tubing assembly enclosed by 18 gage stainless steel #4 brushed finish shroud, standard 2.5 gpm, chrome plated brass shower head with flow control on institutional bracket, metal stem handle, side mount soap dish & all vandal proof securing screws.

2.4.8 Precast Terrazzo Mop Sinks

Terrazzo must be made of marble chips cast in white portland cement to produce 3000 psi minimum compressive strength 7 days after casting. Terrazzo can include corner type additions with minimum dimensions of 28 inches wide by 12 inches height. Provide floor or wall outlet copper alloy body drain cast integral with terrazzo, with polished stainless steel strainers.

2.5 BACKFLOW PREVENTERS

Backflow prevention devices must be approved by the State or local regulatory agencies. If there is no State or local regulatory agency

requirements, the backflow prevention devices must be listed by the Foundation for Cross-Connection Control & Hydraulic Research, or any other approved testing laboratory having equivalent capabilities for both laboratory and field evaluation of backflow prevention devices and assemblies. Reduced pressure principle assemblies, double check valve assemblies, atmospheric (nonpressure) type vacuum breakers, and pressure type vacuum breakers must be meet the above requirements.

Backflow preventers with intermediate atmospheric vent must conform to ASSE 1012. Reduced pressure principle backflow preventers must conform to ASSE 1013. Hose connection vacuum breakers must conform to ASSE 1011. Pipe applied atmospheric type vacuum breakers must conform to ASSE 1001. Pressure vacuum breaker assembly must conform to ASSE 1020. Air gaps in plumbing systems must conform to ASME A112.1.2.

2.6 DRAINS

2.6.1 Floor and Shower Drains

Floor and shower drains must consist of a galvanized body, integral seepage pan, and adjustable perforated or slotted chromium-plated bronze, nickel-bronze, or nickel-brass strainer, consisting of grate and threaded collar. Floor drains must be cast iron except where metallic waterproofing membrane is installed. Drains must be of double drainage pattern for embedding in the floor construction. The seepage pan must have weep holes or channels for drainage to the drainpipe. The seepage pan and weep holes must not be filled or plugged and have pervious materials (such as pea gravel) or a weep hole protection device to allow drainage. The strainer must be adjustable to floor thickness. A clamping device for attaching flashing or waterproofing membrane to the seepage pan without damaging the flashing or waterproofing membrane must be provided when required. Drains must be provided with threaded connection. Between the drain outlet and waste pipe, a neoprene rubber gasket conforming to ASTM C564 may be installed, provided that the drain is specifically designed for the rubber gasket compression type joint. Floor and shower drains must conform to ASME A112.6.3.

2.6.2 Trap Seal Protection

2.6.2.1 Barrier-Type Trap Seal Protection Device

Trap must be protected with a barrier-type trap seal protection device conforming to ASSE 1072 and must be installed in accordance with the manufacturer's instructions.

2.7 TRAPS

Unless otherwise specified, traps must be plastic per ASTM F409. Traps must be without a cleanout. Provide traps with removable access panels for easy clean-out at sinks and lavatories. Tubes must be copper alloy with walls not less than 0.032 inch thick within commercial tolerances, except on the outside of bends where the thickness may be reduced slightly in manufacture by usual commercial methods. Inlets must have rubber washer and copper alloy nuts for slip joints above the discharge level. Swivel joints must be below the discharge level and must be of metal-to-metal or metal-to-plastic type as required for the application. Nuts must have flats for wrench grip. Outlets must have internal pipe thread, except that when required for the application, the outlets must have sockets for solder-joint connections. The depth of the water seal

must be not less than 2 inches. The interior diameter must be not more than 1/8 inch over or under the nominal size, and interior surfaces must be reasonably smooth throughout. A copper alloy "P" trap assembly consisting of an adjustable "P" trap and threaded trap wall nipple with cast brass wall flange must be provided for lavatories. The assembly must be a standard manufactured unit and may have a rubber-gasketed swivel joint.

2.8 WATER HEATERS

Water heater types and capacities must be as indicated. Each water heater must have replaceable anodes. Each primary water heater must have controls with an adjustable range that includes 90 to 160 degrees F. Each gas-fired water heater and booster water heater must have controls with an adjustable range that includes 120 to 180 degrees F. Hot water systems utilizing recirculation systems must be tied into building off-hour controls. The thermal efficiencies and standby heat losses must conform to TABLE III in PART 3 of this Section for each type of water heater specified. Plastic materials polyetherimide (PEI) and polyethersulfone (PES) are forbidden to be used for vent piping of combustion gases. A factory pre-charged expansion tank must be installed on the cold water supply to each water heater. Expansion tanks must be specifically designed for use on potable water systems and must be rated for 200 degrees F water temperature and 150 psi working pressure. The expansion tank size and acceptance volume must be per water heater manufacturer recommendations.

2.8.1 Automatic Storage Type

Heaters must be complete with control system, temperature gauge, and pressure gauge, and must have ASME rated combination pressure and temperature relief valve.

2.8.1.1 Electric Type

Electric type water heaters must be tanked type as scheduled and conform to UL 174.

2.8.2 Electric Instantaneous Water Heaters (Tankless)

UL 499 and UL listed flow switch activated, tankless electric instantaneous water heater for wall mounting below sink or lavatory. Temperature rise at Flow Rate: as scheduled. .

2.9 ELECTRICAL WORK

Provide electrical motor driven equipment specified complete with motors, motor starters, and controls as specified herein and in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Provide internal wiring for components of packaged equipment as an integral part of the equipment.

2.9.1 Electrical Requirements for Power Wiring

Power wiring and conduit for field installed equipment must be provided under and conform to the requirements of Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

2.10 MISCELLANEOUS PIPING ITEMS

2.10.1 Escutcheon Plates

Provide one piece or split hinge metal plates for piping entering floors, walls, and ceilings in exposed spaces. Provide chromium-plated on copper alloy plates or polished stainless steel finish in finished spaces. Provide paint finish on plates in unfinished spaces.

2.10.2 Pipe Sleeves

Provide where piping passes entirely through walls, ceilings, roofs, and floors. Sleeves are not required where drain, waste, and vent (DWV) piping passes through concrete floor slabs located on grade, except where penetrating a membrane waterproof floor. For multiple pipe penetrations through load bearing masonry or concrete walls, minimum spacing must be 6 inches center of pipe to center of pipe.

2.10.2.1 Sleeves in Masonry and Concrete

Provide steel pipe sleeves or schedule 40 PVC plastic pipe sleeves. Sleeves are not required where drain, waste, and vent (DWV) piping passes through concrete floor slabs located on grade. Core drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.

2.10.2.2 Sleeves Not in Masonry and Concrete

Provide 26 gage galvanized steel sheet or PVC plastic pipe sleeves.

2.10.3 Pipe Hangers (Supports)

Provide MSS SP-58 Type 1 with adjustable type steel support rods, except as specified or indicated otherwise. Attach to steel joists with Type 19 or 23 clamps and retaining straps. Attach to Steel W or S beams with Type 21, 28, 29, or 30 clamps. Attach to steel angles and vertical web steel channels with Type 20 clamp with beam clamp channel adapter. Attach to horizontal web steel channel and wood with drilled hole on centerline and double nut and washer. Attach to concrete with Type 18 insert or drilled expansion anchor. Provide Type 40 insulation protection shield for insulated piping.

2.10.4 Nameplates

Provide 0.125 inch thick melamine laminated plastic nameplates, black matte finish with white center core, for equipment, gages, thermometers, and valves; valves in supplies to faucets will not require nameplates. Accurately align lettering and engrave minimum of 0.25 inch high normal block lettering into the white core. Minimum size of nameplates must be 1.0 by 2.5 inches. Key nameplates to a chart and schedule for each system. Frame charts and schedules under glass and place where directed near each system. Furnish two copies of each chart and schedule.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

Piping located in air plenums must conform to NFPA 90A requirements. Piping located in shafts that constitute air ducts or that enclose air

ducts must be noncombustible in accordance with NFPA 90A. Installation of plastic pipe where in compliance with NFPA may be installed in accordance with PPFA Fire Man. The plumbing system must be installed complete with necessary fixtures, fittings, traps, valves, and accessories. Submit diagrams, instructions, and other sheets proposed for posting for Plumbing System. Submit for Plumbing System manufacturer's recommendations for the installation of bell and spigot and hubless joints for cast iron soil pipe. Water and drainage piping must be extended 5 feet outside the building, unless otherwise indicated. A full port ball valve and drain must be installed on the water service line inside the building approximately 6 inches above the floor from point of entry. Piping must be connected to the exterior service lines or capped or plugged if the exterior service is not in place. Sewer and water pipes must be laid in separate trenches, except when otherwise shown. Exterior underground utilities must be at least 12 inches below the finish grade or as indicated on the drawings. If trenches are closed or the pipes are otherwise covered before being connected to the service lines, the location of the end of each plumbing utility must be marked with a stake or other acceptable means. Valves must be installed with control no lower than the valve body. Avoid the use of combination double wye and one-eighth bend fittings in the horizontal orientation below grade or below slab.

3.1.1 Water Pipe, Fittings, and Connections

3.1.1.1 Utilities

The piping must be extended to fixtures, outlets, and equipment. The hot-water and cold-water piping system must be arranged and installed to permit draining. The supply line to each item of equipment or fixture, except faucets, flush valves, or other control valves which are supplied with integral stops, must be equipped with a shutoff valve to enable isolation of the item for repair and maintenance without interfering with operation of other equipment or fixtures. Supply piping to fixtures, faucets, hydrants, shower heads, and flushing devices must be anchored to prevent movement.

3.1.1.2 Cutting and Repairing

The work must be carefully laid out in advance, and unnecessary cutting of construction must be avoided. Damage to building, piping, wiring, or equipment as a result of cutting must be repaired by mechanics skilled in the trade involved.

3.1.1.3 Protection of Fixtures, Materials, and Equipment

Pipe openings must be closed with caps or plugs during installation. Fixtures and equipment must be tightly covered and protected against dirt, water, chemicals, and mechanical injury. Upon completion of the work, the fixtures, materials, and equipment must be thoroughly cleaned, adjusted, and operated. Safety guards must be provided for exposed rotating equipment.

3.1.1.4 Mains, Branches, and Runouts

Piping must be installed as indicated. Pipe must be accurately cut and worked into place without springing or forcing. Structural portions of the building must not be weakened. Aboveground piping must run parallel with the lines of the building, unless otherwise indicated. Branch pipes

from service lines may be taken from top, bottom, or side of main, using crossover fittings required by structural or installation conditions. Supply pipes, valves, and fittings must be kept a sufficient distance from other work and other services to permit not less than 1/2 inch between finished covering on the different services. Bare and insulated water lines must not bear directly against building structural elements so as to transmit sound to the structure or to prevent flexible movement of the lines. Water pipe must not be buried in or under floors unless specifically indicated or approved. Buried domestic waste vent piping must not be less than 2 inch diameter. Changes in pipe sizes must be made with reducing fittings. Use of bushings will not be permitted except for use in situations in which standard factory fabricated components are furnished to accommodate specific accepted installation practice. Change in direction must be made with fittings, except that bending of pipe 4 inches and smaller will be permitted, provided a pipe bender is used and wide sweep bends are formed. The center-line radius of bends must be not less than six diameters of the pipe. Bent pipe showing kinks, wrinkles, flattening, or other malformations will not be acceptable.

3.1.1.5 Pipe Drains

Pipe drains indicated must consist of 3/4 inch hose bibb with renewable seat and full port ball valve ahead of hose bibb. At other low points, 3/4 inch brass plugs or caps must be provided. Disconnection of the supply piping at the fixture is an acceptable drain.

3.1.1.6 Expansion and Contraction of Piping

Allowance must be made throughout for expansion and contraction of water pipe. Each hot-water and hot-water circulation riser must have expansion loops or other provisions such as offsets and changes in direction where indicated and required. Risers must be securely anchored as required or where indicated to force expansion to loops. Branch connections from risers must be made with ample swing or offset to avoid undue strain on fittings or short pipe lengths. Horizontal runs of pipe over 50 feet in length must be anchored to the wall or the supporting construction about midway on the run to force expansion, evenly divided, toward the ends. Sufficient flexibility must be provided on branch runouts from mains and risers to provide for expansion and contraction of piping. Flexibility must be provided by installing one or more turns in the line so that piping will spring enough to allow for expansion without straining. If mechanical grooved pipe coupling systems are provided, the deviation from design requirements for expansion and contraction may be allowed pending approval of Contracting Officer.

3.1.1.7 Thrust Restraint

Plugs, caps, tees, valves and bends deflecting 11.25 degrees or more, either vertically or horizontally, in waterlines 4 inches in diameter or larger must be provided with thrust blocks, where indicated, to prevent movement. Thrust blocking must be concrete of a mix not leaner than: 1 cement, 2-1/2 sand, 5 gravel; and having a compressive strength of not less than 2000 psi after 28 days. Blocking must be placed between solid ground and the fitting to be anchored. Unless otherwise indicated or directed on drawings, the base and thrust bearing sides of the thrust block must be poured against undisturbed earth. The side of the thrust block not subject to thrust must be poured against forms. The area of bearing will be as indicated on drawings. Blocking must be placed so that the joints of the fitting are accessible for repair. Steel rods and

clamps, protected by galvanizing or by coating with bituminous paint, must be used to anchor vertical down bends into gravity thrust blocks.

3.1.1.8 Commercial-Type Water Hammer Arresters

Commercial-type water hammer arresters must be provided on hot- and cold-water supplies and must be located as generally indicated, with precise location and sizing to be in accordance with PDI WH 201. Water hammer arresters, where concealed, must be accessible by means of access doors or removable panels. Commercial-type water hammer arresters must conform to ASSE 1010. Vertical capped pipe columns will not be permitted.

3.1.2 Joints

Installation of pipe and fittings must be made in accordance with the manufacturer's recommendations. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted. Joints must be made up with fittings of compatible material and made for the specific purpose intended.

3.1.2.1 Unions and Flanges

Unions, flanges and mechanical couplings must not be concealed in walls, ceilings, or partitions. Unions must be used on pipe sizes 2-1/2 inches and smaller; flanges must be used on pipe sizes 3 inches and larger.

3.1.2.2 Copper Tube and Pipe

a. Brazed. Brazed joints must be made in conformance with AWS B2.2/B2.2M, ASME B16.50, and CDA A4015 with flux and are acceptable for all pipe sizes. Copper to copper joints must include the use of copper-phosphorus or copper-phosphorus-silver brazing metal without flux. Brazing of dissimilar metals (copper to bronze or brass) must include the use of flux with either a copper-phosphorus, copper-phosphorus-silver or a silver brazing filler metal.

b. Soldered. Soldered joints must be made with flux and are only acceptable for piping 2 inches and smaller. Soldered joints must conform to ASME B31.5 and CDA A4015. Soldered joints must not be used in compressed air piping between the air compressor and the receiver.

c. Copper Tube Extracted Joint. Mechanically extracted joints must be made in accordance with ICC IPC.

3.1.2.3 Plastic Pipe

Acrylonitrile-Butadiene-Styrene (ABS) pipe must have joints made with solvent cement. PVC and CPVC pipe must have joints made with solvent cement elastomeric, threading, (threading of Schedule 80 Pipe is allowed only where required for disconnection and inspection; threading of Schedule 40 Pipe is not allowed), or mated flanged.

3.1.3 Dissimilar Pipe Materials

Connections between ferrous and non-ferrous copper water pipe must be made with dielectric unions or flange waterways. Dielectric waterways must have temperature and pressure rating equal to or greater than that specified for the connecting piping. Waterways must have metal connections on both ends suited to match connecting piping. Dielectric

waterways must be internally lined with an insulator specifically designed to prevent current flow between dissimilar metals. Dielectric flanges must meet the performance requirements described herein for dielectric waterways. Connecting joints between plastic and metallic pipe must be made with transition fitting for the specific purpose.

3.1.4 Pipe Sleeves and Flashing

Pipe sleeves must be furnished and set in their proper and permanent location.

3.1.4.1 Sleeve Requirements

Unless indicated otherwise, provide pipe sleeves meeting the following requirements:

a. Secure sleeves in position and location during construction. Provide sleeves of sufficient length to pass through entire thickness of walls, ceilings, roofs, and floors.

b. A modular mechanical type sealing assembly may be installed in lieu of a waterproofing clamping flange and caulking and sealing of annular space between pipe and sleeve. The seals must consist of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe and sleeve using galvanized steel bolts, nuts, and pressure plates. The links must be loosely assembled with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and each nut. After the seal assembly is properly positioned in the sleeve, tightening of the bolt must cause the rubber sealing elements to expand and provide a watertight seal between the pipe and the sleeve. Each seal assembly must be sized as recommended by the manufacturer to fit the pipe and sleeve involved.

c. Sleeves must not be installed in structural members, except where indicated or approved. Rectangular and square openings must be as detailed. Each sleeve must extend through its respective floor, or roof, and must be cut flush with each surface, except for special circumstances. Pipe sleeves passing through floors in wet areas such as mechanical equipment rooms, lavatories, kitchens, and other plumbing fixture areas must extend a minimum of 4 inches above the finished floor.

d. Unless otherwise indicated, sleeves must be of a size to provide a minimum of 1 inch clearance between bare pipe or insulation and inside of sleeve or between insulation and inside of sleeve. Sleeves in bearing walls and concrete slab on grade floors must be steel pipe or cast-iron pipe. Sleeves in nonbearing walls or ceilings may be steel pipe, cast-iron pipe, galvanized sheet metal with lock-type longitudinal seam, or plastic.

e. Except as otherwise specified, the annular space between pipe and sleeve, or between jacket over insulation and sleeve, must be sealed as indicated with sealants conforming to ASTM C920 and with a primer, backstop material and surface preparation as specified in Section 07 92 00 JOINT SEALANTS. The annular space between pipe and sleeve, between bare insulation and sleeve or between jacket over insulation and sleeve must not be sealed for interior walls which are not designated as fire rated.

f. Sleeves through below-grade walls in contact with earth must be recessed 1/2 inch from wall surfaces on both sides. Annular space between pipe and sleeve must be filled with backing material and sealants in the joint between the pipe and concrete or masonry wall as specified above. Sealant selected for the earth side of the wall must be compatible with dampproofing/waterproofing materials that are to be applied over the joint sealant. Pipe sleeves in fire-rated walls must conform to the requirements in Section 07 84 00 FIRESTOPPING.

3.1.4.2 Flashing Requirements

Pipes passing through roof must be installed through a 16 ounce copper flashing, each within an integral skirt or flange. Flashing must be suitably formed, and the skirt or flange must extend not less than 8 inches from the pipe and must be set over the roof or floor membrane in a solid coating of bituminous cement. The flashing must extend up the pipe a minimum of 10 inches. For cleanouts, the flashing must be turned down into the hub and caulked after placing the ferrule. Pipes passing through pitched roofs must be flashed, using lead or copper flashing, with an adjustable integral flange of adequate size to extend not less than 8 inches from the pipe in all directions and lapped into the roofing to provide a watertight seal. The annular space between the flashing and the bare pipe or between the flashing and the metal-jacket-covered insulation must be sealed as indicated. Flashing for dry vents must be turned down into the pipe to form a waterproof joint. Pipes, up to and including 10 inches in diameter, passing through roof or floor waterproofing membrane may be installed through a cast-iron sleeve with caulking recess, anchor lugs, flashing-clamp device, and pressure ring with brass bolts. Flashing shield must be fitted into the sleeve clamping device. Pipes passing through wall waterproofing membrane must be sleeved as described above. A waterproofing clamping flange must be installed.

3.1.4.3 Waterproofing

Waterproofing at floor-mounted water closets must be accomplished by forming a flashing guard from soft-tempered sheet copper. The center of the sheet must be perforated and turned down approximately 1-1/2 inches to fit between the outside diameter of the drainpipe and the inside diameter of the cast-iron or steel pipe sleeve. The turned-down portion of the flashing guard must be embedded in sealant to a depth of approximately 1-1/2 inches; then the sealant must be finished off flush to floor level between the flashing guard and drainpipe. The flashing guard of sheet copper must extend not less than 8 inches from the drainpipe and must be lapped between the floor membrane in a solid coating of bituminous cement. If cast-iron water closet floor flanges are used, the space between the pipe sleeve and drainpipe must be sealed with sealant and the flashing guard must be upturned approximately 1-1/2 inches to fit the outside diameter of the drainpipe and the inside diameter of the water closet floor flange. The upturned portion of the sheet fitted into the floor flange must be sealed.

3.1.4.4 Optional Counterflashing

Instead of turning the flashing down into a dry vent pipe, or caulking and sealing the annular space between the pipe and flashing or metal-jacket-covered insulation and flashing, counterflashing may be accomplished by utilizing the following:

a. A standard roof coupling for threaded pipe up to 6 inches in diameter.

b. A tack-welded or banded-metal rain shield around the pipe.

3.1.4.5 Pipe Penetrations of Slab on Grade Floors

Where pipes, fixture drains, floor drains, cleanouts or similar items penetrate slab on grade floors, except at penetrations of floors with waterproofing membrane as specified in paragraphs FLASHING REQUIREMENTS and WATERPROOFING, a groove 1/4 to 1/2 inch wide by 1/4 to 3/8 inch deep must be formed around the pipe, fitting or drain. The groove must be filled with a sealant as specified in Section 07 92 00 JOINT SEALANTS.

3.1.4.6 Pipe Penetrations

Provide sealants for all pipe penetrations. All pipe penetrations must be sealed to prevent infiltration of air, insects, and vermin.

3.1.5 Supports

3.1.5.1 General

Hangers used to support piping 2 inches and larger must be fabricated to permit adequate adjustment after erection while still supporting the load. Pipe guides and anchors must be installed to keep pipes in accurate alignment, to direct the expansion movement, and to prevent buckling, swaying, and undue strain. Piping subjected to vertical movement when operating temperatures exceed ambient temperatures must be supported by variable spring hangers and supports or by constant support hangers. In the support of multiple pipe runs on a common base member, a clip or clamp must be used where each pipe crosses the base support member. Spacing of the base support members must not exceed the hanger and support spacing required for an individual pipe in the multiple pipe run. Threaded sections of rods must not be formed or bent.

3.1.5.2 Pipe Hangers, Inserts, and Supports

Installation of pipe hangers, inserts and supports must conform to MSS SP-58 except as modified herein.

a. Types 5, 12, and 26 must not be used.

b. Type 3 must not be used on insulated pipe.

c. Type 18 inserts must be secured to concrete forms before concrete is placed. Continuous inserts which allow more adjustment may be used if they otherwise meet the requirements for type 18 inserts.

d. Type 19 and 23 C-clamps must be torqued per MSS SP-58 and must have both locknuts and retaining devices furnished by the manufacturer. Field-fabricated C-clamp bodies or retaining devices are not acceptable.

e. Type 20 attachments used on angles and channels must be furnished with an added malleable-iron heel plate or adapter.

f. Type 24 may be used only on trapeze hanger systems or on fabricated frames.

g. Type 39 saddles must be used on insulated pipe 4 inches and larger

when the temperature of the medium is 60 degrees F or higher. Type 39 saddles must be welded to the pipe.

h. Type 40 shields must:

(1) Be used on insulated pipe less than 4 inches.

(2) Be used on insulated pipe 4 inches and larger when the temperature of the medium is 60 degrees F or less.

(3) Have a high density insert for all pipe sizes. High density inserts must have a density of 8 pcf or greater.

i. Horizontal pipe supports must be spaced as specified in MSS SP-58 and a support must be installed not over 1 foot from the pipe fitting joint at each change in direction of the piping. Pipe supports must be spaced not over 5 feet apart at valves. Operating temperatures in determining hanger spacing for PVC or CPVC pipe must be 120 degrees F for PVC and 180 degrees F for CPVC. Horizontal pipe runs must include allowances for expansion and contraction.

j. Vertical pipe must be supported at each floor, except at slab-on-grade, at intervals of not more than 15 feet nor more than 8 feet from end of risers, and at vent terminations. Vertical pipe risers must include allowances for expansion and contraction.

k. Type 35 guides using steel, reinforced polytetrafluoroethylene (PTFE) or graphite slides must be provided to allow longitudinal pipe movement. Slide materials must be suitable for the system operating temperatures, atmospheric conditions, and bearing loads encountered. Lateral restraints must be provided as needed. Where steel slides do not require provisions for lateral restraint the following may be used:

(1) On pipe 4 inches and larger when the temperature of the medium is 60 degrees F or higher, a Type 39 saddle, welded to the pipe, may freely rest on a steel plate.

(2) On pipe less than 4 inches a Type 40 shield, attached to the pipe or insulation, may freely rest on a steel plate.

(3) On pipe 4 inches and larger carrying medium less that 60 degrees F a Type 40 shield, attached to the pipe or insulation, may freely rest on a steel plate.

l. Pipe hangers on horizontal insulated pipe must be the size of the outside diameter of the insulation. The insulation must be continuous through the hanger on all pipe sizes and applications.

m. Where there are high system temperatures and welding to piping is not desirable, the type 35 guide must include a pipe cradle, welded to the guide structure and strapped securely to the pipe. The pipe must be separated from the slide material by at least 4 inches or by an amount adequate for the insulation, whichever is greater.

n. Hangers and supports for plastic pipe must not compress, distort, cut or abrade the piping, and must allow free movement of pipe except where otherwise required in the control of expansion/contraction.

3.1.5.3 Structural Attachments

Attachment to building structure concrete and masonry must be by cast-in concrete inserts, built-in anchors, or masonry anchor devices. Inserts and anchors must be applied with a safety factor not less than 5. Supports must not be attached to metal decking. Supports must not be attached to the underside of concrete filled floor or concrete roof decks unless approved by the Contracting Officer. Masonry anchors for overhead applications must be constructed of ferrous materials only.

3.1.6 Welded Installation

Plumbing pipe weldments must be as indicated. Changes in direction of piping must be made with welding fittings only; mitering or notching pipe to form elbows and tees or other similar type construction will not be permitted. Branch connection may be made with either welding tees or forged branch outlet fittings. Branch outlet fittings must be forged, flared for improvement of flow where attached to the run, and reinforced against external strains. Beveling, alignment, heat treatment, and inspection of weld must conform to ASME B31.1. Weld defects must be removed and repairs made to the weld, or the weld joints must be entirely removed and rewelded. After filler metal has been removed from its original package, it must be protected or stored so that its characteristics or welding properties are not affected. Electrodes that have been wetted or that have lost any of their coating must not be used.

3.1.7 Pipe Cleanouts

Pipe cleanouts must be the same size as the pipe except that cleanout plugs larger than 4 inches will not be required. A cleanout installed in connection with cast-iron soil pipe must consist of a long-sweep 1/4 bend or one or two 1/8 bends extended to the place shown. An extra-heavy cast-brass or cast-iron ferrule with countersunk cast-brass head screw plug must be caulked into the hub of the fitting and must be flush with the floor. Cleanouts in connection with other pipe, where indicated, must be T-pattern, 90-degree branch drainage fittings with cast-brass screw plugs, except plastic plugs must be installed in plastic pipe. Plugs must be the same size as the pipe up to and including 4 inches. Cleanout tee branches with screw plug must be installed at the foot of soil and waste stacks, at the foot of interior downspouts, on each connection to building storm drain where interior downspouts are indicated, and on each building drain outside the building. Cleanout tee branches may be omitted on stacks in single story buildings with slab-on-grade construction or where less than 18 inches of crawl space is provided under the floor. Cleanouts on pipe concealed in partitions must be provided with chromium plated bronze, nickel bronze, nickel brass or stainless steel flush type access cover plates. Round access covers must be provided and secured to plugs with securing screw. Square access covers may be provided with matching frames, anchoring lugs and cover screws. Cleanouts in finished walls must have access covers and frames installed flush with the finished wall. Cleanouts installed in finished floors subject to foot traffic must be provided with a chrome-plated cast brass, nickel brass, or nickel bronze cover secured to the plug or cover frame and set flush with the finished floor. Heads of fastening screws must not project above the cover surface. Where cleanouts are provided with adjustable heads, the heads must be plastic.

3.1.8 Condensate Drain Piping for Tropical Environments

Condensate drain piping materials must be rated for Drain, Waste and Vent service. Above grade use Copper Type DWV ASTM B306. Condensate piping must maintain a horizontal slope in the direction of discharge of not less than one-eighth unit vertical in 12 units horizontal (1 percent). Do not use PVC above grade in mechanical rooms, fire riser rooms, generator rooms or other high-abuse areas. The following condensate pipe diameters must be sized in accordance with equipment capacity refrigeration shown below:

EQUIPMENT CAPACITY	MINIMUM CONDENSATE PIPE DIAMETER
Up to 5 tons	1 inch
Over 5 tons to 40 tons	1-1/4 inch
Over 40 tons to 90 tons	1-1/2 inch
Over 90 tons to 125 tons	2 inch
Over 125 tons to 250 tons of refrigeration	2-1/2 inch

3.2 WATER HEATERS AND HOT WATER STORAGE TANKS

3.2.1 Relief Valves

No valves must be installed between a relief valve and its water heater or storage tank. The P&T relief valve must be installed where the valve actuator comes in contact with the hottest water in the heater. Whenever possible, the relief valve must be installed directly in a tapping in the tank or heater; otherwise, the P&T valve must be installed in the hot-water outlet piping. A vacuum relief valve must be provided on the cold water supply line to the hot-water storage tank or water heater and mounted above and within 6 inches above the top of the tank or water heater.

3.2.2 Heat Traps

Piping to and from each water heater and hot water storage tank must be routed horizontally and downward a minimum of 24 inches before turning in an upward direction.

3.2.3 Connections to Water Heaters

Connections of metallic pipe to water heaters must be made with dielectric unions or flanges. Use of dielectric nipples is prohibited unless internally lined and specifically designed to limit current flow between dissimilar metals.

3.2.4 Expansion Tank

A pre-charged expansion tank must be installed on the cold water supply between the water heater inlet and the cold water supply shut-off valve. The Contractor must adjust the expansion tank air pressure, as recommended by the tank manufacturer, to match incoming water pressure.

3.3 FIXTURES AND FIXTURE TRIMMINGS

Polished chromium-plated pipe, valves, and fittings must be provided where exposed to view. Angle stops, straight stops, stops integral with the faucets, or concealed type of lock-shield, and loose-key pattern stops for supplies with threaded, sweat or solvent weld inlets must be furnished and installed with fixtures. Where connections between copper tubing and faucets are made by rubber compression fittings, a beading tool must be used to mechanically deform the tubing above the compression fitting. Exposed traps and supply pipes for fixtures and equipment must be connected to the rough piping systems at the wall, unless otherwise specified under the item. Floor and wall escutcheons must be as specified. Drain lines and hot water lines of fixtures for handicapped personnel must be insulated and do not require polished chrome finish. Plumbing fixtures and accessories must be installed within the space shown.

3.3.1 Fixture Connections

Where space limitations prohibit standard fittings in conjunction with the cast-iron floor flange, special short-radius fittings must be provided. Connections between earthenware fixtures and flanges on soil pipe must be made gastight and watertight with a closet-setting compound or neoprene gasket and seal. Use of natural rubber gaskets or putty will not be permitted. Fixtures with outlet flanges must be set the proper distance from floor or wall to make a first-class joint with the closet-setting compound or gasket and fixture used.

3.3.2 Flushometer Valves

Flushometer valves must be secured to prevent movement by anchoring the long finished top spud connecting tube to wall adjacent to valve with approved metal bracket. Flushometer valves for water closets must be installed 39 inches above the floor, except at water closets intended for use by the physically handicapped where flushometer valves must be mounted at approximately 30 inches above the floor and arranged to avoid interference with grab bars. In addition, for water closets intended for handicap use, the flush valve handle must be installed on the wide side of the enclosure.

3.3.3 Height of Fixture Rims Above Floor

Lavatories must be mounted with rim 31 inches above finished floor. Wall-hung drinking fountains and water coolers must be installed with rim 42 inches above floor. Wall-hung service sinks must be mounted with rim 28 inches above the floor. Installation of fixtures for use by the physically handicapped must be in accordance with ICC A117.1.

3.3.4 Shower Bath Outfits

The area around the water supply piping to the mixing valves and behind the escutcheon plate must be made watertight by caulking or gasketing.

3.3.5 Fixture Supports

Fixture supports for off-the-floor lavatories, urinals, water closets, and other fixtures of similar size, design, and use, must be of the chair-carrier type. The carrier must provide the necessary means of mounting the fixture, with a foot or feet to anchor the assembly to the floor slab. Adjustability must be provided to locate the fixture at the

desired height and in proper relation to the wall. Support plates, in lieu of chair carrier, must be fastened to the wall structure only where it is not possible to anchor a floor-mounted chair carrier to the floor slab.

3.3.5.1 Support for Solid Masonry Construction

Chair carrier must be anchored to the floor slab. Where a floor-anchored chair carrier cannot be used, a suitable wall plate must be imbedded in the masonry wall.

3.3.5.2 Support for Concrete-Masonry Wall Construction

Chair carrier must be anchored to floor slab. Where a floor-anchored chair carrier cannot be used, a suitable wall plate must be fastened to the concrete wall using through bolts and a back-up plate.

3.3.5.3 Support for Steel Stud Frame Partitions

Chair carrier must be used. The anchor feet and tubular uprights must be of the heavy duty design; and feet (bases) must be steel and welded to a square or rectangular steel tube upright. Wall plates, in lieu of floor-anchored chair carriers, must be used only if adjoining steel partition studs are suitably reinforced to support a wall plate bolted to these studs.

3.3.5.4 Support for Wood Stud Construction

Where floor is a concrete slab, a floor-anchored chair carrier must be used. Where entire construction is wood, wood crosspieces must be installed. Fixture hanger plates, supports, brackets, or mounting lugs must be fastened with not less than No. 10 wood screws, 1/4 inch thick minimum steel hanger, or toggle bolts with nut. The wood crosspieces must extend the full width of the fixture and must be securely supported.

3.3.6 Backflow Prevention Devices

Plumbing fixtures, equipment, and pipe connections must not cross connect or interconnect between a potable water supply and any source of nonpotable water. Backflow preventers must be installed where indicated and in accordance with ICC IPC at all other locations necessary to preclude a cross-connect or interconnect between a potable water supply and any nonpotable substance. In addition backflow preventers must be installed at all locations where the potable water outlet is below the flood level of the equipment, or where the potable water outlet will be located below the level of the nonpotable substance. Backflow preventers must be located so that no part of the device will be submerged. Backflow preventers must be of sufficient size to allow unrestricted flow of water to the equipment, and preclude the backflow of any nonpotable substance into the potable water system. Bypass piping must not be provided around backflow preventers. Access must be provided for maintenance and testing. Each device must be a standard commercial unit.

3.3.7 Access Panels

Access panels must be provided for concealed valves and controls, or any item requiring inspection or maintenance. Access panels must be of sufficient size and located so that the concealed items may be serviced, maintained, or replaced.

3.3.8 Traps

Each trap must be placed as near the fixture as possible, and no fixture must be double-trapped. Traps installed on cast-iron soil pipe must be cast iron. Traps installed on steel pipe or copper tubing must be recess-drainage pattern, or brass-tube type. Traps installed on plastic pipe may be plastic conforming to ASTM D3311. Traps for acid-resisting waste must be of the same material as the pipe.

3.4 IDENTIFICATION SYSTEMS

3.4.1 Identification Tags

Identification tags made of brass, engraved laminated plastic, or engraved anodized aluminum, indicating service and valve number must be installed on valves, except those valves installed on supplies at plumbing fixtures. Tags must be 1-3/8 inch minimum diameter, and marking must be stamped or engraved. Indentations must be black, for reading clarity. Tags must be attached to valves with No. 12 AWG, copper wire, chrome-plated beaded chain, or plastic straps designed for that purpose.

3.4.2 Pipe Color Code Marking

Color code marking of piping must be as specified in Section 09 90 00 PAINTS AND COATINGS.

3.4.3 Color Coding Scheme for Locating Hidden Utility Components

Scheme must be provided in buildings having suspended grid ceilings. The color coding scheme must identify points of access for maintenance and operation of operable components which are not visible from the finished space and installed in the space directly above the suspended grid ceiling. The operable components must include valves, dampers, switches, linkages and thermostats. The color coding scheme must consist of a color code board and colored metal disks. Each colored metal disk must be approximately 3/8 inch in diameter and secured to removable ceiling panels with fasteners. The fasteners must be inserted into the ceiling panels so that the fasteners will be concealed from view. The fasteners must be manually removable without tools and must not separate from the ceiling panels when panels are dropped from ceiling height. Installation of colored metal disks must follow completion of the finished surface on which the disks are to be fastened. The color code board must have the approximate dimensions of 3 foot width, 30 inches height, and 1/2 inch thickness. The board must be made of wood fiberboard and framed under glass or 1/16 inch transparent plastic cover. Unless otherwise directed, the color code symbols must be approximately 3/4 inch in diameter and the related lettering in 1/2 inch high capital letters. The color code board must be mounted and located in the mechanical or equipment room.

3.5 ESCUTCHEONS

Escutcheons must be provided at finished surfaces where bare or insulated piping, exposed to view, passes through floors, walls, or ceilings, except in boiler, utility, or equipment rooms. Escutcheons must be fastened securely to pipe or pipe covering and must be satin-finish, corrosion-resisting steel, polished chromium-plated zinc alloy, or polished chromium-plated copper alloy. Escutcheons must be either one-piece or split-pattern, held in place by internal spring tension or

setscrew.

3.6 PAINTING

Painting of pipes, hangers, supports, and other iron work, either in concealed spaces or exposed spaces, is specified in Section 09 90 00 PAINTS AND COATINGS.

3.6.1 Painting of New Equipment

New equipment painting must be factory applied or shop applied, and must be as specified herein, and provided under each individual section.

3.6.1.1 Factory Painting Systems

Manufacturer's standard factory painting systems may be provided subject to certification that the factory painting system applied will withstand 125 hours in a salt-spray fog test, except that equipment located outdoors must withstand 500 hours in a salt-spray fog test. Salt-spray fog test must be in accordance with ASTM B117, and for that test the acceptance criteria must be as follows: immediately after completion of the test, the paint must show no signs of blistering, wrinkling, or cracking, and no loss of adhesion; and the specimen must show no signs of rust creepage beyond 0.125 inch on either side of the scratch mark.

The film thickness of the factory painting system applied on the equipment must not be less than the film thickness used on the test specimen. If manufacturer's standard factory painting system is being proposed for use on surfaces subject to temperatures above 120 degrees F, the factory painting system must be designed for the temperature service.

3.6.1.2 Shop Painting Systems for Metal Surfaces

Clean, pretreat, prime and paint metal surfaces; except aluminum surfaces need not be painted. Apply coatings to clean dry surfaces. Clean the surfaces to remove dust, dirt, rust, oil and grease by wire brushing and solvent degreasing prior to application of paint, except metal surfaces subject to temperatures in excess of 120 degrees F must be cleaned to bare metal.

Where more than one coat of paint is specified, apply the second coat after the preceding coat is thoroughly dry. Lightly sand damaged painting and retouch before applying the succeeding coat. Color of finish coat must be aluminum or light gray.

a. Temperatures Less Than 120 Degrees F: Immediately after cleaning, the metal surfaces subject to temperatures less than 120 degrees F must receive one coat of pretreatment primer applied to a minimum dry film thickness of 0.3 mil, one coat of primer applied to a minimum dry film thickness of one mil; and two coats of enamel applied to a minimum dry film thickness of one mil per coat.

b. Temperatures Between 120 and 400 Degrees F: Metal surfaces subject to temperatures between 120 and 400 degrees F must receive two coats of 400 degrees F heat-resisting enamel applied to a total minimum thickness of 2 mils.

c. Temperatures Greater Than 400 Degrees F: Metal surfaces subject to temperatures greater than 400 degrees F must receive two coats of 600

degrees F heat-resisting paint applied to a total minimum dry film thickness of 2 mils.

3.7 TESTS, FLUSHING AND DISINFECTION

Submit test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, completion and testing of the installed system. Each test report must indicate the final position of controls.

3.7.1 Plumbing System

The following tests must be performed on the plumbing system in accordance with ICC IPC, except that the drainage and vent system final test must include the smoke test. The Contractor has the option to perform a peppermint test in lieu of the smoke test. If a peppermint test is chosen, the Contractor must submit a testing procedure and reasons for choosing this option in lieu of the smoke test to the Contracting Officer for approval.

a. Drainage and Vent Systems Test. The final test must include a smoke test.

b. Building Sewers Tests.

c. Water Supply Systems Tests.

3.7.1.1 Test of Backflow Prevention Assemblies

Certification of proper operation must be submitted and must be as accomplished in accordance with state regulations by an individual certified by the state to perform such tests. If no state requirement exists, the Contractor must have the manufacturer's representative test the device to ensure the unit is properly installed and performing as intended. The Contractor must provide written documentation of the tests performed and signed by the individual performing the tests. Backflow prevention assembly must be tested using gauges specifically designed for the testing of backflow prevention assemblies.

Backflow prevention assembly test gauges must be tested annually for accuracy in accordance with the requirements of State or local regulatory agencies. If there is no State or local regulatory agency requirements, gauges must be tested annually for accuracy in accordance with the requirements of University of Southern California's Foundation of Cross Connection Control and Hydraulic Research or the American Water Works Association Manual of Cross Connection (Manual M-14), or any other approved testing laboratory having equivalent capabilities for both laboratory and field evaluation of backflow prevention assembly test gauges. Report form for each assembly must include, as a minimum, the following:

Data on Device	Data on Testing Firm
Type of Assembly	Name
Manufacturer	Address

Model Number	Certified Tester
Serial Number	Certified Tester No.
Size	Date of Test
Location	
Test Pressure Readings	Serial Number and Test Data of Gauges

If the unit fails to meet specified requirements, the unit must be repaired and retested.

3.7.2 Defective Work

If inspection or test shows defects, such defective work or material must be replaced or repaired as necessary and inspection and tests must be repeated. Repairs to piping must be made with new materials. Caulking of screwed joints or holes will not be acceptable.

3.7.3 System Flushing

3.7.3.1 During Flushing

Before operational tests or disinfection, potable water piping system must be flushed with hot potable water. Sufficient water must be used to produce a water velocity that is capable of entraining and removing debris in all portions of the piping system. This requires simultaneous operation of all fixtures on a common branch or main in order to produce a flushing velocity of approximately 4 fps through all portions of the piping system. In the event that this is impossible due to size of system, the Contracting Officer (or the designated representative) must specify the number of fixtures to be operated during flushing. Contractor must provide adequate personnel to monitor the flushing operation and to ensure that drain lines are unobstructed in order to prevent flooding of the facility. Contractor must be responsible for any flood damage resulting from flushing of the system. Flushing must be continued until entrained dirt and other foreign materials have been removed and until discharge water shows no discoloration. All faucets and drinking water fountains, to include any device considered as an end point device by NSF/ANSI/CAN 61, Section 9, must be flushed a minimum of 0.25 gallons per 24 hour period, ten times over a 14 day period.

3.7.3.2 After Flushing

System must be drained at low points. Strainer screens must be removed, cleaned, and replaced. After flushing and cleaning, systems must be prepared for testing by immediately filling water piping with clean, fresh potable water. Any stoppage, discoloration, or other damage to the finish, furnishings, or parts of the building due to the Contractor's failure to properly clean the piping system must be repaired by the Contractor. When the system flushing is complete, the hot-water system must be adjusted for uniform circulation. Flushing devices and automatic control systems must be adjusted for proper operation according to manufacturer's instructions. Flow rates on fixtures must not exceed those stated in PART 2 of this Section. Unless more stringent local requirements exist, lead levels must not exceed limits established by

40 CFR 141.80 (c)(1). The water supply to the building must be tested separately to ensure that any lead contamination found during potable water system testing is due to work being performed inside the building.

3.7.4 Operational Test

Upon completion of flushing and prior to disinfection procedures, the Contractor must subject the plumbing system to operating tests to demonstrate satisfactory installation, connections, adjustments, and functional and operational efficiency. Such operating tests must cover a period of not less than 8 hours for each system and must include the following information in a report with conclusion as to the adequacy of the system:

a. Time, date, and duration of test.

b. Water pressures at the most remote and the highest fixtures.

c. Operation of each fixture and fixture trim.

d. Operation of each valve, hydrant, and faucet.

e. Temperature of each domestic hot-water supply.

f. Operation of each floor and roof drain by flooding with water.

g. Operation of each vacuum breaker and backflow preventer.

h. Complete operation of each water pressure booster system, including pump start pressure and stop pressure.

3.7.5 Disinfection

After all system components are provided and operational tests are complete, the entire domestic hot- and cold-water distribution system must be disinfected. Before introducing disinfecting chlorination material, entire system must be flushed with potable water until any entrained dirt and other foreign materials have been removed.

Water chlorination procedure must be in accordance with AWWA C651 and AWWA C652 as modified and supplemented by this specification. The chlorinating material must be hypochlorites or liquid chlorine. The chlorinating material must be fed into the water piping system at a constant rate at a concentration of at least 50 parts per million (ppm). Feed a properly adjusted hypochlorite solution injected into the system with a hypochlorinator, or inject liquid chlorine into the system through a solution-feed chlorinator.

3.7.5.1 Water Chlorination Monitoring

Test the chlorine residual level in the water at 6 hour intervals for a continuous period of 24 hours. If at the end of a 6 hour interval, the chlorine residual has dropped to less than 25 ppm, flush the piping including tanks with potable water, and repeat the above chlorination procedures. During the chlorination period, each valve and faucet must be opened and closed several times. After the second 24 hour period, verify that no less than 25 ppm chlorine residual remains in the treated system. The 24 hour chlorination procedure must be repeated until no less than 25 ppm chlorine residual remains in the treated system.

3.7.5.2 Water Chlorination Flushing

Upon the specified verification, the system including tanks must then be flushed with potable water until the residual chlorine level is reduced to less than one part per million. During the flushing period, each valve and faucet must be opened and closed several times.

3.7.5.3 Sample Testing

Take additional samples of water in disinfected containers, for bacterial examination, at locations specified by the Contracting Officer. Test these samples for total coliform organisms (coliform bacteria, fecal coliform, streptococcal, and other bacteria) in accordance with AWWA 10084. The testing method used must be EPA approved for drinking water systems and must comply with applicable local and state requirements.

3.7.5.4 Disinfection Acceptance

Disinfection must be repeated until bacterial tests indicate the absence of coliform organisms (zero mean coliform density per 100 milliliters) in the samples for at least 2 full days. The system will not be accepted until satisfactory bacteriological results have been obtained.

3.8 POSTED INSTRUCTIONS

Framed instructions under glass or in laminated plastic, including wiring and control diagrams showing the complete layout of the entire system, must be posted where directed. Condensed operating instructions explaining preventive maintenance procedures, methods of checking the system for normal safe operation, and procedures for safely starting and stopping the system must be prepared in typed form, framed as specified above for the wiring and control diagrams and posted beside the diagrams. The framed instructions must be posted before acceptance testing of the systems.

3.9 TABLES

TABLE I

PIPE AND FITTING MATERIALS FOR DRAINAGE, WASTE, VENT AND CONDENSATE DRAIN PIPING SYSTEMS

Item #	Pipe and Fitting Materials	SERVICE A	SERVICE B	SERVICE C	SERVICE D	SERVICE E	SERVICE F	SERVICE G
1	Copper drainage tube, (DWV), ASTM B306							X

TABLE I

PIPE AND FITTING MATERIALS FOR DRAINAGE, WASTE, VENT AND CONDENSATE DRAIN PIPING SYSTEMS

Item #	Pipe and Fitting Materials	SERVICE A	SERVICE B	SERVICE C	SERVICE D	SERVICE E	SERVICE F	SERVICE G
2	Polyvinyl Chloride plastic drain, waste and vent pipe and fittings, ASTM D2665, ASTM F891, (Sch 40) ASTM F1760	X	X	X	X	X	X	

SERVICE:

A - Underground Building Soil, Waste and Storm Drain
B - Aboveground Soil, Waste, Drain In Buildings
C - Underground Vent
D - Aboveground Vent
E - Interior Rainwater Conductors Aboveground
F - Corrosive Waste And Vent Above And Belowground
G - Condensate Drain Aboveground

* - Hard Temper

TABLE II

PIPE AND FITTING MATERIALS FOR PRESSURE PIPING SYSTEMS

Item #	Pipe and Fitting Materials	SERVICE A	SERVICE B	SERVICE C	SERVICE D
1	Seamless copper pipe, ASTM B42	x	x		x
2	Seamless copper water tube, ASTM B88, ASTM B88M	x**	x**	x**	x**
3	Wrought copper and bronze solder-joint pressure fittings, ASME B16.22 for use with Items 5, 7 and 8	X	X	X	X

TABLE II

PIPE AND FITTING MATERIALS FOR PRESSURE PIPING SYSTEMS

Item #	Pipe and Fitting Materials	SERVICE A	SERVICE B	SERVICE C	SERVICE D
4	Cast copper alloy solder-joint pressure fittings, ASME B16.18 for use with Item 8	X	X	X	X
	SERVICE: A - Cold Water Service Aboveground B - Hot and Cold Water Distribution 180 degrees F Maximum Aboveground C - Compressed Air Lubricated D - Cold Water Service Belowground Indicated types are minimum wall thicknesses. ** - Type L - Hard *** - Type K - Hard temper with brazed joints only or type K-soft temper without joints in or under floors **** - In or under slab floors only brazed joints				

-- End of Section --

SECTION 23 05 93

TESTING, ADJUSTING, AND BALANCING FOR HVAC
11/15

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC. (AMCA)

AMCA 203	(1990; R 2011) Field Performance Measurements of Fan Systems

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 62.1	(2016) Ventilation for Acceptable Indoor Air Quality

ASSOCIATED AIR BALANCE COUNCIL (AABC)

AABC MN-1	(2002; 6th ed) National Standards for Total System Balance

NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB)

NEBB MASV	(2006) Procedural Standards for Measurements and Assessment of Sound and Vibration
NEBB PROCEDURAL STANDARDS	(2015) Procedural Standards for TAB (Testing, Adjusting and Balancing) Environmental Systems

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA 1780	(2023) HVAC Systems - Testing, Adjusting and Balancing, 3rd Edition
SMACNA 1858	(2004) HVAC Sound And Vibration Manual - First Edition
SMACNA 1972 CD	(2012) HVAC Air Duct Leakage Test Manual - 2nd Edition

1.2 DEFINITIONS

a. AABC: Associated Air Balance Council

b. COTR: Contracting Officer's Technical Representative

c. DALT: Duct air leakage test

d. DALT'd: Duct air leakage tested

e. HVAC: Heating, ventilating, and air conditioning; or heating, ventilating, and cooling

f. NEBB: National Environmental Balancing Bureau

g. Out-of-tolerance data: Pertains only to field acceptance testing of Final DALT or TAB report. When applied to DALT work, this phase means "a leakage rate measured during DALT field acceptance testing which exceeds the leakage rate allowed by SMACNA Leak Test Manual for an indicated duct construction and sealant class." When applied to TAB work this phase means "a measurement taken during TAB field acceptance testing which does not fall within the range of plus 5 to minus 5 percent of the original measurement reported on the TAB Report for a specific parameter."

h. Season of maximum heating load: The time of year when the outdoor temperature at the project site remains within plus or minus 30 degrees Fahrenheit of the project site's winter outdoor design temperature, throughout the period of TAB data recording.

i. Season of maximum cooling load: The time of year when the outdoor temperature at the project site remains within plus or minus 5 degrees Fahrenheit of the project site's summer outdoor design temperature, throughout the period of TAB data recording.

j. Season 1, Season 2: Depending upon when the project HVAC is completed and ready for TAB, Season 1 is defined, thereby defining Season 2. Season 1 could be the season of maximum heating load, or the season of maximum cooling load.

k. Sound measurements terminology: Defined in AABC MN-1, NEBB MASV, or SMACNA 1858 (TABB).

l. TAB: Testing, adjusting, and balancing (of HVAC systems)

m. TAB'd: HVAC Testing/Adjusting/Balancing procedures performed

n. TAB Agency: TAB Firm

o. TAB team field leader: TAB team field leader

p. TAB team supervisor: TAB team engineer

q. TAB team technicians: TAB team assistants

r. TABB: Testing Adjusting and Balancing Bureau

1.2.1 Similar Terms

In some instances, terminology differs between the Contract and the TAB Standard primarily because the intent of this Section is to use the industry standards specified, along with additional requirements listed herein to produce optimal results.

The following table of similar terms is provided for clarification only. Contract requirements take precedent over the corresponding AABC, NEBB, or TABB requirements where differences exist.

SIMILAR TERMS			
Contract Term	AABC Term	NEBB Term	TABB Term
TAB Standard	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems	Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems	International Standards for Environmental Systems Balance
TAB Specialist	TAB Engineer	TAB Supervisor	TAB Supervisor
Systems Readiness Check	Construction Phase Inspection	Field Readiness Check & Preliminary Field Procedures	Field Readiness Check & Prelim. Field Procedures

1.3 WORK DESCRIPTION

The work includes duct air leakage testing (DALT) and testing, adjusting, and balancing (TAB) of new heating, ventilating, and cooling (HVAC) air distribution systems including equipment and performance data, ducts, and piping which are located within, on, under, between, and adjacent to buildings, including records of existing conditions.

Perform TAB in accordance with the requirements of the TAB procedural standard recommended by the TAB trade association that approved the TAB Firm's qualifications. Comply with requirements of AABC MN-1, NEBB PROCEDURAL STANDARDS, or SMACNA 1780 (TABB) as supplemented and modified by this specification section. All recommendations and suggested practices contained in the TAB procedural standards are considered mandatory.

Conduct DALT and TAB of the indicated existing systems and equipment and submit the specified DALT and TAB reports for approval. Conduct DALT testing in compliance with the requirements specified in SMACNA 1972 CD, except as supplemented and modified by this section. Conduct DALT and TAB work in accordance with the requirements of this section.

1.3.1 Air Distribution Systems

Test, adjust, and balance systems (TAB) in compliance with this section. Obtain Contracting Officer's written approval before applying insulation to exterior of air distribution systems as specified under Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

TAB Firm; G

Designation of TAB Team Assistants; G

Designation of TAB Team Engineer; G or TAB Specialist; G

Designation of TAB Team Field Leader; G

SD-03 Product Data

Equipment and Performance Data; G

TAB Related HVAC Submittals; G

A list of the TAB Related HVAC Submittals, no later than 7 days after the approval of the TAB team engineer and assistant.

TAB Procedures; G

Proposed procedures for TAB, submitted with the TAB Schematic Drawings and Report Forms.

Calibration; G

TAB Execution; G

TAB Verification; G

SD-06 Test Reports

Completed Pre-Final DALT Report; G

Certified Final DALT Report; G

TAB Design Review Report; G

TAB Report; G

SD-07 Certificates

Independent TAB Agency and Personnel Qualifications; G

DALT and TAB Submittal and Work Schedule; G

TAB Pre-Field Engineering Report; G

TAB Firm; G

Pre-field DALT Preliminary Notification; G

Advanced Notice for TAB Field Work; G

Prerequisite HVAC Work Check Out List; G

1.5 QUALITY ASSURANCE

1.5.1 Independent TAB Agency and Personnel Qualifications

To secure approval for the proposed agency, submit information certifying

that the TAB agency is a first tier subcontractor who is not affiliated with any other company participating in work on this contract, including design, furnishing equipment, or construction. Further, submit the following, for the agency, to Contracting Officer for approval:

a. Independent AABC or NEBB or TABB TAB agency:

(1) TAB agency: AABC registration number and expiration date of current certification; or NEBB certification number and expiration date of current certification; or TABB certification number and expiration date of current certification.

(2) TAB team supervisor: Name and copy of AABC or NEBB or TABB TAB supervisor certificate and expiration date of current certification.

(3) TAB team field leader: Name and documented evidence that the team field leader has satisfactorily performed full-time supervision of TAB work in the field for not less than 3 years immediately preceding this contract's bid opening date.

(4) TAB team field technicians: Names and documented evidence that each field technician has satisfactorily assisted a TAB team field leader in performance of TAB work in the field for not less than one year immediately preceding this contract's bid opening date.

(5) Current certificates: Registrations and certifications are current, and valid for the duration of this contract. Renew Certifications which expire prior to completion of the TAB work, in a timely manner so that there is no lapse in registration or certification. TAB agency or TAB team personnel without a current registration or current certification are not to perform TAB work on this contract.

b. TAB Team Members: TAB team approved to accomplish work on this contract are full-time employees of the TAB agency. No other personnel is allowed to do TAB work on this contract.

c. Replacement of TAB team members: Replacement of members may occur if each new member complies with the applicable personnel qualifications and each is approved by the Contracting Officer.

1.5.2 TAB Standard

Perform TAB in accordance with the requirements of the standard under which the TAB Firm's qualifications are approved, i.e., AABC MN-1, NEBB PROCEDURAL STANDARDS, or SMACNA 1780 unless otherwise specified herein. All recommendations and suggested practices contained in the TAB Standard are considered mandatory. Use the provisions of the TAB Standard, including checklists, report forms, etc., as nearly as practical, to satisfy the Contract requirements. Use the TAB Standard for all aspects of TAB, including qualifications for the TAB Firm and Specialist and calibration of TAB instruments. Where the instrument manufacturer calibration recommendations are more stringent than those listed in the TAB Standard, adhere to the manufacturer's recommendations.

All quality assurance provisions of the TAB Standard such as performance guarantees are part of this contract. For systems or system components

not covered in the TAB Standard, TAB procedures must be developed by the TAB Specialist. Where new procedures, requirements, etc., applicable to the Contract requirements have been published or adopted by the body responsible for the TAB Standard used (AABC, NEBB, or TABB), the requirements and recommendations contained in these procedures and requirements are considered mandatory, including the latest requirements of ASHRAE 62.1.

1.5.3 Qualifications

1.5.3.1 TAB Firm

The TAB Firm must be either a member of AABC or certified by the NEBB or the TABB and certified in all categories and functions where measurements or performance are specified on the plans and specifications, including TAB of environmental systems.

Certification must be maintained for the entire duration of duties specified herein. If, for any reason, the firm loses subject certification during this period, the Contractor must immediately notify the Contracting Officer and submit another TAB Firm for approval. Any firm that has been the subject of disciplinary action by either the AABC, the NEBB, or the TABB within the five years preceding Contract Award is not be eligible to perform any duties related to the HVAC systems, including TAB. All work specified in this Section and in other related Sections to be performed by the TAB Firm will be considered invalid if the TAB Firm loses its certification prior to Contract completion and must be performed by an approved successor.

These TAB services are to assist the prime Contractor in performing the quality oversight for which it is responsible. The TAB Firm must be a prime subcontractor of the Contractor and be financially and corporately independent of the mechanical subcontractor, reporting directly to and paid by the Contractor.

1.5.3.2 TAB Specialist

The TAB Specialist must be either a member of AABC,an experienced technician of the Firm certified by the NEBB, or a Supervisor certified by the TABB. The certification must be maintained for the entire duration of duties specified herein. If, for any reason, the Specialist loses subject certification during this period, immediately notify the Contracting Officer and submit another TAB Specialist for approval. Any individual that has been the subject of disciplinary action by either the AABC, the NEBB, or the TABB within the five years preceding Contract Award is not eligible to perform any duties related to the HVAC systems, including TAB. All work specified in this Section and in other related Sections performed by the TAB Specialist will be considered invalid if the TAB Specialist loses its certification prior to Contract completion and must be performed by the approved successor.

1.5.3.3 TAB Specialist Responsibilities

TAB Specialist responsibilities include all TAB work specified herein and in related sections under his direct guidance. The TAB specialist is required to be onsite on a daily basis to direct TAB efforts.

1.5.3.4 TAB Related HVAC Submittals

The TAB Specialist must prepare a list of the submittals from the Contract Submittal Register that relate to the successful accomplishment of all HVAC TAB. Accompany the submittals identified on this list with a letter of approval signed and dated by the TAB Specialist when submitted to the Government. Ensure that the location and details of ports, terminals, connections, etc., necessary to perform TAB are identified on the submittals.

1.5.4 Responsibilities

The Contractor is responsible for ensuring compliance with the requirements of this section. The following delineation of specific work responsibilities is specified to facilitate TAB execution of the various work efforts by personnel from separate organizations. This breakdown of specific duties is specified to facilitate adherence to the schedule listed in the paragraph TAB SUBMITTAL AND WORK SCHEDULE.

1.5.4.1 Contractor

a. TAB personnel: Ensure that the DALT work and the TAB work is accomplished by a group meeting the requirements specified in the paragraph TAB PERSONNEL QUALIFICATION REQUIREMENTS.

b. Pre-DALT/TAB meeting: Attend the meeting with the TAB Supervisor, and ensure that a representative is present for the sheetmetal contractor, mechanical contractor, electrical contractor, and automatic temperature controls contractor.

c. HVAC documentation: Furnish one complete set of the following HVAC-related documentation to the TAB agency:

   (1) Contract drawings and specifications

   (2) Approved submittal data for equipment

   (3) Construction work schedule

   (4) Up-to-date revisions and change orders for the previously listed items

d. Submittal and work schedules: Ensure that the schedule for submittals and work required by this section and specified in the paragraph TAB SUBMITTAL AND WORK SCHEDULE is met.

e. Coordination of supporting personnel:

f. Provide the technical personnel, such as factory representatives or HVAC controls installer required by the TAB field team to support the DALT and the TAB field measurement work.

g. Provide equipment mechanics to operate HVAC equipment and ductwork mechanics to provide the field designated test ports to enable TAB field team to accomplish the DALT and the TAB field measurement work. Ensure these support personnel are present at the times required by the TAB team, and cause no delay in the DALT and the TAB field work.

h. Conversely, ensure that the HVAC controls installer has required

support from the TAB team field leader to complete the controls check out.

i. Deficiencies: Ensure that the TAB Agency supervisor submits all Design/Construction deficiency notifications directly to the Contracting officer within 3 days after the deficiency is encountered. Further, ensure that all such notification submittals are complete with explanation, including documentation, detailing deficiencies.

j. Prerequisite HVAC work: Complete check out and debugging of HVAC equipment, ducts, and controls prior to the TAB engineer arriving at the project site to begin the TAB work. Debugging includes searching for and eliminating malfunctioning elements in the HVAC system installations, and verifying all adjustable devices are functioning as designed. Include as prerequisite work items, the deficiencies pointed out by the TAB team supervisor in the design review report.

k. Prior to the TAB field team's arrival, ensure completion of the applicable inspections and work items listed in the TAB team supervisor's pre-field engineering report. Do not allow the TAB team to commence TAB field work until all of the following are completed.

(1) HVAC system installations are fully complete.

(2) HVAC prerequisite checkout work lists specified in the paragraph PRE-FIELD TAB ENGINEERING REPORT are completed, submitted, and approved. Ensure that the TAB Agency gets a copy of the approved prerequisite HVAC work checklist.

(3) DALT field checks for all systems are completed.

(4) HVAC system filters are clean for both Season 1 and Season 2 TAB field work.

l. Advance notice: Furnish to the Contracting Officer with advance written notice for the commencement of the DALT field work and for the commencement of the TAB field work.

m. Insulation work: For required DALT work , ensure that insulation is not installed on ducts to be DALT'd until DALT work on the subject ducts is complete. Later, ensure that openings in duct and machinery insulation coverings for TAB test ports are marked, closed and sealed.

1.5.4.2 TAB Agency

Provide the services of a TAB team which complies with the requirements of the paragraph INDEPENDENT TAB AGENCY PERSONNEL QUALIFICATIONS. The work to be performed by the TAB agency is limited to testing, adjusting, and balancing of HVAC air and water systems to satisfy the requirements of this specification section.

1.5.4.3 TAB Team Supervisor

a. Overall management: Supervise and manage the overall TAB team work effort, including preliminary and technical DALT and TAB procedures and TAB team field work.

b. Pre-DALT/TAB meeting: Attend meeting with Contractor.

c. Design review report: Review project specifications and accompanying drawings to verify that the air systems and water systems are designed in such a way that the TAB engineer can accomplish the work in compliance with the requirements of this section. Verify the presence and location of permanently installed test ports and other devices needed, including gauge cocks, thermometer wells, flow control devices, circuit setters, balancing valves, and manual volume dampers.

d. Support required: Specify the technical support personnel required from the Contractor other than the TAB agency; such as factory representatives for temperature controls or for complex equipment. Inform the Contractor in writing of the support personnel needed and when they are needed. Furnish the notice as soon as the need is anticipated, either with the design review report, or the pre-field engineering report, the during the DALT or TAB field work.

e. Pre-field DALT preliminary notification: Monitor the completion of the duct installation of each system and provide the necessary written notification to the Contracting Officer.

f. Pre-field engineering report: Utilizing the following HVAC-related documentation; contract drawings and specifications, approved submittal data for equipment, up-to-date revisions and change orders; prepare this report.

g. Prerequisite HVAC work checklist: Ensure the Contractor gets a copy of this checklist at the same time as the pre-field engineering report is submitted.

h. Technical assistance for DALT work.

(1) Technical assistance: Provide immediate technical assistance to TAB field team.

(2) DALT field visit: Near the end of the DALT field work effort, visit the contract site to inspect the HVAC installation and the progress of the DALT field work. Conduct a site visit to the extent necessary to verify correct procedures are being implemented and to confirm the accuracy of the Pre-final DALT Report data which has been reported. Also, perform sufficient evaluation to allow the TAB supervisor to issue certification of the final report. Conduct the site visit full-time for a minimum of one 8 hour workday duration.

i. Final DALT report: Certify the DALT report. This certification includes the following work:

(1) Review: Review the Pre-final DALT report data. From these field reports, prepare the Certified Final DALT report.

(2) TAB Verification: Verify adherence, by the TAB field team, to the procedures specified in this section.

j. Technical Assistance for TAB Work: Provide immediate technical assistance to the TAB field team for the TAB work.

(1) TAB field visit: Near the end of the TAB field work effort, visit the contract site to inspect the HVAC installation and the

progress of the TAB field work. Conduct site visit full-time for a minimum of one 8 hour workday duration. Review the TAB final report data and certify the TAB final report.

k. Certified TAB report: Certify the TAB report. This certification includes the following work:

(1) Review: Review the TAB field data report. From this field report, prepare the certified TAB report.

(2) Verification: Verify adherence, by the TAB field team, to the TAB plan prescribed by the pre-field engineering report and verify adherence to the procedures specified in this section.

l. Design/Construction deficiencies: Within 3 working days after the TAB Agency has encountered any design or construction deficiencies, the TAB Supervisor must submit written notification directly to the Contracting Officer, with a separate copy to the Contractor, of all such deficiencies. Provide in this submittal a complete explanation, including supporting documentation, detailing deficiencies. Where deficiencies are encountered that are believed to adversely impact successful completion of TAB, the TAB Agency must issue notice and request direction in the notification submittal.

m. TAB Field Check: The TAB team supervisor must attend and supervise TAB field check.

1.5.4.4 TAB Team Field Leader

a. Field manager: Manage, in the field, the accomplishment of the work specified in Part 3, EXECUTION.

b. Full time: Be present at the contract site when DALT field work or TAB field work is being performed by the TAB team; ensure day-to-day TAB team work accomplishments are in compliance with this section.

c. Prerequisite HVAC work: Do not bring the TAB team to the contract site until a copy of the prerequisite HVAC Checklist, with all work items certified by the Contractor to be working as designed, reaches the office of the TAB Agency.

1.5.5 Test Reports

1.5.5.1 Data from DALT Field Work

Report the data for the Pre-final DALT Report and Certified Final DALT Report in compliance the following requirements:

a. Report format: Submit report data on Air Duct Leakage Test Summary Report Forms as shown on Page 6-2 of SMACNA 1972 CD. In addition, submit in the report, a marked duct shop drawing which identifies each section of duct tested with assigned node numbers for each section. Include node numbers in the completed report forms to identify each duct section. The TAB supervisor must review and certify the report.

b. The TAB supervisor must include a copy of all calculations prepared in determining the duct surface area of each duct test section. In addition,provide the ductwork air leak testing (DALT) reports with a copy(s) of the calibration curve for each of the DALT test orifices

used for testing.

c. Instruments: List the types of instruments actually used to measure the data. Include in the listing each instrument's unique identification number, calibration date, and calibration expiration date. Instruments must have been calibrated within one year of the date of use in the field. Instrument calibration must be traceable to the measuring standards of the National Institute of Standards and Technology.

d. Certification: Include the typed name of the TAB supervisor and the dated signature of the TAB supervisor.

1.5.5.2 Certified TAB Reports

Submit: TAB Report in the following manner:

a. Report format: Submit the completed pre-field data forms approved in the pre-field TAB Engineering Report completed by TAB field team, reviewed and certified by the TAB supervisor. Bind the report with a waterproof front and back cover. Include a table of contents identifying by page number the location of each report. Report forms and report data must be typewritten. Handwritten report forms or report data are not acceptable.

b. Temperatures: On each TAB report form reporting TAB work accomplished on HVAC thermal energy transfer equipment, include the indoor and outdoor dry bulb temperature range and indoor and outdoor wet bulb temperature range within which the TAB data was recorded. Include in the TAB report continuous time versus temperature recording data of wet and dry bulb temperatures for the rooms, or zones, as designated in the following list:

(1) Measure and compile data on a continuous basis for the period in which TAB work affecting those rooms is being done.

(2) Measure and record data only after the HVAC systems installations are complete, the systems fully balanced and the HVAC systems controls operating in fully automatic mode.

(3) Data may be compiled using direct digital controls trend logging where available. Otherwise, temporarily install calibrated time versus temperature/humidity recorders for this purpose. The HVAC systems and controls must be fully operational a minimum of 24 hours in advance of commencing data compilation.

c. Static Pressure Profiles: Report static pressure profiles for air duct systems. Report static pressure data for all supply, return, relief, exhaust and outside air ducts for the systems listed. Include the following in the static pressure report data, in addition to AABC/NEBB/TABB required data:

(1) Report supply fan, return fan, relief fan, and exhaust fan inlet and discharge static pressures.

(2) Report static pressure drop across chilled water coils, DX coils, hot water coils, steam coils, electric resistance heating coils and heat reclaim devices installed in unit cabinetry or the system ductwork.

(3) Report static pressure drop across outside air, return air, and supply air automatic control dampers, both proportional and two-position, installed in unit cabinetry.

(4) Report static pressure drop across air filters, acoustic silencers, moisture eliminators, air flow straighteners, air flow measuring stations or other pressure drop producing specialty items installed in unit cabinetry, or in the system ductwork. Examples of these specialty items are smoke detectors, white sound generators, RF shielding, wave guides, security bars, blast valves, small pipes passing through ductwork, and duct mounted humidifiers.

(5) Do not report static pressure drop across duct fittings provided for the sole purpose of conveying air, such as elbows, transitions, offsets, plenums, manual dampers, and branch takes-offs.

(6) Report static pressure drop across outside air and relief/exhaust air louvers.

d. Duct Traverses: Report duct traverses for main supply, return, exhaust, relief and outside air ducts. This includes all ducts, including those which lack 7 1/2 duct diameters upstream and 2 1/2 duct diameters downstream of straight duct unobstructed by duct fittings/offsets/elbows. The TAB Agency must evaluate and report findings on the duct traverses taken. Evaluate the suitability of the duct traverse measurement based on satisfying the qualifications for a pilot traverse plane as defined by AMCA 203, "Field Measurements", Section 8, paragraph 8.3, "Location of Traverse Plane."

e. Instruments: List the types of instruments actually used to measure the tab data. Include in the listing each instrument's unique identification number, calibration date, and calibration expiration date.

f. Instrumentation, used for taking wet bulb temperature readings must provide accuracy of plus or minus 5 percent at the measured face velocities. Submit instrument manufacturer's literature to document instrument accuracy performance is in compliance with that specified.

g. Certification: Include the typed name of the TAB supervisor and the dated signature of the TAB supervisor.

h. Performance Curves: The TAB Supervisor must include, in the TAB Reports, factory pump curves and fan curves for pumps and fans TAB'd on the job.

i. Calibration Curves: The TAB Supervisor must include, in the TAB Reports, a factory calibration curve for installed flow control balancing valves, flow venturi's and flow orifices TAB'd on the job.

1.6 SEQUENCING AND SCHEDULING

1.6.1 DALT and TAB Submittal and Work Schedule

Submit this schedule,and TAB Schematic Drawings, adapted for this particular contract, to the Contracting Officer (CO) for review and

approval. Include with the submittal the planned calendar dates for each submittal or work item. Resubmit an updated version for CO approval every 90 calendar days. Compliance with the following schedule is the Contractor's responsibility.

Qualify TAB Personnel: Within 45 calendar days after date of contract award, submit TAB agency and personnel qualifications.

Pre-DALT/TAB Meeting: Within 30 calendar days after the date of approval of the TAB agency and personnel, meet with the COTR.

Design Review Report: Within 60 calendar days after the date of the TAB agency personnel qualifications approval, submit design review report.

Pre-Field DALT Preliminary Notification: On completion of the duct installation for each system, notify the Contracting Officer in writing within 5 days after completion.

Ductwork Selected for DALT: Within 7 calendar days of Pre-Field DALT Preliminary Notification, the COTR will select which of the project ductwork must be DALT'd.

DALT Field Work: Within 48 hours of COTR's selection, complete DALT field work on selected.

Submit Pre-final DALT Report: Within one working day after completion of DALT field work, submit Pre-final DALT Report. Separate Pre-final DALT reports may be submitted to allow phased testing from system to system.

DALT Work Field Check: Upon approval of the Pre-final DALT Report, schedule the COTR's DALT field check work with the Contracting Officer.

Submit Final DALT Report: Within 15 calendar days after completion of successful DALT Work Field Check, submit TAB report.

Pre-Field TAB Engineering Report: Within 28 calendar days after approval of the TAB agency Personnel Qualifications, submit the Pre-Field TAB Engineering Report.

Prerequisite HVAC Work Check Out List and Advanced Notice For TAB Field Work: At a minimum of 115 calendar days prior to CCD, submit prerequisite HVAC work check out list certified as complete, and submit advance notice of commencement of TAB field work.

TAB Field Work: At a minimum of 90 calendar days prior to CCD, accomplish TAB field work; submit TAB report; and conduct field check.

1.6.1.1 TAB Design Review Report

Submit typed report describing omissions and deficiencies in the HVAC system's design that would preclude the TAB team from accomplishing the duct leakage testing work and the TAB work requirements of this section. Provide a complete explanation including supporting documentation detailing the design deficiency. State that no deficiencies are evident if that is the case.

1.6.1.2 Pre-Field DALT Preliminary Notification

Notification: On completion of the installation of each duct system indicated to be DALT'd, notify the Contracting Officer in writing within 7 calendar days after completion.

1.6.1.3 TAB Pre-Field Engineering Report

Submit report containing the following information:

a. Step-by-step TAB procedure:

(1) Strategy: Describe the method of approach to the TAB field work from start to finish. Include in this description a complete methodology for accomplishing each seasonal TAB field work session.

(2) Air System Diagrams: Use the contract drawings and duct fabrication drawings if available to provide air system diagrams in the report showing the location of all terminal outlet supply, return, exhaust and transfer registers, grilles and diffusers. Use a key numbering system on the diagrams which identifies each outlet contained in the outlet airflow report sheets. Show intended locations of all traverses and static pressure readings.

(3) Procedural steps: Delineate fully the intended procedural steps to be taken by the TAB field team to accomplish the required TAB work of each air distribution system and each water distribution system. Include intended procedural steps for TAB work for subsystems and system components.

b. Pre-field data: Submit AABC or NEBB or SMACNA 1780 data report forms with the following pre-field information filled in:

(1) Design data obtained from system drawings, specifications, and approved submittals.

(2) Notations detailing additional data to be obtained from the contract site by the TAB field team.

(3) Designate the actual data to be measured in the TAB field work.

(4) Provide a list of the types of instruments, and the measuring range of each, which are anticipated to be used for measuring in the TAB field work. By means of a keying scheme, specify on each TAB data report form submitted, which instruments will be used for measuring each item of TAB data. If the selection of which instrument to use, is to be made in the field, specify from which instruments the choice will be made. Place the instrument key number in the blank space where the measured data would be entered.

c. Prerequisite HVAC work checkout list: Provide a list of inspections and work items which are to be completed by the Contractor. This list must be acted upon and completed by the Contractor and then submitted and approved by the Contracting Officer prior to the TAB team coming to the contract site.

d. At a minimum, a list of the applicable inspections and work items

listed in the NEBB PROCEDURAL STANDARDS, Section III, "Preliminary TAB Procedures" under paragraphs titled, "Air Distribution System Inspection" and "Hydronic Distribution System Inspection" must be provided for each separate system to be TAB'd.

1.7 WARRANTY

Furnish workmanship and performance warranty for the DALT and TAB system work performed for a period not less than 1 year from the date of Government acceptance of the work; issued directly to the Government. Include provisions that if within the warranty period the system shows evidence of major performance deterioration, or is significantly out of tolerance, resulting from defective TAB or DALT workmanship, the corrective repair or replacement of the defective materials and correction of the defective workmanship is the responsibility of the TAB firm. Perform corrective action that becomes necessary because of defective materials and workmanship while system TAB and DALT is under warranty 7 days after notification, unless additional time is approved by the Contracting Officer. Failure to perform repairs within the specified period of time constitutes grounds for having the corrective action and repairs performed by others and the cost billed to the TAB firm. The Contractor must also provide a 1 year contractor installation warranty.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 WORK DESCRIPTIONS OF PARTICIPANTS

Comply with requirements of this section.

3.2 PRE-DALT/TAB MEETING

Meet with the Contracting Officer's technical representative (COTR) to develop a mutual understanding relative to the details of the DALT work and TAB work requirements. Ensure that the TAB supervisor is present at this meeting. Requirements to be discussed include required submittals, work schedule, and field quality control.

3.3 DALT PROCEDURES

3.3.1 Instruments, Consumables and Personnel

Provide instruments, consumables and personnel required to accomplish the DALT field work. Follow the same basic procedure specified below for TAB Field Work, including maintenance and calibration of instruments, accuracy of measurements, preliminary procedures, field work, workmanship and treatment of deficiencies. Calibrate and maintain instruments in accordance with manufacturer's written procedures.

3.3.2 Advance Notice of Pre-Final DALT Field Work

On completion of the installation of each duct system indicated to be DALT'd, notify the Contracting Officer in writing prior to the COTR's duct selection field visit.

3.3.3 Ductwork To Be DALT'd

From each duct system indicated as subject to DALT, the COTR will randomly select sections of each completed duct system for testing by the Contractor's TAB Firm. The sections selected will not exceed 20 percent of the total measured linear footage of duct systems indicated as subject to DALT. Sections of duct systems subject to DALT will include 20 percent of main ducts, branch main ducts, branch ducts and plenums for supply, return, exhaust, and plenum ductwork.

It is acceptable for an entire duct system to be DALT'd instead of disassembling that system in order to DALT only the 20 percent portion specified above.

3.3.4 DALT Testing

Perform DALT on the HVAC duct sections of each system as selected by the COTR. Use the duct class, seal class, leakage class and the leak test pressure data indicated on the drawings, to comply with the procedures specified in SMACNA 1972 CD.

In spite of specifications of SMACNA 1972 CD to the contrary, DALT ductwork of construction class of 3-inch water gauge static pressure and below if indicated to be DALT'd. Complete DALT work on the COTR selected ductwork within 48 hours after the particular ductwork was selected for DALT. Separately conduct DALT work for large duct systems to enable the DALT work to be completed in 48 hours.

3.3.5 Completed Pre-Final DALT Report

After completion of the DALT work, prepare a Pre-final DALT Report using the reporting forms specified. TAB team to furnish data required by those data report forms. Prepare the report neatly and legibly; the Pre-final DALT report is the basis for the Final DALT Report. TAB supervisor must review and certify the Pre-final DALT Report and submit this report within one day of completion of DALT field work. Verbally notify the COTR that the field check of the Pre-final DALT Report data can commence.

3.3.6 Quality Assurance - COTR DALT Field Acceptance Testing

In the presence of the COTR and TAB team field leader, verify for accuracy Pre-final DALT Report data selected by the COTR. For each duct system, this acceptance testing shall be conducted on a maximum of 50 percent of the duct sections DALT'd.

Further, if any data on the Pre-final DALT report form for a given duct section is out-of-tolerance, then field acceptance testing shall be conducted on data for one additional duct section, preferably in the same duct system, in the presence of the COTR.

3.3.7 Additional COTR Field Acceptance Testing

If any of the duct sections checked for a given system are determined to have a leakage rate measured that exceeds the leakage rate allowed by SMACNA Leak Test Manual for an indicated duct construction class and sealant class, terminate data checking for that section. The associated Pre-final DALT Report data for the given duct system will be disapproved. Make the necessary corrections and prepare a revised Pre-final DALT Report. Reschedule a field check of the revised report data with the COTR.

3.3.8 Certified Final DALT Report

On successful completion of all field checks of the Pre-final DALT Report data for all systems, the TAB Supervisor is to assemble, review, certify and submit the Final DALT Report to the Contracting Officer for approval.

3.3.9 Prerequisite for TAB Field Work

Do not commence TAB field work prior to the completion and approval, for all systems, of the Final DALT Report.

3.4 TAB PROCEDURES

3.4.1 TAB Field Work

Test, adjust, and balance the HVAC systems until measured flow rates (air and water flow) are within plus or minus 5 percent of the design flow rates as specified or indicated on the contract documents.

That is, comply with the the requirements of AABC MN-1 or SMACNA 1780 (TABB) and SMACNA 1858 (TABB),except as supplemented and modified by this section.

Provide instruments and consumables required to accomplish the TAB work. Calibrate and maintain instruments in accordance with manufacturer's written procedures.

Test, adjust, and balance the HVAC systems until measured flow rates (air and water flow) are within plus or minus 5 percent of the design flow rates as specified or indicated on the contract documents. Conduct TAB work, including measurement accuracy, and sound measurement work in conformance with the AABC MN-1 and AABC MN-4, or NEBB TABES and NEBB MASV, or SMACNA 1780 (used by TABB) and SMACNA 1858 sound measurement procedures, except as supplemented and modified by this section.

3.4.2 Preliminary Procedures

Use the approved pre-field engineering report as instructions and procedures for accomplishing TAB field work. TAB engineer is to locate, in the field, test ports required for testing. It is the responsibility of the sheet metal contractor to provide and install test ports as required by the TAB engineer.

3.4.3 TAB Air Distribution Systems

3.4.3.1 Air Handling Units

Air handling unit systems including fans (air handling unit fans, exhaust fans and winter ventilation fans), coils, ducts, plenums, mixing boxes, terminal units, variable air volume boxes, and air distribution devices for supply air, return air, outside air, mixed air relief air, and makeup air.

3.4.3.2 Rooftop Air Conditioning

Rooftop air conditioning systems including fans, coils, ducts, plenums, and air distribution devices for supply air, return air, and outside air.

For refrigeration compressors/condensers/condensing units/evaporators, report data as required by NEBB, AABC, and TABB standard procedures, including refrigeration operational data.

3.4.3.3 Exhaust Fans

Exhaust fan systems including fans, ducts, plenums, grilles, and hoods for exhaust air.

3.4.4 Workmanship

Conduct TAB work on the HVAC systems until measured flow rates are within plus or minus 5 percent of the design flow rates as specified or indicated on the contract documents. This TAB work includes adjustment of balancing valves, balancing dampers, and sheaves. Further, this TAB work includes changing out fan sheaves and pump impellers if required to obtain air and water flow rates specified or indicated. If, with these adjustments and equipment changes, the specified or indicated design flow rates cannot be attained, contact the Contracting Officer for direction.

3.4.5 Deficiencies

Strive to meet the intent of this section to maximize the performance of the equipment as designed and installed. However, if deficiencies in equipment design or installation prevent TAB work from being accomplished within the range of design values specified in the paragraph WORKMANSHIP, provide written notice as soon as possible to the Contractor and the Contracting Officer describing the deficiency and recommended correction.

Responsibility for correction of installation deficiencies is the Contractor's. If a deficiency is in equipment design, call the TAB team supervisor for technical assistance. Responsibility for reporting design deficiencies to Contractor is the TAB team supervisor's.

3.4.6 TAB Reports

After completion of the TAB work, prepare a pre-final TAB report using the reporting forms approved in the pre-field engineering report. Data required by those approved data report forms is to be furnished by the TAB team. Except as approved otherwise in writing by the Contracting Officer, the TAB work and the TAB report is considered incomplete until the TAB work is accomplished to within the accuracy range specified in the paragraph WORKMANSHIP of this section.

Prepare the report neatly and legibly; the pre-final TAB report is the final TAB report minus the TAB supervisor's review and certification. Obtain, at the contract site, the TAB supervisor's review and certification of the TAB report.

Verbally notify the COTR that the field check of the TAB report data can commence; give this verbal notice 48 hours in advance of field check commencement. Do not schedule field check of the TAB report until the specified workmanship requirements have been met or written approval of the deviations from the requirements have been received from the Contracting Officer.

3.4.7 Quality Assurance - COTR TAB Field Acceptance Testing

3.4.7.1 TAB Field Acceptance Testing

During the field acceptance testing, verify, in the presence of the COTR, random selections of data (water, air quantities, air motion) recorded in the TAB Report. Points and areas for field acceptance testing are to be selected by the COTR. Measurement and test procedures are the same as approved for TAB work for the TAB Report.

Field acceptance testing includes verification of TAB Report data recorded for the following equipment groups:

Group 1: All air handling units (rooftop and central stations).

Group 3: 25 percent of the supply diffusers, registers, grilles associated with constant volume air handling units.

Group 4: 25 percent of the return grilles, return registers, exhaust grilles and exhaust registers.

Group 5: 25 percent of the supply fans, exhaust fans, and pumps.

Further, if any data on the TAB Report for Groups 2 through 5 is found not to fall within the range of plus 5 to minus 5 percent of the TAB Report data, additional group data verification is required in the presence of the COTR. Verify TAB Report data for one additional piece of equipment in that group. Continue this additional group data verification until out-of-tolerance data ceases to be found.

3.4.7.2 Additional COTR TAB Field Acceptance Testing

If any of the acceptance testing measurements for a given equipment group is found not to fall within the range of plus 5 to minus 5 percent of the TAB Report data, terminate data verification for all affected data for that group. The affected data for the given group will be disapproved. Make the necessary corrections and prepare a revised TAB Report. Reschedule acceptance testing of the revised report data with the COTR.

Further, if any data on the TAB Report for a given field acceptance test group is out-of-tolerance, then field test data for one additional field test group as specified herein. Continue this increase field test work until out-of-tolerance data ceases to to be found. This additional field testing is up and above the original 25 percent of the of reported data entries to be field tested.

If there are no more similar field test groups from which to choose, additional field testing from another, but different, type of field testing group must be tested.

3.4.7.3 Prerequisite for Approval

Compliance with the field acceptance testing requirements of this section is a prerequisite for the final Contracting Officer approval of the TAB Report submitted.

3.5 MARKING OF SETTINGS

Upon the final TAB work approval, permanently mark the settings of HVAC

adjustment devices including valves, gauges, splitters, and dampers so that adjustment can be restored if disturbed at any time. Provide permanent markings clearly indicating the settings on the adjustment devices which result in the data reported on the submitted TAB report.

3.6 MARKING OF TEST PORTS

The TAB team is to permanently and legibly mark and identify the location points of the duct test ports. If the ducts have exterior insulation, make these markings on the exterior side of the duct insulation. Show the location of test ports on the as-built mechanical drawings with dimensions given where the test port is covered by exterior insulation.

-- End of Section --

SECTION 23 07 00

THERMAL INSULATION FOR MECHANICAL SYSTEMS
08/24

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only. At the discretion of the Government, the manufacturer of any material supplied will be required to furnish test reports pertaining to any of the tests necessary to assure compliance with the standard or standards referenced in this specification.

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 90.1 - IP	(2019) Energy Standard for Buildings Except Low-Rise Residential Buildings
ASHRAE 90.1 - SI	(2019) Energy Standard for Buildings Except Low-Rise Residential Buildings

ASTM INTERNATIONAL (ASTM)

ASTM A240/A240M	(2024b) Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
ASTM A580/A580M	(2023) Standard Specification for Stainless Steel Wire
ASTM B209	(2014) Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
ASTM C195	(2007; R 2024) Standard Specification for Mineral Fiber Thermal Insulating Cement
ASTM C450	(2008) Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging
ASTM C534/C534M	(2024) Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form
ASTM C552	(2022) Standard Specification for Cellular Glass Thermal Insulation
ASTM C553	(2024) Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
ASTM C612	(2014; R 2019) Standard Specification for Mineral Fiber Block and Board Thermal

Insulation

ASTM C647	(2008; R 2013) Properties and Tests of Mastics and Coating Finishes for Thermal Insulation
ASTM C755	(2019b) Standard Practice for Selection of Water Vapor Retarders for Thermal Insulation
ASTM C795	(2008; R 2023) Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel
ASTM C916	(2020) Standard Specification for Adhesives for Duct Thermal Insulation
ASTM C920	(2018; R 2024) Standard Specification for Elastomeric Joint Sealants
ASTM C921	(2010; R 2015) Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation
ASTM C1126	(2024) Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation
ASTM C1136	(2023) Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation
ASTM C1290	(2016; R 2021) Standard Specification for Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts
ASTM C1710	(2011) Standard Guide for Installation of Flexible Closed Cell Preformed Insulation in Tube and Sheet Form
ASTM D882	(2012) Tensile Properties of Thin Plastic Sheeting
ASTM D2863	(2019) Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
ASTM D5590	(2017; R 2021) Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated Four-Week Agar Plate Assay
ASTM E84	(2023) Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM E96/E96M	(2024) Standard Test Methods for Gravimetric Determination of Water Vapor

	Transmission Rate of Materials
ASTM E2231	(2021) Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)

CDPH SECTION 01350	(2017; Version 1.2) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers

FM GLOBAL (FM)

FM APP GUIDE	(updated on-line) Approval Guide https://www.approvalguide.com/

GREEN SEAL (GS)

GS-36	(2013) Adhesives for Commercial Use

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 2758	(2014) Paper - Determination of Bursting Strength

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-58	(2018) Pipe Hangers and Supports - Materials, Design and Manufacture, Selection, Application, and Installation

MIDWEST INSULATION CONTRACTORS ASSOCIATION (MICA)

MICA Insulation Stds	(8th Ed) National Commercial & Industrial Insulation Standards

SCIENTIFIC CERTIFICATION SYSTEMS (SCS)

SCS	SCS Global Services (SCS) Indoor Advantage

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

SCAQMD Rule 1168	(2022) Adhesive and Sealant Applications

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-A-3316	(1987; Rev C; Am 2 1990) Adhesives, Fire-Resistant, Thermal Insulation
MIL-A-24179	(1969; Rev A; Am 2 1980; Notice 1 1987; Notice 2 2020) Adhesive, Flexible Unicellular-Plastic Thermal Insulation
MIL-PRF-19565	(1988; Rev C) Coating Compounds, Thermal Insulation, Fire- and Water-Resistant,

Vapor-Barrier

UL SOLUTIONS (UL)

UL 94	(2023; Reprint Jan 2024) UL Standard for Safety Tests for Flammability of Plastic Materials for Parts in Devices and Appliances
UL 723	(2020) UL Standard for Safety Test for Surface Burning Characteristics of Building Materials
UL 2818	(2022) GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings

1.2 SYSTEM DESCRIPTION

1.2.1 General

Provide field-applied insulation and accessories on mechanical systems as specified herein; factory-applied insulation is specified under the piping, duct or equipment to be insulated. Provide field applied insulation materials required for use on Government-furnished items as listed in the SPECIAL CONTRACT REQUIREMENTS.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Submit the three SD types, SD-02 Shop Drawings, SD-03 Product Data, and SD-08 Manufacturer's Instructions at the same time for each system.

SD-02 Shop Drawings

MICA Plates; G

Pipe Insulation Systems and Associated Accessories

Duct Insulation Systems and Associated Accessories

Equipment Insulation Systems and Associated Accessories

Recycled content for insulation materials; S

SD-03 Product Data

Pipe Insulation Systems; G

Duct Insulation Systems; G

Equipment Insulation Systems; G

SD-04 Samples

Thermal Insulation; G

Display Samples; G

SD-07 Certificates

Indoor air quality for adhesives; S

SD-08 Manufacturer's Instructions

Pipe Insulation Systems; G

Duct Insulation Systems; G

Equipment Insulation Systems; G

1.4 CERTIFICATIONS

1.4.1 Adhesives and Sealants

Provide products certified to meet indoor air quality requirements by UL 2818 (Greenguard) Gold, SCS Global Services Indoor Advantage Gold or provide certification or validation by other third-party programs that products meet the requirements of this Section. Provide current product certification documentation from certification body. When product does not have certification, provide validation that product meets the indoor air quality product requirements cited herein.

1.5 QUALITY ASSURANCE

1.5.1 Installer Qualification

Qualified installers must have successfully completed three or more similar type jobs within the last 5 years.

1.6 DELIVERY, STORAGE, AND HANDLING

Deliver materials in the manufacturer's unopened containers. Protect materials delivered and placed in storage from weather, humidity, dirt, dust and other contaminants. The Contracting Officer may reject insulation material and supplies that become dirty, dusty, wet, or contaminated by some other means. Attach manufacturer's stamp or label giving the name of the manufacturer and brand, and a description of the material, date codes, and approximate shelf life (if applicable) to packages or standard containers of insulation, jacket material, cements, adhesives, and coatings delivered for use, and samples required for approval. Insulation packages and containers must be asbestos free.

PART 2 PRODUCTS

2.1 STANDARD PRODUCTS

Provide materials which are the standard products of manufacturers regularly engaged in the manufacture of such products and that essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening and is an acceptable product per this specification. Submit a complete list of materials, including manufacturer's descriptive technical literature, performance data, catalog cuts, and installation instructions. Include the product number, k-value, thickness and

furnished accessories including adhesives, sealants and jackets for each mechanical system requiring insulation. The product data must be copyrighted, have an identifying or publication number, and have been published prior to the issuance date of this solicitation. Submit materials furnished under this section together in a booklet and in conjunction with the MICA plates booklet (SD-02). Annotate the product data to indicate which MICA plate is applicable.

2.1.1 Insulation System

Provide insulation systems in accordance with the approved MICA National Insulation Standards plates as supplemented by this specification. Provide field-applied insulation for heating, ventilating, and cooling (HVAC) air distribution systems and piping systems that are located within, on, under, and adjacent to buildings; and for plumbing systems. Provide CFC and HCFC free insulation.

2.1.2 Surface Burning Characteristics

Unless otherwise specified, insulation must have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Determine flame spread, and smoke developed indexes, by ASTM E84 or UL 723. Test insulation in the same density and installed thickness as the material to be used in the actual construction. Prepare and mount test specimens according to ASTM E2231.

2.2 MATERIALS

Provide insulation that meets or exceed the requirements of ASHRAE 90.1 - IP. Ensure insulation exterior is cleanable, grease resistant, non-flaking and non-peeling. Provide compatible materials that do not contribute to corrosion, soften, or otherwise attack surfaces to which applied in either wet or dry state. Use materials on stainless steel surfaces meeting ASTM C795 requirements. Do not use calcium silicate on chilled or cold water systems. Use asbestos free materials. Provide product recognized under UL 94 (if containing plastic) and listed in FM APP GUIDE.

2.2.1 Adhesives

Provide non-aerosol adhesive products used on the interior of the building (defined as inside of the weatherproofing system) that meet either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of SCAQMD Rule 1168 (HVAC duct sealants must meet limit requirements of "Other" category within SCAQMD Rule 1168 sealants table). Provide aerosol adhesives used on the interior of the building that meet either emissions requirements of CDPH SECTION 01350 (use the office or classroom requirements, regardless of space type) or VOC content requirements of GS-36. Provide certification or validation of indoor air quality for adhesives.

2.2.1.1 Acoustical Lining Insulation Adhesive

Provide a nonflammable, fire-resistant adhesive conforming to ASTM C916, Type I.

2.2.1.2 Mineral Fiber Insulation Cement

Provide cement in accordance with ASTM C195.

2.2.1.3 Lagging Adhesive

Lagging is the material used for thermal insulation, especially around a cylindrical object. This may include the insulation as well as the cloth/material covering the insulation. To resist mold/mildew, use lagging adhesive meeting ASTM D5590 with 0 growth rating. Provide nonflammable and fire-resistant lagging adhesives that have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Ensure adhesive is MIL-A-3316, Class 1, pigmented white and suitable, as listed by the manufacturer,for bonding fibrous glass cloth to faced and unfaced fibrous glass insulation board; for bonding cotton brattice cloth to faced and unfaced fibrous glass insulation board; for sealing edges of and bonding glass tape to joints of fibrous glass board; for bonding lagging cloth to thermal insulation; or Class 2 for attaching fibrous glass insulation to metal surfaces. Apply lagging adhesives in strict accordance with the manufacturer's recommendations for pipe and duct insulation.

2.2.1.4 Contact Adhesive

Adhesives may be any of, but not limited to, the neoprene based, rubber based, or elastomeric type that have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Ensure adhesive does not adversely affect, initially or in service, the insulation to which it is applied, nor cause any corrosive effect on metal to which it is applied. Ensure that any solvent dispersing medium or volatile component of the adhesive has no objectionable odor and does not contain any benzene or carbon tetrachloride. Ensure dried adhesive does not emit nauseous, irritating, or toxic volatile matters or aerosols when the adhesive is heated to any temperature up to 212 degrees F. The dried adhesive must be nonflammable and fire resistant. Flexible Elastomeric Adhesive: Comply with MIL-A-24179, Type II, Class I. Provide product listed in FM APP GUIDE.

2.2.2 Caulking

ASTM C920, Type S, Grade NS, Class 25, Use A.

2.2.3 Corner Angles

Nominal 0.016 inch aluminum 1 by 1 inch with factory applied kraft backing. Aluminum must be ASTM B209, Alloy 3003, 3105, or 5005.

2.2.4 Fittings

Fabricated Fittings are the prefabricated fittings for flexible elastomeric pipe insulation systems in accordance with ASTM C1710. Together with the flexible elastomeric tubes, they provide complete system integrity for retarding heat gain and controlling condensation drip from chilled-water and refrigeration systems. Flexible elastomeric, fabricated fittings provide thermal protection (0.25 k) and condensation resistance (0.05 Water Vapor Transmission factor). For satisfactory performance, use properly installed protective vapor retarder/barriers and vapor stops on high relative humidity and below ambient temperature applications to reduce movement of moisture through or around the insulation to the colder

interior surface.

2.2.5 Finishing Cement

ASTM C450: Mineral fiber hydraulic-setting thermal insulating and finishing cement. All cements that may come in contact with Austenitic stainless steel must comply with ASTM C795.

2.2.6 Fibrous Glass Cloth and Glass Tape

Provide fibrous glass cloth, with 20X20 maximum mesh size, and glass tape with maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Provide tape consisting of 4 inch wide rolls. Provide Class 3 tape that is 4.5 ounces/square yard. Elastomeric Foam Tape: Black vapor-retarder foam tape with acrylic adhesive containing an anti-microbial additive.

2.2.7 Staples

Outward clinching type monel or Type 304 or 316 stainless steel.

2.2.8 Jackets

2.2.8.1 Aluminum Jackets

Provide aluminum jackets consisting of corrugated, embossed or smooth sheet, 0.016 inch nominal thickness; ASTM B209, Temper H14, Temper H16, Alloy 3003, 5005, or 3105. Do not use corrugated aluminum jacket outdoors. Aluminum jacket securing bands must be Type 304 stainless steel, 0.015 inch thick, 1/2 inch wide for pipe under 12 inch diameter and 3/4 inch wide for pipe over 12 inch and larger diameter. Aluminum jacket circumferential seam bands must be 2 by 0.016 inch aluminum matching jacket material. Ensure bands for insulation below ground are 3/4 by 0.020 inch thick stainless steel, or fiberglass reinforced tape. The jacket may, at the option of the Contractor, be provided with a factory fabricated Pittsburgh or "Z" type longitudinal joint. When the "Z" joint is used, use bands at the circumferential joints that are designed by the manufacturer to seal the joints and hold the jacket in place.

2.2.8.2 Polyvinyl Chloride (PVC) Jackets

Polyvinyl chloride (PVC) jacket and fitting covers must have high impact strength, ultraviolet (UV) resistant rating or treatment and moderate chemical resistance. The minimum thickness for a Standard jacket is 0.020 inch and where high abuse resistance is required use Heavy Duty PVC jacket 0.030 inch. Standard PVC fittings will have an initial core thickness (before thermoforming) of 0.025 inch and heavy duty fittings will have an initial core thickness of 0.030 inch.

2.2.8.3 Vapor Barrier/Weatherproofing Jacket

Provide laminated self-adhesive vapor barrier/weatherproofing jacket, greater than 3 plies standard grade, silver, white, black and embossed or greater than 8 ply (minimum 2.9 mils adhesive); with less than 0.02 permeability when tested in accordance with ASTM E96/E96M, using the water transmission rate test method; heavy duty, white or natural; and UV resistant. Flexible Elastomeric exterior foam with factory applied, UV Jacket made with a cold weather acrylic adhesive. Construction of

laminate designed to provide UV resistance, high puncture, tear resistance and excellent Water Vapor Transmission (WVT) rate.

2.2.8.4 Vapor Barrier/Vapor Retarder

Apply the following criteria to determine which system is required.

a. On ducts, equip piping and equipment operating below 98 degrees F or located outside with a vapor barrier.

b. Install ducts, pipes and equipment that are located inside and that always operate above 98 degrees F with a vapor retarder where required as stated in paragraph VAPOR RETARDER REQUIRED.

2.2.9 Vapor Retarder Required

ASTM C921, Type I, minimum puncture resistance 50 Beach units on all surfaces except concealed ductwork, where a minimum puncture resistance of 25 Beach units is acceptable. Minimum tensile strength, 35 pounds/inch width. ASTM C921, Type II, minimum puncture resistance 25 Beach units, tensile strength minimum 20 pounds/inch width. Use jackets on insulation exposed in finished areas that have white finish suitable for painting without sizing. Based on the application, insulation materials that require manufacturer or fabricator applied pipe insulation jackets are cellular glass, when all joints are sealed with a vapor barrier mastic, and mineral fiber. Ensure all non-metallic jackets have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Flexible elastomerics require (in addition to vapor barrier skin) vapor retarder jacketing for high relative humidity and below ambient temperature applications.

2.2.9.1 White Vapor Retarder All Service Jacket (ASJ)

ASJ is for use on hot/cold pipes, ducts, or equipment indoors or outdoors if covered by a suitable protective jacket. Provide product which meets all physical property and performance requirements of ASTM C1136, Type I, except a minimum burst strength of 85 psi. ASTM D2863 Limited Oxygen Index (LOI) is a minimum of 31.

In addition, do not use paper or other moisture-sensitive material for the outer exposed surface or the inner-most surface contacting the insulation. Ensure the outer exposed surface is white and has an emittance no less than 0.80.

2.2.9.2 Vapor Retarder/Vapor Barrier Mastic Coatings

2.2.9.2.1 Vapor Barrier

The vapor barrier must be self adhesive (minimum 2 mils adhesive, 3 mils embossed) greater than 3 plies standard grade, silver, white, black and embossed white jacket for use on hot/cold pipes. Ensure permeability is less than 0.02 when tested in accordance with ASTM E96/E96M. Provide products meeting UL 723 or ASTM E84 flame and smoke requirements and that are UV resistant.

2.2.9.2.2 Vapor Retarder

Provide fire and water resistant vapor retarder coating appropriately selected for either outdoor or indoor service. Color must be white.

Ensure the water vapor permeance of the compound is in accordance with ASTM C755. Provide nonflammable, fire resistant coating. To resist mold/mildew, provide coating meeting ASTM D5590 with 0 growth rating. Ensure coating meets MIL-PRF-19565 Type II (if selected for indoor service) and is Qualified Products Database listed. Determine all other application and service properties pursuant to ASTM C647.

2.2.9.3 Laminated Film Vapor Retarder

ASTM C1136, Type I, maximum moisture vapor transmission 0.02 perms, minimum puncture resistance 50 Beach units on all surfaces except concealed ductwork; where Type II, maximum moisture vapor transmission 0.02 perms, a minimum puncture resistance of 25 Beach units is acceptable. Provide vapor retarder with a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Flexible Elastomeric exterior foam with factory applied UV Jacket. Construction of laminate designed to provide UV resistance, high puncture, tear resistance and an excellent WVT rate.

2.2.9.4 Polyvinylidene Chloride (PVDC) Film Vapor Retarder

Provide PVDC film vapor retarder with a maximum moisture vapor transmission of 0.02 perms, minimum puncture resistance of 150 Beach units, a minimum tensile strength in any direction of 30 lb/inch when tested in accordance with ASTM D882, and a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84.

2.2.9.5 Polyvinylidene Chloride Vapor Retarder Adhesive Tape

Requirements must meet the same as specified for Laminated Film Vapor Retarder above.

2.2.9.6 Vapor Barrier/Weather Barrier

Ensure the vapor barrier is greater than 3 ply self adhesive laminate -white vapor barrier jacket- superior performance (permeability less than 0.02 when tested in accordance with ASTM E96/E96M). Provide vapor barrier meeting UL 723 or ASTM E84 25 flame and 50 smoke requirements; and UV resistant. Minimum burst strength 185 psi in accordance with ISO 2758. Tensile strength 68 lb/inch width (PSTC-1000). Provide tape as specified for laminated film vapor barrier above.

2.2.10 Vapor Retarder Not Required

ASTM C921, Type II, Class D, minimum puncture resistance 50 Beach units on all surfaces except ductwork, where Type IV, maximum moisture vapor transmission 0.10, a minimum puncture resistance of 25 Beach units is acceptable. Provide jacket with a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84.

2.2.11 Wire

Soft annealed ASTM A580/A580M Type 302, 304 or 316 stainless steel, 16 or 18 gauge.

2.2.12 Insulation Bands

Provide 1/2 inch wide; 26 gauge stainless steel insulation bands.

2.2.13 Sealants

Choose sealants from the butyl polymer type, the styrene-butadiene rubber type, or the butyl type of sealants. Provide sealants with a maximum permeance of 0.02 perms based on Procedure B for ASTM E96/E96M, and a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84.

2.3 PIPE INSULATION SYSTEMS

Conform insulation materials to Table 1 and minimum insulation thickness as listed in Table 2 and meet or exceed the requirements of ASHRAE 90.1 - SIASHRAE 90.1 - IP. Limit pipe insulation materials to those listed herein and meeting the following requirements:

2.3.1 Recycled Materials

Provide insulation materials containing the following minimum percentage of recycled material content by weight:

Rock Wool: 75 percent slag of weight
Fiberglass: 20 percent glass cullet
Rigid Foam: 9 percent recovered material
Phenolic Rigid Foam: 9 percent recovered material

Provide data identifying percentage of recycled content for insulation materials.

2.3.2 Aboveground Cold Pipeline (-30 to 60 deg. F)

Provide insulation for outdoor, indoor, exposed or concealed applications, as follows:

2.3.2.1 Flexible Elastomeric Cellular Insulation

Closed-cell, foam- or expanded-rubber materials containing anti-microbial additive, complying with ASTM C534/C534M, Grade 1, Type I or II. Type I, Grade 1 for tubular materials. Type II, Grade 1, for sheet materials. Ensure Type I and II have vapor retarder/vapor barrier skin on one or both sides of the insulation, and require an additional exterior vapor retarder covering for high relative humidity and below ambient temperature applications.

2.3.3 Aboveground Hot Pipeline (Above 60 deg. F)

Provide insulation for outdoor, indoor, exposed or concealed applications meeting the following requirements. Supply the insulation with manufacturer's recommended factory-applied jacket/vapor barrier.

2.3.3.1 Flexible Elastomeric Cellular Insulation

Closed-cell, foam- or expanded-rubber materials containing anti-microbial additive, complying with ASTM C534/C534M, Grade 1, Type I or II to 220 degrees F service. Type I for tubular materials. Type II for sheet materials.

2.4 DUCT INSULATION SYSTEMS

2.4.1 Factory Applied Insulation

Provide factory-applied ASTM C552, cellular glass thermal insulation according to manufacturer's recommendations for insulation with insulation manufacturer's standard reinforced fire-retardant vapor barrier, with identification of installed thermal resistance (R) value and out-of-package R value.

2.4.2 Field Applied Insulation

2.4.2.1 General

Calculate the minimum thickness in accordance with Table 3 & 4.

2.4.3 Rigid Insulation

Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C612, Type IA or Type IB; 3.0 pcf. Provide insulation with factory applied ASJ and factory-applied FSK jacket. Minimum thickness in accordance with Tables 3 and 4.

2.4.4 Blanket Insulation

Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C553, Type II and ASTM C1290, Type III with factory-applied FSK jacket; 3/4 pcf. Minimum thickness in accordance with Tables 3 and 4.

2.4.5 Duct Insulation Jackets

2.4.5.1 All-Purpose Jacket

Provide insulation with insulation manufacturer's standard reinforced fire-retardant jacket with or without integral vapor barrier as required by the service. In exposed locations, provide jacket with a white surface.

2.4.5.2 Metal Jackets

2.4.5.2.1 Aluminum Jackets

ASTM B209, Temper H14, minimum thickness of 27 gauge (0.016 inch), with factory-applied polyethylene and kraft paper moisture barrier on inside surface. Provide smooth surface jackets for jacket outside dimension 8 inches and larger. Provide corrugated surface jackets for jacket outside dimension 8 inches and larger. Provide stainless steel bands, minimum width of 1/2 inch.

2.4.5.2.2 Stainless Steel Jackets

ASTM A240/A240M; Type 304, minimum thickness of 33 gauge (0.010 inch), smooth surface with factory-applied polyethylene and kraft paper moisture barrier on inside surface. Provide stainless steel bands, minimum width of 1/2 inch.

2.4.5.3 Vapor Barrier/Weatherproofing Jacket

Provide vapor barrier/weatherproofing jacket that is laminated

self-adhesive (minimum 2 mils adhesive, 3 mils embossed) less than 0.02 permeability, (greater than 3 ply, standard grade, silver, white, black and embossed or greater than 8 ply (minimum 2.9 mils adhesive), heavy duty white or natural).

2.4.6 Weatherproof Duct Insulation

Provide ASTM C552, cellular glass thermal insulation, and weatherproofing as specified in manufacturer's instruction. Multi-ply, Polymeric Blend Laminate Jacketing: Construction of laminate designed to provide UV resistance, high puncture, tear resistance and an excellent WVT rate.

2.5 EQUIPMENT INSULATION SYSTEMS

Insulate equipment and accessories as specified in Tables 5 and 6. In outside locations, provide insulation 1/2 inch thicker than specified. Increase the specified insulation thickness for equipment where necessary to equal the thickness of angles or other structural members to make a smooth, exterior surface. Submit a booklet containing manufacturer's published installation instructions for the insulation systems in coordination with the submitted MICA Insulation Stds plates booklet. Annotate their installation instructions to indicate which product data and which MICA plate are applicable. The instructions must be copyrighted, have an identifying or publication number, and have been published prior to the issuance date of this solicitation. A booklet is also required by paragraphs titled: Pipe Insulation Systems and Duct Insulation Systems.

PART 3 EXECUTION

3.1 APPLICATION - GENERAL

Apply insulation to unheated and uncooled piping and equipment. Do not compress flexible elastomeric cellular insulation at joists, studs, columns, ducts, and hangers. The insulation must not pull apart after a one hour period; replace any insulation found to pull apart after one hour.

3.1.1 Display Samples

Submit and display, after approval of materials, actual sections of installed systems, properly insulated in accordance with the specification requirements. Such actual sections must remain accessible to inspection throughout the job and will be reviewed from time to time for controlling the quality of the work throughout the construction site. Identify each material used by indicating on an attached sheet the specification requirement for the material and the material by each manufacturer intended to meet the requirement. The Contracting Officer will inspect display sample sections at the jobsite. Keep approved display sample sections on display at the jobsite during the construction period. Upon completion of construction, the display sample sections will be closed and sealed.

3.1.1.1 Pipe Insulation Display Sections

Include as a minimum an elbow or tee, a valve, dielectric waterways and flanges, a hanger with protection shield and insulation insert, or dowel as required, at support point, method of fastening and sealing insulation at longitudinal lap, circumferential lap, butt joints at fittings and on pipe runs, and terminating points for each type of pipe insulation used on

the job, and for hot pipelines and cold pipelines, both interior and exterior, even when the same type of insulation is used for these services.

3.1.1.2 Duct Insulation Display Sections

Display sample sections for rigid and flexible duct insulation used on the job. Use a temporary covering to enclose and protect display sections for duct insulation exposed to weather

3.1.2 Installation

Except as otherwise specified, install material in accordance with the manufacturer's written instructions. Do not apply insulation materials until tests specified in other sections of this specification are completed. Remove material such as rust, scale, dirt and moisture from surfaces to receive insulation. Keep insulaton clean and dry. Do not remove insulation from its shipping containers until the day it is ready to use and return to like containers or equally protect from dirt and moisture at the end of each workday. Thoroughly clean insulation that becomes dirty prior to use. If insulation becomes wet or if cleaning does not restore the surfaces to like new condition, reject the insulation, and immediately remove from the jobsite. Stagger joints on multi layer insulation. Mix mineral fiber thermal insulating cement with demineralized water when used on stainless steel surfaces. Install insulation, jacketing and accessories in accordance with MICA Insulation Stds plates except where modified herein or on the drawings.

3.1.3 Installation of Flexible Elastomeric Cellular Insulation

Install flexible elastomeric cellular insulation with seams and joints sealed with rubberized contact adhesive. Do not use flexible elastomeric cellular insulation on surfaces greater than 220 degrees F. Stagger seams when applying multiple layers of insulation. Protect insulation exposed to weather with metal jacketing as recommended by the manufacturer after the adhesive is dry and cured.

3.1.3.1 Adhesive Application

Apply a brush coating of adhesive to both butt ends to be joined and to both slit surfaces to be sealed. Allow the adhesive to set until dry to touch but tacky under slight pressure before joining the surfaces. Ensure insulation seals at seams and joints are not capable of being pulled apart one hour after application. Replace insulation that can be pulled apart one hour after installation.

3.1.3.2 Adhesive Safety Precautions

Use natural cross-ventilation, local (mechanical) pickup, or general area (mechanical) ventilation to prevent an accumulation of solvent vapors, keeping in mind the ventilation pattern must remove any heavier-than-air solvent vapors from lower levels of the workspaces. Gloves and spectacle-type safety glasses are recommended in accordance with safe installation practices.

3.1.4 Welding

Welding is not permitted on piping, duct or equipment without written approval of the Contracting Officer. The capacitor discharge welding

process may be used for securing metal fasteners to duct.

3.1.5 Pipes/Ducts/Equipment That Require Insulation

Insulation is required on all pipes, ducts, or equipment, except for omitted items as specified.

3.2 PIPE INSULATION SYSTEMS INSTALLATION

Install pipe insulation systems in accordance with the approved MICA Insulation Stds plates as supplemented by the manufacturer's published installation instructions.

3.2.1 Pipe Insulation

3.2.1.1 General

Install pipe insulation on aboveground hot and cold pipeline systems as specified below to form a continuous thermal retarder/barrier, including straight runs, fittings and appurtenances unless specified otherwise. Install full length units of insulation using a single cut piece to complete a run. Do not use cut pieces or scraps abutting each other. Omit pipe insulation on the following:

a. Air chambers.

b. Adjacent insulation.

c. ASME stamps.

d. Access plates of fan housings.

3.2.1.2 Pipes Passing Through Walls, Roofs, and Floors

Provide continuous pipe insulation through the sleeve.

Provide an aluminum jacket or vapor barrier/weatherproofing self adhesive jacket (minimum 2 mils adhesive, 3 mils embossed) less than 0.0000 permeability, greater than 3 ply standard grade, silver, white, black and embossed with factory applied moisture retarder over the insulation wherever penetrations require sealing.

3.2.1.2.1 Penetrate Interior Walls

Provide aluminum jacket or vapor barrier/weatherproofing - self adhesive jacket (minimum 2 mils adhesive, 3 mils embossed) less than 0.02 permeability, greater than 3 plies standard grade, silver, white, black and embossed which extends 2 inches beyond either side of the wall and secure on each end with a band.

3.2.1.2.2 Penetrating Floors

Extend the aluminum jacket from a point below the backup material to a point 10 inches above the floor with one band at the floor and one not more than 1 inch from the end of the aluminum jacket.

3.2.1.2.3 Penetrating Waterproofed Floors

Extend the aluminum jacket from below the backup material to a point 2

inches above the flashing with a band 1 inch from the end of the aluminum jacket.

3.2.1.2.4 Penetrating Exterior Walls

Continue the aluminum jacket required for pipe exposed to weather through the sleeve to a point 2 inches beyond the interior surface of the wall.

3.2.1.2.5 Penetrating Roofs

Insulate pipe as required for interior service to a point flush with the top of the flashing and sealed with flashing sealant. Tightly butt the insulation for exterior application to the top of flashing and interior insulation. Extend the exterior aluminum jacket 2 inches down beyond the end of the insulation to form a counter flashing. Seal the flashing and counter flashing underneath with metal jacketing/flashing sealant.

3.2.1.2.6 Hot Water Pipes Supplying Lavatories or Other Similar Heated Service

Terminate the insulation on the backside of the finished wall. Protect the insulation termination with two coats of vapor barrier coating with a minimum total thickness of 1/16 inch applied with glass tape embedded between coats (if applicable). Extend the coating out onto the insulation 2 inches and seal the end of the insulation. Overlap glass tape seams 1 inch. Caulk the annular space between the pipe and wall penetration with approved fire stop material. Cover the pipe and wall penetration with a properly sized (well fitting) escutcheon plate. Ensure the escutcheon plate overlaps the wall penetration at least 3/8 inches.

3.2.1.2.7 Domestic Cold Water Pipes Supplying Lavatories or Other Similar Cooling Service

Terminate the insulation on the finished side of the wall (i.e., insulation must cover the pipe throughout the wall penetration). Protect the insulation with two coats of weather barrier mastic (breather emulsion type weatherproof mastic impermeable to water and permeable to air) with a minimum total thickness of 1/16 inch. Extend the mastic out onto the insulation 2 inches and seal the end of the insulation. Caulk the annular space between the outer surface of the pipe insulation and the wall penetration with an approved fire stop material having vapor retarder properties. Cover the pipe and wall penetration with a properly sized (well fitting) escutcheon plate. Ensure the escutcheon plate overlaps the wall penetration by at least 3/8 inches.

3.2.1.3 Pipes Passing Through Hangers

Ensure insulation, whether hot or cold application, is continuous through hangers. Support all horizontal pipes 2 inches and smaller on hangers with the addition of a Type 40 protection shield to protect the insulation in accordance with MSS SP-58. Whenever insulation shows signs of being compressed, or when the insulation or jacket shows visible signs of distortion at or near the support shield, install insulation inserts as specified below for piping larger than 2 inches, or factory insulated hangers (designed with a load bearing core) can be used.

3.2.1.3.1 Horizontal Pipes Larger Than 2 Inches at 60 Degrees F and Above

Supported on hangers in accordance with MSS SP-58, and Section 22 00 00

PLUMBING, GENERAL PURPOSE.

3.2.1.3.2 Horizontal Pipes Larger Than 2 Inches and Below 60 Degrees F

Supported on hangers with the addition of a Type 40 protection shield in accordance with MSS SP-58. Install an insulation insert of cellular glass, prefabricated insulation pipe hangers, or perlite above 80 degrees F above each shield. Ensure insert covers no less than the bottom 180-degree arc of the pipe. Provide inserts that are the same thickness as the insulation, and extend 2 inches on each end beyond the protection shield. When insulation inserts are required in accordance with the above, and the insulation thickness is less than 1 inch, wooden or cork dowels or blocks may be installed between the pipe and the shield to prevent the weight of the pipe from crushing the insulation, as an option to installing insulation inserts. Ensure the insulation jacket is continuous over the wooden dowel, wooden block, or insulation insert.

3.2.1.3.3 Vertical Pipes

Supported with either Type 8 or Type 42 riser clamps with the addition of two Type 40 protection shields in accordance with MSS SP-58 covering the 360-degree arc of the insulation. Install an insulation insert of cellular glass or calcium silicate between each shield and the pipe. Ensure the insert covers the 360-degree arc of the pipe. Provide inserts that are the same thickness as the insulation, and extend 2 inches on each end beyond the protection shield. When insulation inserts are required in accordance with the above, and the insulation thickness is less than 1 inch, wooden or cork dowels or blocks may be installed between the pipe and the shield to prevent the hanger from crushing the insulation, as an option instead of installing insulation inserts. Ensure the insulation jacket is continuous over the wooden dowel, wooden block, or insulation insert. Support the vertical weight of the pipe with hangers located in a horizontal section of the pipe. When the pipe riser is longer than 30 feet, support the weight of the pipe additionally with hangers in the vertical run of the pipe that are directly clamped to the pipe, penetrating the pipe insulation. Use insulated hangers and seal the insulation jacket as indicated herein for anchors in a similar service.

3.2.1.3.4 Inserts

Covered with a jacket material of the same appearance and quality as the adjoining pipe insulation jacket, overlap the adjoining pipe jacket 1-1/2 inches, and seal as required for the pipe jacket. Use jacket material to cover inserts in flexible elastomeric cellular insulation conforming to ASTM C1136, Type 1, and is allowed to be of a different material than the adjoining insulation material.

3.2.1.4 Flexible Elastomeric Cellular Pipe Insulation

Use tubular form flexible elastomeric cellular pipe insulation for pipe sizes 6 inches and less. Grade 1, Do not stretch Type II sheet insulation used on pipes larger than 6 inches around the pipe. On pipes larger than 12 inches, adhere the insulation directly to the pipe on the lower 1/3 of the pipe. Stagger seams when applying multiple layers of insulation. Insulate sweat fittings with miter-cut pieces the same size as on adjacent piping. Insulate screwed fittings with sleeved fitting covers fabricated from miter-cut pieces and overlap and seal to the adjacent pipe insulation. Type II requires an additional exterior vapor retarder/barrier covering for high relative humidity and below ambient

temperature applications.

3.2.1.5 Pipes in High Abuse Areas

In high abuse areas such as janitor closets and traffic areas in equipment rooms, kitchens, and mechanical rooms, utilize aluminum or flexible laminate cladding (comprised of elastomeric, plastic or metal foil laminate) laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket, - less than 0.02 permeability; (greater than 3 ply, standard grade, silver, white, black and embossed) aluminum jackets. Protect pipe insulation to the 6 foot level.

3.2.1.6 Pipe Insulation Material and Thickness

Pipe insulation materials must be as listed in Table 1 and must meet or exceed the requirements of ASHRAE 90.1 - IP.

TABLE 1

Insulation Material for Piping

Service					
	Material	Specification	Type	Class	VR/VB Req'd
Cold Domestic Water Piping, Makeup Water, and Condenser Water Piping					
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
Hot Domestic Water Supply & Recirculating Piping (Max 200 F)					
	Faced Phenolic Foam	ASTM C1126	III		Yes
Refrigerant Suction Piping (35 degrees F nominal)					
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
Exposed Lavatory Drains, Exposed Domestic Water Piping & Drains to Areas for Handicapped Personnel					
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
Condensate Drain Located Inside Building					
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
Note: VR/VB = Vapor Retarder/Vapor Barrier					

TABLE 2

Piping Insulation Thickness (inch)
Do not use integral wicking material in Chilled water applications exposed to outdoor ambient conditions in climatic zones 1 through 4.

Service							
	Material	Conductivity K-value (Btu-in/ hr-ft^2-deg F)	Tube And Pipe Size (inch)				
			<1	1-<1.5	1.5-<4	4-<8	> or = >8
Cold Domestic Water Piping, Makeup Water, and Condenser Water							
	Flexible Elastomeric Cellular	0.235	1	1	1	N/A	N/A
Hot Domestic Water Supply & Recirculating Piping (Max 200 F)							
	Flexible Elastomeric Cellular	0.30	1.5	1.5	2	N/A	N/A
Refrigerant Suction Piping (35 degrees F nominal)							
	Flexible Elastomeric Cellular	0.235	1	1	1	N/A	N/A
Exposed Lavatory Drains, Exposed Domestic Water Piping & Drains to Areas for Handicapped Personnel							
	Flexible Elastomeric Cellular		0.5	0.5	0.5	0.5	0.5
Condensate Drain Located Inside Building							
	Flexible Elastomeric Cellular	0.235	1	1	1	N/A	N/A

3.2.2 Aboveground Cold Pipelines

Insulate the following cold pipelines for minus 30 to plus 60 degrees F in accordance with Table 2 except those piping listed in subparagraph Pipe Insulation in PART 3 as to be omitted. This includes but is not limited to the following:

a. Make-up water.

b. Horizontal and vertical portions of interior roof drains.

c. Refrigerant suction lines.

d. Chilled water.

e. Dual temperature water, i.e. HVAC hot/chilled water.

f. Air conditioner condensate drains.

g. Brine system cryogenics.

h. Condenser water piping where pipe temperature may fall below ambient dew point.

i. Exposed lavatory drains and domestic water lines serving plumbing fixtures for handicap persons.

j. Domestic cold and chilled drinking water.

3.2.2.1 Insulation Material and Thickness

Determine insulation thickness for cold pipelines using Table 2.

3.2.2.2 Factory or Field applied Jacket

Cover insulation with a factory applied vapor retarder jacket/vapor barrier or field applied seal welded PVC jacket or greater than 3 ply laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket - less than 0.02 permeability, standard grade, sliver, white, black and embossed for use with Mineral Fiber, Cellular Glass, and Phenolic Foam Insulated Pipe. For insulation inside the building, to be protected with an aluminum jacket, PVC jacket or fittings (installed over a vapor retarder jacket), or greater than 3 ply vapor barrier/weatherproofing self-adhesive (minimum 2 mils adhesive, 3 mils embossed) product, less than 0.02 permeability, standard grade, Embossed Silver, White & Black, install the insulation and vapor retarder jacket as specified herein. Install the aluminum jacket, PVC jacket or fittings (installed over a vapor retarder jacket), or greater than 3 ply vapor barrier/weatherproofing self-adhesive (minimum 2 mils adhesive, 3 mils embossed) product, less than 0.02 permeability, standard grade, embossed silver, White & Black, as specified for piping exposed to weather, except sealing of the laps of the aluminum jacket is not required. In high abuse areas such as janitor closets and traffic areas in equipment rooms, kitchens, and mechanical rooms, provide aluminum jackets, PVC jacket or fittings (installed over a vapor retarder jacket), or greater than 3 ply vapor barrier/weatherproofing self-adhesive (minimum 2 mils adhesive, 3 mils embossed) product, less than 0.02 permeability, standard grade, embossed silver, white & black, for pipe insulation to the 6 ft level.

3.2.2.3 Installing Insulation for Straight Runs Hot and Cold Pipe

Apply insulation to the pipe with tight butt joints. Seal all butted joints and ends with joint sealant and seal with a vapor retarder coating, greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape or PVDC adhesive tape.

3.2.2.3.1 Longitudinal Laps of the Jacket Material

Overlap not less than 1-1/2 inches. Provide butt strips 3 inches wide for circumferential joints.

3.2.2.3.2 Laps and Butt Strips

Secure with adhesive and staple on 4 inch centers if not factory self-sealing. If staples are used, seal in accordance with paragraph STAPLES below. Note that staples are not required with cellular glass systems.

3.2.2.3.3 Factory Self-Sealing Lap Systems

May be used when the ambient temperature is between 40 and 120 degrees F during installation. Install the lap system in accordance with manufacturer's recommendations. Use a stapler only if specifically recommended by the manufacturer. Where gaps occur, replace the section or repair the gap by applying adhesive under the lap and then stapling.

3.2.2.3.4 Staples

Coat all staples, including those used to repair factory self-seal lap systems, with a vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - 0.0000 perm adhesive tape. Coat all seams, except those on factory self-seal systems, with vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape.

3.2.2.3.5 Breaks and Punctures in the Jacket Material

Patch by wrapping a strip of jacket material around the pipe and secure it with adhesive, staple, and coat with vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape. Extend the patch not less than 1-1/2 inches past the break.

3.2.2.3.6 Penetrations Such as Thermometers

Fill the voids in the insulation and seal with vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape.

3.2.2.3.7 Flexible Elastomeric Cellular Pipe Insulation

Install by slitting the tubular sections and applying them onto the piping or tubing. Alternately, whenever possible slide un-slit sections over the open ends of piping or tubing. Secure all seams and butt joints and seal with adhesive. When using self seal products, secure only the butt joints with adhesive. Push insulation on the pipe, never pulled. Stretching of insulation may result in open seams and joints. Clean cut all edges. Rough or jagged edges of the insulation are not be permitted. Use proper tools such as sharp knives. Do not stretch Grade 1, Type II sheet insulation around the pipe when used on pipe larger than 6 inches. On pipes larger than 12 inches, adhere sheet insulation directly to the pipe on the lower 1/3 of the pipe.

3.2.2.4 Insulation for Fittings and Accessories

a. Butt pipe insulation tightly to the insulation of the fittings and accessories. Seal the butted joints and ends with joint sealant and seal with a vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape.

b. Place precut or preformed insulation around all fittings and accessories and conform to MICA plates except as modified herein: 5 for anchors; 10, 11, and 13 for fittings; 14 for valves; and 17 for flanges and unions. Insulation must be the same insulation as the pipe insulation, including same density, thickness, and thermal conductivity. Where precut/preformed is unavailable, rigid preformed pipe insulation sections may be segmented into the shape required. Use insulation of the same thickness and conductivity as the adjoining pipe insulation. If nesting size insulation is used, overlap the insulation 2 inches or one pipe diameter. Elbows insulated using segments must conform to MICA Tables 12.20 "Mitered Insulation Elbow'. Submit a booklet containing completed MICA Insulation Stds plates detailing each insulating system for each pipe, duct, or equipment insulating system, after approval of materials and prior to applying insulation.

(1) Ensure MICA plates detail the materials to be installed and the specific insulation application. Submit all MICA plates required showing the entire insulating system, including plates required to show insulation penetrations, vessel bottom and top heads, legs, and skirt insulation as applicable. Present all variations of insulation systems including locations, materials, vaporproofing, jackets and insulation accessories.

(2) If the Contractor elects to submit detailed drawings instead of edited MICA Plates, ensure the detail drawings are technically equivalent to the edited MICA Plate submittal.

c. Upon completion of insulation installation on flanges, unions, valves, anchors, fittings and accessories, terminations, seams, joints and insulation not protected by factory vapor retarder jackets or PVC fitting covers must be protected with PVDC or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape or two coats of vapor retarder coating with a minimum total thickness of 1/16 inch, applied with glass tape embedded between coats. Overlap tap seams 1 inch. Extend the coating out onto the adjoining pipe insulation 2 inches. Protect fabricated insulation with a factory vapor retarder jacket with either greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape, standard grade, silver, white, black and embossed or PVDC adhesive tape or two coats of vapor retarder coating with a minimum thickness of 1/16 inch and with a 2 inch wide glass tape embedded between coats. Where fitting insulation butts to pipe insulation, seal the joints with a vapor retarder coating and a 4 inch wide ASJ tape which matches the jacket of the pipe insulation.

d. Insulate anchors attached directly to the pipe for a sufficient distance to prevent condensation but no less than 6 inches from the insulation surface.

e. Mark insulation to show the location of unions, strainers, and check valves.

3.2.2.5 Optional PVC Fitting Covers

At the option of the Contractor, premolded, one or two piece PVC fitting covers may be used in lieu of the vapor retarder and embedded glass tape. Factory precut insulation inserts or premolded insulation segments must be used under the fitting covers for elbows, tees and other miscellaneous configurations. Insulation inserts must be the same installed insulation

thickness. One insert must be installed for each inch of pipe insulation. The installed and compressed insert must have the same thermal performance as the pipe insulation. Premolded insulation segments must be the same insulation as the pipe insulation including same density, thickness, and thermal conductivity. PVC fitting covers must be secured by PVC vapor retarder tape, adhesive, seal welding or with tacks made for securing PVC covers. For above ambient pipe temperatures, secure PVC covers using tacks. As an option circumferential joints can be covered with PVC vapor retarder tape. For below ambient conditions seal system using PVC vapor retarder tape, and vapor retarder mastic with vapor dams. Longitudinal seams may be sealed with vapor retarder mastic, PVC vapor retarder tape or solvent weld adhesive to obtain a continuous vapor seal. For severe service conditions install PVC jackets over the existing ASJ jacket and seal using a solvent weld adhesive.

3.2.3 Aboveground Hot Pipelines

3.2.3.1 General Requirements

Insulate all hot pipe lines above 60 degrees F, except those piping listed in subparagraph Pipe Insulation in PART 3 as to be omitted, in accordance with Table 2. This includes but is not limited to the following:

a. Domestic hot water supply & re-circulating system.

b. Steam.

c. Condensate & compressed air discharge.

d. Hot water heating.

e. Heated oil.

f. Water defrost lines in refrigerated rooms.

Cover insulation, in accordance with manufacturer's recommendations, with a factory applied Type I jacket or field applied aluminum where required or seal welded PVC.

3.2.3.2 Insulation for Fittings and Accessories

Butt pipe insulation tightly to the insulation of the fittings and accessories. Seal butted joints and ends with joint sealant. Mark insulation to show the location of unions, strainers, check valves and other components that would otherwise be hidden from view by the insulation.

3.2.3.2.1 Precut or Preformed

Place precut insulation inserts or preformed insulation inserts around all fittings and accessories. Insulation inserts must be the same installed insulation thickness as the pipe insulation. One insert must be installed for each inch of pipe insulation thickness. The installed and compressed insert must have the same thermal performance as the pipe insulation. Preformed insulation inserts must be the same insulation as the pipe insulation including same density, thickness, and thermal conductivity.

3.2.3.2.2 Rigid Preformed

Where precut/preformed is unavailable, rigid preformed pipe insulation sections may be segmented into the shape required. Use insulation that is the same thickness and conductivity as the adjoining pipe insulation. If nesting size insulation is used, do not overlap insulation 2 inches or one pipe diameter. Elbows insulated using segments must conform to MICA Tables 12.20 "Mitered Insulation Elbow".

3.2.4 Piping Exposed to Weather

Insulate and jacket piping exposed to weather as specified for the applicable service inside the building. After this procedure, apply a laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket - less than 0.02 permeability (greater than 3 ply, standard grade, silver, white, black and embossed aluminum jacket, stainless steel or PVC jacket.

PVC jacketing requires no factory-applied jacket beneath it, however apply an all service jacket if factory applied jacketing is not furnished.

3.2.4.1 Aluminum Jacket

The jacket for hot piping may be factory applied. Overlap the jacket no less than 2 inches at longitudinal and circumferential joints and secure with bands at no more than 12 inch centers. Overlap longitudinal joints down to shed water and locate at 4 or 8 o'clock positions. Seal joints on piping 60 degrees F and below with metal jacketing/flashing sealant while overlapping to prevent moisture penetration. Where jacketing on piping 60 degrees F and below abuts an un-insulated surface, caulk joints to prevent moisture penetration. Seal joints on piping above 60 degrees F with a moisture retarder.

3.2.4.2 Insulation for Fittings

Insulate and finish flanges, unions, valves, fittings, and accessories as specified for the applicable service. Apply two coats of breather emulsion type weatherproof mastic (impermeable to water, permeable to air) recommended by the insulation manufacturer with glass tape embedded between coats. Overlap tap no less than 1 inch and the adjoining aluminum jacket no less than 2 inches. Factory preformed aluminum jackets may be used in lieu of the above. Provide molded PVC fitting covers when PVC jackets are used for straight runs of pipe.PVC fitting covers must be sealed based upon the pipe temperature in combination with ambient conditions and if the pipe insulation will be exposed to severe service conditions. For below ambient conditions, the pipe insulation and insulation fittings must be covered and sealed with a vapor barrier or weatherproofing jacket with a minimum 0.02 permeability as defined per ASTM C1136 before installing the PVC jacket and fitting cover. When in doubt as to the pipe temperature or service conditions, secure the PVC jacket using a weld adhesive using the manufacturer's recommended adhesive.

3.2.4.3 PVC Jacket

Provide ultraviolet resistant PVC jacket that is adhesive welded weather tight with manufacturer's recommended adhesive. Include provision for thermal expansion.

3.2.4.4 Stainless Steel Jackets

ASTM A240/A240M; Type 304, minimum thickness of 33 gauge (0.010 inch), smooth surface with factory-applied polyethylene and kraft paper moisture barrier on inside surface. Provide stainless steel bands, minimum width of 1/2 inch.

3.3 DUCT INSULATION SYSTEMS INSTALLATION

Install duct insulation systems in accordance with the approved MICA Insulation Stds plates as supplemented by the manufacturer's published installation instructions. Duct insulation minimum thickness and insulation level must be as listed in Table 3 at the discretion of the designer and must meet or exceed the requirements ofASHRAE 90.1 - IP.

Except for oven hood exhaust duct insulation, install corner angles on external corners of insulation on ductwork in exposed finished spaces before covering with jacket.

3.3.1 Duct Insulation Minimum Thickness

Duct insulation minimum thickness in accordance with Table 4.

Table 4 - Minimum Duct Insulation (inches)	
Cold Air Ducts	3.0
Relief Ducts	2.0
Fresh Air Intake Ducts	2.0
Warm Air Ducts	2.0

3.3.2 Insulation and Vapor Retarder/Vapor Barrier for Cold Air Duct

Provide insulation and vapor retarder/vapor barrier for the following cold air ducts and associated equipment.

a. Supply ducts.

b. Return air ducts.

c. Relief ducts.

d. Flexible run-outs (field-insulated).

e. Plenums.

f. Duct-mounted coil casings.

g. Coil headers and return bends.

h. Coil casings.

i. Fresh air intake ducts.

j. Filter boxes.

k. Mixing boxes (field-insulated).

l. Supply fans (field-insulated).

m. Site-erected air conditioner casings.

n. Ducts exposed to weather.

o. Combustion air intake ducts.

p. Exhaust ducts passing through concealed spaces, unconditioned spaces, or semi-heated spaces exhausting conditioned air.

Use insulation for rectangular ducts that is flexible type where concealed, minimum density 3/4 pcf, and rigid type where exposed, minimum density 3 pcf. Provide insulation for both concealed or exposed round/oval ducts that is flexible type, minimum density 3/4 pcf or a semi rigid board, minimum density 3 pcf, formed or fabricated to a tight fit, edges beveled and joints tightly butted and staggered. Provide insulation for all exposed ducts with either a white, paint-able, factory-applied Type I jacket or a field applied vapor retarder/vapor barrier jacket coating finish as specified. Ensure the total field applied dry film thickness is approximately 1/16 inch. Provide insulation on all concealed duct with a factory-applied Type I or II vapor retarder/vapor barrier jacket. Continue duct insulation through sleeves and prepare openings except firewall penetrations. Duct insulation terminating at fire dampers, must be continuous over the damper collar and retaining angle of fire dampers, which are exposed to unconditioned air and which may be prone to condensate formation. Provide duct insulation and vapor retarder/vapor barrier to cover the collar, neck, and un-insulated surfaces of diffusers, registers and grills. Apply vapor retarder/vapor barrier materials to form a complete unbroken vapor seal over the insulation. Seal sheet metal duct in accordance with Section 23 30 00 HVAC AIR DISTRIBUTION.

3.3.2.1 Installation on Concealed Duct

a. For rectangular, oval or round ducts, attach flexible insulation by applying adhesive around the entire perimeter of the duct in 6 inch wide strips on 12 inch centers.

b. For rectangular and oval ducts, 24 inches and larger, additionally secure insulation to bottom of ducts using mechanical fasteners. Space fasteners on 16 inch centers and no more than 16 inches from duct corners.

c. For rectangular, oval and round ducts, provide mechanical fasteners on sides of duct risers for all duct sizes. Space fasteners on 16 inch centers and no more than 16 inches from duct corners.

d. Impale insulation on the mechanical fasteners (self stick pins) where used and press thoroughly into the adhesive. Take care to ensure vapor retarder/vapor barrier jacket joints overlap 2 inches. Do not compress insulation to a thickness less than that specified. Carry insulation over standing seams and trapeze-type duct hangers.

e. Where mechanical fasteners are used, install self-locking washers and trim and bend the pin over.

f. Secure jacket overlaps with staples and tape as necessary to ensure a

secure seal. Coat staples, tape and seams with a brush coat of vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate (minimum 2 mils adhesive, 3 mils embossed) - less than 0.0000 perm adhesive tape.

g. Cover breaks in the jacket material with patches of the same material as the vapor retarder jacket. Do not extend patches less than 2 inches beyond the break or penetration in all directions and secure with tape and staples. Seal staples and tape joints with a brush coat of vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate (minimum 2 mils adhesive, 3 mils embossed) - less than 0.0000 perm adhesive tape.

h. At jacket penetrations such as hangers, thermometers, and damper operating rods, fill voids in the insulation and seal the penetration with a brush coat of vapor retarder coating or PVDC adhesive tape greater than 3 ply laminate (minimum 2 mils adhesive, 3 mils embossed) - less than 0.0000 perm adhesive tape.

i. Seal insulation terminations and pin punctures and flash with a reinforced vapor retarder coating finish or tape with a brush coat of vapor retarder coating.. Ensure the coating overlaps the adjoining insulation and un-insulated surface 2 inches. Extend pin puncture coatings 2 inches from the puncture in all directions.

j. Where insulation standoff brackets occur, extend insulation under the bracket and terminate the jacket at the bracket.

3.3.2.2 Installation on Exposed Duct Work

a. For rectangular ducts, secure rigid insulation to the duct by mechanical fasteners on all four sides of the duct, space no more than 12 inches apart and no more than 3 inches from the edges of the insulation joints. Provide a minimum of two rows of fasteners for each side of duct 12 inches and larger. Provide one row for each side of duct less than 12 inches. Provide mechanical fasteners that are corrosion resistant as G60 coated galvanized steel, and indefinitely sustain a 50 lb tensile dead load test perpendicular to the duct wall.

b. Form duct insulation with minimum jacket seams. Fasten each piece of rigid insulation to the duct using mechanical fasteners. When the height of projections is less than the insulation thickness, bring insulation up to standing seams, reinforcing, and other vertical projections and do not carry over. Continue vapor retarder/barrier jacket across seams, reinforcing, and projections. When height of projections is greater than the insulation thickness, carry over insulation and jacket . Apply insulation with joints tightly butted. Neatly bevel insulation around name plates and access plates and doors.

c. Impale insulation on the fasteners; install self-locking washers and trim and bend the pin over.

d. Seal joints in the insulation jacket with a 4 inch wide strip of tape. Seal taped seams with a brush coat of vapor retarder coating.

e. Cover breaks and ribs or standing seam penetrations in the jacket material with a patch of the same material as the jacket. Do not extend patches less than 2 inches beyond the break or penetration and secure with tape and staple. Seal staples and joints with a brush

coat of vapor retarder coating.

f. At jacket penetrations such as hangers, thermometers, and damper operating rods, fill the voids in the insulation and seal the penetrations with a flashing sealant.

g. Seal and flash insulation terminations and pin punctures with a reinforced vapor retarder coating finish. Ensure coating overlaps the adjoining insulation and un-insulated surface 2 inches. Extend pin puncture coatings 2 inches from the puncture in all directions.

h. Insulation for both concealed or exposed round or oval ducts must be flexible type, minimum density 3/4 pcf or a semi rigid board, minimum density 3 pcf, formed or fabricated to a tight fit, edges beveled and joints tightly butted and staggered. Insulation for all exposed ducts must be provided with either a white, factory-applied Type I jacket or a field applied vapor retarder or vapor barrier jacket coating finish as specified, the total field applied dry film thickness must be approximately 1/16 inch.

i. Insulate oval and round ducts, flexible type, with factory Type I jacket insulation with minimum density of 3/4 pcf, attach in accordance with MICA standards.

3.3.3 Insulation for Warm Air Duct

Provide insulation and vapor barrier for the following warm air ducts and associated equipment:.

a. Supply ducts.

b. Return air ducts.

c. Relief air ducts

d. Flexible run-outs (field insulated).

e. Plenums.

f. Duct-mounted coil casings.

g. Coil-headers and return bends.

h. Coil casings.

i. Fresh air intake ducts.

j. Filter boxes.

k. Mixing boxes.

l. Supply fans.

m. Site-erected air conditioner casings.

n. Ducts exposed to weather.

o. Exhaust ducts passing through concealed spaces, unconditioned spaces, or semi-heated spaces exhausting conditioned air.

Provide insulation for rectangular ducts that is flexible type where concealed, and rigid type where exposed. Provide insulation on exposed ducts with a white, paint-able, factory-applied Type II jacket, or finish with adhesive finish. Use flexible type insulation for round ducts, with a factory-applied Type II jacket. Provide insulation on concealed duct with a factory-applied Type II jacket. Accomplish adhesive finish where indicated to be used by applying two coats of adhesive with a layer of glass cloth embedded between the coats. Ensure total dry film thickness is approximately 1/16 inch. Continue duct insulation through sleeves and prepare openings. Terminate duct insulation at fire dampers and flexible connections.

3.3.3.1 Installation on Concealed Duct

a. For rectangular, oval and round ducts, attach insulation by applying adhesive around the entire perimeter of the duct in 6 inch wide strips on 12 inch centers.

b. For rectangular and oval ducts 24 inches and larger, secure insulation to the bottom of ducts using mechanical fasteners. Space fasteners on 18 inch centers and no more than 18 inches from duct corner.

c. For rectangular, oval and round ducts, provide mechanical fasteners on sides of duct risers for all duct sizes. Space fasteners on 18 inch centers and no more than 18 inches from duct corners.

d. Impale insulation on the mechanical fasteners where used. Do not compress insulation to a thickness less than that specified. Carry insulation over standing seams and trapeze-type hangers.

e. Install self-locking washers where mechanical fasteners are used and trim and bend the pin over.

f. Do not overlap insulatio jacket less than 2 inches at joints and secure the lap and staple on 4 inch centers.

3.3.3.2 Installation on Exposed Duct

a. For rectangular ducts, secure the rigid insulation to the duct using mechanical fasteners on all four sides of the duct, space no more than 16 inches apart and no more than 6 inches from the edges of the insulation joints. Provide a minimum of two rows of fasteners for each side of duct 12 inches and larger and a minimum of one row for each side of duct less than 12 inches.

b. Form duct insulation with factory-applied jacket with minimum jacket seams, and fasten each piece of rigid insulation to the duct using mechanical fasteners. When the height of projection is less than the insulation thickness, bring insulation up to standing seams, reinforcing, and other vertical projections and do not carry over the projection. Continue jacket across seams, reinforcing, and projections. Where the height of projections is greater than the insulation thickness, carry insulation and jacket over the projection.

c. Impale insulation on the fasteners; install self-locking washers and trim and bend the pin over.

d. Seal joints on jacketed insulation with a 4 inch wide strip of tape

and brush with vapor retarder coating.

e. Cover breaks and penetrations in the jacket material with a patch of the same material as the jacket. Extend patches no less than 2 inches beyond the break or penetration and secure with adhesive and staple.

f. Seal insulation terminations and pin punctures with tape and brush with vapor retarder coating.

g. Insulate oval and round ducts, flexible type, with factory Type I jacket insulation, minimum density of 3/4 pcf attach by staples spaced no more than 16 inches and no more than 6 inches from the degrees of joints. Seal joints in accordance with item "d." above.

3.3.4 Duct Test Holes

After duct systems have been tested, adjusted, and balanced, repair breaks in the insulation and jacket in accordance with the applicable section of this specification for the type of duct insulation to be repaired. After the insulation is repaired, identify on the outside of the insulation with marker, sticker, or other means "TAB test ports."

3.3.5 Duct Exposed to Weather

3.3.5.1 Installation

Insulate and finish ducts exposed to weather as specified for the applicable service for exposed duct inside the building. After the above is accomplished, further finish the insulation as detailed in the following subparagraphs.

3.3.5.2 Round Duct

Laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket - Less than 0.02 permeability, (greater than 3 ply, standard grade, silver, white, black and embossed or greater than 8 ply, heavy duty, white and natural) membrane must be applied overlapping material by 3 inches no bands or caulking needed - see manufacturer's recommended installation instructions. Aluminum jacket with factory applied moisture retarder must be applied with the joints lapped no less than 3 inches and secured with bands located at circumferential laps and at no more than 12 inch intervals throughout. Lap horizontal joints down to shed water and located at 4 or 8 o'clock position. Seal joints with metal jacketing sealant to prevent moisture penetration. Where jacketing abuts an un-insulated surface, seal joints with metal jacketing sealant.

3.3.5.3 Fittings

Finish fittings and other irregular shapes as specified for rectangular ducts.

3.3.5.4 Rectangular Ducts

Apply two coats of weather barrier mastic reinforced with fabric or mesh for outdoor application to the entire surface. Ensure each coat of weatherproof mastic has a minimum thickness of 1/16 inch. Ensure exterior is a metal jacketing applied for mechanical abuse and weather protection, and secure with screws or vapor barrier/weatherproofing jacket less than

0.02 permeability greater than 3 ply, standard grade, silver, white, black, and embossed or greater than 8 ply, heavy duty white and natural. Apply membrane overlapping material by 3 inches. No bands or caulking needed-see manufacturing recommend installation instructions.

3.4 EQUIPMENT INSULATION SYSTEMS INSTALLATION

Install equipment insulation systems in accordance with the approved MICA Insulation Stds plates as supplemented by the manufacturer's published installation instructions.

3.4.1 General

Provide removable insulation sections to cover parts of equipment that must be opened periodically for maintenance including vessel covers, fasteners, flanges and accessories. Omit equipment insulation on the following:

a. Hand-holes.

b. Boiler manholes.

c. Cleanouts.

d. ASME stamps.

e. Manufacturer's nameplates.

f. Duct Test/Balance Test Holes.

3.4.2 Insulation for Cold Equipment

Cold equipment below 60 degrees F: Furnish insulation on equipment handling media below 60 degrees F including the following:

a. Pumps.

b. Refrigeration equipment parts that are not factory insulated.

c. Drip pans under chilled equipment.

d. Cold water storage tanks.

e. Water softeners.

f. Duct mounted coils.

g. Cold and chilled water pumps.

h. Pneumatic water tanks.

i. Roof drain bodies.

j. Air handling equipment parts that are not factory insulated.

k. Expansion and air separation tanks.

3.4.2.1 Insulation Type

Provide insulation suitable for the temperature encountered. Provide material and thicknesses as shown in Table 5:

TABLE 5

Insulation Thickness for Cold Equipment (inches)

Equipment handling media at indicated temperature		
	Material	Thickness (inches)
35 to 60 degrees F		
	Flexible Elastomeric Cellular	1
1 to 34 degrees F		
	Flexible Elastomeric Cellular	1.5
Minus 30 to 0 degrees F		
	Flexible Elastomeric Cellular	1.75

3.4.2.2 Other Equipment

a. Form or fabricate insulation to fit the equipment. To ensure a tight fit on round equipment, bevel edges and tightly butt and stagger joints.

b. Secure insulation in place with bands or wires at intervals as recommended by the manufacturer but no more than 12 inch centers except adhere flexible elastomeric cellular with contact adhesive. Protect insulation corners under wires and bands with suitable corner angles.

c. Install cellular glass in accordance with manufacturer's instructions. Seal joints and ends with joint sealant, and seal with a vapor retarder coating.

d. Use removable insulation on heads of heat exchangers. Fabricate removable section joints using a male-female shiplap type joint. Finish the entire surface of the removable section by applying two coats of vapor retarder coating with a layer of glass cloth embedded between the coats. The total dry thickness of the finish must be 1/16 inch.

e. Protect exposed insulation corners with corner angles.

f. Apply insulation on equipment with ribs over 6 by 6 inches by 12 gauge welded wire fabric which has been cinched in place, or if approved by the Contracting Officer, spot weld to the equipment over the ribs. Secure insulation to the fabric with J-hooks and 2 by 2 inches washers or securely band or wire in place on 12 inch centers.

3.4.2.3 Vapor Retarder/Vapor Barrier

Upon completion of installation of insulation, caulk penetrations. Apply two coats of vapor retarder coating or vapor barrier jacket over insulation, including removable sections, with a layer of open mesh synthetic fabric embedded between the coats. Ensure the total dry thickness of the finish is 1/16 inch. Apply flasing sealant or vapor barrier tape to parting line between equipment and removable section insulation.

3.4.3 Insulation for Hot Equipment

Furnish insulation on equipment handling media above 60 degrees F including the following:

a. Converters.

b. Heat exchangers.

c. Hot water generators.

d. Water heaters.

e. Pumps handling media above 130 degrees F.

f. Fuel oil heaters.

g. Hot water storage tanks.

h. Air separation tanks.

i. Surge tanks.

j. Flash tanks.

k. Feed-water heaters.

l. Unjacketed boilers or parts of boilers.

m. Boiler flue gas connection from boiler to stack (if inside).

n. Induced draft fans.

o. Fly ash and soot collectors.

p. Condensate receivers.

3.4.3.1 Insulation

Provide insulation suitable for the temperature encountered. Insulate shell and tube-type heat exchangers for the temperature of the shell medium.

-- End of Section --

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SECTION 23 11 20

FACILITY GAS PIPING
05/20

PART 1 GENERAL

1.1 SUMMARY

This specification section applies to gas piping installed within buildings incidental underground piping under building, above ground steel piping and corrugated stainless steel tubing (CSST) both outside (up to 5 feet beyond exterior walls) and within buildings in compliance with NFPA 54 /AGA Z223.1, "National Fuel Gas Code".

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN GAS ASSOCIATION (AGA)

AGA XR0603	(2006; 8th Ed) AGA Plastic Pipe Manual for Gas Service
AGA Z223.1	(2012) National Fuel Gas Code

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z21.15/CSA 9.1	(2021) Manually Operated Gas Valves for Appliances, Appliance Connector Valves and Hose End Valves
ANSI Z21.18/CSA 6.3	(2019; R 2024) Gas Appliance Pressure Regulators
ANSI Z21.24/CSA 6.10	(2022) Connectors for Gas Appliances
ANSI Z21.41/CSA 6.9	(2023) Quick-Disconnect Devices for Use with Gas Fuel Appliances
ANSI Z21.69/CSA 6.16	(2015; R 2020) Connectors for Movable Gas Appliances

AMERICAN PETROLEUM INSTITUTE (API)

API RP 2009	(2002; R 2007; 7th Ed) Safe Welding, Cutting, and Hot Work Practices in Refineries, Gasoline Plants, and Petrochemical Plants
API Spec 6D	(June 2018, 4th Ed; Errata 1 July 2018; Errata 2 August 2018) Specification for Pipeline and Piping Valves
API Std 598	(2009) Valve Inspecting and Testing
API Std 607	(2016) Fire Test for Quarter-turn Valves

and Valves Equipped with Non-metallic Seats

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME A13.1	(2023) Scheme for the Identification of Piping Systems
ASME B1.1	(2024) Unified Inch Screw Threads (UN, UNR, and UNJ Thread Form)
ASME B1.20.1	(2013; R 2018) Pipe Threads, General Purpose (Inch)
ASME B16.1	(2020) Gray Iron Pipe Flanges and Flanged Fittings Classes 25, 125, and 250
ASME B16.3	(2021) Malleable Iron Threaded Fittings, Classes 150 and 300
ASME B16.5	(2020) Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard
ASME B16.9	(2024) Factory-Made Wrought Buttwelding Fittings
ASME B16.11	(2022) Forged Fittings, Socket-Welding and Threaded
ASME B16.21	(2021) Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.33	(2024) Manually Operated Metallic Gas Valves for Use in Gas Piping Systems Up to 175 psi, (Sizes NPS 1/2 Through NPS 2)
ASME B18.2.1	(2012; R 2021) Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)
ASME B18.2.2	(2022) Nuts for General Applications: Machine Screw Nuts, and Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
ASME B31.8	(2022; Supplement 2022) Gas Transmission and Distribution Piping Systems
ASME B31.9	(2020) Building Services Piping
ASME B36.10M	(2022) Welded and Seamless Wrought Steel Pipe
ASME BPVC SEC IX	(2017; Errata 2018) BPVC Section IX-Welding, Brazing and Fusing Qualifications

ASTM INTERNATIONAL (ASTM)

ASTM A105/A105M	(2023) Standard Specification for Carbon

	Steel Forgings for Piping Applications
ASTM A181/A181M	(2014; R 2020) Standard Specification for Carbon Steel Forgings, for General-Purpose Piping
ASTM A193/A193M	(2024a) Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service and Other Special Purpose Applications
ASTM A194/A194M	(2024) Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High-Pressure or High-Temperature Service, or Both

CSA GROUP (CSA)

ANSI LC 1/CSA 6.26	(2023) Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing (CSST)
CGA 9.2-M88	(1988; R 2009) Manually Operated Shut-Off Valves for Gas Piping Systems

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-25	(2018) Standard Marking System for Valves, Fittings, Flanges and Unions
MSS SP-58	(2018) Pipe Hangers and Supports - Materials, Design and Manufacture, Selection, Application, and Installation

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 54	(2024) National Fuel Gas Code
NFPA 70	(2023; ERTA 1 2024; TIA 24-1) National Electrical Code

U.S. DEPARTMENT OF DEFENSE (DOD)

MIL-STD-101	(2014; Rev C) Color Code for Pipelines and for Compressed Gas Cylinders

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

49 CFR 192	Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards

UL SOLUTIONS (UL)

UL FLAMMABLE & COMBUSTIBLE	(2012) Flammable and Combustible Liquids and Gases Equipment Directory

1.3 SYSTEM DESCRIPTION

The gas piping system includes natural gas and piping and appurtenances

from point of connection with supply system, as indicated, to gas operated equipment within the facility. Submit operation and maintenance data in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA, in three separate packages.

1.3.1 Gas Facility System and Equipment Operation

Include shop drawings showing piping layout, locations of system valves, gas line markers; step-by-step procedures for system start up, operation and shutdown (index system components and equipment to the system drawings); isolation procedures including valve operation to shutdown or isolate each section of the system (index valves to the system maps and provide separate procedures for normal operation and emergency shutdown if required to be different).

1.3.2 Gas Facility System Maintenance

Include maintenance procedures and frequency for system and equipment; identification of pipe materials and manufacturer by locations, pipe repair procedures, and jointing procedures at transitions to other piping material or material from a different manufacturer. Submit Data Package No.4.

1.3.3 Gas Facility Equipment Maintenance

Include identification of valves, shut-offs, disconnects, and other equipment by materials, manufacturer, vendor identification and location; maintenance procedures and recommended tool kits for valves and equipment; recommended repair methods (i.e., field repair, factory repair, or replacement) for each valve and piece of equipment; and preventive maintenance procedures, possible failure modes and troubleshooting guide.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Gas Piping System; G

SD-03 Product Data

Gas Equipment Connectors; G

Gas Piping System; G

Pipe Coating Materials; G

Risers; G

Transition Fittings; G

Valves; G

Warning and Identification Tape; G

SD-06 Test Reports

Testing; G

Pressure Tests; G

Test with Gas; G

SD-07 Certificates

Welders Procedures and Qualifications; G

Assigned Number, Letter, or Symbol; G

SD-08 Manufacturer's Instructions

Pipe Coating Materials; G

SD-10 Operation and Maintenance Data

Gas Facility System and Equipment Operation; G

Gas Facility System Maintenance; G

Gas Facility Equipment Maintenance; G

1.5 QUALITY ASSURANCE

Submit manufacturer's descriptive data and installation instructions for approval for compression-type mechanical joints used in joining dissimilar materials and for insulating joints. Mark all valves, flanges and fittings in accordance with MSS SP-25.

1.5.1 Welding Qualifications

a. Weld piping in accordance with qualified procedures using performance qualified welders and welding operators in accordance with API RP 2009, ASME BPVC SEC IX, and ASME B31.9. Welding procedures qualified by others, and welders and welding operators qualified by another employer may be accepted as permitted by ASME B31.9. Notify the Contracting Officer at least 24 hours in advance of tests, and perform at the work site if practicable.

b. Submit a certified copy of welders procedures and qualifications metal and PE in conformance with ASME B31.9 for each welder and welding operator. Submit the assigned number, letter, or symbol that will be used in identifying the work of each welder to the Contracting Officer.

1.5.2 Shop Drawings

Submit drawings for complete Gas Piping System, within 30 days of contract award, showing location, size and all branches of pipeline; location of all required shutoff valves; and instructions necessary for the installation of gas equipment connectors and supports.

1.6 DELIVERY, STORAGE, AND HANDLING

1.6.1 CSST Tubing

Handle, transport and store CSST tubing on the wooden spool or shipping container provided by the manufacturer. Insure tubing ends are capped during transportation and storage to minimize dirt and moisture entry. Discard any tubing segment and fitting that has been damaged.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

Provide materials and equipment which are the standard products of a manufacturer regularly engaged in the manufacture of the products and that essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening. Asbestos or products containing asbestos are not allowed. Submit catalog data and installation instructions for pipe, valves, all related system components, pipe coating materials and application procedures. Conform to NFPA 54 and with requirements specified herein. Provide supply piping to appliances or equipment at least as large as the inlets thereof.

2.2 GAS PIPING SYSTEM AND FITTINGS

2.2.1 Steel Pipe, Joints, and Fittings

Provide steel pipe conforming to ASME B36.10M; and malleable-iron threaded fittings conforming to ASME B16.1 and ASME B16.3. Provide steel pipe flanges and flanged fittings, including bolts, nuts, and bolt pattern in accordance with ASME B16.5 and ASTM A105/A105M. Provide wrought steel buttwelding fittings conforming to ASME B16.9. Provide socket welding and threaded forged steel fittings conforming to ASME B16.11 and ASTM A181/A181M, Class 60.

2.2.2 Corrugated Stainless Steel Tubing, Fittings and Accessories

Provide corrugated stainless steel tubing conforming to ANSI LC 1/CSA 6.26 (austenitic stainless steel of series 300) with tubing joints made with special mechanical fittings as supplied by the tubing manufacturer.

2.2.2.1 Tubing

Austenitic stainless alloy of series 300 with polyethylene jacket/coating in accordance with ANSI LC 1/CSA 6.26 for sizes 3/8-inch through 2-inch

2.2.2.2 Mechanical Fittings

Copper alloy with one end matched to the corrugated tubing and one end with NPT threads in accordance with ASME B1.20.1

2.2.2.3 Striker Plates

Hardened steel designed to protect tubing from mechanical damage in accordance with ANSI LC 1/CSA 6.26

2.2.2.4 Manifolds

Malleable iron, steel or copper alloy with threaded connections/ports in

accordance with ASME B1.20.1

2.2.3 Sealants for Steel Pipe Threaded Joints

Provide joint sealing compound as listed in UL FLAMMABLE & COMBUSTIBLE, Class 20 or less. For taping, use tetrafluoroethylene tape conforming to UL FLAMMABLE & COMBUSTIBLE.

2.2.4 Warning and Identification

Provide pipe flow markings, warning and identification tape, and metal tags as required.

2.2.5 Flange Gaskets

Provide gaskets of nonasbestos compressed material in accordance with ASME B16.21, 1/16 inch thickness, full face or self-centering flat ring type, containing aramid fibers bonded with styrene butadiene rubber (SBR) or nitrile butadiene rubber (NBR) suitable for a maximum 600 degree F service, to be used for hydrocarbon service.

2.2.6 Pipe Threads

Provide pipe threads conforming to ASME B1.20.1.

2.2.7 Escutcheons

Provide chromium-plated steel or chromium-plated brass escutcheons, either one piece or split pattern, held in place by internal spring tension or set screw.

2.2.8 Gas Transition Fittings

a. Provide manually operated shut-off valve conforming to CGA 9.2-M88

2.2.9 Insulating Pipe Joints

2.2.9.1 Insulating Joint Material

Provide insulating joint material between flanged or threaded metallic pipe systems where shown to control galvanic or electrical action.

2.2.9.2 Threaded Pipe Joints

Provide threaded pipe joints of steel body nut type dielectric unions with insulating gaskets.

2.2.9.3 Flanged Pipe Joints

Provide joints for flanged pipe consisting of full face sandwich-type flange insulating gasket of the dielectric type, insulating sleeves for flange bolts, and insulating washers for flange nuts.

2.2.10 Flexible Connectors

a. Provide flexible connectors for connecting gas utilization equipment to building gas piping conforming to ANSI Z21.24/CSA 6.10 or ANSI Z21.41/CSA 6.9 for quick disconnect devices, and flexible connectors for movable food service equipment conforming to

ANSI Z21.69/CSA 6.16.

b. Do not install the flexible connector through the appliance cabinet face. Provide rigid metallic pipe and fittings to extend the final connection beyond the cabinet, except when appliance is provided with an external connection point.

2.3 VALVES

Provide lockable shutoff or service isolation valves conforming to the following:

2.3.1 Valves 2 Inches and Smaller

Provide valves 2 inches and smaller conforming to ASME B16.33 of materials and manufacture compatible with system materials used.

2.3.2 Valves 2-1/2 Inches and Larger

Provide valves 2-1/2 inches and larger of carbon steel conforming to API Spec 6D, Class 150.

2.4 RISERS

Provide manufacturer's standard riser, transition from plastic to steel pipe with 7 to 12 mil thick epoxy coating. Use swaged gas-tight construction with O-ring seals, metal insert, and protective sleeve. Provide wall-mounted riser supports.

2.5 PIPE HANGERS AND SUPPORTS

Provide pipe hangers and supports conforming to MSS SP-58.

2.6 LINE AND APPLIANCE REGULATORS AND SHUTOFF VALVES

Provide regulators conforming to ANSI Z21.18/CSA 6.3 for appliances. Provide shutoff valves conforming to ANSI Z21.15/CSA 9.1 for manually controlled gas shutoff valves.

2.7 BOLTING (BOLTS AND NUTS)

Stainless steel bolting; ASTM A193/A193M, Grade B8M or B8MA, Type 316, for bolts; and ASTM A194/A194M, Grade 8M, Type 316, for nuts. Dimensions of bolts, studs, and nuts must conform with ASME B18.2.1 and ASME B18.2.2 with coarse threads conforming to ASME B1.1, with Class 2A fit for bolts and studs and Class 2B fit for nuts. Bolts or bolt-studs must extend through the nuts and may have reduced shanks of a diameter not less than the diameter at root of threads. Bolts must have American Standard regular square or heavy hexagon heads; nuts must be American Standard heavy semifinished hexagonal.

2.8 GASKETS

Fluorinated elastomer, compatible with flange faces.

2.9 IDENTIFICATION FOR ABOVEGROUND PIPING

MIL-STD-101 for legends and type and size of characters. For pipes 3/4 inch od and larger, provide printed legends to identify contents of pipes

and arrows to show direction of flow. Color code label backgrounds to signify levels of hazard. Make labels of plastic sheet with pressure-sensitive adhesive suitable for the intended application. For pipes smaller than 3/4 inch od, provide brass identification tags 1 1/2 inches in diameter with legends in depressed black-filled characters.

PART 3 EXECUTION

3.1 EXAMINATION

After becoming familiar with all details of the work, verify all dimensions in the field, and advise the Contracting Officer of any discrepancy or areas of conflict before performing the work.

3.2 EXCAVATION AND BACKFILLING

Provide required excavation, backfilling, and compaction.

3.3 GAS PIPING SYSTEM

Provide a gas piping system from the point of delivery, defined as the outlet of the service regulator to the connections to each gas utilization device that is in compliance with NFPA 54.

3.3.1 Protection and Cleaning of Materials and Components

Protect equipment, pipe, and tube openings by closing with caps or plugs during installation. At the completion of all work, thoroughly clean the entire system.

3.3.2 Workmanship and Defects

Piping, tubing and fittings must be clear and free of cutting burrs and defects in structure or threading and must be thoroughly brushed and chip-and scale-blown. Repair of defects in piping, tubing or fittings is not allowed; replace defective items when found.

3.4 PROTECTIVE COVERING

3.4.1 Underground Metallic Pipe

Protect buried metallic piping and tubing from corrosion by applying protective coatings.

3.4.2 Aboveground Metallic Piping Systems

3.4.2.1 Ferrous Surfaces

Touch up shop primed surfaces with ferrous metal primer. Solvent clean surfaces that have not been shop primed . Mechanically clean surfaces that contain loose rust, loose mill scale and other foreign substances by power wire brushing and prime with ferrous metal primer or vinyl type wash coat. Finish primed surfaces with two coats of exterior oil paint or vinyl paint.

3.4.2.2 Nonferrous Surfaces

Except for aluminum alloy pipe, do not paint nonferrous surfaces. Paint surfaces of aluminum alloy pipe and fittings to protect against external

corrosion where they contact masonry, plaster, insulation, or are subject to repeated wettings by such liquids as water, detergents or sewage. Solvent-clean the surfaces and treat with vinyl type wash coat. Apply a first coat of aluminum paint and a second coat of alkyd gloss enamel or silicone alkyd copolymer enamel.

3.5 INSTALLATION

Install the gas system in conformance with the manufacturer's recommendations and applicable provisions of NFPA 54 and AGA XR0603, and as indicated. Perform all pipe cutting without damage to the pipe, with an approved type of mechanical cutter, unless otherwise authorized. Use wheel cutters where practicable. On steel pipe 6 inches and larger, an approved gas cutting and beveling machine may be used. Cut thermoplastic and fiberglass pipe in accordance with AGA XR0603.

3.5.1 Metallic Piping Installation

Bury underground piping a minimum of 18 inches below grade. Make changes in direction of piping with fittings only; mitering or notching pipe to form elbows and tees or other similar type construction is not permitted. Branch connection may be made with either tees or forged branch outlet fittings. Provide branch outlet fittings which are forged, flared for improvement of flow where attached to the run, and reinforced against external strains. Do not use aluminum alloy pipe in exterior locations or underground.

3.5.2 Concealed Piping in Buildings

Do not use combinations of fittings (unions, tubing fittings, running threads, right- and left-hand couplings, bushings, and swing joints) to conceal piping within buildings.

3.5.2.1 Piping and Tubing in Partitions

Locate concealed piping and tubing in hollow, rather than solid, partitions. Protect tubing passing through walls or partitions against physical damage both during and after construction, and provide appropriate safety markings and labels. Provide protection of concealed pipe and tubing in accordance with ANSI LC 1/CSA 6.26.

3.5.3 Aboveground Piping

Run aboveground piping as straight as practicable along the alignment and elevation indicated, with a minimum of joints, and separately supported from other piping system and equipment. Install exposed horizontal piping no farther than 6 inches from nearest parallel wall and at an elevation which prevents standing, sitting, or placement of objects on the piping.

3.5.4 Final Gas Connections

Unless otherwise specified, make final connections with rigid metallic pipe and fittings. Provide accessible gas shutoff valve and coupling for each gas equipment item.

3.6 PIPE JOINTS

Design and install pipe joints to effectively sustain the longitudinal pull-out forces caused by contraction of the piping or superimposed loads.

3.6.1 Threaded Metallic Joints

Provide threaded joints in metallic pipe with tapered threads evenly cut and made with UL approved graphite joint sealing compound for gas service or tetrafluoroethylene tape applied to the male threads only. Threaded joints up to 1-1/2 inches in diameter may be made with approved tetrafluoroethylene tape. Threaded joints up to 2 inches in diameter may be made with approved joint sealing compound. After cutting and before threading, ream pipe and remove all burrs. Caulking of threaded joints to stop or prevent leaks is not permitted.

3.6.2 Welded Metallic Joints

Conform beveling, alignment, heat treatment, and inspection of welds to NFPA 54. Remove weld defects and make repairs to the weld, or remove the weld joints entirely and reweld. After filler metal has been removed from its original package, protect and store so that its characteristics or welding properties are not affected adversely. Do not use electrodes that have been wetted or have lost any of their coating.

3.6.3 Flared Metallic Tubing Joints

Make flared joints in metallic tubing with special tools recommended by the tubing manufacturer. Use flared joints only in systems constructed from nonferrous pipe and tubing, when experience or tests have demonstrated that the joint is suitable for the conditions, and when adequate provisions are made in the design to prevent separation of the joints. Do not use metallic ball sleeve compression-type tubing fittings for tubing joints.

3.6.4 Solder or Brazed Joints

Make all joints in metallic tubing and fittings with materials and procedures recommended by the tubing supplier. Braze joints with material having a melting point above 1000 degrees F, containing no phosphorous.

3.6.5 Press Connections

Make press connections in accordance with manufacturer's installation instructions using tools approved by the manufacturer. Fully insert the tubing into the fitting and then mark at the shoulder of the fitting. Check the fitting alignment against the mark on the tubing to assure the tubing is fully inserted before the joint is pressed.

3.7 PIPE SLEEVES

Provide pipes passing through concrete or masonry walls or concrete floors or roofs with pipe sleeves fitted into place at the time of construction. Do not install sleeves in structural members except where indicated or approved. Make all rectangular and square openings as detailed. Extend each sleeve through its respective wall, floor or roof, and cut flush with each surface, except in mechanical room floors not located on grade where clamping flanges or riser pipe clamps are used. Extend sleeves in mechanical room floors above grade at least 4 inches above finish floor. Unless otherwise indicated, use sleeves large enough to provide a minimum clearance of 1/4 inch all around the pipe. Provide steel pipe for sleeves in bearing walls, waterproofing membrane floors, and wet areas . Provide sleeves in nonbearing walls, floors, or ceilings of steel pipe, galvanized

sheet metal with lock-type longitudinal seam, or moisture-resistant fiber or plastic. For penetrations of fire walls, fire partitions and floors which are not on grade, seal the annular space between the pipe and sleeve with fire-stopping material and sealant that meet the requirement of Section 07 84 00 FIRESTOPPINGG.

3.8 PIPES PENETRATING WATERPROOFING MEMBRANES

Install pipes penetrating waterproofing membranes as specified in Section 22 00 00 PLUMBING, GENERAL PURPOSE.

3.9 ESCUTCHEONS

Provide escutcheons for all finished surfaces where gas piping passes through floors, walls, or ceilings except in boiler, utility, or equipment rooms.

3.10 SPECIAL REQUIREMENTS

Provide drips, grading of the lines, freeze protection, and branch outlet locations as shown and conforming to the requirements of NFPA 54.

3.11 BUILDING STRUCTURE

Do not weaken any building structure by the installation of any gas piping. Do not cut or notch beams, joists or columns. Attach piping supports to metal decking. Do not attach supports to the underside of concrete filled floors or concrete roof decks unless approved by the Contracting Officer.

3.12 PIPING SYSTEM SUPPORTS

Support gas piping systems in buildings with pipe hooks, metal pipe straps, bands or hangers suitable for the size of piping or tubing. Do not support any gas piping system by other piping. Conform spacing of supports in gas piping and tubing installations to the requirements of NFPA 54. Conform the selection and application of supports in gas piping and tubing installations to the requirements of MSS SP-58. In the support of multiple pipe runs on a common base member, use a clip or clamp where each pipe crosses the base support member. Spacing of the base support members is not to exceed the hanger and support spacing required for any of the individual pipes in the multiple pipe run. Rigidly connect the clips or clamps to the common base member. Provide a clearance of 1/8 inch between the pipe and clip or clamp for all piping which may be subjected to thermal expansion.

3.13 ELECTRICAL BONDING AND GROUNDING

Provide a gas piping system within the building that is electrically continuous and bonded to a grounding electrode as required by NFPA 54, and NFPA 70.

3.14 SHUTOFF VALVE

Install the main gas shutoff valve controlling the gas piping system to be easily accessible for operation, as indicated, protected from physical damage, and marked with a metal tag to clearly identify the piping system controlled. Install valves approximately at locations indicated. Orient stems vertically, with operators on top, or horizontally. Provide stop

valve on service branch at connection to main and shut-off valve on riser outside of building.

3.15 LINE AND APPLIANCE PRESSURE REGULATORS

Install line pressure regulators and appliance regulators in accordance with the manufacturer's requirements and in accordance with NFPA 54. Install each regulator in an accessible location and install shutoff valves ahead of each line and appliance regulator to allow for maintenance. Where vent limiting devices are not included in the regulators, install a vent pipe to the exterior of the building. Terminate all service regulator vents and relief vents in the outside air in rain and insect resistant fittings. Locate the open end of the vent where gas can escape freely into the atmosphere, away from any openings into the building and above areas subject to flooding.

3.16 GAS SERVICE INSTALLATION

Installations must be in accordance with 49 CFR 192 and ASME B31.8. Contractor must submit and use only tested and approved work procedures. Contractor must use only welders and jointers who have been recently qualified by training and test for joining and installing the gas pipe material used on this job. The finished product must be inspected by a person qualified to inspect joints made by the particular procedures used to make joints.

3.17 TESTING

Submit test procedures and reports in booklet form tabulating test and measurements performed; dated after award of this contract, and stating the Contractor's name and address, the project name and location, and a list of the specific requirements which are being certified. Test entire gas piping system to ensure that it is gastight prior to putting into service. Prior to testing, purge the system, clean, and clear all foreign material. Test each joint with an approved gas detector, soap and water, or an equivalent nonflammable solution. Inspect and test each valve in conformance with API Std 598 and API Std 607. Complete testing before any work is covered, enclosed, or concealed, and perform with due regard for the safety of employees and the public during the test. Install bulkheads, anchorage and bracing suitably designed to resist test pressures if necessary, and as directed and or approved by the Contracting Officer. Do not use oxygen as a testing medium.

3.17.1 Pressure Tests

Submit test procedures and reports in booklet form tabulating test and measurements performed; dated after award of this contract, and stating the Contractor's name and address, the project name and location, and a list of the specific requirements which are being certified. Before appliances are connected, test by filling the piping systems with air or an inert gas to withstand a minimum pressure of 3 pounds gauge for a period of not less than 10 minutes as specified in NFPA 54 without showing any drop in pressure. Do not use Oxygen for test. Measure pressure with a mercury manometer, slope gauge, or an equivalent device calibrated to be read in increments of not greater than 0.1 pound. Isolate the source of pressure before the pressure tests are made.

3.17.2 Test With Gas

Before turning on gas under pressure into any piping, close all openings from which gas can escape. Immediately after turning on the gas, check the piping system for leakage by using a laboratory-certified gas meter, an appliance orifice, a manometer, or equivalent device. Conform all testing to the requirements of NFPA 54. If leakage is recorded, shut off the gas supply, repair the leak , and repeat the tests until all leaks have been stopped.

3.17.3 Purging

After testing is completed, and before connecting any appliances, fully purge all gas piping. Do not purge piping into the combustion chamber of an appliance. Do not purge the open end of piping systems into confined spaces or areas where there are ignition sources unless the safety precautions recommended in NFPA 54 are followed.

3.17.4 Labor, Materials and Equipment

Furnish all labor, materials and equipment necessary for conducting the testing and purging.

3.18 PIPE COLOR CODE MARKING

Provide color code marking of piping conforming to ASME A13.1.

-- End of Section --

SECTION 23 23 00

REFRIGERANT PIPING
08/21

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI)

AHRI 710 I-P	(2009) Performance Rating of Liquid-Line Driers
AHRI 720	(2002) Refrigerant Access Valves and Hose Connectors

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 15 & 34	(2013) ASHRAE Standard 34-2016 Safety Standard for Refrigeration Systems/ASHRAE Standard 34-2016 Designation and Safety Classification of Refrigerants-ASHRAE Standard 34-2016

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B16.22	(2021) Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
ASME B16.26	(2018) Standard for Cast Copper Alloy Fittings for Flared Copper Tubes
ASME B31.1	(2024) Power Piping
ASME B31.5	(2022) Refrigeration Piping and Heat Transfer Components
ASME B40.100	(2022) Pressure Gauges and Gauge Attachments
ASME BPVC SEC IX	(2017; Errata 2018) BPVC Section IX-Welding, Brazing and Fusing Qualifications

AMERICAN WELDING SOCIETY (AWS)

AWS A5.8/A5.8M	(2019) Specification for Filler Metals for Brazing and Braze Welding
AWS A5.31/A5.31M	(2012) Specification for Fluxes for Brazing and Braze Welding
AWS BRH	(2007; 5th Ed) Brazing Handbook

AWS D1.1/D1.1M	(2020; Errata 1 2021) Structural Welding Code - Steel
AWS Z49.1	(2021) Safety in Welding and Cutting and Allied Processes

ASTM INTERNATIONAL (ASTM)

ASTM A53/A53M	(2024) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A653/A653M	(2023) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM B32	(2020) Standard Specification for Solder Metal
ASTM B62	(2017) Standard Specification for Composition Bronze or Ounce Metal Castings
ASTM B75/B75M	(2020) Standard Specification for Seamless Copper Tube
ASTM B117	(2019) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B280	(2023) Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
ASTM B813	(2024) Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
ASTM D520	(2000; R 2011) Zinc Dust Pigment
ASTM D3308	(2012; R 2017) Standard Specification for PTFE Resin Skived Tape
ASTM E84	(2023) Standard Test Method for Surface Burning Characteristics of Building Materials

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY (MSS)

MSS SP-58	(2018) Pipe Hangers and Supports - Materials, Design and Manufacture, Selection, Application, and Installation

U.S. DEPARTMENT OF DEFENSE (DOD)

UFC 3-301-01	(2023; with Change 2, 2024) Structural Engineering

1.2 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Refrigerant Piping System; G

SD-03 Product Data

Refrigerant Piping System

Spare Parts

Qualifications

Refrigerant Piping Tests

Verification of Dimensions

SD-06 Test Reports

Refrigerant Piping Tests

SD-07 Certificates

Service Organization

SD-10 Operation and Maintenance Data

Maintenance; G

1.3 QUALITY ASSURANCE

1.3.1 Qualifications

Submit 3 copies of qualified procedures, and list of names and identification symbols of qualified welders and welding operators, prior to non-factory welding operations. Weld piping in accordance with the qualified procedures using performance qualified welders and welding operators. Procedures and welders must be qualified in accordance with ASME BPVC SEC IX. Welding procedures qualified by others, and welders and welding operators qualified by another employer may be accepted as permitted by ASME B31.1. Notify the Contracting Officer 24 hours in advance of tests to be performed at the work site, if practical. The welder or welding operator must apply the personally assigned symbol near each weld made, as a permanent record.

1.3.2 Contract Drawings

Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. Carefully investigate the plumbing, fire protection, electrical, structural and finish conditions that would affect the work to be performed and arrange such work accordingly, furnishing required offsets, fittings, and accessories to meet such conditions.

1.4 DELIVERY, STORAGE, AND HANDLING

Protect stored items from the weather, humidity and temperature variations, dirt and dust, or other contaminants. Proper protection and care of all material both before and during installation is the Contractor's responsibility. Replace any materials found to be damaged at the Contractor's expense. During installation, cap piping and similar openings to keep out dirt and other foreign matter.

1.5 MAINTENANCE

1.5.1 General

Submit operation and maintenance data as specified herein.

1.5.2 Extra Materials

Submit spare parts data for each different item of equipment specified, after approval of detail drawings and not later than 2 months prior to the date of beneficial occupancy. Include a complete list of parts and supplies, with current unit prices and source of supply, a recommended spare parts list for 1 year of operation, and a list of the parts recommended by the manufacturer to be replaced on a routine basis in the data.

PART 2 PRODUCTS

2.1 STANDARD COMMERCIAL PRODUCTS

a. Provide materials and equipment which are standard products of a manufacturer regularly engaged in the manufacturing of such products, that are of a similar material, design and workmanship and that have been in satisfactory commercial or industrial use for 2 years prior to bid opening.

b. The 2 year use must include applications of equipment and materials under similar circumstances and of similar size. The 2 years' experience must be satisfactorily completed by a product which has been sold or is offered for sale on the commercial market through advertisements, manufacturer's catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation, for not less than 6000 hours exclusive of the manufacturer's factory tests, can be shown.

c. Products must be supported by a service organization. System components must be environmentally suitable for the indicated locations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. The service organizations must be reasonably convenient to the equipment installation and be able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

d. Exposed equipment moving parts, parts that produce high operating temperature, parts which may be electrically energized, and parts that may be a hazard to operating personnel must be insulated, fully enclosed, guarded, or fitted with other types of safety devices. Install safety devices so that proper operation of equipment is not

impaired. Welding and cutting safety requirements must be in accordance with AWS Z49.1.

e. Provide the manufacturer's standard catalog data, at least 5 weeks prior to the purchase or installation of a particular component. Highlight the data to show information such as, but not limited to, material, size, options, performance charts, and curves in adequate detail to demonstrate compliance with contract requirements. Include the manufacturer's recommended installation instructions and procedures in the data provided. Provide data for the following components as a minimum:

(1) Piping and Fittings
(2) Valves
(3) Piping Accessories
(4) Pipe Hangers, Inserts, and Supports

2.2 ELECTRICAL WORK

Electrical equipment and wiring must be in accordance with Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Field wiring must be in accordance with manufacturer's instructions. Manual or automatic control and protective or signal devices required for the operation specified and any control wiring required for controls and devices specified, but not shown, must be provided.

2.3 REFRIGERANT PIPING SYSTEM

Provide refrigerant piping, valves, fittings, and accessories in accordance with ASHRAE 15 & 34 and ASME B31.5, except as specified herein. Refrigerant piping, valves, fittings, and accessories must be compatible with the fluids used and capable of withstanding the pressures and temperatures of the service. Refrigerant piping, valves, and accessories used for refrigerant service must be cleaned, dehydrated, and sealed (capped or plugged) prior to shipment from the manufacturer's plant. Submit drawings, at least 5 weeks prior to beginning construction, provided in adequate detail to demonstrate compliance with contract requirements. Drawings must consist of:

a. Piping layouts which identify all valves and fittings.

b. Plans and elevations which identify clearances required for maintenance and operation.

2.4 PIPE, FITTINGS AND END CONNECTIONS (JOINTS)

2.4.1 Copper Tubing

Provide copper tubing conforming to ASTM B280 annealed or hard drawn as required. Copper tubing must bear the product identification markings in accordance with ASTM B280, "ACR" must be present on copper tubing. Copper tubing must be soft annealed where bending is required and hard drawn where no bending is required. Soft annealed copper tubing must not be used in sizes larger than 1-3/8 inches. Joints must be brazed except that joints on lines 7/8 inchand smaller may be flared. Cast copper alloy fittings for flared copper tube must conform to ASME B16.26 and ASTM B62. Wrought copper and bronze solder-joint pressure fittings must conform to ASME B16.22 and ASTM B75/B75M. Joints and fittings for brazed joint must be wrought-copper or forged-brass sweat fittings. Cast sweat-type joints

and fittings are not allowed for brazed joints. Brass or bronze adapters for brazed tubing may be used for connecting tubing to flanges and to threaded ends of valves and equipment.

2.4.2 Solder

Solder must conform to ASTM B32, grade Sb5, tin-antimony alloy for service pressures up to 150 psig. Solder flux must be liquid or paste form, non-corrosive and conform to ASTM B813.

2.4.3 Brazing Filler Metal

Filler metal must conform to AWS A5.8/A5.8M, Type BAg-5 with AWS Type FB3-A or Type FB3-C flux, except Type BCuP-3, BCuP-4, or BCuP-5 may be used for brazing copper-to-copper joints. BAlSi-4 with AWS Type FB1-A flux may be used when joining copper piping to aluminum components.

2.4.4 Brazing Flux

Brazing flux must conform to AWS A5.31/A5.31M, Type FB3-A or Type FB3-C when using Type BAg-5 filler metal. Type FB1-A is to be used with Type BAlSi-4 filler metal.

2.4.5 Press Fittings

Press fittings are not acceptable for use in refrigerant piping systems.

2.5 VALVES

Valves must be designed, manufactured, and tested specifically for refrigerant service. The valve material and all internal components must be compatible with the specific refrigerant and lubricant used. Valve bodies must be of brass, bronze, steel, or ductile iron construction. Valves 1 inch and smaller must have brazed or socket welded connections. Valves larger than 1 inch must have butt welded end connections. Do not use threaded end connections, except in pilot pressure or gauge lines where maintenance disassembly is required and welded flanges cannot be used. Internal parts must be removable for inspection or replacement without applying heat or breaking pipe connections. Valve stems exposed to the atmosphere must be stainless steel or corrosion resistant metal plated carbon steel. Direction of flow must be legibly and permanently indicated on the valve body. Control valve inlets must be fitted with integral or adapted strainer or filter where recommended or required by the manufacturer. Purge, charge and receiver valves must be of manufacturer's standard configuration.

2.5.1 Refrigerant Stop Valves

Valve must be the globe or full-port ball type with a back-seating stem especially packed for refrigerant service. Valve packing must be replaceable under line pressure. Provide valve with a handwheel or wrench operator and a seal cap. Valve must be the straight or angle pattern design as indicated.

2.5.2 Safety Relief Valves

Valve must be the two-way type, unless indicated otherwise. Valve must bear the ASME code symbol. Valve capacity must be certified by the National Board of Boiler and Pressure Vessel Inspectors. Valve must be of

an automatically reseating design after activation.

2.5.3 Evaporator Pressure Regulators, Direct-Acting

Valve must include a diaphragm/spring assembly, external pressure adjustment with seal cap, and pressure gauge port. Valve must maintain a constant inlet pressure by balancing inlet pressure on diaphragm against an adjustable spring load. Pressure drop at system design load must not exceed the pressure difference corresponding to a 2 degrees F change in saturated refrigerant temperature at evaporator operating suction temperature. Spring must be selected for indicated maximum allowable suction pressure range.

2.5.4 Refrigerant Access Valves

Provide refrigerant access valves and hose connections in accordance with AHRI 720.

2.6 PIPING ACCESSORIES

2.6.1 Filter Driers

Driers must conform to AHRI 710 I-P. Sizes 5/8 inch and larger must be the full flow, replaceable core type. Sizes 1/2 inch and smaller must be the sealed type. Cores must be of suitable desiccant that will not plug, cake, dust, channel, or break down, and must remove water, acid, and foreign material from the refrigerant. Constructfilter driers so that none of the desiccant will pass into the refrigerant lines. Minimum bursting pressure must be 1,500 psi.

2.6.2 Vibration Dampeners

Dampeners must be of the all-metallic bellows and woven-wire type.

2.6.3 Flexible Pipe Connectors

Connector must be a composite of interior corrugated phosphor bronze or Type 300 Series stainless steel, as required for fluid service, with exterior reinforcement of bronze, stainless steel or monel wire braid. Assembly must be constructed with a safety factor of not less than 4 at300 degrees F. Unless otherwise indicated, the length of a flexible connector must be as recommended by the manufacturer for the service intended.

2.6.4 Strainers

Strainers used in refrigerant service must have brass or cast-iron body, Y-or angle-pattern, cleanable, not less than 60-mesh noncorroding screen of an area to provide net free area not less than ten times the pipe diameter with pressure rating compatible with the refrigerant service. Screens must be stainless steel or monel and reinforced spring-loaded where necessary for bypass-proof construction.

2.6.5 Pressure and Vacuum Gauges

Provide gauges conforming to ASME B40.100 with throttling type needle valve or a pulsation dampener and shut-off valve. Gauge must be a minimum of 3-1/2 inches in diameter with a range from 0 psig to approximately 1.5 times the maximum system working pressure. Select each gauge range so that at normal operating pressure, the needle is within the middle-third

of the range.

2.6.6 Temperature Gauges

Provide industrial duty type temperature gauges for the required temperature range. Gauges must have Fahrenheit scale in 2 degrees graduations scale (black numbers) on a white face. The pointer must be adjustable. Provide rigid stem type temperature gauges in thermowells located within 5 feet of the finished floor. Provide universal adjustable angle type or remote element type temperature gauges in thermowells located 5 to 7 feet above the finished floor. Provide remote element type temperature gauges in thermowells located 7 feet above the finished floor.

2.6.6.1 Stem Cased-Glass

Provide stem cased-glass case composed of polished stainless steel or cast aluminum, 9 inches long, with clear acrylic lens, and non-mercury filled glass tube with indicating-fluid column.

2.6.6.2 Bimetallic Dial

Provide bimetallic dial type case that is greater than 3-1/2 inches, stainless steel, and hermetically sealed with clear acrylic lens. Bimetallic element must be silicone dampened and unit fitted with external calibrator adjustment. Accuracy must be one percent of dial range.

2.6.6.3 Liquid-, Solid-, and Vapor-Filled Dial

Provide liquid-, solid-, and vapor-filled dial type cases that are greater than 3-1/2 inches, stainless steel or cast aluminum with clear acrylic lens. Fill must be nonmercury, suitable for encountered cross-ambients, and connecting capillary tubing must be double-braided bronze.

2.6.6.4 Thermowell

Thermowell must be identical size, 1/2 or 3/4 inch NPT connection, brass or stainless steel. Where test wells are indicated, provide captive plug-fitted type 1/2 inch NPT connection suitable for use with either engraved stem or standard separable socket thermometer or thermostat. Mercury must not be used in thermometers. Extended neck thermowells must be of sufficient length to clear insulation thickness by 1 inch.

2.6.7 Pipe Hangers, Inserts, and Supports

Provide pipe hangers, inserts, guides, and supports conforming to MSS SP-58.

2.6.8 Escutcheons

Escutcheons must be chromium-plated iron or chromium-plated brass, either one piece or split pattern, held in place by internal spring tension or set screws.

2.7 FABRICATION

2.7.1 Factory Coating

Unless otherwise specified, equipment and component items, when fabricated from ferrous metal, must be factory finished with the manufacturer's standard finish, except that items located outside of buildings must have

weather resistant finishes that will withstand 500 hours exposure to the salt spray test specified in ASTM B117 using a 5 percent sodium chloride solution. Immediately after completion of the test, the specimen must show no signs of blistering, wrinkling, cracking, or loss of adhesion and no sign of rust creepage beyond 1/8 inch on either side of the scratch mark. Cut edges of galvanized surfaces where hot-dip galvanized sheet steel is used must be coated with a zinc-rich coating conforming to ASTM D520, Type I.

2.7.2 Factory Applied Insulation

Factory installed insulation must be in accordance with Section 23 07 00, Table 2. Factory insulated items installed outdoors are not required to be fire-rated. As a minimum, factory insulated items installed indoors must have a flame spread index no higher than 25 and a smoke developed index no higher than 50. Factory insulated items (no jacket) installed indoors and which are located in air plenums, in ceiling spaces, and in attic spaces must have a flame spread index no higher than 25 and a smoke developed index no higher than 50. Flame spread and smoke developed indexes must be determined by ASTM E84. Test insulation in the same density and installed thickness as the material to be used in the actual construction. Test material supplied by a manufacturer with a jacket as a composite material. Provide jackets, facings, and adhesives that have a flame spread index less than 25 and a smoke developed index less than 50 when tested in accordance with ASTM E84.

PART 3 EXECUTION

3.1 EXAMINATION

After becoming familiar with all details of the work, perform a verification of dimensions in the field. Submit a letter, at least 2 weeks prior to beginning construction, including the date the site was visited, conformation of existing conditions, and any discrepancies found before performing any work.

3.2 INSTALLATION

Pipe and fitting installation must conform to the requirements of ASME B31.1. Cut pipe accurately to measurements established at the jobsite, and work into place without springing or forcing, completely clearing all windows, doors, and other openings. Cutting or other weakening of the building structure to facilitate piping installation is not permitted without written approval. Cut pipe or tubing square, remove by reaming, and permit free expansion and contraction without causing damage to the building structure, pipe, joints, or hangers.

3.2.1 Directional Changes

Make changes in direction with fittings, except that bending of pipe 4 inches and smaller is permitted, provided a pipe bender is used and wide weep bends are formed. Mitering or notching pipe or other similar construction to form elbows or tees is not permitted. The centerline radius of bends must not be less than 6 diameters of the pipe. Bent pipe showing kinks, wrinkles, flattening, or other malformations will not be accepted.

3.2.2 Functional Requirements

Install piping 1/2 inch/10 feet of pipe in the direction of flow to ensure adequate oil drainage. Properly cap or plug open ends of refrigerant lines or equipment during installation to keep moisture, dirt, or other foreign material out of the system. Piping must remain capped until installation. Equipment piping must be in accordance with the equipment manufacturer's recommendations and the contract drawings. Equipment and piping arrangements must fit into space allotted and allow adequate acceptable clearances for installation, replacement, entry, servicing, and maintenance.

3.2.3 Fittings and End Connections

3.2.3.1 Threaded Connections

Make threaded connections with tapered threads and make tight with PTFE tape complying with ASTM D3308 or equivalent thread-joint compound applied to the male threads only. Do not show more than three threads after the joint is made.

3.2.3.2 Brazed Connections

Perform brazing in accordance with AWS BRH, except as modified herein. During brazing, fill the pipe and fittings with a pressure regulated inert gas, such as nitrogen, to prevent the formation of scale. Before brazing copper joints, clean both the outside of the tube and the inside of the fitting with a wire fitting brush until the entire joint surface is bright and clean. Do not use brazing flux on copper-to-copper connections. Remove surplus brazing material at all joints. Make steel tubing joints in accordance with the manufacturer's recommendations. Paint joints in steel tubing with the same material as the baked-on coating within 8 hours after joints are made. Protect tubing against oxidation during brazing by continuous purging of the inside of the piping using nitrogen. Support piping prior to brazing and do not spring or force.

3.2.3.3 Welded Connections

Fusion-weld joints in steel refrigerant piping. Make branch connections with welding tees or forged welding branch outlets. Thoroughly clean pipe of all scale and foreign matter before the piping is assembled. During welding, fill the pipe and fittings with an inert gas, such as nitrogen, to prevent the formation of scale. Beveling, alignment, heat treatment, and inspection of weld must conform to ASME B31.1. Remove and reweld weld defects at no additional cost to the Government. Store and dry electrodes in accordance with AWS D1.1/D1.1M or as recommended by the manufacturer. Do not use electrodes that have been wetted or that have lost any of their coating

3.2.3.4 Flared Connections

When flared connections are used, use a suitable lubricant between the back of the flare and the nut in order to avoid tearing the flare while tightening the nut.

3.2.3.5 Flanged Connections

When steel refrigerant piping is used, provide union or flange joints in each line immediately preceding the connection to each piece of equipment

requiring maintenance, such as compressors, coils, chillers, control valves, and other similar items. Flanged joints must be assembled square end tight with matched flanges, gaskets, and bolts. Provide gaskets that are suitable for use with the refrigerants to be handled.

3.2.4 Valves

3.2.4.1 General

Install refrigerant stop valves on each side of each piece of equipment such as compressors condensers, evaporators, receivers, and other similar items in multiple-unit installation, to provide partial system isolation as required for maintenance or repair. Install stop valves with stems horizontal unless otherwise indicated. Install ball valves must be installed with stems positioned to facilitate operation and maintenance. Isolating valves for pressure gauges and switches must be external to thermal insulation. Safety switches must not be fitted with isolation valves. Filter dryers having access ports may be considered a point of isolation. Purge valves must be provided at all points of systems where accumulated non-condensable gases would prevent proper system operation. Valves must be furnished to match line size, unless otherwise indicated or approved.

3.2.4.2 Valve Identification

Tag each system valve, including those which are part of a factory assembly. Tags must be in alphanumeric sequence, progressing in direction of fluid flow. Tags must be embossed, engraved, or stamped plastic or nonferrous metal of various shapes, sized approximately 1-3/8 inch diameter, or equivalent dimension, substantially attached to a component or immediately adjacent thereto. Attach tags with nonferrous, heavy duty, bead or link chain, 14 gauge annealed wire, nylon cable bands or as approved. Reference tag numbers in Operation and Maintenance Manuals and system diagrams.

3.2.5 Vibration Dampers

Provide vibration damper in the suction and discharge lines on spring mounted compressors. Install vibration dampers parallel with the shaft of the compressor and anchor firmly at the upstream end on the suction line and the downstream end in the discharge line.

3.2.6 Strainers

Provide strainers immediately ahead of solenoid valves and expansion devices. Strainers may be an integral part of an expansion valve.

3.2.7 Filter Dryer

Provide a liquid line filter dryer on each refrigerant circuit located such that all liquid refrigerant passes through a filter dryer. Size dryers in accordance with the manufacturer's recommendations for the system in which it is installed. Install dryers such that it can be isolated from the system, the isolated portion of the system evacuated, and the filter dryer replaced. Install dryers in the horizontal position except replaceable core filter dryers may be installed in the vertical position with the access flange on the bottom.

3.2.8 Discharge Line Oil Separator

Provide discharge line oil separator in the discharge line from each compressor. Connect the oil return line to the compressor as recommended by the compressor manufacturer.

3.2.9 Accumulator

Provide accumulators in the suction line to each compressor.

3.2.10 Flexible Pipe Connectors

Install connectors perpendicular to line of motion being isolated. Fit piping for equipment with bidirectional motion with two flexible connectors, in perpendicular planes. Install reinforced elastomer flexible connectors in accordance with manufacturer's instructions. Provide piping guides and restraints related to flexible connectors as required.

3.2.11 Pipe Hangers, Inserts, and Supports

Pipe hangers, inserts, and supports must conform to MSS SP-58, except as modified herein. Do not use pipe hanger types 5, 12, and 26. Fabricate hangers used to support piping 2 inches and larger to permit adequate adjustment after erection while still supporting the load. Support piping subjected to vertical movement, when operating temperatures exceed ambient temperatures, by variable spring hangers and supports or by constant support hangers.

3.2.11.1 Hangers

Do not use Type 3 on insulated piping. Type 24 may be used only on trapeze hanger systems or on fabricated frames.

3.2.11.2 Inserts

Secure Type 18 inserts to concrete forms before concrete is placed. Continuous inserts which allow more adjustments may be used if they otherwise meet the requirements for Type 18 inserts.

3.2.11.3 C-Clamps

Torque Type 19 and 23 C-clamps in accordance with MSS SP-58 and have both locknuts and retaining devices, furnished by the manufacturer. Field-fabricated C-clamp bodies or retaining devices are not acceptable.

3.2.11.4 Angle Attachments

Furnish Type 20 attachments used on angles and channels with an added malleable-iron heel plate or adapter.

3.2.11.5 Saddles and Shields

Where Type 39 saddle or Type 40 shield are permitted for a particular pipe attachment application, the Type 39 saddle, connected to the pipe, must be used on all pipe 4 inches and larger when the temperature of the medium is 60 degrees F or higher. Use Type 40 shields on all piping less than 4 inches and all piping 4 inches and larger carrying medium less than 60 degrees F. Use a high-density insulation insert of cellular glass under

the Type 40 shield for piping 2 inches and larger.

3.2.11.6 Horizontal Pipe Supports

Space horizontal pipe supports as specified in MSS SP-58 and install a support no more than 1 foot from the pipe fitting joint at each change in direction of the piping. Space pipe supports no more than 5 feet apart at valves.

3.2.11.7 Vertical Pipe Supports

Support vertical pipe at each floor, except at slab-on-grade, and at intervals of not more than 15 feet not more than 8 feet from end of risers, and at vent terminations.

3.2.11.8 Pipe Guides

Provide Type 35 guides using, steel, reinforced polytetrafluoroethylene (PTFE) or graphite slides where required to allow longitudinal pipe movement. Provide lateral restraints as required. Provide slide materials that are suitable for the system operating temperatures, atmospheric conditions, and bearing loads encountered.

3.2.11.9 Steel Slides

Where steel slides do not require provisions for restraint of lateral movement, an alternate guide method may be used. On piping 4 inches and larger, usea Type 39 saddle. On piping under 4 inches, a Type 40 protection shield may be attached to the pipe or insulation and freely rest on a steel slide plate.

3.2.11.10 High Temperature Guides with Cradles

Where there are high system temperatures and welding to piping is not desirable, the Type 35 guide must include a pipe cradle, welded to the guide structure and strapped securely to the pipe. Separate the pipe from the slide material by at least 4 inches, or by an amount adequate for the insulation, whichever is greater.

3.2.11.11 Multiple Pipe Runs

In the support of multiple pipe runs on a common base member, use a clip or clamp where each pipe crosses the base support member. Spacing of the base support members must not exceed the hanger and support spacing required for an individual pipe in the multiple pipe run.

3.2.11.12 Seismic Requirements

Support and brace piping and attached valves to resist seismic loads as specified under UFC 3-301-01 and Sections 13 48 73 SEISMIC CONTROL FOR MISCELLANEOUS EQUIPMENT. Provide structural steel required for reinforcement to properly support piping, headers, and equipment but not shown under this section. Specify material used for support under Section 05 12 00 STRUCTURAL STEEL.

3.2.11.13 Structural Attachments

Attachment to building structure concrete and masonry must be by cast-in concrete inserts, built-in anchors, or masonry anchor devices. Inserts

and anchors must be applied with a safety factor not less than 5. Do not attach supports to metal decking. Construct masonry anchors for overhead applications of ferrous materials only. Provide structural steel brackets required to support piping, headers, and equipment, but not shown, under this section. Specify material used for support under Section 05 12 00 STRUCTURAL STEEL.

3.2.12 Pipe Alignment Guides

Provide pipe alignment guides where indicated for expansion loops, offsets, and bends and as recommended by the manufacturer for expansion joints, not to exceed 5 feet on each side of each expansion joint, and in lines 4 inches or smaller not more than 2 feet on each side of the joint.

3.2.13 Pipe Anchors

Provide anchors wherever necessary or indicated to localize expansion or to prevent undue strain on piping. Provide anchors consisting of heavy steel collars with lugs and bolts for clamping and attaching anchor braces, unless otherwise indicated. Install anchor braces in the most effective manner to secure the desired results using turnbuckles where required. Do not attach supports, anchors, or stays where they will injure the structure or adjacent construction during installation or by the weight of expansion of the pipeline. Where pipe and conduit penetrations of vapor barrier sealed surfaces occur, immediately anchor these items adjacent to each penetrated surface, to provide essentially zero movement within penetration seal. Submit detailed drawings of pipe anchors for approval before installation.

3.2.14 Building Surface Penetrations

Do not install sleeves in structural members except where indicated or approved. Provide galvanized sheet metal sleeves in non-load bearing surfaces conforming to ASTM A653/A653M, Coating Class G-90, 20 gauge. Provide uncoated carbon steel pipe sleeves in load bearing surfaces conforming to ASTM A53/A53M, Schedule 20. Apply sealants to moisture and oil-free surfaces and elastomers to not less than 1/2 inch depth. Do not install sleeves in structural members.

3.2.14.1 General Service Areas

Extend each sleeve through its respective wall, floor, or roof, and cut flush with each surface. Provide pipes passing through concrete or masonry wall or concrete floors or roofs with pipe sleeves fitted into place at the time of construction. Provide sleeves that allow a minimum of 1/4 inch all-around clearance between bare pipe and sleeves or between jacketed-insulation and sleeves. Except in pipe chases or interior walls, seal the annular space between pipe and sleeve or between jacket over-insulation and sleeve.

3.2.14.2 Waterproof Penetrations

Install pipes passing through roof or floor waterproofing membrane through a 17 ounce copper sleeve, or a 0.032 inch thick aluminum sleeve, each within an integral skirt or flange. Form flashing sleeve, and extend skirt or flange greater than 8 inches from the pipe and set over the roof or floor membrane in a troweled coating of bituminous cement. Extend the flashing sleeve up the pipe a minimum of 2 inches above the roof or floor penetration. Seal the annular space between the flashing sleeve and the

bare pipe or between the flashing sleeve and the metal-jacket-covered insulation as indicated. Seal penetrations by either one of the following methods.

3.2.14.2.1 Waterproofing Clamping Flange

Pipes up to and including 10 inches in diameter passing through roof or floor waterproofing membrane may be installed through a cast iron sleeve with caulking recess, anchor lugs, flashing clamp device, and pressure ring with brass bolts. Clamp waterproofing membrane into place and place sealant in the caulking recess.

3.2.14.2.2 Modular Mechanical Type Sealing Assembly

In lieu of a waterproofing clamping flange and caulking and sealing of annular space between pipe and sleeve or conduit and sleeve, a modular mechanical type sealing assembly may be installed. Provide seals consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the pipe/conduit and sleeve with corrosion protected carbon steel bolts, nuts, and pressure plates. Loosely assemble links with bolts to form a continuous rubber belt around the pipe with a pressure plate under each bolt head and each nut. After the seal assembly is properly positioned in the sleeve, tighten the bolt to cause the rubber sealing elements to expand and provide a watertight seal between the pipe/conduit and the sleeve. Size each seal assembly as recommended by the manufacturer to fit the pipe/conduit and sleeve involved. The Contractor electing to use the modular mechanical type seals must provide sleeves of the proper diameters.

3.2.14.3 Escutcheons

Provide escutcheons for finished surfaces where exposed piping, bare or insulated, pass through floors, walls, or ceilings, except in boiler, utility, or equipment rooms. Where sleeves project slightly from floors, use special deep-type escutcheons. Secure escutcheon to pipe or pipe covering.

3.2.15 Access Panels

Provide access panels for all concealed valves, vents, controls, and items requiring inspection or maintenance. Provide access panels of sufficient size and locate so that the concealed items may be serviced and maintained or completely removed and replaced.

3.2.16 Field Applied Insulation

Field installed insulation is specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS, except as defined differently herein.

3.2.17 Identification Tags

Provide identification tags made of brass, engraved laminated plastic or engraved anodized aluminum indicating service and item number on all valves and dampers. Tags must be 1-3/8 inch minimum diameter and marking must be stamped or engraved. Indentations must be black for reading clarity. Attach tags to valves with No. 12 AWG copper wire, chrome-plated beaded chain or plastic straps designed for that purpose.

3.3 CLEANING AND ADJUSTING

Clean uncontaminated system(s) by evacuation and purging procedures currently recommended by refrigerant and refrigerant equipment manufacturers, and as specified herein, to remove small amounts of air and moisture. Systems containing moderate amounts of air, moisture, contaminated refrigerant, or any foreign matter are considered contaminated systems. Restore contaminated systems to clean condition including disassembly, component replacement, evacuation, flushing, purging, and re-charging, using currently approved refrigerant and refrigeration manufacturer's procedures. Restore contaminated systems at no additional cost to the Government as determined by the Contracting Officer. Do not use water in any procedure or test.

3.4 REFRIGERANT PIPING TESTS

After all components of the refrigerant system have been installed and connected, subject the entire refrigeration system to pneumatic, evacuation, and startup tests as described herein. Submit a schedule, at least 2 weeks prior to the start of related testing, for each test. Identify the proposed date, time, and location for each test. Conduct tests in the presence of the Contracting Officer. Water and electricity required for the tests will be furnished by the Government. Provide all material, equipment, instruments, and personnel required for the test. Provide the services of a qualified technician, as required, to perform all tests and procedures indicated herein. Coordinate field tests with Section 23 05 93 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS. Submit 6 copies of the tests report in bound 8 1/2 by 11 inch booklets documenting all phases of the tests performed. Include initial test summaries, all repairs/adjustments made, and the final test results in the report.

3.4.1 Preliminary Procedures

Prior to pneumatic testing, isolate equipment which has been factory tested and refrigerant charged as well as equipment which could be damaged or cause personnel injury by imposed test pressure, positive or negative, from the test pressure, or remove from the system. Remove safety relief valves and rupture discs that are not part of factory sealed systems, and cap or plug openings.

3.4.2 Pneumatic Test

Provide pressure control and excess pressure protection at the source of test pressure. Valves must be wide open, except those leading to the atmosphere. Test gas must be dry nitrogen, with minus 70 degree F dewpoint and less than 5 ppm oil. Apply test pressure in two stages before any refrigerant pipe is insulated or covered. In accordance with ASME B31.5, a preliminary test not to exceed 25 psi must be applied as a means of locating major leaks. Every joint being tested must be coated with a thick soap or color indicating solution. The second stage test pressure must be at least 110 percent of the design pressure, but cannot exceed 130 percent of the design pressure of any component in the system. For large systems that are not completely visible, the pressure in the system must be gradually increased to one-half of the test pressure after which the pressure must be increased in steps of one-tenth of the test pressure, until the required test pressure has been reached. The test pressure must be continuously maintained for at leas 24 hours, after which it can be reduced to the leak test pressure. A correction factor of 0.3

psi will be allowed for each degree F change between test space initial and final ambient temperature, plus for increase and minus for a decrease. The leak test pressure must be the design pressure, or a pressure specified in the engineering design. To repair leaks, the joint must be taken apart, thoroughly cleaned, and reconstructed as a new joint. Joints repaired by caulking, re-melting, or back-welding/brazing are not acceptable. Following repair, the entire system must be retested using the pneumatic tests described above. Reassemble the entire system once the pneumatic tests are satisfactorily completed.

3.4.3 Evacuation Test

Following satisfactory completion of the pneumatic tests, relieve the pressure and evacuate the entire system to an absolute pressure of 300 micrometers. During evacuation of the system, the ambient temperature must be higher than 35 degrees F. Do not evacuate no more than one system at one time by one vacuum pump. Once the desired vacuum has been reached, close the vacuum line and allow the system to stand for 1 hour. If the pressure rises over 500 micrometers after the 1 hour period, evacuate the system again down to 300 micrometers and let set for another 1 hour period. Do not charge the system until a vacuum of at least 500 micrometers is maintained for a period of 1 hour without the assistance of a vacuum line. If during the testing the pressure rises above 500 micrometers, continue to repeat the evacuation procedures until all residual moisture has been removed. During evacuation, record pressures by a thermocouple-type, electronic-type, or a calibrated-micrometer type gauge.

3.4.4 System Charging and Startup Test

Following satisfactory completion of the evacuation tests, charge the system with the required amount of refrigerant by raising pressure to normal operating pressure and in accordance with manufacturer's procedures. Following charging, the system must operate with high-side and low-side pressures and corresponding refrigerant temperatures, at design or improved values. Test the entire system tested for leaks. Test fluorocarbon systems with halide torch or electronic leak detectors.

3.4.5 Refrigerant Leakage

If a refrigerant leak is discovered after the system has been charged, the leaking portion of the system must be immediatelyisolated from the remainder of the system and the refrigerant pumped into the system receiver or other suitable container. The refrigerant must not be discharged into the atmosphere.

3.4.6 Contractor's Responsibility

At all times during the installation and testing of the refrigeration system, take steps to prevent the release of refrigerants into the atmosphere. The steps must include, but not be limited to, procedures which will minimize the release of refrigerants to the atmosphere and the use of refrigerant recovery devices to remove refrigerant from the system and store the refrigerant for reuse or reclaim. At no time will the allowable leak rate exceed the leak rates allowed in Section 608 of the Clean Air Act: 30 percent of the full charge per year for industrial refrigeration, 20 percent of the full charge per year for commercial refrigeration, and 10 percent of the full charge per year for comfort cooling. Any system leaks within the first year must be repaired in

accordance with the requirements herein at no cost to the Government including material, labor, and refrigerant if the leak is the result of defective equipment, material, or installation.

-- End of Section --

SECTION 23 30 00

HVAC AIR DISTRIBUTION
02/25

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC. (AMCA)

AMCA 201	(2002; R 2011) Fans and Systems
AMCA 210	(2016) Laboratory Methods of Testing Fans for Aerodynamic Performance Rating
AMCA 300	(2014) Reverberant Room Method for Sound Testing of Fans
AMCA 301	(2014) Methods for Calculating Fan Sound Ratings from Laboratory Test Data
AMCA 500-D	(2018) Laboratory Methods of Testing Dampers for Rating

AMERICAN BEARING MANUFACTURERS ASSOCIATION (ABMA)

ABMA 9	(2015) Load Ratings and Fatigue Life for Ball Bearings
ABMA 11	(2014) Load Ratings and Fatigue Life for Roller Bearings

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ASHRAE 62.1	(2016) Ventilation for Acceptable Indoor Air Quality
ASHRAE 70	(2023) Method of Testing the Performance of Air Outlets and Inlets
ASHRAE 90.1 - IP	(2019) Energy Standard for Buildings Except Low-Rise Residential Buildings

ASTM INTERNATIONAL (ASTM)

ASTM A123/A123M	(2024) Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A240/A240M	(2024b) Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

ASTM A924/A924M	(2022a) Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM B117	(2019) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B766	(2023) Standard Specification for Electrodeposited Coatings of Cadmium
ASTM C553	(2024) Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
ASTM D520	(2000; R 2011) Zinc Dust Pigment
ASTM D1654	(2008; R 2016; E 2017) Standard Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D3359	(2017) Standard Test Methods for Rating Adhesion by Tape Test

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)

CDPH SECTION 01350	(2017; Version 1.2) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80	(2025; TIA 24-1) Standard for Fire Doors and Other Opening Protectives
NFPA 90A	(2024) Standard for the Installation of Air Conditioning and Ventilating Systems
NFPA 701	(2023; ERTA 1 2023) Standard Methods of Fire Tests for Flame Propagation of Textiles and Films

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)

SMACNA 1966	(2020) HVAC Duct Construction Standards Metal and Flexible, 4th Edition

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

SCAQMD Rule 1168	(2022) Adhesive and Sealant Applications

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 82	Protection of Stratospheric Ozone

UL SOLUTIONS (UL)

UL 6	(2022) UL Standard for Safety Electrical Rigid Metal Conduit-Steel
UL 181	(2013; Reprint Dec 2021) UL Standard for Safety Factory-Made Air Ducts and Air Connectors
UL 705	(2017; Reprint Sep 2024) UL Standard for Safety Power Ventilators
UL Bld Mat Dir	(updated continuously online) Building Materials Directory

1.2 SYSTEM DESCRIPTION

Furnish ductwork, piping offsets, fittings, and accessories as required to provide a complete installation. Coordinate the work of the different trades to avoid interference between piping, equipment, structural, and electrical work. Provide complete, in place, all necessary offsets in piping and ductwork, and all fittings, and other components, required to install the work as indicated and specified.

1.2.1 Mechanical Equipment Identification

The number of charts and diagrams must be equal to or greater than the number of mechanical equipment rooms. Where more than one chart or diagram per space is required, mount these in edge pivoted, swinging leaf, extruded aluminum frame holders which open to 170 degrees.

1.2.1.1 Charts

Provide chart listing of equipment by designation numbers and capacities such as flow rates, pressure and temperature differences, heating and cooling capacities, horsepower, pipe sizes, and voltage and current characteristics.

1.2.2 Service Labeling

1.2.2.1 Equipment Labeling

Label equipment as indicated below with labels made of self-sticking, plastic film designed for permanent installation. Provide labels in accordance with the typical examples below:

SERVICE	LABEL AND TAG DESIGNATION
Exhaust Fan Number	EF - _____

1.2.2.2 Pipe Labeling

Identify similar services with different temperatures or pressures. Where pressures could exceed 125 pounds per square inch, gage, include the maximum system pressure in the label. Color coding of all piping systems must be in accordance with MIL-STD-101. Label and arrow piping in accordance with the following:

a. Each point of entry and exit of pipe passing through walls.

b. Each change in direction, i.e., elbows, tees.

c. In congested or hidden areas and at all access panels at each point required to clarify service or indicated hazard.

d. In long straight runs, locate labels at distances within eyesight of each other not to exceed 75 feet. All labels must be visible and legible from the primary service and operating area.

e.

For Bare or Insulated Pipes	
for Outside Diameters of	Lettering
1/2 thru 1-3/8 inch	1/2 inch
1-1/2 thru 2-3/8 inch	3/4 inch
2-1/2 inch and larger	1-1/4 inch

1.2.2.3 Ductwork Labeling

Label ductwork with 2 inch lettering indicating the type of ductwork, associated air handling device and arrow indiccating direction of airflow. Coordinate ductwork labeling with any duct insulation and painting requirements to assure labeling is visible on final installation. Duct labels are to be black text on white background, produced by either paint/stenciling or made of self-sticking, plastic film designed for permanent installation. Locations of ductwork labels are to be in accordance with the following:

a. Each point of entry and exit of ductwork passing through walls.

b. In congested or hidden areas and at all access panels at each point required to clarify service.

c. In long straight runs, locate labels at distances within eyesight of each other not to exceed 75 feet.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Detail Drawings; G

SD-03 Product Data

Metallic Flexible Duct

Duct Access Doors; G

Manual Balancing Dampers; G

Gravity Backdraft and Relief Dampers; G

Diffusers; G

Registers and Grilles; G

Louvers; G

In-Line Centrifugal Fans; G

Test Procedures

Indoor Air Quality for Duct Sealants; S

SD-06 Test Reports

Performance Tests; G

Damper Acceptance Test; G

SD-07 Certificates

Ozone Depleting Substances Technician Certification

SD-08 Manufacturer's Instructions

Manufacturer's Installation Instructions

Operation and Maintenance Training

SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals; G

Manual Balancing Dampers; G

In-Line Centrifugal Fans; G

SD-11 Closeout Submittals

Indoor Air Quality During Construction; S

1.4 QUALITY ASSURANCE

Except as otherwise specified, approval of materials and equipment is based on manufacturer's published data.

a. Where materials and equipment are specified to conform to the standards of the Underwriters Laboratories, the label of or listing with reexamination in UL Bld Mat Dir, and UL 6 is acceptable as sufficient evidence that the items conform to Underwriters Laboratories requirements. In lieu of such label or listing, submit a written certificate from any nationally recognized testing agency, adequately equipped and competent to perform such services, stating that the items have been tested and that the units conform to the specified requirements. Outline methods of testing used by the specified agencies.

b. Where materials or equipment are specified to be constructed or tested, or both, in accordance with the standards of the ASTM

International (ASTM), the ASME International (ASME), or other standards, a manufacturer's certificate of compliance of each item is acceptable as proof of compliance.

c. Conformance to such agency requirements does not relieve the item from compliance with other requirements of these specifications.

d. Where products are specified to meet or exceed the specified energy efficiency requirement of FEMP-designated or ENERGY STAR covered product categories, equipment selected must have as a minimum the efficiency rating identified under "Energy-Efficient Products" at http://femp.energy.gov/procurement.

1.4.1 Prevention of Corrosion

Protect metallic materials against corrosion. Provide rust-inhibiting treatment and standard finish for the equipment enclosures. Do not use aluminum in contact with earth, and where connected to dissimilar metal. Protect aluminum by approved fittings, barrier material, or treatment. Provide hot-dip galvanized ferrous parts such as anchors, bolts, braces, boxes, bodies, clamps, fittings, guards, nuts, pins, rods, shims, thimbles, washers, and miscellaneous parts not of corrosion-resistant steel or nonferrous materials in accordance with ASTM A123/A123M for exterior locations and cadmium-plated in conformance with ASTM B766 for interior locations.

1.4.2 Asbestos Prohibition

Do not use asbestos and asbestos-containing products.

1.4.3 Ozone Depleting Substances Technician Certification

All technicians working on equipment that contain ozone depleting refrigerants must be certified as a Section 608 Technician to meet requirements in 40 CFR 82, Subpart F. Provide copies of technician certifications to the Contracting Officer at least 14 calendar days prior to work on any equipment containing these refrigerants.

1.4.4 Detail Drawings

Submit detail drawings showing equipment layout, including assembly and installation details and electrical connection diagrams; ductwork layout showing the location of all supports and hangers, typical hanger details, gauge reinforcement, reinforcement spacing rigidity classification, and static pressure and seal classifications. Include any information required to demonstrate that the system has been coordinated and functions properly as a unit on the drawings and show equipment relationship to other parts of the work, including clearances required for operation and maintenance. Submit drawings showing bolt-setting information, and foundation bolts prior to concrete foundation construction for all equipment indicated or required to have concrete foundations. Submit function designation of the equipment and any other requirements specified throughout this Section with the shop drawings.

1.4.5 Test Procedures

Conduct performance tests as required in Section 23 05 93 Testing, Adjusting and Balancing for HVAC.

1.5 DELIVERY, STORAGE, AND HANDLING

Protect stored equipment at the jobsite from the weather, humidity and temperature variations, dirt and dust, or other contaminants. Additionally, cap or plug all pipes until installed.

PART 2 PRODUCTS

2.1 STANDARD PRODUCTS

Provide components and equipment that are "standard products" of a manufacturer regularly engaged in the manufacturing of products that are of a similar material, design and workmanship. "Standard products" is defined as being in satisfactory commercial or industrial use for 2 years before bid opening, including applications of components and equipment under similar circumstances and of similar size, satisfactorily completed by a product that is sold on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record are acceptable if a certified record of satisfactory field operation, for not less than 6000 hours exclusive of the manufacturer's factory tests, can be shown. Provide equipment items that are supported by a service organization. In product categories covered by ENERGY STAR or the Federal Energy Management Program, provide equipment that is listed on the ENERGY STAR Qualified Products List or that meets or exceeds the FEMP-designated Efficiency Requirements.

2.2 IDENTIFICATION PLATES

In addition to standard manufacturer's identification plates, provide engraved laminated phenolic identification plates for each piece of mechanical equipment. Identification plates are to designate the function of the equipment. Submit designation with the shop drawings. Provide identification plates that are layers, black-white-black, engraved to show white letters on black background. Letters must be upper case. Identification plates that are 1-1/2-inches high and smaller must be 1/16-inch thick, with engraved lettering 1/8-inch high; identification plates larger than 1-1/2-inches high must be 1/8-inch thick, with engraved lettering of suitable height. Identification plates 1-1/2-inches high and larger must have beveled edges. Install identification plates using a compatible adhesive.

2.3 EQUIPMENT GUARDS AND ACCESS

Fully enclose or guard belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts exposed to personnel contact according to OSHA requirements. Properly guard or cover with insulation of a type specified, high temperature equipment and piping exposed to contact by personnel or where it creates a potential fire hazard.

2.4 ELECTRICAL WORK

a. Provide motors, controllers, integral disconnects, contactors, and controls with their respective pieces of equipment, except controllers indicated as part of motor control centers. Provide electrical equipment, including motors and wiring, as specified in Section 26 20 00INTERIOR DISTRIBUTION SYSTEM. Provide manual or automatic control and protective or signal devices required for the operation specified and control wiring required for controls and devices

specified, but not shown. For packaged equipment, include manufacturer provided controllers with the required monitors and timed restart.

2.4.1 Electronically Commutated Motors

Provide ECM Motors of a sufficient size for the duty to be performed while not exceeding the full-load rating when the driven equipment is operating at specified capacity under the most severe loading conditions.

2.4.1.1 Design Requirements

a. Provide Electronically Commutated Motors (ECM) designed as a DC brushless motor for variable speed or constant speed motor control. ECM design must allow for factory setting of the unit's fan flow. ECM must maintain respective constant fan speed at all set points regardless of external pressures that are within design ranges. Motor must be permanently lubricated with ball bearings with an L-10 rated life of not less than standards in accordance with ABMA 9 or ABMA 11.

b. ECM will be complete with and be operated by a single-phase or three-phase integrated controller/inverter. AC power will be rectified, filtered and then converted to DC power. This will ensure variable speed operation at DC power.

c. ECM controller must be capable of accepting a 0-10VDC or a 4-20mA signal for manual/automatic control.

d. Ensure efficiency is a minimum of 70 percent over the motors entire operating range.

2.4.1.2 Electrically Driven Equipment

When electrically driven equipment differs from that indicated, make adjustments to the motor size, wiring and conduit systems, disconnect devices, and circuit protection to accommodate the equipment installed, at no additional cost to the Government. Provide control and protective devices in accordance with NFPA 70 requirements.

2.4.1.3 Voltage Ratings

Provide at a minimum, motors with the following voltage ratings:

MOTOR SIZE		FED FROM POWER SOURCE	MOTOR VOLTAGE RATING
MOTOR TYPE	HORSE POWER		
Fractional horsepower, single-phase	3/4 and smaller	120/208-volt, 120/240-volt, 480/277-volt, 3-phase, 4-wire	115-volt, 200-volt, 230-volt, 277-volt 1-phase 50/60-hertz

MOTOR SIZE		FED FROM POWER SOURCE	MOTOR VOLTAGE RATING
MOTOR TYPE	HORSE POWER		
Integer horsepower, single-phase	1	120/208-volt, 120/240-volt, 277/480-volt, 3-phase, 4-wire	115-volt, 200-volt, 230-volt, 277-volt 1-phase 50/60-hertz
Integer horsepower, single-phase	2 and 3	120/208-volt, 120/240-volt, 3-phase, 4-wire	200-volt, 230-volt, 1-phase 50/60-hertz
Integer horsepower, three-phase	1 thru 5	120/208-volt, 120/240-volt, 277/480-volt, 3-phase, 4-wire	200-volt, 230-volt, 460-volt, 3-phase 50/60-hertz
Integer horsepower, three-phase	7.5 and above	277/480-volt, 3-phase, 4-wire	460-volt, 3-phase 50/60-hertz

2.4.1.4 Temperature Rating and Insulation

Provide motors designed for continuous operation at the rated full load in an ambient temperature of 40 degrees C, 104 degrees F, with an insulation level of at least Class B.

2.4.1.5 Motor Enclosures

2.4.1.5.1 Indoor Type Enclosures

a. For motors installed in indoor, clean, dry, non-hazardous locations, provide the following: Open-type drip-proof enclosures.

b. For motors installed in indoor, wet, non-hazardous locations, provide the following: Open splash-proof enclosures.

c. For motors installed in indoor, non-hazardous locations where it is necessary to protect the motor from dirt, moisture, chemical fumes, or other harmful ingredients in the surrounding atmosphere, provide either of the following type of enclosure: Totally enclosed fan-cooled enclosures for exterior cooling by means of a fan or fans integral with the machine.

2.5 ANCHOR BOLTS

Provide anchor bolts for equipment placed on concrete equipment pads or on concrete slabs. Bolts to be of the size and number recommended by the equipment manufacturer and located by means of suitable templates. Installation of anchor bolts must not degrade the surrounding concrete.

2.6 PAINTING

Paint equipment units in accordance with approved equipment manufacturer's standards unless specified otherwise. Field retouch only if approved.

Otherwise, return equipment to the factory for refinishing.

2.7 FACTORY PAINTING

Factory paint new equipment, which are not of galvanized construction. Paint with a corrosion resisting paint finish according to ASTM A123/A123M or ASTM A924/A924M. Clean, phosphatize and coat internal and external ferrous metal surfaces with a paint finish which has been tested according to ASTM B117, ASTM D1654, and ASTM D3359. Submit evidence of satisfactory paint performance for a minimum of 125 hours for units to be installed indoors and 500 hours for units to be installed outdoors. Provide rating of failure at the scribe mark that is not less than 6, average creepage not greater than 1/8 inch. Provide rating of the inscribed area that is not less than 10, no failure. On units constructed of galvanized steel that have been welded, provide a final shop docket of zinc-rich protective paint on exterior surfaces of welds or welds that have burned through from the interior according to ASTM D520 Type I.

Field paint factory painting that has been damaged prior to acceptance by the Contracting Officer in compliance with the requirements of paragraph FIELD PAINTING OF MECHANICAL EQUIPMENT.

2.8 INDOOR AIR QUALITY

Provide equipment and components that comply with the requirements of ASHRAE 62.1 unless more stringent requirements are specified herein.

2.9 DUCT SYSTEMS

2.9.1 Metal Ductwork

Provide metal ductwork construction, including all fittings and components, that complies with SMACNA 1966, as supplemented and modified by this specification .

a. Construct ductwork meeting the requirements for the duct system static pressure as indicated on the Ductwork Construction and Leakage Testing Table provided on the drawings.

b. Provide radius type elbows with a centerline radius of 1.5 times the width or diameter of the duct where space permits. Otherwise, elbows having a minimum radius equal to the width or diameter of the duct or square elbows with factory fabricated turning vanes are allowed.

c. Provide branch duct supply take-offs and return connections to main ductwork using 45 degree branch connections or conical tap connections as indicated on the drawings.

d. Provide ductwork that meets the requirements of Seal Class A.

e. Provide sealants that conform to fire hazard classification specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS and are suitable for the range of air distribution and ambient temperatures to which it is exposed. Do not use pressure sensitive tape as a sealant. Provide duct sealant products that meet either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or Volatile Organic Compounds (VOC) content requirements of SCAQMD Rule 1168 (HVAC duct sealants are classified as "Other" within the SCAQMD Rule 1168

sealants table). The VOC emittance must be 420 g/l or less. Provide validation of indoor air quality for duct sealants.

f. Make spiral lock seam duct, and flat oval with duct sealant and lock with not less than 3 equally spaced drive screws or other approved methods indicated in SMACNA 1966. Apply the sealant to the exposed male part of the fitting collar so that the sealer is on the inside of the joint and fully protected by the metal of the duct fitting. Apply one brush coat of the sealant over the outside of the joint to at least 2 inch band width covering all screw heads and joint gap. Dents in the male portion of the slip fitting collar are not acceptable.
g. Fabricate outdoor air intake ducts and plenums with watertight soldered or brazed joints and seams. Slope bottom of outdoor air intake plenums final 3 feet of duct run connecting to louver at 1/2 inch per foot.

2.9.1.1 Metallic Flexible Duct

a. Provide duct that conforms to UL 181 and NFPA 90A with factory-applied insulation, vapor barrier, and end connections. Provide duct assembly that does not exceed 25 for flame spread and 50 for smoke developed. Provide ducts designed for working pressures of 2 inches water gauge positive pressure and 1.5 inches water gauge negative pressure. Provide flexible round duct length that does not exceed 5 feet. Secure connections by applying adhesive for 2 inches over rigid duct, apply flexible duct 2 inches over rigid duct, apply metal clamp, and provide minimum of three No. 8 sheet metal screws through clamp and rigid duct.

b. Inner duct core: Provide interlocking spiral or helically corrugated flexible core constructed of zinc-coated steel, aluminum, or stainless steel; or constructed of inner liner of continuous galvanized spring steel wire helix fused to continuous, fire-retardant, flexible vapor barrier film, inner duct core.

c. Insulation: Provide inner duct core that is insulated with mineral fiber blanket type flexible insulation, minimum of 1 inch thick. Provide insulation covered on exterior with manufacturer's standard fire retardant vapor barrier jacket for flexible round duct.

2.9.1.2 General Service Duct Connectors

Provide a flexible duct connector approximately 6 inches in width where sheet metal connections are made to fans or where ducts of dissimilar metals are connected. For round/oval ducts, secure the flexible material by stainless steel or zinc-coated, iron clinch-type draw bands. For rectangular ducts, install the flexible material locked to metal collars using normal duct construction methods. Provide a composite connector system that complies with NFPA 701 and is classified as "flame-retardant fabrics" in UL Bld Mat Dir.

2.9.1.3 Corrosion Resisting (Stainless) Steel Sheets

ASTM A240/A240M

2.9.2 Duct Access Doors

Provide hinged access doors conforming to SMACNA 1966 in ductwork and plenums where indicated and at all air flow measuring primaries, automatic

dampers, fire dampers, coils, thermostats, and other apparatus requiring service and inspection in the duct system. Provide access doors upstream and downstream of air flow measuring primaries and heating and cooling coils. Provide doors that are a minimum 15 by 18 inches, unless otherwise shown. Where duct size does not accommodate this size door, make the doors as large as practicable. Equip doors 24 by 24 inches or larger with fasteners operable from inside and outside the duct. Use insulated type doors in insulated ducts.

2.9.3 Manual Balancing Dampers

a. Furnish factory manufactured and assembled manual balancing dampers with accessible locking-type quadrant operators. Manufacturer must publish damper data sheets and dampers must be sold on the open market. Use chromium plated operators (with all exposed edges rounded) in finished portions of the building where ductwork is exposed.

b. Furnish stand-off mounting brackets, bases, or adapters, not less than the thickness of the insulation, to provide clearance between the duct surface and the operator. Stand-off mounting items are to be integral with the operator or standard accessory of the damper manufacturer. For duct widths greater than 30 inches, provide locking regulator at each end of the damper shaft.

c. Dampers installed in ductwork with an air velocity over 1500 feet per minute, or pressure class greater than 2 inches must be rated for the design velocity and pressure class indicated.

2.9.3.1 Single Blade Round Dampers

a. May be furnished up to 20 inches in diameter.

b. Provide a minimum 3/8 inch square continuous full length galvanized or plated steel axle shaft that supports the entire blade diameter and extends through the standoff bracket and quadrant operator. Firmly affix the axle shaft to the blade. Spring-loaded positioners are not permitted.

c. Must be factory fabricated in a frame with a minimum length of 6 inches made of galvanized steel with straightening ribs; minimum of 22 gage up to 8 inch diameter, and 20 gage above 8 inch diameter. Damper frames are to be mounted end to end with round duct. Supple the axle shaft on both ends with a pressed in elastomeric bearing/seal, for low infiltration/exfiltration air leakage.

d. Provide galvanized steel damper blade; minimum of 22 gage up to 8 inch diameter, and 20 gage above 8 inch diameter.

2.9.3.2 Single Blade Rectangular Dampers

a. May be furnished up to 12 inches in height for rectangular ducts.

b. Provide square galvanized or plated steel axle shaft(s) that support the blade at both ends and extends through the standoff bracket and quadrant operator; minimum 3/8 inch up to 19 inch blade length, and 1/2 inch over 19 inch blade length. Firmly affix the axle shaft(s) to the blade. Spring-loaded positioners are not permitted. Provide, at the duct wall shaft penetration, an elastomeric seal for low infiltration/exfiltration air leakage.

c. Must be factory fabricated in a frame with a minimum length 3 inches made of galvanized steel; minimum of 24 gage up to 19 inch blade length, and 22 gage over 19 inch blade length. Damper frames are to be mounted inside the duct. Support axle shaft on both ends with a bearing in the frame.

d. Provide damper blades made of galvanized steel with roll formed or broke stiffener(s); minimum of 20 gage up to 19 inch blade length, and 18 gage over 19 inch blade length.

2.9.3.3 Multi-blade Rectangular Dampers

a. Furnish for round ducts larger than 20 inch and rectangular duct greater than 12 inches in height, except flanged duct system. Furnish square to round transitions for application in round duct.

b. Provide 1/2 inch galvanized or plated steel axle shafts that support each blade at both ends. Extend the operator shaft through the standoff bracket and quadrant operator. An elastomeric seal for low infiltration/exfiltration air leakage must be at the duct wall shaft penetration.

c. Must be factory fabricated in a frame with a minimum length of 5 inches made of minimum 16 gage galvanized steel. Damper frames are to be mounted inside the duct. Support axle shafts on both end with a bearing in the frame. Blade linkage must be galvanized or plated steel and concealed in the frame, out of the air stream.

d. Provide opposed blades made of galvanized steel with roll formed or broke stiffeners(s); minimum of 16 gage.

2.9.3.4 Rectangular Dampers for Flanged Duct

a. Provide for flanged duct systems.

b. Must be multi-blade rectangular.

c. Provide 1/2 inch galvanized or plated steel axle shafts that support each blade at both ends. Extend the operator shaft through the standoff bracket and quadrant operator.

d. Must be factory fabricated in a frame with a minimum length of 3 inches made galvanized steel with a thickness to match the duct and at least 16 gage, or 20 gage with additional reinforcing such as a C channel. Mount damper frames end to end with the duct. Support axle shafts on both ends with a pressed in elastomeric bearing/seal for low infiltration/exfiltration air leakage. Provide galvanized or plated steel blade linkage, concealed in a frame, out of the air stream.

e. Provide opposed blades made of galvanized steel with roll formed or broker stiffeners(s); minimum of 16 gage.

2.9.4 Air Supply And Exhaust Air Dampers

Provide outdoor air supply and exhaust air dampers that have a maximum leakage rate when tested in accordance with AMCA 500-D as required by ASHRAE 90.1 - IP, including maximum Damper Leakage for:

a. Climate Zones 1,2,6,7,8 the maximum damper leakage at 1.0 inch w.g. for motorized dampers is 4 cfm per square foot of damper area and non-motorized dampers are not allowed.

b. All other Climate Zones the maximum damper leakage at 1.0 inch w.g. is 10 cfm per square foot and for non-motorized dampers is 20 cfm per square foot of damper area.

Dampers smaller than 24 inches in either direction may have leakage of 40 cfm per square foot.

2.9.5 Gravity Backdraft and Relief Dampers

Provide gravity balanced backdraft dampers where indicated on plans or as required on equipment schedules. Backdraft dampers must be constructed for horizontal or vertical mounting as required for the application. Backdraft dampers must be testing and rated for the required application in accordance with AMCA 500-D.

Damper blades are to be equipped with vinyl blade seals mechanically locked into the blade edge.

Equip with adjustable counterbalancing weights to allow operation of the blades such that "start to open" occurs at 0.02 inch w.g. and the damper achieves fully open position at 12.5 pascals.

Where backdraft dampers are provided as an accessory option to a fan, such backdraft dampers must be installed meeting all manufacturer's recommendations. The installer must demonstrate that the damper closes once the fan ceases operation.

2.9.6 Diffusers, Registers, and Grilles

Provide factory-fabricated units of aluminum that distribute the specified quantity of air evenly over space intended without causing noticeable drafts, air movement faster than 50 fpm in occupied zone, or dead spots anywhere in the conditioned area. Provide outlets for diffusion, spread, throw, and noise level as required for specified performance. Certify performance according to ASHRAE 70. Provide sound rated and certified inlets and outlets according to ASHRAE 70. Provide units with sound ratings at design conditions not exceeding the ASHRAE Applications Handbook, Noise and Vibration Control Chapter - table "Design Guidelines for HVAC-Related Background Sound in Rooms" refer to drawing air device schedule for maximum permissible sound rating by device. Provide diffusers and registers with volume damper with accessible operator, unless otherwise indicated; or if standard with the manufacturer, an automatically controlled device is acceptable. Provide opposed blade type volume dampers for all diffusers and registers, except linear slot diffusers. Provide linear slot diffusers with round or elliptical balancing dampers. Where the inlet and outlet openings are located less than 7 feet above the floor, protect them by a grille or screen according to NFPA 90A.

2.9.6.1 Diffusers

Provide diffuser types indicated. Furnish ceiling mounted units with anti-smudge devices, unless the diffuser unit minimizes ceiling smudging through design features. Provide diffusers with air deflectors of the type indicated. Install ceiling mounted units with rims tight against

ceiling. Provide sponge rubber gaskets between ceiling and surface mounted diffusers for air leakage control. Provide suitable trim for flush mounted diffusers. For connecting the duct to diffuser, provide duct collar that is airtight and does not interfere with volume controller. Provide return or exhaust units that are similar to supply diffusers.

2.9.6.2 Registers and Grilles

Provide registers and grilles of the types indicated on the drawings. Furnish registers with sponge-rubber gasket between flanges and wall or ceiling. Install wall supply registers at least 6 inches below the ceiling unless otherwise indicated. Locate return and exhaust registers 6 inches above the floor unless otherwise indicated. Provide grilles as specified for registers, without volume control damper.

2.9.7 Louvers

Provide louvers for installation in exterior walls that are associated with the air supply and distribution system as indicated.

2.10 AIR SYSTEMS EQUIPMENT

2.10.1 Fans

Test and rate fans according to AMCA 210. Calculate system effect on air moving devices in accordance with AMCA 201 where installed ductwork differs from that indicated on drawings. Install air moving devices to minimize fan system effect. Where system effect is unavoidable, determine the most effective way to accommodate the inefficiencies caused by system effect on the installed air moving device. The sound power level of the fans must not exceed 85 dBA when tested according to AMCA 300 and rated in accordance with AMCA 301. Provide all fans with an AMCA seal. Connect fans to the motors either directly or indirectly with V-belt drive. Provide fan and motor assemblies with vibration-isolation supports or mountings as required by ASHRAE Applications Handbook - Table "Selection Guide for Vibration Isolation. Use vibration-isolation units that are standard products with published loading ratings. Select each fan to produce the capacity required at the fan static pressure indicated. Provide units with sound ratings at design conditions that will not result in objectional background noise in accordance with the ASHRAE Applications Handbook, chapter Noise and Vibration Control, table "Design Guidelines for HVAC-Related Background Sound in Rooms" refer to drawing fan schedule for maximum permissible sound rating by device. Obtain the sound power level values according to AMCA 300. Provide power ventilators that conform to UL 705 and have a UL label.

2.10.1.1 In-Line Centrifugal Fans

Provide in-line fans with centrifugal backward inclined blades, stationary discharge conversion vanes, internal and external belt guards, and adjustable motor mounts. Mount fans in a welded tubular casing. Provide a fan that axially flows the air in and out. Streamline inlets with conversion vanes to eliminate turbulence and provide smooth discharge air flow. Enclose and isolate fan bearings and drive shafts from the air stream. Provide precision, self aligning ball or roller type fan bearings that are sealed against dust and dirt and are permanently lubricated. Provide L50 rated bearing life at not less than 200,000 hours as defined by ABMA 9 and ABMA 11. Provide motors with open enclosure. Provide manual

motor starters across-the-line with general-purpose enclosures.

2.11 SUPPLEMENTAL COMPONENTS/SERVICES

2.11.1 Refrigerant Piping

The requirements for refrigerant piping are specified in Section 23 23 00 REFRIGERANT PIPING.

2.11.2 Insulation

The requirements for shop and field applied insulation are specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

PART 3 EXECUTION

3.1 EXAMINATION

After becoming familiar with all details of the work, verify all dimensions in the field, and advise the Contracting Officer of any discrepancy before performing the work.

3.2 INSTALLATION

a. Install materials and equipment in accordance with the requirements of the contract drawings and approved manufacturer's installation instructions. Accomplish installation by workers skilled in this type of work. Perform installation so that there is no degradation of the designed fire ratings of walls, partitions, ceilings, and floors.

b. No installation is permitted to block or otherwise impede access to any existing machine or system. Install all hinged doors to swing open a minimum of 120 degrees. Provide an area in front of all access doors that clears a minimum of 3 feet. In front of all access doors to electrical circuits, clear the area the minimum distance to energized circuits as specified in OSHA Standards, part 1910.333 (Electrical-Safety Related work practices)and an additional 3 feet.

c. Except as otherwise indicated, install emergency switches and alarms in conspicuous locations. Mount all indicators, to include gauges, meters, and alarms in order to be easily visible by people in the area.

3.2.1 Condensate Drain Lines

Provide water seals in the condensate drain from all units. Provide a depth of each seal of 2 inches plus the number of inches, measured in water gauge, of the total static pressure rating of the unit to which the drain is connected. Provide water seals that are constructed of 2 tees and an appropriate U-bend with the open end of each tee plugged. Provide pipe cap or plug cleanouts where indicated. Connect drains indicated to connect to the sanitary waste system using an indirect waste fitting. Insulate air conditioner drain lines as specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

3.2.2 Equipment and Installation

Provide frames and supports for tanks, compressors, pumps, valves, air handling units, fans, coils, dampers, and other similar items requiring supports. Floor mount or ceiling hang air handling units as indicated.

Anchor and fasten as detailed. Set floor-mounted equipment on not less than 6 inch concrete pads or curbs doweled in place unless otherwise indicated assuring mounting height accommodates depth of condensate drain water seal (trap) where applicable. Make concrete foundations heavy enough to minimize the intensity of the vibrations transmitted to the piping, duct work and the surrounding structure, as recommended in writing by the equipment manufacturer. In lieu of a concrete pad foundation, build a concrete pedestal block with isolators placed between the pedestal block and the floor. Make the concrete foundation or concrete pedestal block a mass not less than three times the weight of the components to be supported. Provide the lines connected to the pump mounted on pedestal blocks with flexible connectors. Submit foundation drawings as specified in paragraph DETAIL DRAWINGS.

3.2.3 Access Panels

Install access panels for concealed valves, vents, controls, dampers, and items requiring inspection or maintenance of sufficient size, and locate them so that the concealed items are easily serviced and maintained or completely removed and replaced.

3.2.4 Flexible Duct

Install pre-insulated flexible duct in accordance with the latest printed instructions of the manufacturer to ensure a vapor tight joint. Provide hangers, when required to suspend the duct, of the type recommended by the duct manufacturer and set at the intervals recommended.

3.2.5 Metal Ductwork

Install according to SMACNA 1966 unless otherwise indicated. Install duct supports for sheet metal ductwork according to SMACNA 1966, unless otherwise specified. Do not use friction beam clamps indicated in SMACNA 1966. Anchor risers on high velocity ducts in the center of the vertical run to allow ends of riser to move due to thermal expansion. Erect supports on the risers that allow free vertical movement of the duct. Attach supports only to structural framing members and concrete slabs. Do not anchor supports to metal decking unless a means is provided and approved for preventing the anchor from puncturing the metal decking. Where supports are required between structural framing members, provide suitable intermediate metal framing. Where C-clamps are used, provide retainer clips.

3.2.6 Dust Control

To prevent the accumulation of dust, debris and foreign material during construction, perform temporary dust control protection. Protect the distribution system (supply and return) with temporary seal-offs at all inlets and outlets at the end of each day's work. Keep temporary protection in place until system is ready for startup.

3.2.7 Insulation

Provide thickness and application of insulation materials for ductwork, piping, and equipment according to Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS. Externally insulate outdoor air intake ducts and plenums up to the point where the outdoor air reaches the conditioning unit or up to the point where the outdoor air mixes with the return air stream.

3.2.8 Duct Test Holes

Provide holes with closures or threaded holes with plugs in ducts and plenums as indicated or where necessary for the use of pitot tube in balancing the air system. Plug insulated duct at the duct surface, patched over with insulation and then marked to indicate location of test hole if needed for future use.

3.2.9 Power Transmission Components Adjustment

Test V-belts and sheaves for proper alignment and tension prior to operation and after 72 hours of operation at final speed. Uniformly load belts on drive side to prevent bouncing. Make alignment of direct driven couplings to within 50 percent of manufacturer's maximum allowable range of misalignment.

3.3 EQUIPMENT PADS

Provide equipment pads to the dimensions shown or, if not shown, to conform to the shape of each piece of equipment served with a minimum 3-inch margin around the equipment and supports. Allow equipment bases and foundations, when constructed of concrete or grout, to cure a minimum of 28 calendar days before being loaded.

3.4 CUTTING AND PATCHING

Install work in such a manner and at such time that a minimum of cutting and patching of the building structure is required. Make holes in exposed locations, in or through existing floors, by drilling and smooth by sanding. Use of a jackhammer is permitted only where specifically approved. Make holes through masonry walls to accommodate sleeves with an iron pipe masonry core saw.

3.5 CLEANING

Thoroughly clean surfaces of piping and equipment that have become covered with dirt, plaster, or other material during handling and construction before such surfaces are prepared for final finish painting or are enclosed within the building structure. Before final acceptance, clean mechanical equipment, including piping, ducting, and fixtures, and free from dirt, grease, and finger marks. When the work area is in an occupied space such as office, laboratory or warehouse protect all furniture and equipment from dirt and debris. Incorporate housekeeping for field construction work which leaves all furniture and equipment in the affected area free of construction generated dust and debris; and, all floor surfaces vacuum-swept clean.

3.6 PENETRATIONS

Provide sleeves and prepared openings for duct mains, branches, and other penetrating items, and install during the construction of the surface to be penetrated. Cut sleeves flush with each surface. Place sleeves for round duct 15 inches and smaller. Build framed, prepared openings for round duct larger than 15 inches and square, rectangular or oval ducts. Sleeves and framed openings are also required where grilles, registers, and diffusers are installed at the openings. Provide one inch clearance between penetrating and penetrated surfaces except at grilles, registers, and diffusers. Pack spaces between sleeve or opening and duct or duct insulation with mineral fiber conforming with ASTM C553, Type 1, Class B-2.

3.6.1 Sleeves

Fabricate sleeves, except as otherwise specified or indicated, from 20 gauge thick mill galvanized sheet metal. Refer to design details on the drawings for sleeves in bearing walls or partitions.

3.6.2 Framed Prepared Openings

Fabricate framed prepared openings from 20 gauge galvanized steel, unless otherwise indicated.

3.6.3 Insulation

Provide duct insulation in accordance with Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS continuous through sleeves and prepared openings except firewall penetrations. Terminate duct insulation at fire dampers and flexible connections. For duct handling air at or below 60 degrees F, provide insulation continuous over the damper collar and retaining angle of fire dampers, which are exposed to unconditioned air.

3.6.4 Closure Collars

Provide closure collars of a minimum 4 inches wide, unless otherwise indicated, for exposed ducts and items on each side of penetrated surface, except where equipment is installed. Install collar tight against the surface and fit snugly around the duct or insulation. Grind sharp edges smooth to prevent damage to penetrating surface. Fabricate collars for round ducts 15 inches in diameter or less from 20 gauge galvanized steel. Fabricate collars for square and rectangular ducts, or round ducts with minimum dimension over 15 inches from 18 gauge galvanized steel. Fabricate collars for square and rectangular ducts with a maximum side of 15 inches or less from 20 gauge galvanized steel. Install collars with fasteners a maximum of 6 inches on center. Attach to collars a minimum of 4 fasteners where the opening is 12 inches in diameter or less, and a minimum of 8 fasteners where the opening is 20 inches in diameter or less.

3.7 IDENTIFICATION SYSTEMS

Provide identification tags made of brass, engraved laminated plastic, or engraved anodized aluminum, indicating service and item number on all valves and dampers. Provide tags that are 1-3/8 inch minimum diameter with stamped or engraved markings. Make indentations black for reading clarity. Attach tags to valves with No. 12 AWG 0.0808-inch diameter corrosion-resistant steel wire, copper wire, chrome-plated beaded chain or plastic straps designed for that purpose.

3.7.1 Identification of Hidden Utility Components

Provide labeling for equipment installed above the ceiling that requires periodic inspection or servicing. The labeling must be stick-on adhesive type with black lettering on white or clear background with lettering a minimum of 1/2" in height. For lay-in ceiling applications, locate stick-on on ceiling grid T-Bars closest to equipment such that recommended ceiling tile to be removed for servicing/access is direction above the label. For equipment located above hard ceilings, labeling is to be provided on the provided access door. The operable equipment requiring identification include, valves, dampers, and fans.

3.8 DUCTWORK LEAK TESTS

The requirements for ductwork leak tests are specified in Section 23 05 93 TESTING, ADJUSTING AND BALANCING FOR HVAC.

3.9 DAMPER ACCEPTANCE TEST

Submit the proposed schedule, at least 2 weeks prior to the start of test. Perform the damper acceptance test in accordance with NFPA 80. Operate all fire dampers and smoke dampers with the air handling and distribution system operating at maximum air flow conditions, prior to the occupancy of the building to verify that they function properly. Test each fire damper with a fusible link by manually releasing the damper. Visually inspect the mechanism. Reset all fire dampers after acceptance testing.

3.10 TESTING, ADJUSTING, AND BALANCING

The requirements for testing, adjusting, and balancing are specified in Section 23 05 93 TESTING, ADJUSTING AND BALANCING FOR HVAC. Begin testing, adjusting, and balancing only when the air supply and distribution, including controls, has been completed, with the exception of performance tests.

3.11 PERFORMANCE TESTS

Conduct performance tests as required in Section 23 05 93 Testing, Adjusting and Balancing for HVAC.

3.12 CLEANING AND ADJUSTING

Inside of room fan-coil units and air terminal units devices thoroughly clean ducts, plenums, and casing of debris and blow free of small particles of rubbish and dust and then vacuum clean before installing outlet faces. Wipe equipment clean, with no traces of oil, dust, dirt, or paint spots. Temporary filters must be provided and used when any air distribution system is in operation during construction. Provide new filters after all construction dirt has been removed from the building, and the ducts, plenums, casings, and other items specified have been vacuum cleaned. Perform and document that proper "Indoor Air Quality During Construction" procedures have been followed; provide documentation showing that after construction ends, and prior to occupancy, new filters were provided and installed. Maintain system in this clean condition until final acceptance. Properly lubricate bearings with oil or grease as recommended by the manufacturer. Tighten belts to proper tension. Adjust control valves and other miscellaneous equipment requiring adjustment to setting indicated or directed. Adjust fans to the speed indicated by the manufacturer to meet specified conditions. Maintain all equipment installed under the contract until close out documentation is received, the project is completed and the building has been documented as beneficially occupied.

3.13 OPERATION AND MAINTENANCE

3.13.1 Operation and Maintenance Manuals

Submit six manuals at least 2 weeks prior to field training. Submit data complying with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA. Submit Data Package 3 for the items/units listed

under SD-10 Operation and Maintenance Data

3.13.2 Operation And Maintenance Training

Conduct a training course for the members of the operating staff as designated by the Contracting Officer. Make the training period consist of a total of 8 hours of normal working time and start it after all work specified herein is functionally completed and the Performance Tests have been approved. Conduct field instruction that covers all of the items contained in the Operation and Maintenance Manuals as well as demonstrations of routine maintenance operations. Submit the proposed On-site Training schedule concurrently with the Operation and Maintenance Manuals and at least 14 days prior to conducting the training course.

-- End of Section --

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SECTION 260511 - ELECTRICAL GENERAL

PART 1 – GENERAL

1.1 GENERAL

A. All work shall conform to the latest editions of the National Electrical Code (NEC) [National Fire Protection Association (NFPA) 70], the Standard for Electrical Safety in the Workplace (NFPA 70E), the Life-Safety Code (NFPA 101), the International Building Code, the Americans with Disabilities Act, and all other applicable federal, state, and local codes and regulations.

B. All work shall be performed in strict compliance with NFPA 70E. Submission of bid shall stand as an agreement by the Contractor to indemnify and hold harmless the Engineer and Owner from all liability related to damage and/or injury to personnel and equipment during the installation of the project.

C. The contract documents are schematic in nature and are intended to convey the intent of the electrical work to be performed on this project. Provide all material, labor, equipment, etc., necessary to provide complete and operable electrical systems.

D. The General Conditions, Supplementary Conditions, General Requirements, Information to Bidders, and all other parts of this set of Contract Documents are hereby adopted and are applicable to the Electrical Contractor.

E. If we are required to make additional site visits due to the Contractor not meeting the project schedule, additional engineering fees will be invoiced to the Owner (via the Architect if applicable) at our standard hourly rates, along with expenses. The Owner will reduce his payments to the Contractor accordingly.

1.2 SCOPE OF WORK

A. Visit site prior to bid. Devise a plan for installation of complete and operable electrical systems meeting the requirements and intent of the Contract Documents. Submission of Bid stands as evidence that the Contractor accepts the Contract Documents as sufficient and complete for the work to be performed. Notify the engineer at least two weeks prior to bid of any discrepancies between the Contract Documents and actual field conditions. No change orders will be granted due to existing conditions that could have been observed during a site visit.

B. Provide temporary power and lighting during construction. Coordinate with the General Contractor for the exact requirements.

C. Electrical switchgear and panelboard layouts are based on sizes of Square D equipment. Equipment manufactured by General Electric, Siemens, and Cutler Hammer are equally acceptable. However, the Electrical Contractor is responsible for selecting and furnishing gear that will fit in the spaces provided and shall be responsible for arranging the gear to meet the required code clearances. Regardless of the manufacturer, the Electrical Contractor shall provide a drawn-to-scale electrical layout with the equipment brochures for all rooms in which panelboards, motor control centers, switchboards, or switchgear are placed. The drawings shall include the work of all other trades including mechanical system piping, ductwork, sprinkler piping, etc. No conduits shall be installed until layouts have been approved.

D. Locate junction boxes, pull boxes, disconnects, and other equipment requiring access in such a manner that they are accessible at the end of construction. Notify the Architect where it is impossible to plan conduit routing or equipment placement in such a manner, and provide the necessary access panels in

the ceiling or wall as required. The access panel type and style shall be subject to the Architect's approval. Employ a painter to provide the appropriate coatings as directed by the Architect.

E. Relocate, or recircuit, all electrical equipment, conduit, and circuitry conflicting with or obstructing work on this project. Where the electrical systems are owned by other entities, pay them to relocate, or recircuit, their facilities.

F. Arrange for connection of service to all electrical systems by the appropriate utility company. Coordinate completely with all utility company requirements even if they are different than the contract documents. If utility company requirements are different from the contract documents, notify the engineer at least ten days prior to bid. Pay all utility company charges necessary for installation and connection of service. If the cost of the service is unavailable at the time of bid, submit a letter to the General Contractor, signed by the appropriate utility company official, stating that the cost has not been determined. The General Contractor shall submit this letter with his bid. The cost will then become the Owner's responsibility.

G. Provide all necessary equipment, raceway, circuitry, fittings, lugs, terminations, labor, etc. and connect to all equipment and appliances requiring electrical connections furnished herein, by the Owner, or by other Contractors. Prior to ordering electrical equipment and roughing in for equipment furnished herein, by the Owner, or by other Contractors, verify all connection types, connection locations, connection heights, voltages, number of phases, conductor sizes, disconnecting means, breaker sizes, etc. Furnish the proper electrical equipment for the equipment actually being supplied.

1.2 SCHEDULING OUTAGES

The Contractor is responsible for scheduling any required power, communications, fire alarm system, etc., outages to existing facilities with the Owner and/or other affected parties. The Contractor shall take steps as necessary to minimize the period of these outages including, but not limited to the following:

- Working multiple shifts as required;
- Increasing manpower as required;
- Providing temporary power and/or connections as required.

The cost of all such work, including premium work hours such as weekends and holidays, shall be included in the Contractor's bid price.

1.4 SUBMITTALS AND SHOP DRAWINGS

A. Within 30 days after award of Contract and prior to beginning work, provide six bound copies of manufacturers' cut sheets containing information concerning each article of electrical equipment to be furnished on this project. These cut sheets shall contain sufficient information to prove compliance with the contract documents. Information addressing the requirements of the contract documents shall be highlighted. Each bound set shall bear the stamp of the Electrical Contractor as well as the General Contractor.

B. Within 30 days after award of Contract and prior to beginning work, provide six sets of full-size shop drawings showing exact equipment locations with all equipment drawn to scale. Show all raceways with their junction boxes and pull boxes. Show all connection types, locations, and heights to equipment. Provide mounting and support details for all raceways and equipment. Coordinate with all other trades to ensure that there are no conflicts between systems. Each set of shop drawings shall bear the stamp of the Electrical Contractor, the General Contractor, and all Project Sub-Contractors. Failure to submit these Shop Drawings will render the Electrical Contractor responsible for resolving all conflicts between trades at his own expense.

C. Submittals and Shop Drawings are reviewed to determine quality of materials. Approval of submittals and shop drawings does not relieve the Contractor of meeting the requirements and intent of the Contract Documents.

D. Outlet, light fixture, and device locations are shown in their approximate locations on the drawings. Coordinate with Architectural drawings to get final locations. Mount all electrical outlets shown at counters such that the bottom of the box is two inches above the backsplash or six inches above a counter with no backsplash. The Owner reserves the right to relocate outlets, light fixtures, and devices a distance not to exceed twenty feet prior to the installation of outlet boxes.

E. If we are required to reject submittals twice, our additional reviews will be invoiced to the Owner (via the Architect if applicable) at our standard hourly rates. The Owner will reduce his payments to the Contractor accordingly.

PART 2 - PRODUCTS

2.1 All electrical equipment and materials shall be new. All equipment and materials shall be stored on the job site in weatherproof enclosures. Electronic equipment shall be stored in facilities where the temperature and humidity are controlled. In addition, comply completely with all manufacturers' requirements for storage and handling.

2.2 All equipment shall be UL listed for the application in which it is used and shall be labeled as evidence of its UL listing.

2.3 All products of similar type shall be of the same manufacturer.

2.4 Each branch circuit and multiwire branch circuit shall be run with its own neutral conductor complying with NEC article 200.4.

PART 3 – EXECUTION

3.1 WORKMANSHIP

All work shall be performed with an emphasis on neatness. The Engineer, Architect, and Owner retain the right to reject work that is, in their judgment, unsatisfactory.

3.2 EXPERIENCE

The Contractor shall have completed at least two jobs of similar size and scope within the past five years. The Engineer reserves the right to reject Contractors based on their inability to submit evidence of their experience, or based on experience with the Contractor on previous projects.

3.3 PERMITS

Obtain and pay for all permits required for work.

3.4 FIREPROOFING

A. Fireproof all penetrations through firewalls with a fireproofing compound listed to maintain the rating of the wall through which the raceway passes.

B. The firestopping caulk shall be a one-part, intumescent, latex elastomer. The caulk shall be capable of expanding a minimum of 3 times at 1000°F. The material shall be thixotropic and be applicable to overhead, vertical and horizontal firestops. The caulk shall be listed by independent test agencies such as UL or FM and be tested to, and pass the criteria of, ASTM E 814 Fire Test, tested under positive pressure. It shall comply with the requirements of the NEC (NFPA-70), BOCA, ICBO, SBCCI and NFPA

Code 101. Firestopping caulk shall be paintable, but shall be non-hardening. Firestopping caulk shall be 3M Firebarrier CP or approved equal.

C. The fireproofing materials shall be installed by individuals certified to perform such work. Submit evidence of personnel certifications with electrical equipment brochures.

D. Where cable trays are shown crossing firewalls, terminate the cable tray on each side of the wall and run the conductors through conduits installed in the wall. Fireproof around the conductors after installation.

E. Provide mineral wool packing and all other materials recommended by the manufacturer for a complete installation.

3.5 FLASHING

Provide all necessary equipment and flash all roof penetrations in such a manner to ensure that all penetrations are completely sealed and all roof warranties remain in effect. Where there are no roof warranties, the Electrical Contractor shall guarantee the electrical penetrations against leaking for a period of one year from project completion. Employ a professional roofing contractor to perform all flashing.

3.6 PROTECTION

A. Keep energized equipment covered during all phases of construction. Use enclosures, doors, covers, etc., to ensure that neither personnel nor machinery contact live electrical equipment.

B. Replace electrical equipment that is damaged during construction.

3.7 DAMAGED FACILITIES

Locate all existing site equipment and utilities prior to beginning construction. Repair all equipment and utilities damaged during construction, or pay for the repair of the equipment and utilities where required by the Owner of the damaged facilities.

3.8 EXCAVATION AND BACKFILL

A. Excavate in such a manner as to minimize erosion of the soil. Backfill trenches around conduits with fine sand that is free of rocks, clods, and debris. Fill sand a minimum of 4” over conduits. Backfill the rest of the trench in six inch increments, wetted, and tamped. Final compaction shall be a minimum of 95% of that of the adjacent earth. Resurface the grade with the same material as that excavated from the grade whether it be paving, concrete, sod, etc. Repair work shall be comparable to the quality of the original site prior to excavation.

B. Provide a 3” wide plastic labeled marker tape 12” below grade over all electrical conduits buried underground. Tapes for power circuits shall have a warning such as “Caution: Buried Electrical Line Below.” Labels on tapes for telephone, data, cable television, and other facilities shall adequately describe the line over which they are buried.

C. Provide a #12 AWG tracer wire in each buried conduit run labeled accordingly on each end.

3.9 IDENTIFICATION

A. Label all switchboards, panelboards, motor starters, disconnects, and motor control centers furnished under Division 26 and other divisions of this contract with engraved rigid plastic nameplates having letters at least ¼ inch high. Nameplates shall be bolted to the enclosure. All labels shall indicate the

voltage, number of phases, the AIC rating, and the panelboard and circuit number from which the device is fed.

B. All circuit breakers in Switchboards, Motor Control Centers, Square D I-Line, and similar panelboards shall be labeled with plastic nameplates (as described in Part A) providing the name of the load served and the ampacity and number of poles of the breaker.

C. All Square D NQOD, NF and similar panelboards shall have typewritten circuit directories.

D. Label all conductors at all junction boxes, pull boxes, and terminations with typewritten adhesive markers indicating the panelboard or switchboard name and circuit number of the conductor. Labels shall be Brady Datatab or approved equal.

E. Label all junction boxes and pull boxes with stenciled painted letters containing the name of the panelboard and circuit numbers of the circuits contained within. Use black paint for normal circuits, red paint for emergency circuits, and orange paint for fire alarm circuits. The Contractor may select other colors for junction boxes and pull boxes for auxiliary systems.

F. Label all conduits in the most likely direction of access and view every 50’ and on both ends of each bend with stenciled painted letters containing the name of the panelboard and circuit numbers of the circuits contained within. Use black paint for normal circuits, red paint for emergency circuits, and orange paint for fire alarm circuits. The Contractor may select other colors for conduits for auxiliary systems.

3.10 AS-BUILT DRAWINGS

Maintain one set of drawings during construction for as-built markings. Mark these drawings in red to indicate field changes. Provide these drawings to the Engineer at the end of the construction process. Where required under the General Conditions, Special Conditions, or other portions of this contract, provide revised computer drawn as-built drawings to the Engineer at the end of construction.

3.11 TESTING

A. Test all systems, or pay testing agencies as required, for compliance with the requirements of all regulatory agencies.

B. Test the electrical power service ground using a Biddle Three-Terminal Ground Resistance Tester, or approved equal. Grounds shall meet the requirements of the NEC, or of Specification 26 05 26, whichever is more stringent. Test grounds only when the earth is dry. Provide additional ground rods as necessary to achieve the required results.

C. Prior to making final equipment connections, test all service, feeder, and branch circuit conductors for continuity, phase-to-phase faults, and phase-to-ground faults using a Megger BM100 or approved equal test instrument generating 500 Vdc. Insulation resistance shall be a minimum of 500,000 Ohms between any conductor and ground and 1,000,000 Ohms between any two conductors.

D. Test other systems as required in their respective specifications.

E. Provide three bound copies of all test results to the Engineer at the end of the construction process. No Recommendation of Substantial Completion will be granted until all testing reports have been submitted.

3.12 WARRANTY

Provide the Owner a written guarantee to repair, or replace, all faulty equipment and systems for a period of one year from date of Substantial Completion. During this one-year period, a representative

of the Contractor shall be on the site actively working on the repairs within 24 hours of the Owner's telephone call. During this period of time, the Owner shall not be charged for any repair work or expenses related with the repair work unless the Contractor can prove that the Owner has damaged the equipment or system.

END OF SECTION

SECTION 260512 - WORK IN EXISTING FACILITIES

PART 1 – GENERAL

1.1 GENERAL

A. All work shall be scheduled and coordinated through the General Contractor with the Owner. Provide necessary costs for all work during both normal and premium work hours in bid.

B. Provide continuous uninterrupted power to all existing facilities to remain during the entire construction process. Any required power outages must be scheduled and approved by the Owner in writing at least three days prior to the outage.

1.2 SCOPE OF WORK

A. Prior to beginning work, survey existing electrical systems. Document, in writing, signed by the Owner any portions of existing systems that are not operating properly before construction begins. Any electrical systems found inoperable at the end of the construction process that has not been so documented shall be repaired at the end of construction.

B. Remove electrical equipment in areas being demolished, and electrical equipment feeding other equipment being demolished. Remove raceways and circuitry back to the panel of origination. Where raceways are installed in inaccessible areas, remove conductors back to the panel of origination. Where circuits are not being completely demolished, remove conductors back to a junction box or other connection point outside of the renovated area and recircuit existing electrical equipment that is to remain as required. Where necessary, completely refeed existing electrical equipment that is to remain. It is the intent of this specification that all existing equipment to remain be left completely operable at the end of the construction process.

C. Survey existing panelboard circuitry and provide new typewritten directories giving complete as-built circuitry information for all panelboards affected by the construction on this project.

D. Where new circuit breakers are installed in existing equipment, the new circuit breakers shall be manufactured for installation in that equipment. The Amperes Interrupting Current (AIC) Rating shall equal the AIC rating of the existing equipment. A breaker with a lower AIC rating may be used if the contractor provides calculations showing that the breaker rating is sufficient to handle the available fault current. Submit these calculations for approval prior to ordering the breaker. An AIC rating on an existing breaker in the panelboard or switchboard does not demonstrate sufficient proof that the available fault current is less than that breaker's AIC rating.

PART 2 – PRODUCTS

2.1 Products shall be selected to maintain or improve the aesthetics of the facility. Gain approval of the Architect or Engineer prior to ordering or installing any electrical equipment or raceway.

PART 3 – EXECUTION

3.1 Coordinate the routing of all circuits and the locations of all devices with the Architect or Engineer and the Owner. Shop drawings shall describe completely the locations and elevations of all raceways, boxes, fittings, and equipment.

3.2 Where conduits and circuitry are shown concealed in existing walls, ceiling, or floors, employ professional tradesmen to perform cutting, patching, painting, and any other type of finishing required to match the

surrounding surfaces. Submit the selected professional's qualifications to the Architect or Engineer for approval prior to beginning work.

END OF SECTION

SECTION 260519 - 600V CONDUCTORS

PART 1 – GENERAL

Provide all circuitry, terminations, splices, connectors, lugs, and other equipment necessary for connection of all equipment requiring electrical connections.

PART 2 – PRODUCTS

2.1 All electrical conductors shall be soft-drawn annealed copper having 98% conductivity and an insulation rating of 600V.

2.2 Conductors shall be UL listed for installation in the raceway in which they are to be installed.

2.3 Conductors shall be rated 90 degrees C for use in residential, commercial, industrial, and institutional facilities, and shall be listed as 105 degrees C appliance wire. Conductors shall be listed under UL 83, UL 1063, and UL 758. If XLP or EPR insulation is used, conductors shall be listed under UL 44 and NEMA WC7.

2.4 Conductors used for branch circuits, feeders, auxiliary systems, and controls run in dry locations shall have PVC insulation and a Nylon outer jacket. They shall be THHN/THWN or XHHW-2.

2.5 Conductors used for branch circuits, feeders, auxiliary systems, and controls run in wet locations shall have XLP or EPR insulation and be type XHHW-2.

2.6 Conductors used for operating room isolation panels and associated branch circuits shall be copper stranded conductor having a cross-linked polyethylene insulation or equivalent with a dielectric constant of 3.5 or less. Wire-pulling compounds that increase the dielectric constant shall not be used on the secondary conductors of isolation panels. The isolated circuit conductors shall be identified as follows:

Isolated Circuit #1 – Orange
Isolated Circuit #2 – Brown

For 125 volt, 15 & 20 ampere receptacles: The orange conductor shall be connected to the terminal on the receptacle that is identified in accordance with NEC 200.10(B) for connection to the grounded circuit conductor.

2.7 Conductors used for services shall be type SE for aerial services or type USE-2 for underground services.

2.8 All conductors shall be stranded. Use ring tongue terminals or spade lugs for connections to terminal screws.

2.9 Use minimum #14 AWG conductors for controls and auxiliary circuits. Use larger conductors as required to compensate for voltage drops exceeding 3% of the system voltage.

2.10 Conductors shall be furnished in the colors described below unless local ordinances require different colors. Conductors #8 and smaller shall be furnished with colored insulation; conductors larger than #8 shall be taped with the appropriately colored tape for a length of at least 2” at each panelboard, junction box, pull box, load, or other exposed location. Ground conductors shall be taped green for their entire exposed length.

System Voltage	208Y/120V, 3-Phase, 4-Wire	120/240V, 3-Phase, 4-Wire	480Y/277V, 3-Phase, 4-Wire
Phase A	Black	Black	Brown
Phase B	Red	Orange	Orange
Phase C	Blue	Blue	Yellow
Neutral	White	White	Gray
Ground	Green	Green	Green

2.11 Conductor sizing chart:

Voltage Drop Chart for 20amp single pole circuits		
Voltage	Circuit Length	Conductor size (awg)
120	< 90'	#12
120	> 90'	#10
120	> 145'	#8
120	> 230'	#6
277	< 200'	#12
277	> 200'	#10
277	> 325'	#8
277	> 525'	#6

A. Circuit sizes indicated on the drawings are minimum NEC requirements. Refer to this chart for upsizing conductors based on circuit length.
B. Do not connect conductors larger than #10 directly to a receptacle or a switch. Provide a junction box to downsize the conductor to #12 at the device.
C. For circuits longer than those listed above, consult with the Engineer for conductor sizes.

PART 3 – EXECUTION

3.1 Install conductors carefully using a minimum of two tradesmen – one feeding the conductors into the conduit, and the other pulling the conductors into the conduit.

3.2 Each branch circuit and multiwire branch circuit shall be run with its own neutral conductor complying with NEC article 200.4.

3.3 Join stranded conductors with appropriate mechanical or compression lugs. Wire nuts may be used for solid conductors only.

3.4 Splices shall only be made in approved enclosures. Splices shall not be pulled inside conduits.

3.5 Provide cable supports and strain relief connectors as required by the NEC.

3.6 Furnish junction boxes, pull boxes, handholes, manholes, etc. as required to ensure that the maximum number of bends allowed by the NEC are not exceeded and to ensure that the cables are not damaged during installation.

END OF SECTION

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.1 GENERAL

Ground all equipment, systems, structures, etc., per the latest edition of the National Electrical Code (NEC).

PART 2 – PRODUCTS

2.1 Use mechanical bolted connections in dry locations that are accessible.

2.2 Use exothermic welds in wet locations and locations that will be inaccessible at the end of construction.

2.3 Ground rods shall be UL listed 3/4” x 10’ copper-clad steel ground rods with a minimum copper cladding thickness of 10 mils.

PART 3 – EXECUTION

3.1 Ground rods shall be installed with their tops no less than 6” below grade.

3.2 Bond ground connections to metal raceways at each end of the conduit run. Provide grounding bushings where required by the NEC. Where cable trays are used, bond the ground conductor to each section and fitting of the tray.

3.3 Provide all circuits with an equipment grounding conductor sized per the NEC, or as shown on the drawings. Circuitry shown on drawings does not include the required equipment grounding conductor. Where multiple circuits are run with a common neutral, only one equipment grounding conductor is needed. The equipment grounding conductor shall be furnished with green insulation for conductors #8 AWG and smaller; where larger than #8, the equipment grounding conductor shall be taped green for its entire exposed length.

3.4 The grounding electrode conductor(s) shall be bare or shall be colored green for its entire exposed length.

3.5 Individual ground conductors shall be installed in PVC conduit sized per the NEC.

3.6 Provide receptacles, luminaires, and other devices with a green conductor that bonds the receptacle grounding screw or pigtail, the outlet box grounding screw, and the equipment grounding conductor together.

3.7 In health care facilities, where two or more different panel boards serve the same patient-care area, an 8 AWG insulated continuous copper conductor shall bond these different panel boards together.

3.8 Telephone, cable television, and other auxiliary systems shall be bonded to the electrical building service ground using a conductor no smaller than #6 AWG.

END OF SECTION

SECTION 260533 - RACEWAYS

PART 1 – GENERAL

1.1 GENERAL

All electrical systems circuitry shall be contained in raceways unless expressly listed in the specification for that system.

1.2 SCOPE OF WORK

A. Provide all raceways, fittings, couplings, anchors, supports, hangers, etc. for complete raceway systems.

B. Use Schedule 40 polyvinyl chloride (PVC) conduit for circuits run underground. Provide PVC-coated galvanized rigid steel elbows and PVC-coated galvanized rigid steel conduit for all vertical runs extending to a point at least 6” above grade. Galvanized Rigid steel conduit coated with two complete coats of asphaltum or bituminous paint may be used in lieu of PVC-coated galvanized rigid steel conduit.

C. Use Galvanized Rigid Steel (GRS) conduit for all applications where circuits are run above ground exposed to the weather.

D. Use Intermediate Metal Conduit (IMC) for all branch circuits, feeders, and auxiliary circuits requiring conduit 1 ¼” nominal trade size or larger in dry locations.

E. Use Electrical Metallic Tubing (EMT) for all branch circuits and feeders less than 1 ¼” nominal trade size in dry locations and in slabs above grade level.

PART 2 – PRODUCTS

2.1 PVC conduits, fittings, couplings, adapters, and accessories shall be UL listed and approved for use with 90 degree Celsius conductors. The UL label shall be affixed to each ten foot length of conduit and each fitting. Conduits shall comply with NEMA Specification TC-2 and UL 651. Fittings shall comply with NEMA TC-3 and UL 514b.

2.2 PVC-coated conduits, fittings, couplings, adapters, and accessories shall be UL listed with PVC as the primary corrosion protection. They shall be hot dipped galvanized rigid steel conduit with threads electro-galvanized after cutting. The conduit shall meet UL 6. The fittings shall meet UL 514B. The PVC coating shall be uniformly applied to the interior and exterior of all conduit and fittings. The coating shall be nominally 2 mils thick. The PVC coating shall extend one pipe diameter or two inches, whichever is less, at every male fitting except unions to fit over the joining female connection. Couplings shall contain a series of longitudinal ribs, 40 mils in thickness, to protect the coating from damage by tools during installation. PVC-coated conduits shall be ETL Verified PVC-001. Fittings shall be manufactured to the same standard. PVC-coated conduit shall be Robroy Plastibond or approved equal.

2.3 GRS conduits, fittings, couplings, adapters, and accessories shall be UL listed. They shall be hot-dipped galvanized steel. They shall meet the safety standards of UL 6, and shall be manufactured to ANSI C80.1. Threads shall be hot galvanized after cutting.

2.4 IMC conduits, fittings, couplings, adapters, and accessories shall be UL listed. They shall be hot-galvanized steel. Fittings, couplings, adapters, and accessories shall be the same as those for GRS conduit described above. IMC shall meet UL 1242 and ANSI C80.6. Threads shall be hot galvanized after cutting. The inside of the conduit shall be finished with a corrosion-resistant coating.

2.5 EMT conduits, fittings, couplings, adapters, and accessories shall be UL listed. They shall be hot galvanized steel and shall be produced in accordance with UL 797 and ANSI C80.3. The inside shall be finished with a corrosion-resistant lubricating coating.

2.6 Conduit fittings used with EMT conduits may be set screw indenter type or compression type. All metallic fittings for IMC and Rigid conduit shall be threaded type fittings.

2.7 Flexible metallic conduit shall be constructed of galvanized steel and shall be UL listed as compliant with UL 1 and UL 1479.

2.8 Liquidtight flexible conduit shall be constructed of galvanized steel and shall be coated with a PVC jacket to resist liquids, dirt, grease, and oils. All fittings shall be designed, constructed, and installed to maintain the integrity of the liquidtight connections. Liquidtight flexible conduit shall comply with UL 360.

PART 3 – EXECUTION

3.1 All conduits are to be run concealed in ceilings or walls unless specifically shown otherwise, or unless written permission is obtained from the Architect or Engineer to run them exposed in a certain location where field conditions prohibit their concealment.

3.2 Conduits run underground shall be buried no less than 24” deep. Services, conduits for primary conductors, and conduits run under roadways shall be buried no less than 48” deep.

3.3 Do not install conduits in or below ground floor slabs, except for service conduits, site lighting, and where specifically indicated on the drawings. All ground floor conduits shown underground where there are concrete slabs shall be run in the ground below the aggregate trenched and backfilled with select fill that is free of rocks, clods, and debris.

3.4 No conduits shall be run in the slabs on any level unless specifically shown on the drawings to be routed in that manner, and then permission must be obtained in writing from the structural engineer describing where it is permissible to route the conduits.

3.5 Do not install conduits within 6” of the deck where a screw down type roof system is utilized.

3.6 PVC-coated conduits may be field-bent provided that manufacturer-approved tools are used. Individuals installing PVC-coated conduits shall be trained for installation by factory-certified trainers. Provide evidence of training with equipment brochures.

3.7 Support and install all conduits per the latest edition of the National Electrical Code. Support groups of conduits with electrical strut supported by threaded rods anchored to the building structure. Supports shall be designed to hold no less than twice the weight of the conduit and conductors to be supported plus an additional 250 pounds at midspan.

3.8 All conduits shall be grouped and run parallel to each other and to building walls.

3.9 All conduits shall be assembled according to the manufacturer’s instructions.

3.10 Conduits run underground shall be assembled to be watertight.

3.11 Cap all conduits during installation. Pull a mandrel sized for that conduit and a cleaning brush through each conduit before installation of any conductors.

3.12 Conduits that are obviously damaged and field bends that are obviously out of round shall be replaced.

3.13 Provide final connections to equipment with flexible metallic conduit. In wet or damp locations, use liquidtight flexible metallic conduit. Flexible conduit connections to equipment shall be no longer than 72”.

3.14 Terminate all 1” and smaller conduits entering boxes with a locknut inside the box and a locknut outside the box. Provide protective bushings on all 1” and smaller conduit threads. Use watertight hubs where conduit terminations are exposed to moisture.

3.15 Use grounding bushings on all connections of 1-1/4” and larger conduits into outlet boxes, junction boxes, metallic enclosures, and panelboards. Grounding bushings shall also be used on all underground conduits and elsewhere required by the National Electrical Code.

3.16 Conduits shall be run no closer than 12” to hot water pipes.

3.17 Where conduits are run through the ceiling and are required to make connections to equipment within the room that is not located near a wall, support the conduit from the structural ceiling and provide a flange bolted to the floor. Install a tee conduit fitting in the vertical run of conduit, and make the connection to the equipment with a piece of flexible conduit extending from the tee conduit fitting to the equipment.

3.18 Provide expansion fittings where conduits cross building expansion joints. Provide grounding jumpers between the conduits.

3.19 Provide EMT conduit sleeves where conduits pass through walls, floors, or footings sized a minimum of two nominal trade sizes larger than the conduit that must pass through the sleeve.

3.20 Equip all empty conduits with a pullwire or string capable of withstanding 500 pounds of pulling tension.

END OF SECTION

SECTION 260534 - OUTLET BOXES AND JUNCTION BOXES

PART 1 – GENERAL

1.1 Furnish and install all outlet boxes and junction boxes in accordance with this specification and the requirements of the NEC.

1.2 Provide outlet boxes for all switches, receptacles, luminaires, telephone jacks, cable jacks, and other devices furnished in this Contract. Provide all necessary hardware including, but not limited to, additional structural support, support brackets, screws, bolts, fixture studs, etc.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

Outlet boxes and junction boxes shall be manufactured by Raco, Steel City, Crouse Hinds, or Appleton.

2.2 GENERAL

A. Concealed Outlet boxes and junction boxes in dry locations shall be galvanized stamped steel boxes sized per the latest edition of the National Electrical Code (NEC), but no less than 4” x 4” x 2 1/8” deep. The thickness of the steel shall be in compliance with the requirements of the NEC. Provide stamped steel covers for all junction boxes manufactured to fit the particular box on which it is used. **Note: Do not use stamped steel outlet boxes in exposed locations.**

B. Exposed Outlet boxes in dry locations shall be heavy duty, deep, die cast aluminum device boxes (Perfect Line “T” or “LT” series or approved equal) with appropriate coverplates.

C. Outlet boxes used in concrete and masonry walls and ceilings shall be of the concrete type manufactured for such applications.

D. Outlet boxes and junction boxes in wet locations shall be of cast metal construction with gasketed waterproof covers. All conduit connections to the boxes shall be made watertight.

E. Wall outlet boxes shall be 4” x 4” x 2 1/8”, or larger as required, with plaster rings provided for final flush installation. Plaster rings shall have single-gang openings unless the equipment mounted inside requires two-gang installation.

F. Floor boxes in slabs on grade shall be deep rectangular, cast iron, fully adjustable boxes with brass rings. Covers shall be made of brass and shall provide flip top access to the power or data jacks inside. Screw-on covers are not acceptable unless a flip-top cover is unavailable for the device installed in the floor box. Provide the box sized as required for the number of devices shown installed. Boxes shall be as follows, or approved equal:

1. Single-Gang Boxes: Hubbell B2436
2. Single-Gang Cover Plates: Hubbell S3825
3. Double-Gang Boxes: Hubbell B4233
4. Double-Gang Cover Plates: Two Hubbell S3825 Cover Plates
5. Triple-Gang Boxes: Hubbell B4333
6. Triple-Gang Cover Plates: Three Hubbell S3825 Cover Plates

In slabs above grade, use cast iron, semi-adjustable shallow boxes as follows, or approved equal:

1. Single-Gang Boxes: Hubbell B2414
2. Two-Gang Boxes: Hubbell B4214

3. Three-Gang Boxes: Hubbell B4314

Receptacles installed in floor boxes shall be as described in Specification 16460, Switches and Receptacles. Data, Telephone, or Combination Data and Telephone Outlets shall consist of Category 5 rated RJ45 jacks mounted in a Hubbell DJOI strap for use under a S3825 flip top cover plate.

In existing slabs above grade, use poke thru boxes as follows, or equal:

1. Hubbell System One

G. Size all boxes per the requirements of the latest NEC.

PART 3 – EXECUTION

3.1 All devices shall be flush mounted unless specific written permission is obtained from the Engineer for a particular device in a particular location.

3.2 Install outlet boxes in walls, and provide plaster rings such that wall finish contractor's finish is flush against the edge of the plaster ring. Workmanship will not be accepted where the hole in the wall shows behind the cover plate, or the wall finish is uneven or unpainted at the edge of the cover plate.

3.3 Use round or square ceiling outlet boxes as required for the device being installed. The ceiling shall be finished flush against the box; the fixture shall completely cover the box and mount tight against the ceiling. Coordinate the requirements of the fixture prior to installing the box.

3.4 Provide junction boxes, pull boxes, and conduit fittings where required by the NEC to limit the number of bends in the raceway, and where required to prevent damage to conductors due to long runs.

3.5 Junction boxes and pull boxes installed in the ground outside shall be Quazite Composolite or approved equal. Mount the boxes over 24" of washed gravel fill. If splices are to be made inside the boxes, the boxes shall be of the type furnished with a bottom, and all conduit connections shall be watertight. In addition, all conductor splices shall be made watertight using an appropriate splice kit as manufactured by 3M, or an approved equal.

END OF SECTION

SECTION 260923 - SWITCHES AND RECEPTACLES

PART 1 – GENERAL

Furnish and install all switches and receptacles in accordance with this specification and the requirements of the NEC.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

Switches and receptacles shall be manufactured by Hubbell, Cooper Wiring Devices, Leviton, or Pass & Seymour.

2.2 GENERAL

A. Switches and receptacles shall be specification grade. They shall have ampacity and voltage ratings suitable for the application in which they are used.

B. Consult architect or engineer for device colors prior to ordering devices.

C. Provide brushed stainless steel cover plates for all devices. A single cover plate shall cover all devices in one box.

D. Light switches shall be 20 Ampere, 120-277V back-wired and side-wired toggle switches. They shall be rated up to 2 HP at 240V. Each switch shall be equipped with a grounding screw. Switches shall be Hubbell CSB series or approved equal.

E. Duplex NEMA 5-20R receptacles shall be Hubbell HBL 5362A or approved equal.

F. Duplex GFI NEMA 5-20R receptacles shall be Hubbell HBL GF5362A or approved equal.

G. Weatherproof while-in-use cover plates shall be Teddico #34017-7 or approved equal. Cover plates shall be single gang, lockable, and constructed of heavy duty die cast metal.

H. All 125V, 15 and 20 ampere receptacles installed in dwelling units shall be of the tamper-resistant type.

I. All 15 and 20 ampere, 125 and 250V non-locking receptacles installed in wet or damp locations shall be listed as the weather-resistant type.

J. Devices furnished in this Contract, but not listed above, shall be of the same standard of quality as those items listed.

PART 3 – EXECUTION

3.1 Flush mount all devices unless specific written permission is obtained from the Engineer for a particular device in a particular location.

3.2 Install all devices vertically unless the drawings specifically state that the particular device should be mounted horizontally.

3.3 Install receptacles with the ground slot up.

END OF SECTION

SECTION 260926 - VACANCY SENSORS

PART 1 - GENERAL

1.1 Furnish and install a complete system of Vacancy sensors as shown on the drawings and as specified herein to comply with IECC 2012. The drawings are provided to show the general scope of the work, and show the absolute minimum components required. Actual system components, quantities, and locations shall be determined by the motion detector vendor and provided to the Contractor with the installation shop drawings.

1.2 The Contractor and Sales Representatives are advised to take notice of specified component characteristics when attempting to select and propose substitutions. It is highly unlikely that substitutions on a one-for-one component basis will produce results that provide acceptable system performance.

1.3 Provide all power packs, hardware, software, devices, circuitry, and other components, material, and labor required to install, configure, and test the entire system to the satisfaction of the Architect, Owner, and Engineer.

1.4 Submit six sets of manufacturer's cut sheets describing completely all equipment, and six sets of shop drawings showing all circuitry including terminal-to-terminal connections.

1.5 The wiring diagrams on these drawings are based on our best interpretation of the manufacturer's data that was available at the time of design; however, they shall not be used for system installation and configuration. The controls equipment vendor is expected to be thoroughly knowledgeable of the equipment that is being proposed, and shall provide detailed shop drawings tailored for each circuit and lighting zone on the project. General manufacturer's data sheets shall not be acceptable. The shop drawings shall be suitable for the installing electrician to use for complete installation of the circuitry without referring to data sheets or installation manuals for connection of lighting control equipment. These requirements shall be followed whether the specified equipment, or products of other manufacturers, is provided.

PART 2 - PRODUCTS

2.1 Hallway Vacancy sensors: Vacancy sensors used in the hallways shall be passive infrared, ceiling-mounted units with a coverage of 6' x 130'. They shall be Sensor Switch HW13 WV BR or approved equal.

2.2 Wall mounted LED lighting controls shall be 0-10V dimmer/vacancy sensor type equal to Lutron MS-Z101-V-XX

2.3 Wall mounted lighting controls shall be dual technology (ultrasonice/passive infrared) dual relay vacancy sensor type equal to Lutron MS-B202-V-XX

2.4 Areas up to 500 Square Feet: Ceiling mounted Vacancy sensors used in areas up to 500 square feet shall be dual technology infrared and passive infrared, ceiling-mounted units with a 360 degree, 500 square foot coverage.

2.5 Power Packs: Power packs shall be of the same manufacturer as the Vacancy sensors. Each shall be capable of controlling a 20 ampere circuit. They shall be rated for operation at the voltage of the system on which they will be used.

2.6 Circuitry: Provide control circuitry as required by the manufacturer for optimum system operation, but no less than the following: Control cables shall be 3-conductor #22 AWG copper with an overall jacket. Adjust conductor sizes as required to overcome unacceptable voltage drop.

PART 3 - EXECUTION

3.1 Vacancy sensors shall be provided so that their coverage areas overlap and there are no dead zones in the rooms where persons may stand and not be detected.

3.2 Vacancy Sensors shall be set for “manual on/automatic off” operation.

3.3 All work shall be done by qualified system technicians.

3.4 Wiring, including control wiring, shall be in Raceways meeting Specification 260533.

3.5 Guarantee workmanship and material for a period of one year after final acceptance. During the warranty period, repair or replace faulty equipment at no cost to the Owner for labor, material, or expenses.

3.6 Upon completion of job, test entire system. After testing submit a certificate to the Architect stating verification of the following:

PART 4 – CLOSE-OUT DOCUMENTS

4.1 Provide the following documents to the Architect for delivery to the Owner at the time of substantial completion:

A. Written Guarantee
B. Two sets of data prepared by the manufacturer for each item of electrical equipment completely describing each piece of equipment. The data shall include parts lists, a description of operation, shop drawings, wiring diagrams, maintenance procedures, and other literature required for operation and maintenance of equipment.

4.2 Instruct the Owner on system operational procedures. Notify the Owner and Architect at least one week in advance of the training session. Provide written step-by-step instructional material.

4.3 Notify the General Contractor that you are to present during the Pre-final Inspection. During that inspection, demonstrate all system functionality and capabilities; remove cover plates and panels covers as required to show the quality of the installation. The Owner, Architect, and Engineer reserve the right to reject unsuitable workmanship or performance.

END OF SECTION

SECTION 262400 - PANELBOARDS

PART 1 – GENERAL

1.1 Furnish and install all panelboards, complete with their circuit breakers, phase buses, neutral buses, ground buses, structural supports, and other equipment necessary for complete systems.

1.2 The equipment vendor shall perform all calculations necessary and provide complete Arc Flash Labels as required by the National Electrical Cod (NEC) and the drawings. Note: The drawings typically require more detail than required by the NEC.

PART 2 – PRODUCTS

2.1 GENERAL

A. Panelboards shall be designed, manufactured, and tested to be in compliance with NEMA PB 1, UL 50, UL 67, UL 489, NFPA 70, and the ASTM.

B. Circuit breakers shall be designed, manufactured, and tested to be in compliance with NEMA AB 1, UL 489, and Federal Specification W-C-375B/GEN.

C. Panelboards shall be UL listed for service entrance where used for that purpose.

D. Panelboard ampere interrupting current (AIC) ratings shall equal the lowest rated device in the panelboard. Provide panelboards with the AIC ratings shown on the Contract Drawings. Buses shall be braced to withstand the AIC rating shown on the drawings. Series ratings shall only be used where shown on the panelboard schedules.

E. All panelboards shall be furnished with dead-front, door-in-door construction.

F. Lug locations shall be determined during the creation of shop drawings for proper arrangement with the raceway system.

G. Buses shall be constructed of 98% conductivity copper or equivalently rated aluminum.

H. Panelboard enclosures shall be NEMA 1 when they are to be mounted indoors, and NEMA 3R when they are to be mounted outdoors. Provide special enclosures where shown on the Contract Drawings.

2.2 ACCEPTABLE MANUFACTURERS

Panelboards shall be manufactured by Siemens, Square D, General Electric, or Cutler Hammer.

2.3 PANELBOARD CLASSES

A. Power distribution panelboards shall be available with mains and branch devices up to 1200 amperes. AIC ratings shall be available up to 200,000 Amperes. Power distribution panelboards shall be equipped with a nameplate containing the appropriate system voltage, number of wires, and number of phases for the system on which they are installed.

B. In 480Vac and less applications where a main breaker not exceeding 600 Amperes is required, the AIC rating does not exceed 65,000 Amperes, and no branch breakers exceed 125Amperes, Square D NF and equivalent panelboards may be used.

C. In 480Vac and less applications where a main breaker not exceeding 225 Amperes is required, the AIC rating does not exceed 14,000 Amperes, and no branch breakers exceed 100Amperes, Square D NEHB and equivalent panelboards may be used.

D. In 240Vac and less applications where a main breaker not exceeding 400 Amperes or main lugs not exceeding 600 Amperes is required, the AIC rating does not exceed 22,000 Amperes, and no branch breakers exceed 125 Amperes, Square D NQ and equivalent panelboards may be used. Loadcenters shall not be acceptable!

2.4 CIRCUIT BREAKERS

A. Circuit breakers shall be of the bolt-on type (except for those used in ILINE panelboards and switchboards). Loadcenter, plug-in circuit breakers shall not be acceptable unless specifically indicated on the drawings. They shall be thermal magnetic, molded-case with quick-make, quick-break contact action. They shall have thermal and magnetic tripping elements on each pole. Breakers with multiple poles shall have common tripping of all poles. Circuit breaker ampere ratings shall be stamped on the handle. Interrupting ratings of the circuit breakers shall be equivalent to the specified AIC rating of the panelboard. Breakers handles shall reside in a position between “ON” and “OFF” after a trip condition. Breakers shall be rated HACR when used for heating, air-conditioning, and refrigeration; HID when used with High Intensity Discharge fixtures; and shall be rated SWD when used for switching duty.

B. Circuit breaker sizes for motor loads are based on Square D recommendations for use of their breakers at the motor horsepowers listed on the mechanical drawings. If equipment is used other than Square D, adjust breaker sizes per the manufacturer’s recommendations.

C. Each circuit breaker supplying a multiwire branch circuit shall be installed with a manufacturer supplied handle tie to simultaneously disconnect all ungrounded conductors. Each multiwire branch circuit shall comply with NEC article 210.4.

D. Circuit breakers with slash ratings, such as 120/240V or 480Y/277V, shall be used in solidly grounded systems where the nominal voltage of any conductor to ground does not exceed the lower of the two values of the breaker’s voltage rating and the nominal voltage between any two conductors does not exceed the higher value of the circuit breaker’s voltage rating.

E. Circuit breakers with straight voltage ratings, such as 240V or 480V, shall be used in systems other than solidly grounded systems (Corner-Grounded Delta, Ungrounded, Impedance Grounded, etc.) where the nominal voltage between any two conductors does not exceed the circuit breaker’s voltage rating. A two-pole circuit breaker shall not be used to protect a three-phase, Corner-Grounded Delta system unless the circuit breaker is marked 1Φ-3Φ.

PART 3 – EXECUTION

3.1 Install panelboards in complete compliance with all manufacturers’ installation instructions.

3.2 Install conductors neatly in panelboards. Group and tie-wrap circuits that share a common neutral.

3.3 Number circuits exactly as shown on the contract drawings.

END OF SECTION

SECTION 262800 - DISCONNECTS AND SEPARATELY-MOUNTED CIRCUIT BREAKERS

PART 1 – GENERAL

Furnish and install all disconnects and separately mounted circuit breakers as shown on the drawings, specified herein, and required by the NEC.

PART 2 – PRODUCTS

2.1 GENERAL

A. Disconnects shall be of the heavy-duty type, and shall be UL listed for service entrance use. They shall meet or exceed the requirements of NEMA Standard KS1. Provide fuses sized to appropriately protect the load served. Equipment manufacturer's recommendations shall take precedence over the Contract Drawings.

B. Fuses shall be dual element, time-delay, Class J fuses. They shall be Bussman Low-Peak or approved equal.

C. Circuit breakers shall be thermal magnetic, molded-case with quick-make, quick-break contact action. They shall have thermal and magnetic tripping elements on each pole. Breakers with multiple poles shall have common tripping of all poles. Circuit breaker ampere ratings shall be stamped on the handle. Interrupting ratings of the circuit breakers shall be equivalent to the specified AIC rating of the panelboard. Breakers handles shall reside in a position between "ON" and "OFF" after a trip condition. Breakers shall be rated HACR when used for heating, air-conditioning, and refrigeration; HID when used with High Intensity Discharge fixtures; and shall be rated SWD when used for switching duty.

D. Circuit breaker sizes for motor loads are based on Square D recommendations for use of their breakers at the motor horsepowers listed on the mechanical drawings. If equipment is used other than Square D, adjust breaker sizes per the manufacturer's recommendations.

E. Circuit breakers with slash ratings, such as 120/240V or 480Y/277V, shall be used in solidly grounded systems where the nominal voltage of any conductor to ground does not exceed the lower of the two values of the breaker's voltage rating and the nominal voltage between any two conductors does not exceed the higher value of the circuit breaker's voltage rating.

F. Circuit breakers with straight voltage ratings, such as 240V or 480V, shall be used in systems other than solidly grounded systems (Corner-Grounded Delta, Ungrounded, Impedance Grounded, etc.) where the nominal voltage between any two conductors does not exceed the circuit breaker's voltage rating. A two-pole circuit breaker shall not be used to protect a three-phase, Corner-Grounded Delta system unless the circuit breaker is marked 1Φ-3Φ.

G. Disconnect and individually-mounted circuit breaker ampere interrupting current (AIC) ratings shall equal the rating of the panelboard from which they are fed unless otherwise noted.

H. Buses shall be constructed of 98% conductivity copper or equivalently rated aluminum.

I. Switches shall be horsepower rated where used to serve motors.

J. Enclosures shall be NEMA 1 when they are to be mounted indoors, NEMA 3R when they are to be mounted outdoors, and NEMA 4X where they are subject to washdown. Provide special enclosures where shown on the Contract Drawings.

2.2 ACCEPTABLE MANUFACTURERS

Disconnects and separately-mounted circuit breakers shall be manufactured by Siemens, Square D, General Electric, or Cutler Hammer.

PART 3 – EXECUTION

3.1 Install disconnects and individually-mounted circuit breakers in complete compliance with all manufacturers' installation instructions. Where necessary, provide structural supports and bracing for installation.

3.2 Disconnects are to be surface-mounted.

3.3 Individually-mounted circuit breakers are to be flush-mounted unless otherwise shown.

END OF SECTION

SECTION 264300 - SURGE PROTECTIVE DEVICE (SPD)

PART 1 – GENERAL

1.1 SCOPE

A. The Contractor shall furnish and install the Surge Protective Device (SPD) equipment having the electrical characteristics, ratings, and modifications as specified herein and as shown on the contract drawings. To maximize performance and reliability and to obtain the lowest possible let-through voltages, the ac surge protection shall be integrated into electrical distribution equipment such as switchgear, switchboards, panelboards, busway (integrated within bus plug), or motor control centers. Refer to related sections for surge requirements in:

1.2 RELATED SECTIONS

A. Section 262400 – Panelboards

1.3 REFERENCES

A. SPD units and all components shall be designed, manufactured, and tested in accordance with the latest applicable UL standard (ANSI/UL 1449 3rd Edition).

1.4 SUBMITTALS – FOR REVIEW/APPROVAL

A. The following information shall be submitted to the Engineer:

1. Provide verification that the SPD complies with the required ANSI/UL 1449 3rd Edition listing by Underwriters Laboratories (UL) or other Nationally Recognized Testing Laboratory (NRTL). Compliance may be in the form of a file number that can be verified on UL's website or on any other NRTL's website, as long as the website contains the following information at a minimum: model number, SPD Type, system voltage, phases, modes of protection, Voltage Protection Rating (VPR), and Nominal Discharge Current (I_n).
2. For sidemount mounting applications (SPD mounted external to electrical assembly), electrical/mechanical drawings showing unit dimensions, weights, installation instruction details, and wiring configuration.

B. Where applicable the following additional information shall be submitted to the engineer:

1. Descriptive bulletins
2. Product sheets

1.5 SUBMITTALS – FOR CONSTRUCTION

A. The following information shall be submitted for record purposes:

1. Final as-built drawings and information for items listed in Section 1.04 and shall incorporate all changes made during the manufacturing process

1.6 QUALIFICATIONS

A. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.

B. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.

D. The SPD shall be compliant with the Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC.

1.7 DELIVERY, STORAGE AND HANDLING

A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of manufacturer's instructions shall be included with the equipment at time of shipment.

1.8 OPERATION AND MAINTENANCE MANUALS

A. Operation and maintenance manuals shall be provided with each SPD shipped.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Eaton Cutler-Hammer

The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features, and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer ten (10) days prior to bid date.

2.2 VOLTAGE SURGE SUPPRESSION – GENERAL

B. Electrical Requirements

1. Unit Operating Voltage – Refer to drawings for operating voltage and unit configuration.
2. Maximum Continuous Operating Voltage (MCOV) – The MCOV shall not be less than 125% of the nominal system operating voltage.
3. The suppression system shall incorporate thermally protected metal-oxide varistors (MOVs) as the core surge suppression component for the service entrance and all other distribution levels. The system shall not utilize silicon avalanche diodes, selenium cells, air gaps, or other components that may crowbar the system voltage leading to system upset or create any environmental hazards.
4. Protection Modes – The SPD must protect all modes of the electrical system being utilized. The required protection modes are indicated by bullets in the following table:

	Protection Modes			
Configuration	L-N	L-G	L-L	N-G
Wye	●	●	●	●
Delta	N/A	●	●	N/A
Single Split Phase	●	●	●	●
High Leg Delta	●	●	●	●

5. Nominal Discharge Current (I_n) – All SPDs applied to the distribution system shall have a 20kA I_n rating regardless of their SPD Type (includes Types 1 and 2) or operating voltage. SPDs having an I_n less than 20kA shall be rejected.

6. ANSI/UL 1449 3rd Edition Voltage Protection Rating (VPR) – The maximum ANSI/UL 1449 3rd Edition VPR for the device shall not exceed the following:

Modes	208Y/120	480Y/277	600Y/347
L-N; L-G; N-G	700	1200	1500
L-L	1200	2000	3000

C. SPD Design

1. Maintenance Free Design – The SPD shall be maintenance free and shall not require any user intervention throughout its life. SPDs containing items such as replaceable modules, replaceable fuses, or replaceable batteries shall not be accepted. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.
2. Balanced Suppression Platform – The surge current shall be equally distributed to all MOV components to ensure equal stressing and maximum performance. The surge suppression platform must provide equal impedance paths to each matched MOV. Designs incorporating replaceable SPD modules shall not be accepted.
3. Electrical Noise Filter – Each unit shall include a high-performance EMI/RFI noise rejection filter. Noise attenuation for electric line noise shall be up to 50 dB from 10 kHz to 100 MHz using the MIL-STD-220A insertion loss test method. Products unable able to meet this specification shall not be accepted.
4. Internal Connections – No plug-in component modules or printed circuit boards shall be used as surge current conductors. All internal components shall be soldered, hardwired with connections utilizing low impedance conductors.
5. Monitoring Diagnostics – Each SPD shall provide the following integral monitoring options:
   a. Protection Status Indicators - Each unit shall have a green / red solid-state indicator light that reports the status of the protection on each phase.

      i. For wye configured units, the indicator lights must report the status of all protection elements and circuitry in the L-N and L-G modes. Wye configured units shall also contain an additional green / red solid-state indicator light that reports the status of the protection elements and circuitry in the N-G mode. SPDs that indicate only the status of the L-N and L-G modes shall not be accepted.

      ii. For delta configured units, the indicator lights must report the status of all protection elements and circuitry in the L-G and L-L modes.

      iii. The absence of a green light and the presence of a red light shall indicate that damage has occurred on the respective phase or mode. All protection status indicators must indicate the actual status of the protection on each phase or mode. If power is removed from any one phase, the indicator lights must continue to indicate the status of the protection on all other phases and protection modes. Diagnostics packages that simply indicate whether power is present on a particular phase shall not be accepted.

   b. Remote Status Monitor – The SPD must include Form C dry contacts (one NO and one NC) for remote annunciation of its status. Both the NO and NC contacts shall change state under any fault condition.
   c. Audible Alarm and Silence Button – The SPD shall contain an audible alarm that will be activated under any fault condition. There shall also be an audible alarm silence button used to silence the audible alarm after it has been activated.
   d. ∃Surge Counter – The SPD shall be equipped with an LCD display that indicates to the user how many surges have occurred at the location. The surge counter shall trigger each time a surge event with a peak current magnitude of a minimum of 50 ± 20A occurs. A reset

pushbutton shall also be standard, allowing the surge counter to be zeroed. The reset button shall contain a mechanism to prevent accidental resetting of the counter via a single, short-duration button press. In order to prevent accidental resetting, the surge counter reset button shall be depressed for a minimum of 2 seconds in order to clear the surge count total.

i. The ongoing surge count shall be stored in non-volatile memory. If power to the SPD is completely interrupted, the ongoing count indicated on the surge counter's display prior to the interruption shall be stored in non-volatile memory and displayed after power is restored. The surge counter's memory shall not require a backup battery in order to achieve this functionality.

6. Overcurrent Protection

a. The unit shall contain thermally protected MOVs. These thermally protected MOVs shall have a thermal protection element packaged together with the MOV in order to achieve overcurrent protection of the MOV. The thermal protection element shall disconnect the MOV(s) from the system in a fail-safe manner should a condition occur that would cause them to enter a thermal runaway condition.

7. Fully Integrated Component Design – All of the SPD's components and diagnostics shall be contained within one discrete assembly. SPDs or individual SPD modules that must be ganged together in order to achieve higher surge current ratings or other functionality shall not be accepted.

8. Safety Requirements

a. The SPD shall minimize potential arc flash hazards by containing no user serviceable / replaceable parts and shall be maintenance free. SPDs containing items such as replaceable modules, replaceable fuses, or replaceable batteries shall not be accepted. SPDs requiring any maintenance of any sort such as periodic tightening of connections shall not be accepted. SPDs requiring user intervention to test the unit via a diagnostic test kit or similar device shall not be accepted.

b. SPDs designed to interface with the electrical assembly via conductors shall require no user contact with the inside of the unit. Such units shall have any required conductors be factory installed.

c. Sidemount SPDs shall be factory sealed in order to prevent access to the inside of the unit. Sidemount SPDs shall have factory installed phase, neutral, ground and remote status contact conductors factory installed and shall have a pigtail of conductors protruding outside of the enclosure for field installation.

2.3 SYSTEM APPLICATION

A. The SPD applications covered under this section include distribution and branch panel locations, busway, motor control centers (MCC), switchgear, and switchboard assemblies. All SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C, B, and A environments.

B. Surge Current Capacity – The minimum surge current capacity the device is capable of withstanding shall be as shown in the following table:

Minimum surge current capacity based on ANSI / IEEE C62.41 location category			
Category	Application	Per Phase	Per Mode
C	Service Entrance Locations (Switchboards, Switchgear, MCC, Main Entrance)	250 kA	125 kA
B	High Exposure Roof Top Locations (Distribution Panelboards)	160 kA	80 kA
A	Branch Locations (Panelboards, MCCs, Busway)	120 kA	60 kA

C. SPD Type – all SPDs installed on the line side of the service entrance disconnect shall be Type 1 SPDs. All SPDs installed on the load side of the service entrance disconnect shall be Type 1 or Type 2 SPDs.

2.4 LIGHTING AND DISTRIBUTION PANELBOARD REQUIREMENTS

A. The SPD application covered under this section includes lighting and distribution panelboards. The SPD units shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category B environments.

1. The SPD shall not limit the use of through-feed lugs, sub-feed lugs, and sub-feed breaker options.
2. SPDs shall be installed immediately following the load side of the main breaker. SPDs installed in main lug only panelboards shall be installed immediately following the incoming main lugs.
3. The panelboard shall be capable of re-energizing upon removal of the SPD.
4. The SPD shall be interfaced to the panelboard via a direct bus bar connection. Alternately, an SPD connected to a 30A circuit breaker for disconnecting purposes may be installed using short lengths of conductors as long as the conductors originate integrally to the SPD. The SPD shall be located directly adjacent to the 30A circuit breaker.
5. The SPD shall be included and mounted within the panelboard by the manufacturer of the panelboard.
6. The SPD shall be of the same manufacturer as the panelboard.
7. The complete panelboard including the SPD shall be UL67 listed.

B. Sidemount Mounting Applications Installation (SPD mounted external to electrical assembly)
1. Lead length between the breaker and suppressor shall be kept as short as possible to ensure optimum performance. Any excess conductor length shall be trimmed in order to minimize let-through voltage. The installer shall comply with the manufacturer's recommended installation and wiring practices.

C. Switchgear, Switchboard, MCC and Busway Requirements

1. The SPD application covered under this section is for switchgear, switchboard, MCC, and busway locations. Service entrance located SPDs shall be tested and demonstrate suitability for application within ANSI/IEEE C62.41 Category C environments.
2. The SPD shall be of the same manufacturer as the switchgear, switchboard, MCC, and busway
3. The SPD shall be factory installed inside the switchgear, switchboard, MCC, and/or bus plug at the assembly point by the original equipment manufacturer
4. Locate the SPD on the load side of the main disconnect device, as close as possible to the phase conductors and the ground/neutral bar.
5. The SPD shall be connected through a disconnect (30A circuit breaker). The disconnect shall be located in immediate proximity to the SPD. Connection shall be made via bus, conductors, or other connections originating in the SPD and shall be kept as short as possible.

6. The SPD shall be integral to switchgear, switchboard, MCC, and/or bus plug as a factory standardized design.
7. All monitoring and diagnostic features shall be visible from the front of the equipment.

2.5 ENCLOSURES

A. All enclosed equipment shall have NEMA 1 general purpose enclosures, unless otherwise noted. Provide enclosures suitable for locations as indicated on the drawings and as described below:

1. NEMA 1 – Constructed of a polymer (units integrated within electrical assemblies) or steel (sidemount units only), intended for indoor use to provide a degree of protection to personal access to hazardous parts and provide a degree of protection against the ingress of solid foreign objects (falling dirt).
2. NEMA 4 – Constructed of steel intended for either indoor or outdoor use to provide a degree of protection against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (dirt and windblown dust); to provide a degree of protection with respect to the harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); and that will be undamaged by the external formation of ice on the enclosure. (sidemount units only)
3. NEMA 4X – Constructed of stainless steel providing the same level of protection as the NEMA 4 enclosure with the addition of corrosion protection. (sidemount units only)

PART 3 – EXECUTION

3.1 EXAMINATION

3.2 FACTORY TESTING

A. Standard factory tests shall be performed on the equipment under this section. All tests shall be in accordance with the latest version of NEMA and UL standards.

3.3 INSTALLATION

A. The Contractor shall install all equipment per the manufacturer's recommendations and the contract drawings.

3.4 WARRANTY

A. The manufacturer shall provide a full ten (10) year warranty from the date of shipment against any SPD part failure when installed in compliance with manufacturer's written instructions and any applicable national or local code.

END OF SECTION

SECTION 265100 - LIGHTING

PART 1 – GENERAL

1.1 Provide all lighting fixtures (luminaires), lamps, end caps, connectors, fittings, structural support members, supports, brackets, etc., for a complete and operable lighting system.

1.2 Prior to submitting electrical equipment brochures for review and approval, coordinate with the General Contractor and verify that the fixtures are appropriate for the ceiling types in which they are shown to be installed. Also verify that ballast voltage on the submittals is appropriate for the electrical system on which the fixtures are to be installed (regardless of voltage listed in the part number in the Fixture Schedule). Submit with equipment brochures a certificate stating that these items of coordination have been completed.

1.3 Provide photometric calculations where luminaires are proposed for substitution.

1.4 Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.

1.5 Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on construction, dimensions, ratings, finished, mounting requirements, listing, service conditions, and installed accessories. Include model number nomenclature clearly marked with all proposed features. Where the part number indicates components not shown on cut sheet, provide supporting cut sheet data for the part number. **Applicable data for fixtures proposed shall be highlighted – including any special notes about application!**

PART 2 – PRODUCTS

2.1 LUMINAIRES

A. Luminaires are shown in the Luminaire Schedule on the drawings to establish a standard of quality. Manufacturer's names and model numbers shall not be interpreted as a proprietary specification. Notify the engineer at least two weeks prior to bid if an equivalent for a fixture listed in the schedule is not readily available,

B. Provide the appropriate trim types, lenses, and accessories for proper installation in the area shown on the drawing. Coordinate with the ceiling contractor during the creation of shop drawings to ensure that fixtures are appropriate for the type of ceiling being installed.

2.2 LAMPS

LED lamps shall be LM79 and LM80 tested.

2.3 LED DRIVERS

A. General Requirements:

1. Operate for at least 50,000 hours at maximum case temperature and 90 percent non-condensing relative humidity.

2. Provide thermal fold-back protection by automatically reducing power output (dimming) to protect LED driver and LED light engine/fixture from damage due to over-temperature conditions that approach or exceed the LED driver's maximum operating temperature at calibration point.

3. UL 8750 recognized or listed as applicable.

4. Class A sound rating; Inaudible in a 27 dBA ambient.

5. Demonstrate no visible change in light output with a variation of plus or minus 10 percent change in line-voltage input.

6. LED drivers of the same family/series to track evenly across multiple fixtures at all light levels.

7. Offer programmable output currents in 10 mA increments within designed driver operating ranges for custom fixture length and lumen output configurations, while meeting a low-end dimming range of 100 to 1 percent or 100 to 5 percent as applicable.

8. Employ integral fault protection up to 277 V to prevent LED driver damage or failure in the event of incorrect application of line-voltage to communication link inputs.

9. LED driver may be remote located up to 100 feet (30 m) from LED light engine depending on power outputs required and wire gauge utilized by installer.

B. Driver Control:

1. Provide integral fault protection to prevent driver failure in the event of a mis-wire.

2. Operate from input voltage of 120 V through 277 V at 50/60 Hz.

3. Drivers and their associated controls shall be coordinated to ensure they are compatible.

2.4 EMERGENCY DRIVERS

A. Emergency Drivers: Emergency drivers shall consist of an automatic power failure device, a test switch, and a pilot light that is visible from outside of the fixture. They shall contain a fully automatic solid state charger in a self-contained power pack. The fixture shall be factory wired in a manner that will allow the emergency lamps to be switched while still maintaining charging power to the battery. Wiring Diagrams shall be furnished with the fixture showing switching connections. The battery shall be of the sealed electrolyte type with the capacity to provide power to the lamps provided for a minimum of 90 minutes according to the following formula:

Delivered Lumens =1.25 x Output Power of Emergency Driver x Lumen per Watt rating of the Luminaire

Note: See Fixture Schedule on Drawings for specified Emergency Driver

The battery shall be able to operate unattended with no maintenance for a period of no less than five years. Emergency ballasts shall be fully compatible with solid state ballasts. Battery packs shall be mounted inside the fixture unless remotely mounted ballasts are shown on the drawings, or unless the fixture is of a type that does not have room for internally mounted battery packs.

2.5 SUPPORTS

A. Provide all structural members necessary to support fixtures in locations shown on the contract drawings. Submit mounting and support details to the Architect or Engineer for approval with the project shop drawings. Notify the General Contractor prior to bid of any structural work that will be required to support the fixtures.

B. Provide hangers, cords, stems, etc., where required. Coordinate with the Architect or Engineer for proper stem lengths prior to ordering fixtures.

C. Support the recessed light fixtures at all four corners of the fixture.

D. Provide clips for fixtures installed in lay-in ceilings. Clips shall be equal to Erico Caddy clips # 515 or #515A.

PART 3 – EXECUTION

3.1 Raceways for lighting systems in accessible ceilings shall be run to junction boxes mounted in locations that do not interfere with the ceiling installation, the luminaire installation, or other building systems. Provide final connections to fixtures using conductors in flexible conduit. Flexible conduit whips shall not exceed six feet in length.

3.2 All recessed fixtures shall be mounted with their trims flush against the ceiling.

3.3 Comply completely with all manufacturers' installation instructions.

3.4 Fixtures shall be warranted for a period of five years after beneficial occupancy.

END OF SECTION

SECTION 273000 - DATA SYSTEMS

PART 1 – GENERAL

1.1 Provide complete Data systems in accordance with this specification and the contract drawings. All systems shall be furnished and installed to meet or exceed EIA/TIA Category 6 Standards.

1.2 All new wiring on this project shall conform to the EIA TIA 568A T568A scheme.

1.3 Prior to ordering equipment, provide six sets of manufacturer's cut sheets to the Architect or Engineer for the equipment to be installed. Also submit shop drawings showing the floor plan with all wiring tag identification and conduit and cable routing. Do not order any equipment without receiving submittals and shop drawings that have been reviewed and approved by the Engineer.

1.4 Contractors furnishing and installing Data system components shall be regularly involved in furnishing and installing systems of the type specified. They shall have installed five systems similar in size and scope within the past six months. The Data System Contractor shall pull the cable as well as install all jacks and make all other system terminations.

PART 2 – PRODUCTS

2.1 Outlet Boxes: Provide outlet boxes in accordance with Specification 260533.

2.2 Plaster Rings: Plaster rings shall be furnished to provide single-gang openings in outlet boxes unless otherwise noted.

2.3 Raceways: Provide raceways in accordance with Specification 260533.

2.4 Jacks: Provide outlet boxes with a strap containing the number of Jacks indicated on the drawings. Outlet jacks shall be 8-position, 8-conductor, RJ-45 jacks that are multivendor supportive accepting most phone and data plugs. Jacks shall have gold-plated (50 microinches minimum) contacts with 110 connections on the back. The jacks shall snap in the straps. The straps shall be colored to match the switches and receptacle color selected by the Architect. The straps shall be covered by a stainless steel wallplate identical to those of the receptacles and switches. Telephone outlet jacks shall be yellow; data jacks shall be blue.

2.5 Fiber Optic Cabling: Cable shall be a 12 strand single mode.

2.6 Cable: All cable shall be Category 6 rated and shall conform to or exceed the EIA/TIA 578 Commercial Building Wiring Standard, Horizontal Cable Section and the EIA/TIA Technical Systems Bulletin 36 for Unshielded Twisted Pair Cables. Other standards supported shall include IEEE 802.3, Ibase5, 10BASE-T; IEEE 802.5, 4 Mbps, 16 Mbps (328 ft/100m), 104 Workstations, proposed ANSI X3T9.5 TP-PMD requirements for UTP at 100 Mbps, and 155 MB ATM. Cabling shall be UL listed. Telephone cables shall be yellow; data cables shall be blue. All Cable shall be plenum rated.

2.7 Data Backboard (TDBB): Wall mount a ¾" x 4' x 8' sheet of plywood, primed and painted with two coats of fire retardant paint of the color and finish selected by the Architect. Provide a ¼" x 4" x 17.75" copper ground block (Erico Eritech TMGB-A18L23PT or approved equal) on the wall, bond a #6 AWG copper conductor to the ground block with a two hole compression lug and run the #6 AWG ground wire to the electrical power system ground. Bond the #6 AWG ground wire to the power system electrode using an exothermic weld.

2.8 Punchdown Blocks: Telephone cables shall terminate at the Telephone & Data Backboard on Punchdown Blocks. Telephone Cabling shall be terminated on 110 punchdown blocks maintaining the Category 6 rating. Furnish punchdown blocks for all telephone outlets in this contract plus 25% additional outlets.

2.9 Patch Panels: Data Cables shall terminate at the Telephone & Data Backboard in patch panels. Provide a patch panel (or panels) at each TDBB to accommodate all cabling plus 15% spare capacity. Provide crossconnecting cables as required to interconnect the patch panels providing the Owner a single connection point for a connection to a server.

2.10 Racks: Provide a 19” rack for mounting of the patch panels. The rack shall be mounted on the TDBB.

PART 3 – EXECUTION

3.1 Provide a 1” conduit extending from each outlet box to a point above the nearest accessible ceiling. Terminate the conduit with a protective bushing.

3.2 Route conductors from the outlet box, above the lay-in ceilings, and to the Data backboard. Group, tie-wrap, and support the conductors from the structural ceiling above the lay-in ceiling. Provide conduit for sleeves where cables pass through areas with hard ceilings.

3.3 Provide a minimum of two data cables to each data outlet or combination telephone/data outlet. Provide one cable to each telephone outlet.

3.4 Mount plywood backboard securely to wall framing members. The bottom of the backboard shall be 6” above the finished floor.

3.5 Provide a #6 copper ground wire in 1” PVC conduit from the Data Backboard to the Building Power System Ground.

3.6 Service Conduits: Provide two 2” PVC conduits with long radius elbows from the Data Backboard to the existing Building 125. Conduits bends shall contain radii that are no less than 10 times the conduit diameter. Furnish conduits with pullstrings. Stub conduits up 4” above the floor at the Data Backboard and cover with plastic caps. Do not glue the caps on the conduits. Seal conduits below grade to prohibit the entrance, of dirt, water, and gases. Service conduits shall be buried 24” to 36” below grade.

3.7 Fiber Optic: Terminate all fiber optic strands at the rack in a fiber optic termination box.

3.8 Equip all spare conduits with a pullwire or string capable of withstanding 200 pounds of pulling tension.

3.9 Uniquely identify and label all cables at each end using EIA/TIA Standards. Provide engraved or professionally stenciled label markings on the faceplate beside each jack.

3.10 Test each cable for opens, shorts, correct pairs, crossed wiring, and proper termination using a CT200 tester from Atcom Services, Inc. or approved equal. Replace any cable that is unable to pass the tests. Provide a written log of the test results of each cable to the Engineer at the prefinal inspection. Demonstrate testing of any cables selected by the Engineer.

END OF SECTION

SECTION 283100 - FIRE ALARM AND MASS NOTIFICATION SYSTEMS

PART 1- GENERAL

1.1 SCOPE AND RELATED DOCUMENTS

A. The work covered by this section of the specifications includes the furnishing of all labor, equipment, materials, and performance of all operations associated with the installation of the fire alarm system and Ad Hoc Wide Area Mass Notification System connected to and interfaced with the existing Wide Area Mass Notification System located at the police station.

B. The requirements of the conditions of the Contract, Supplementary Conditions, and General Requirements apply to the work specified in this section.

C. The complete installation shall conform to the applicable sections of UFC-3-600-01 26 September 2006 Change 3 1 March 2013, UCF-4-021-01, NFPA-72, NFPA 71, local code requirements, and National Electrical Code with particular attention to Article 760.

D. The work covered by this section of the specifications shall be coordinated with the related work as specified elsewhere under the project specifications.

1.2 QUALITY ASSURANCE

A. Each and all items of the fire alarm system shall be listed as a product of a single fire alarm system manufacturer under the appropriate category by Underwriters' Laboratories, Inc. (UL), and shall bear the UL label. All control equipment shall be listed under UL category UOJZ as a single control unit. Partial listing shall not be acceptable.

B. All control equipment must have transient protection to comply with UL864 requirements.

C. Where fire alarm circuits leave the building, additional transient protection must be provided for each circuit. Devices must be UL listed under Standard 497B, Isolated Loop Circuit Protectors.

1.3 GENERAL

A. Furnish and install a complete fire alarm system as described herein and as shown on the plans, to be wired, connected, and left in first class operating condition. Include sufficient control panel(s), annunciator(s), manual stations, automatic fire detectors, smoke detectors, alarm indicating appliances, wiring, terminations, electrical boxes, and all other necessary material for a complete operating system.

1. The fire alarm system shall allow for loading and editing special instructions and operating sequences as required. The system shall be capable of on-site programming to accommodate system expansion and facilitate changes in operation. All software operations shall be stored in a non-volatile programmable memory within the fire alarm control panel. Loss of primary and secondary power shall not erase the instructions stored in memory.

2. Full flexibility for selective input/output control functions based on anding, oring, noting, timing, and special coded operations shall also be incorporated in the resident software programming of the system.

B. Resident software shall allow for full configuration of initiating circuits so that additional hardware shall not be necessary to accommodate changes in, for instance, sensing of normally open contact devices to sensing of

normally closed contact devices, or from sensing of normally open contact devices to sensing a combination of current limited and non-current limited devices on the same circuit and being able to differentiate between the two, or changing from a non-verification circuit to a verification circuit or vice-versa.

C. Resident software shall also allow for configuration of indicating appliance and control circuits so that additional hardware shall not be necessary to accommodate changes in, for instance, changing a non-coded indicating appliance circuit to a coded circuit, or from a slow march time (20 BPM) to a fast march time (120 BPM).

D. The system shall have the capability of recalling alarms and trouble conditions in chronological order for the purpose of recreating an event history.

E. All panels and peripheral devices shall be the standard product of a single manufacturer and shall display the manufacturer's name on each component. The catalog numbers specified under this section are those of Simplex and constitute the type, product quality, material, and desired operating features.

F. If equipment of another manufacturer is submitted for approval, the contractor shall state how much is to be deducted from his base bid for the substitution, and also shall state what, if any, specific points of system operation differ from the specified points of the system operation. This differentiation report must reference every paragraph of this specification.

1.4 OPERATION

A. The system alarm operation subsequent to the alarm activation of any manual station, automatic detection device, or sprinkler flow switch shall be as follows:

l. All audible alarm indicating appliances shall sound a continuous fire alarm signal until silenced by the alarm silence switch at the control panel and at the remote annunciator.

2. All visible alarm indicating appliances shall flash continuously until the system is reset.

3. Alarm indicating appliances shall operate selectively by zone.

4. Any subsequent zone alarm shall reactivate the alarm indicating appliances.

5. AII doors normally held open by door control devices shall release after an adjustable time delay.

6. A supervised signal to notify the local fire department or an approved central station shall be activated.

7. The mechanical controls shall activate the air handling systems in accordance with NFPA 90.

B. Upon reset of the fire alarm control panel, air handling units shall sequentially start up to minimize power demand.

C. The alarm shall be displayed on an SO-character LCD display. The top line of 40 characters shall be the point label and the second line shall be the device type identifier. The system alarm LED shall flash on the control panel and the remote annunciator until the alarm has been acknowledged. Once acknowledged, this same LED shall latch on. A subsequent alarm received from another zone shall flash the system alarm LED on the control panel and remote annunciator. The LCD display shall show the new alarm information.

D. A pulsing alarm tone shall occur within the control panel and the remote annunciator until the event has been acknowledged.

E. The alarm activation of any elevator lobby smoke detector shall, in addition to the operations listed above, cause the elevator cabs to be recalled according to the following sequence:

1. If the alarmed detector is on any floor other than the main level of egress, the elevator cabs shall be recalled to the main level of egress.

2. If the alarmed detector is on the main egress level, the elevator cabs shall be recalled to

the predetermined alternate recall level as determined by the local authority having jurisdiction.

F. The activation of any system smoke detector shall initiate an alarm verification operation whereby the panel will reset the activated detector and wait for a second alarm activation. If, within one (1) minute after resetting, a second alarm is reported from the same or any other smoke detector, the system shall process the alarm as described previously. If no second alarm occurs within one minute, the system shall resume normal operation. The alarm verification shall operate only on smoke detector alarms. Other activated initiating devices shall be processed immediately. The alarm verification operation shall be selectable by zone. The control panel shall have the capability to display the number of times (tally) a zone has gone into a verification mode. Should this smoke verification tally reach a pre-programmed number, a trouble condition shall occur.

G. The control panel shall have a dedicated supervisory service LED and a dedicated supervisory service acknowledge switch.

1. The activation of any standpipe or sprinkler valve supervisory (tamper) switch shall activate the system supervisory service audible signal and illuminate the LED at the control panel and the remote annunciator. Differentiation between valve tamper activation and opens and/or grounds on the initiation circuit wiring shall be provided.

2. Pressing the supervisory service acknowledge key will silence the supervisory audible signal while maintaining the supervisory service LED "ON" indicating the off-normal condition.

3. Restoring the valve to the normal position shall cause the supervisory service LED to extinguish, indicating restoration to normal.

4. Restoring the valve to the normal position shall cause the supervisory service audible signal to pulse indicating the restoration to normal position. The supervisory service acknowledge key shall silence the audible signal.

H. The alarm activation by either a manual or an electrically-operated coded station shall pulse the alarm indicating appliance to follow that code. The coded input signal shall take priority over all other input signals. All other alarm inputs shall be processed accordingly after coding is completed. If PNIS code is interrupted, it must be restarted and completed in its entirety without missing any portion of the code. Activation of control circuits for door release and air handling system shall not be delayed.

I. A manual evacuation (drill) switch shall be provided to operate the alarm indicating appliances without causing other control circuits to be activated. However, should a true alarm occur, all alarm functions would occur as described previously.

J. The system shall have a single key that will allow the operator to display all alarms, troubles, and supervisory service conditions including the time of each occurrence.

K. All doors normally held open by door control devices shall release upon AC power failure.

L. The actuation of the "enable walk test" program at the control panel shall activate the "walk test" mode of the system which shall cause the following to occur:

1. The city circuit connection shall be bypassed.
2. Control relay functions shall be bypassed.
3. The control panel shall show a trouble condition.
4. The alarm activation of any initiation device shall cause the audible signals to activate for two seconds.
5. The panel shall automatically reset itself after signaling is complete.
6. Any momentary opening of an initiating or indicating appliance circuit wiring shall cause the audible signals to sound for four seconds indicating a trouble condition.
7. The system shall have the capacity of eight distinctive walk test groups. Such that only a portion of the system need be disabled during testing.

1.5 SUPERVISION

A. The system shall contain Class "A", Style "D" independently supervised initiating device circuits. The alarm activation of any initiation circuit shall not prevent the subsequent alarm operation of any other initiation circuit.

B. There shall be supervisory service initiation device circuits for connection of all sprinkler valve supervisory (tamper). Device activation shall cause a supervisory alarm at the control panel.

C. There shall be independently supervised and independently fused indicating appliance circuits for alarm horns, speakers, flashing alarm lamps. Disarrangement conditions of any circuit shall not affect the operation of other circuits.

D. Auxiliary manual controls shall be supervised so that an "off normal" position of any switch shall cause an "off normal" system trouble.

E. Each independently supervised circuit shall include a discrete LCD readout to indicate disarrangement conditions per circuit.

F. The incoming power to the system shall be supervised so that any power failure must be audibly and visually indicated at the control panel and the remote annunciator. A green "power on" LED shall be displayed continuously while incoming power is present.

G. The system batteries shall be supervised so that a low battery condition or disconnection of the battery shall be audibly and visually indicated at the control panel and the remote annunciator.

H. The system modules shall be electrically supervised for module placement. Should a module become disconnected, the system trouble indicator shall illuminate and the audible trouble signal shall sound.

I. The system shall have provisions for disabling and enabling all circuits individually for maintenance or testing purposes.

J. There shall be independent supervision for opens of the air handling on/off/auto switch control output wiring. A discrete trouble LCD readout per output circuit will be provided for indication. A ground condition of the air handling control output wiring shall indicate a common ground trouble on the control panel.

1.6 POWER REQUIREMENTS

A. The control panel shall receive 120 VAC power (as noted on the plans) via a dedicated fused disconnect circuit.

B. The system shall be provided with sufficient battery capacity to operate the entire system upon loss of normal 120 VAC power in a normal supervisory mode for a period of 60 hours with 15 minutes of alarm operation at the end of this period. The system shall automatically transfer to the standby batteries upon power failure. All battery charging and recharging operations shall be automatic.

C. All external circuits requiring system operating power shall be 24 VDC and shall be individually fused at the control panel.

PART 2 - PRODUCTS

2.1 FIRE ALARM CONTROL PANEL - SIMPLEX TYPE 4100ES

A. Control panel construction shall be modular with solid-state, microprocessor-based electronics. It shall display only those primary controls and displays essential to operation during a fire alarm condition. Keyboards or keypads shall not be required to operate the system during fire alarm conditions.

B. A local audible device shall sound during alarm, trouble, or supervisory conditions. This audible device shall sound differently during each condition to distinguish one condition from another without having to view the panel. This audible device shall also sound during each keypress to provide an audible feedback to ensure that the key has been pressed properly.

C. The following primary controls shall be visible through a front access panel:

1. Eighty-character liquid crystal display.
2. Individual red system alarm LED.
3. Individual yellow supervisory service LED.
4. Individual yellow trouble LED.
5. Green "power on" LED.
6. Alarm Acknowledge key.
7. Supervisory Acknowledge key.
8. Trouble Acknowledge key.
9. Alarm Silence key.
10. System Reset key.

D. The following secondary control switches and LEDs shall be available behind an access door:

1. City disconnect/switch.
2. Manual evacuation (drill).
3. Elevator bypass.
4. Door holder release bypass.
5. Future.

E. The control panel shall provide the following:

1. Setting of time and date.
2. LED testing.
3. Alarm, Trouble, and Abnormal condition listing.
4. Enabling and disabling of each monitor point separately.
5. Activation and deactivation of each control point separately.
6. Changing operator access levels.
7. Walk Test enable.

8. Running diagnostic functions.

9. Displaying software revision level.

10. Displaying historical logs.

11. Displaying card status.

12. Point listing.

F. For maintenance purposes, the following lists shall be available from the point lists menu:

1. All points list by address.

2. Monitor point list.

3. Signal/speaker list.

4. Auxiliary control list.

5. Feedback point list.

6. Psuedo point list.

7. LED/switch status list.

G. Scrolling through menu options or lists shall be accomplished in a self-directing manner in which prompting messages shall direct the user. These controls shall be located behind an access door.

H. Primary Keys, LEDs, and LCD Display:

1. The control panel shall have a 2 line x 40 character liquid crystal display which shall be backlit for enhanced readability. So as to conserve battery standby power, it shall not be lit during an AC power failure unless an alarm condition occurs or there is keypad activity.

2. The display shall support both upper- and lower-case letters. Lowercase letters shall be used for softkey titles and prompting the user. Uppercase letters shall be used for system status information. A cursor shall be visible when entering information.

2.2 SYSTEM FRONT PANEL OPERATION AND CAPABILITIES

A. Under normal condition, the front panel shall display a "System is Normal" message and the current time and date.

B. Should an abnormal condition be detected, the appropriate LED (Alarm, Supervisory, or Trouble) shall flash. The panel audible signal shall pulse for alarm conditions and sound steady for trouble and supervisory conditions.

C. The LCD shall display the following information relative to the abnormal condition of a point in the system.

1. 40-character custom location label.

2. Type of device (i.e., smoke, pull station, water flow).

3. Point status (i.e., alarm, trouble).

D. Two methods of acknowledgment for each abnormal condition shall be provided. One may be chosen depending on the NFPA requirements.

1. For NFPA 72D requirements: Pressing the appropriate acknowledge button shall display the first unacknowledged condition in the appropriate list (either alarm, supervisory, or trouble), and require another acknowledge button. Press to acknowledge only the displayed point.

2. For NFPA 72A, B, or C requirements: Pressing the appropriate acknowledge button shall

globally acknowledge every point in the list.

E. These acknowledge functions may be passcode protected if the user has insufficient privilege to acknowledge such conditions. A message shall indicate insufficient privilege but allow the user to view the points without acknowledging them. Should the user have sufficient privilege to acknowledge, a message will be displayed informing the user that the condition has been acknowledged.

F. After all points have been acknowledged, the LEDs shall glow steady and the Sonalert will be silenced. The total number of alarms, supervisory, and trouble conditions shall be displayed along with a prompt to review each list chronologically. The end of the list shall be indicated by an end-of-list message "END OF LIST."

G. Alarm Silencing:

1. Should the Alarm Silence button be pressed, all audible alarm signals shall cease to operate.

2. Signals shall not be silenced during alarm silence inhibit mode.

H. System Reset:

1. The System Reset button shall be used to return the system to its normal state after an alarm condition has been remedied. The LCD display shall step the user through the reset process with simple English Language messages. Messages "SYSTEM RESET IN PROGRESS" will first be displayed followed by the message "SYSTEM RESET COMPLETED" and finally "SYSTEM IS NORMAL" should all alarm conditions be cleared.

2. Should an alarm condition continue to exist the message "SYSTEM RESET IN PROGRESS" will be followed by the message "SYSTEM RESET ABORTED" and the system will remain in an abnormal state. System control relays shall not reset. The Sonalert and the alarm LED will be on. The display will indicate the total number of alarms and troubles present in the system along with a prompt to use the ACK keys to review the points. These points will not require acknowledgment, if they were previously acknowledged.

3. Should the Alarm Silence Inhibit function be active, the SYSTEM RESET key press will be ignored. The message "SYSTEM RESET INHIBITED" will be displayed for a short time to indicate the action was not taken. As feedback to the operator, the message "SYSTEM RESET NO LONGER INHIBITED" will be displayed when the inhibit function times out.

Function Keys:

1. Additional function keys shall be provided to access status data for the following points:

a. Initiating device circuits.

b. Indicating appliance circuits.

c. Auxiliary relays.

d. Feedback points.

e. All other input/output points.

2. The following status data shall be available.

a. Primary state of point.

b. Zone, PID and Card type information.

c. Class "A" status.

d. Current priority of outputs.

e. Disable/Enable status.

f. Verification tallies of initiating devices.

g. Automatic/Manual Control Status of output points.

h. Acknowledge status.

i. Relay status.

J. History Logging:

1. The system shall be capable of logging and storing 300 events in an alarm log and 300 events in a trouble log. These events shall be stored in a battery-protected random-access memory. Each recorded event shall include the time and date of that event's occurrence.

2. The following Historical Alarm log events shall be stored:

a. Alarms.

b. Alarm Acknowledgment.

c. Alarm Silence.

d. System Reset.

e. Alarm Historical log cleared.

3. The following Historical Trouble log events shall be stored:

a. Trouble conditions.

b. Supervisory alarms.

c. Trouble acknowledgment.

d. Supervisory acknowledgment.

e. Alarm Verification tallies.

f. Walk Test results.

g. Trouble Historical log cleared.

4. Silent Walk Test with History Logging:

a. The system shall be capable of being tested by one person. While in testing mode, the alarm activation of an initiating device circuit shall be silently logged as an alarm condition in the historical data file. The panel shall automatically reset itself after logging of the alarm.

b. The momentary disconnection of an initiating or indicating device circuit shall be silently logged as a trouble condition in the historical data file. The panel shall automatically reset itself after logging of the trouble condition.

c. Should the walk test feature be on for an inappropriate amount of time, it shall revert to the normal mode automatically.

d. The control panel shall be capable of supporting up to 8 separate testing groups whereby one group of points may be in a testing mode and the other (non-testing) groups may be active and operate as programmed per normal system operation. After testing is considered complete, testing data may be retrieved from the system in chronological order to ensure device/circuit activation.

e. Should an alarm condition occur from an active point, not in walk test mode, it shall perform operations described in Section 1.4.

K. LED Supervision: All slave module LEDs shall be supervised for burnout or disarrangement. Should a problem occur, the LCD shall display the module and LED location numbers to facilitate location of that LED.

L. System Trouble Reminder: Should a trouble condition be present within the system and the audible trouble signal silenced, the trouble signal shall resound at preprogrammed time intervals to act as reminder that the fire alarm system is not 100% operational. Both the time interval and the trouble reminder signal shall be programmed to suit the owner's application.

M. Access Levels:

1. There shall be four (4) access levels with level 4 being the highest level. Level 1 actions shall not require a passcode. Passcodes shall consist of up to ten (10) digits. Changes to passcodes shall only be made by authorized personnel.

2. In order to maintain security when entering a passcode, the digits entered will not be displayed, but a cursor will move along filling the position with an X to indicate that the digit has been accepted. All key presses will be acknowledged by a local audible sound.

3. When a correct passcode is entered, the message "Access Granted" shall be displayed. The new access level shall be in effect until the operator manually logs out or the keypad has been inactive for ten (10) minutes.

4. Should an invalid code be inputted, the operator shall be notified with the message "ERROR. .. INCORRECT PASSCODE" and shall be allowed up to three chances to enter a valid code. After three unsuccessful tries, the message "ACCESS DENIED" shall be displayed. The level shall not be altered, and the operator shall no longer be in the menu option.

5. Access to a level will only allow the operator to perform all actions within that level plus all actions of lower levels, not higher levels.

6. The following keys/switches shall have access levels associated with them:

a. Alarm Silence

b. System Reset

c. Set Time/Date

d. Manual Control

e. On/Off/Auto Control

f. Disable/Enable

g. Clear Historical Alarm Log

h. Clear Historical Trouble Log

i. Walk Test

j. Change Alarm Verification

7. Acknowledge keys shall also require privileged access to acknowledge points. If the operator presses an (ACK) key with insufficient access, an error message will be displayed. The points will scroll with (ACK) key presses to view the points on the list, but the points will not get acknowledged in the database.

A. Fire Alarm Control System Network:

1. Each fire alarm control panel shall operate as a proprietary local system with data communication to a higher order Central Processing Unit (CPU).

2. The CPU shall monitor all alarms and troubles of each fire alarm control panel.

3. The CPU shall control each fire alarm control panel as listed in this specification.

4. All data communication wiring between the CPU and fire alarm control panel shall be supervised for opens, shorts, and grounds.

5. Equipment Enclosures: Provide cabinets of sufficient size to accommodate the aforementioned equipment. Cabinet shall be equipped with locks and transparent door panel providing freedom from tampering yet allowing full view of the various lights and controls.

2.3 REMOTE ANNUNCIATOR(S) - SIMPLEX TYPE 4603-9101

A. Where shown on the plans, provide and install an LCD annunciator. The annunciator(s) shall have a beige enamel finish and shall communicate to the control panel over one twisted shielded pair of wire and operating power shall be 24 VDC and be fused at the control panel. Point- wired annunciators will not be considered as equal. The LCD display shall mimic- the LCD display on the control panel.

B. The serial annunciator shall provide a common alarm and trouble circuit consist of:

1. Control Push-Button Switches - for: alarm silence, trouble silence, system reset, and manual evacuation duplicating the control panel switches. A key "enable" switch shall be provided to activate or deactivate the control switches.

2. Tone Alert - Duplicates the control panel tone alert during alarm and trouble conditions.

3. System trouble English language display.

4. Power on LED.

5. To accommodate and facilitate job site changes, the control switches shall have the capability to be programmed on-site to provide for manual switch input operation other than their standard purpose.

2.4 INDIVIDUAL DEVICE NETWORK (IDNET)

A. Communication with addressable devices. The system must provide communication with initiating and control devices individually. All of these devices will be individually annunciated at the control panel. Annunciation shall include the following conditions for each point:

1. Alarm.

2. Trouble.

3. Open.

4. Short.

5. Device missing/failed.

B. All addressable devices shall have the capability of being disabled or enabled individually.

C. Up to 250 addressable devices may be multi-dropped from a single pair of wires. Systems that require factory reprogramming to add or delete devices are unacceptable.

D. Format: The communication format must be a completely digital poll/response protocol to allow t-tapping of the circuit wiring. A high degree of communication reliability must be obtained by using parity data bit error checking routines for address codes and check sum routines for the data transmission portion of the protocol. Systems that do not utilize full digital transmission protocol are not acceptable.

E. Identification of Addressable Devices: Each addressable device must be uniquely identified by an address code entered on each device at time of installation. The use o fjumpers to set address will not be acceptable due to the potential of vibration and poor contact. Device identification schemes that do not use uniquely set addresses, but rely on electrical position along the communication channel are unacceptable. These systems cannot accommodate t-tapping the addition of an addressable device between existing devices requires reprogramming all existing electrically further devices. The system must verify that proper type device is in place and matches the desired software configuration.

F. Wiring Type, Distances, Survivability, and Configurations: Wiring types will be approved by the equipment manufacturer. Existing wiring will be utilized in retrofit applications. The system shall allow a line distance of up to 2,500 feet to the furthest addressable device on a Class B circuit. (Class A communications will be provided where shown on the drawings. Wire will be so routed to maintain sufficient distance between the forward and return loop as called for by the authority having jurisdiction.) To minimize wire routing and to facilitate future additions, t-tapping of the communications channel will be supported except where Class A wiring is required.

G. Addressable Device Types:

1. General: The system control panel, must be capable of communicating with the types of addressable devices specified below. Addressable devices will be located as shown on the drawings.

2. TrueAlarm Addressable Detector Bases - Simplex Type 4098-9792: All addressable smoke and heat detector heads as specified below will be pluggable into their bases. The base will contain electronics that communicate the detector status (normal, alarm, trouble) to the control panel over two wires. The same two wires shall also provide power to the base and detector. Different detector heads (smoke or heat) must be interchangeable. Upon removal of the head, a trouble signal will be transmitted to the control panel.

3. Photoelectric TrueAlarm Sensor - Simplex Type 4098-9714:

a. The photoelectric type detector shall be a plug-in unit which mounts to a twist-lock base, and shall be UL approved.

b. The detectors shall be of the solid-state photoelectric type and shall contain no radioactive material. They will use a pulsed infrared LED light source and be sealed against rear airflow entry.

c. The detector shall fit into a base that is common with both the heat detector and ionization type detector and shall be compatible with other addressable detectors, addressable manual stations, and addressable zone adapter modules on the same circuit. There shall be no limit to the number of detectors or zone adapter modules which may be activated or "in alarm" simultaneously.

4. Addressable Thermal Detector Head - Simplex 4098-9733: Thermal detector heads must be UL listed. They will be a combination rate-of-rise and fixed temperature (135 F) type, (155 f), & (190 f) automatically restorable.

5. Addressable Pull Stations - Simplex Type 4099-9004 Single & 4099-9006 Double Action:

a. Addressable pull stations will contain electronics that communicate the station's status (alarm, normal) to the transponder over two wires which also provide power to the pull station. The address will be set on the station. They will be manufactured from high impact red Lexan. Station will mechanically latch upon operation and remain so until manually reset by opening with a key common to all system locks. Pull stations will be double action.

b. The front of the station is to be hinged to a backplate assembly and must be opened with a key to reset the station. The key shall be common with the control panels. Stations which use Allen wrenches or special tools to reset, will not be accepted. The station shall consist of high impact Lexan plastic, red in color.

c. The addressable manual station shall be capable of field programming of its "address" location on an addressable initiating circuit. The manual station shall be fitted with screw terminals for field wire attachment.

d. There shall be no limit to the number of stations, detectors or zone adapter modules, which may be activated or "in alarm" simultaneously.

e. The addressable manual station shall be UL listed.

6. Addressable Photoelectric Duct Detector TrueAlarm - Simplex Type 4098-9755 w/o relay & 4098-9756 with relay:

a. The detector shall be a non-polarized 24 VDC type which is compatible with the fire alarm panel and obtains its operating power from the supervisory current in the fire alarm detection loop.

b. Detectors shall be of the solid-state photoelectric type and shall operate on the light scattering, photodiode principle. To minimize nuisance alarms, detectors shall have an insect screen and be designed to ignore invisible airborne particles or smoke densities that are below the factory set alarm point. No radioactive material shall be used.

c. The detector head shall be directly interchangeable with an ionization detector type. The 24 VDC detector may be reset by actuating the control panel reset switch.

d. Detector construction shall have a mounting base with a twist-lock detecting head that is lockable. The locking feature must be field removable when not required.

Contact between the base and head shall be of the bifurcated type utilizing spring type, self-wiping contacts. Removal of the detector head shall interrupt the supervisory circuit of the fire alarm detection loop and cause a trouble signal at the control panel. Detector design shall provide compatibility with other normally open fire alarm detection loop devices (heat detectors, pull stations, etc.).

e. It shall be possible to alarm the duct housing by using a test switch. Simplex Type 2098-9806 test LED alarm indicator.

f. For maintenance purposes, it shall be possible to clean the duct housing sampling tubes by accessing them through the duct housings front cover.

g. To minimize false alarms, voltage and RF transient suppression techniques shall be employed as-well-as smoke signal verification circuit and an insect screen.

h. Auxiliary SPDT relays and or remote LED alarm indicators and key-operated test stations shall be installed where indicated.

7. Individual Addressable Module - Simplex Type 4090-9001: Individual Addressable Module shall be used for monitoring of water flow, valve tamper, Halon control panels, non- addressable detectors, and for control of evacuation indicating appliances and AHU systems:

a. An addressable interface module shall be provided for interfacing normally open direct contact devices to an addressable initiating circuit. The device shall be a Simplex Individual Addressable Module (IAM).

b. IAMs will be capable of mounting in a standard electric outlet box. IAMs will include cover plates to allow surface or flush mounting. IAMs will receive their 24 VDC power from a separate two-wire pair running from an appropriate power supply.

c. The ZAM shall be supervised and uniquely identified by the control panel. Device identification shall be transmitted to the control panel for processing according to the program instructions. Should the IAM become non-operational, tampered with, or removed, a discrete trouble signal, unique to the device, shall be transmitted to, and annunciated at, the control panel.

d. The IAM shall be capable of being programmed for its "address" location on the addressable device initiating circuit. The IAM shall be compatible with addressable manual stations and addressable detectors on the same addressable initiating circuit.

8. Addressable Device Supervision:

a. All devices shall be supervised for trouble conditions. The system control panel will be capable of displaying the type of trouble condition (open, short, device missing/failed).

b. Should a device fail, it will not hinder the operation of other system devices.

2.5 ONE-WAY VOICE COMMUNICATION

A. Provide one-way voice communication and tone generating capabilities.

B. A central audio control module shall be provided for the necessary alarm message/tone generation, main and remote microphone connections, music inputs, and mixer/pre-amplifier circuits. Continuous supervision shall be provided. Audio outputs shall have individual gain control.

C. A hand-held, push-to-talk microphone shall be provided recessed within a protective panel- mounted enclosure. The microphone shall be a dynamic communication type with a frequency range of 200 Hz to 4000 Hz and shall be equipped with a self-winding 5-foot coiled cable. An LED indicator shall be provided to indicate microphone push-to-talk button has been pressed and speaker circuits are ready for transmission. Microphone shall be supervised from disconnection.

D. An audio control switch module shall be furnished to provide manual to the audio functions. These switches and associated LED indicators shall be supervised from disarrangement or failure.

E. Audio power amplifiers shall be furnished with Dual 100W self-contained filtered 24 VDC power supply, transformer, and amplifier monitor circuits. Amplifiers shall provide a 70 VRMS output with a frequency response of 120 Hz to 12,000 Hz. Provide a sufficient quantity of amplifiers to operate all system speakers simultaneously plus ten (20) percent space capacity.

G. Speaker circuits shall be supplied which are capable of supplying audio signals at 70 VRMS supplied by the system amplifiers. Supervision for open, short, or ground fault conditions shall be provided. Individual and distinct trouble indications shall be provided for each fault. Provide one circuit for each zone or area of distinct communication.

H. Tones: Digitized tones for alarm or auxiliary requirements shall be available. Tone requirements are as follows:

1. The Slow Whoop shall be a slowly ascending tone from 200 to 830 Hz in 2.5 seconds.

2. The Wail shall ascent and descent from 600 to 940 Hz.

3. The Beep shall be a 470 Hz tone. The time duration shall be 0.7 seconds on and 0.7 seconds off.

4. The Hom shall be a continuous 470 Hz tone.

5. The Stutter shall be a 470 Hz tone which is on for 100 milliseconds and off for 100 milliseconds.

6. The Chime shall be a 700 Hz tone with a 1.5 second delay time.

7. The Coded Hom shall be a 470 Hz tone designed specifically for use on a coded system.

8. The Hi/Lo shall be a free running tone with a high frequency of 544 Hz and a low frequency of 440 Hz. The "on time" (Hi) shall be 100 milliseconds while the "off time" (Lo) is 400 milliseconds.

I. A pre-recorded digitized voice message capability shall be provided for automatic transmission to building occupants during alarm conditions. Three (3) messages shall be provided, one for alarm, one for testing. This message player shall not rely on a tape or other mechanical means of transmitting the evacuation message. Those systems that do not use tape players must provide a back-up player designed to automatically operate should the primary device jam or otherwise fail to operate. A standard evacuation message shall be provided under this contract; however, the message player must be capable of transmitting a customized message of up to 4 minutes long. A self-contained speaker will provide testing of the message(s) without disturbing the occupants of the facility.

J. A pre-recorded digitized P.N.I.S. (Positive Non-Interfering Successive) "voice coding" capability shall be provided for automatic transmission to building occupants during alarm conditions. A separate "voice code" shall sound throughout the facility for each zone in alarm condition. Examples of voice messages are as follows:

1. Doctor Firestone please dial two-three-two.

2. Doctor Firestone please call five-four-seven.

3. Code Red three-four-five.

K. Automatic Voice Evacuation Sequence:

1. The audio alarm signal shall consist of an alarm tone for a maximum of 10 seconds followed by automatic pre-selected voice evacuation messages. At the end of each voice evacuation message, the alarm tone shall resume. The alarm tones shall sound until the alarm silence switch at the fire alarm control panel has been operated.

2. All audio alarm operations (speaker circuit selection and alarm tone/voice message timing variations) shall be activated by the system software so that any required future changes to the evacuation sequence can be facilitated by authorized personnel without any component rewiring.

L. Manual Voice Paging Sequence:

1. The system shall be configured to allow selective voice paging. Upon activation of any speaker manual control switch, two (2) seconds of tone shall sound over the speakers indicating an impending voice message will occur.

2. If any speaker manual control switches are activated, the control panel operator shall be able to make announcements via the push-to-talk paging microphone over the preselected speakers.

3. Facility for total building evacuation and paging shall be provided to allow for activation of speakers. This shall be accomplished by the means of an "All Circuit" switch.

M. Alarm Signals:

1. Provide audio/visual units with flush trims and backboxes for all wall mount audio-visual unit locations as shown on the plans.

2. Provide speakers with mounting plates for all locations requiring surface-mounted audio devices only.

3. Provide speakers and visual alarm signals for all locations requiring ceiling-mounted audio-visual alarm signals as shown on the plans.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide and install the system in accordance with the plans and specifications, all applicable codes and the manufacturer's recommendations. All wiring shall be installed in strict compliance with all the provisions of NEC article 760 A and C, Power-Limited Fire Protective Signaling Circuits or if required may be reclassified as non-power limited and wired in accordance with NEC-Article 760 A and B. Upon completion, the contractor shall so certify in writing to the owner and general contractor. All junction boxes shall be sprayed red and labeled "Fire Alarm." Wiring color code shall be maintained throughout the installation.

B. Installation of equipment and devices that pertain to other work in the contract shall be closely coordinated with the appropriate subcontractors.

C. The contractor shall clean all dirt and debris from the inside and the outside of the fire alarm equipment after completion of the installation.

D. The manufacturer's authorized representative shall provide on-site supervision of installation.

E. All wiring shall be installed in conduit and Class "A", Style "7".

TESTING

A. The completed fire alarm system shall be fully tested in accordance with NFPA-71H by the contractor in the presence of the owner's representative and the local Fire Marshal. Upon completion of a successful test, the contractor shall so certify in writing to the owner and general contractor.

3.3 WARRANTY

A. The contractor shall warrant the completed fire alarm system wiring and equipment to be free from inherent mechanical and electrical defects for a period of one (1) year from the date of the completed and certified test or from the date of first beneficial use.

B. The equipment manufacturer shall make available to the owner a maintenance contract proposal to provide a minimum of two (2) inspections and tests per year in compliance with NFPA-72H guidelines.

END OF SECTION