

Wake County Office Building
 8th Floor and Skybridge Demolition
 Raleigh, North Carolina
 April 11, 2024

ADDENDUM NO. 2
 Page 1

HUFFMAN ARCHITECTS, PA
 632 PERSHING ROAD
 RALEIGH, NORTH CAROLINA 27608
 PHONE (919) 972-9949

TO: ALL PRIME BIDDERS OF RECORD

This Addendum forms a part of the Contract Documents and modifies the original Project Manual and Construction Documents dated March 13, 2024. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification. This Addendum consists of seven (7) pages and twenty-five (25) 8 1/2" X 11" attachments. All documents are distributed digitally.

DRAWINGS

- | <u>Item No.</u> | <u>Description</u> |
|-----------------|--|
| 1. | Sheets D101 "DEMOLITION PLAN - WCOB EIGHTH FLOOR", D102 "DEMOLITION FLOOR PLAN - WCCH SIXTH FLOOR AND SKYBRIDGE", D111 "DEMOLITION RCP - WCOB EIGHTH FLOOR", and D112 "DEMOLITION RCP AND SECTIONS - WCCH SIXTH FLOOR AND SKYBRIDGE", under DEMOLITION GENERAL NOTES, add the following item: |
| 15. | Remove existing suspended ceiling system in its entirety on the Eighth Floor of the Wake County Office Building. Demolish furred plaster subceiling and associated suspension system (typical above all ceilings). Additionally, remove lathe and plaster wrap from beams (typical at all locations). Concrete cover on beams to remain undisturbed. |
| 2. | Sheet FP100 "FIRE PROTECTION WCOB FLOOR PLAN", add Demolition Note #3 to a fire hose cabinet located on the east side of the west elevators and to a fire hose cabinet on the east side of the east stairs adjacent to the water cooler. |
| 3. | Sheet P100 "PLUMBING FLOOR PLAN", add Demolition Note #3 to the water cooler near column F/5 and to the water cooler on the east side of the east stairs. Refer to Sheet D101 for exact locations. |
| 4. | Sheet P100 "PLUMBING FLOOR PLAN", add Demolition Note #4 to the lavatory in the toilet room near column D/9 and to the janitor's sink near column D.1/10. Refer to Sheet D101 for exact locations. |
| 5. | Sheet P100 "PLUMBING FLOOR PLAN", add Demolition Note #3 to the water closet in the toilet room near column D/9. Refer to Sheet D101 for the exact location. |
| 6. | Sheet P100 "PLUMBING FLOOR PLAN", add Demolition Note #3 to the urinal in the toilet room near column like D.1/3. Refer to Sheet D101 for the exact location. |

SPECIFICATIONS

- | <u>Item No.</u> | <u>Description</u> |
|-----------------|---|
| 1. | Replace the original "Bid Proposal Form" with the attached "Bid Proposal Form". |

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2. Specification 01 2100 – “Allowances” – under Part 3, Section 3.3, make the following revision:
 - D. Allowance No. 4: Unit-Cost Allowance: Abatement of Asbestos Containing TSI.
 1. Coordinate allowance adjustment with corresponding unit-price requirements in Section 01 2200 “Unit Prices”.
 2. Allowance Quantity: 1000 Linear Feet.
 - E. Allowance No. 5: Unit-Cost Allowance: Replacement of Abated TSI.
 1. Coordinate allowance adjustment with corresponding unit-price requirements in Section 01 2200 “Unit Prices”.
 2. Allowance Quantity: 1000 Linear Feet.
3. Specification 01 2100 – “Allowances” – under Part 3, Section 3.1, delete the following:
 - F. Allowance No. 6: Abatement of Asbestos Containing Black Mastic.
 1. Coordinate allowance adjustment with corresponding unit-price requirements in Section 01 2200 “Unit Prices”.
 2. Allowance Quantity: 150 Square Feet.
4. Specification 01 2200 – “Unit Prices” – under Part 3, Section 3.1, make the following revision:
 - A. Unit Price 1: Abatement of Asbestos Containing TSI.
 1. Description: Complete abatement of asbestos containing TSI.
 2. Unit of Measurement: 1 Linear Foot.
 3. Allowance Quantity: 1000 Linear Feet.
 - B. Unit Price 2: Replacement of Abated TSI.
 1. Description: Replacement of HVAC piping insulation at all locations where abated per Specification 23 0719 “HVAC Piping Insulation”.
 2. Allowance Quantity: 1000 Linear Feet.
5. Specification 01 2200 – “Unit Prices” – under Part 3, Section 3.1, delete the following:
 - C. Unit Price 3: Abatement of Asbestos Containing Black Mastic
 3. Description: Complete abatement of asbestos containing black mastic.
 4. Unit of Measurement: 1 Square Foot.
 5. Allowance Quantity: 150 Square Feet.
6. Specification 01 3200 – “Construction Progress Documentation” – under part 3, Section 3.1, delete Section A – “Scheduling Consultant” in its entirety.
7. Specification 01 3300 – “Submittal Procedures” – under Part 2, Section 2.1, Section C.3, make the following revision:
 - b. Physical copies of all sample submittals are required. See Section D – “Samples” below. No paper copies of shop drawing or product data submittals will be required except for as required in Spec 01 7823 – “Operation and Maintenance Data”.

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8. Specification 01 5000 – “Temporary Facilities and Controls” – under Part 2, Section 2.2, Section B – “Field Office”, delete the following:
 2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- (1.2-m-) square tack and marker boards.
 3. Drinking water.
 4. Coffee machine and supplies.
 5. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F (20 to 22 deg C).
 6. Lighting fixtures capable of maintaining average illumination of 20 fc (215 lx) at desk height.
9. Specification 01 7823 – “Operation and Maintenance Data” – under Part 1, Section 1.4, Section B – “Format”, make the following revision:
 - A. One paper copy and one electronic PDF copy. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.
10. Specification 01 7839 – “Project Record Documents” – under Part 2, Section 2.1, delete the following:
 - A. General: Provide as-built surveys to scale with finished spot elevations as needed for the Work completed in the Scope of Work. The as-built survey shall be sealed by a professional land surveyor. Provide three (3) copies of the survey along with pdf and AutoCAD electronic files.
11. Specification 02 0760-A – “Asbestos Abatement Thermal System Insulation” – under Part 3, make the following revision:
 - 3.08. After final clean-up procedures have been completed, porous substrata which can be assumed to have some degree of non-visible contamination from prior exposure shall receive a thin coat of a satisfactory encapsulating agent to seal in non-visible residue.
12. Specification 02 4119 – “Selective Demolition” – under Part 1, Section 1.7, delete Section D – “Hazardous Materials” in its entirety.
13. Add the attached Specification 07 8413 – “Penetration Firestopping”.
14. Specification 08 1416 – “Flush Wood Doors” – under Part 1, Section 1.4, delete the following:
 - B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.
15. Specification 08 1416 – “Flush Wood Doors” – under Part 1, delete Section 1.5 in its entirety.
16. Specification 08 1416 – “Flush Wood Doors” – under Part 3, Section 3.3, Section A – “Inspections”, delete the following:
 - A. Provide inspection of installed Work through AWI’s Quality Certification Program, certifying that wood doors and frames, including installation, comply with requirements of AWI/AWMCA/WI’s “Architectural Woodwork Standards” for the specified grade.
17. Specification 08 5113 – “Aluminum Windows” – under Part 1, Section 1.06, delete the following:
 - C. In-House Testing: Conduct air and/or water testing of 2% windows prior to shipping.
 1. Detailed documentation on in-house testing is available upon request.

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18. Add the attached Specification 23 0719 – “HVAC Piping Insulation”.

CLARIFICATIONS

Item No. Description

1. Due to time constraints with the user group currently occupying the Eighth Floor of the Wake County Office Building, site mobilization is anticipated to be authorized between mid-July and early August 2024.

QUESTIONS

Item No. Description

1. In the WCOB, a few doors have a cipher lock i.e., Room 828, 835-843. Please advise if the cipher locks are to be removed and turned over or disposed of.
- a. **Cipher locks shall be turned over to Wake County GSA for reuse if they are still in place upon site mobilization. Wake County reserves the right to remove and retain any items from the floor ahead of the Notice-To-Proceed.**
2. Analytical Procedures, Asbestos Bulk Samples, EEC, Inc’s Report of Limited Facility Survey to Identify Asbestos-Containing Materials - states that no bulk samples were identified to contain asbestos in amounts greater than one percent (1%) and the Summary of Analytical Results states that no asbestos was detected in any of the bulk building material samples and collected during our survey. The results show that there was <1% Chrysotile present in the Wall Joint Compound in Area 814. The abatement contractor shall assume that all Wall Joint Compound in the WCOB contains Chrysotile and will need to be abated to ensure that workers are not exposed to concentrations of asbestos fibers in the air above the PEL during demolition. Please confirm.
- a. **The abatement contractor shall assume that all Wall Joint Compound in the WCOB contains Chrysotile, and it shall be abated at all demolished walls according to the following recommendations. Wall Joint Compound at existing walls to remain shall not be disturbed.**
- i. **The NC-NESHAP program does not require full scale abatement of Wall Joint Compound containing Chrysotile if it is less than or equal to 1% but does require that it is removed in wet conditions. All required abatement is already accounted for in the contract documents.**
- ii. **NC-OSHA requires that any amount of asbestos from <1% up to 1% requires employee protection which includes employee training, personal protective equipment, air monitoring to measure exposure, and medical examination before respirators are required to be put on by employees for their qualification to wear respirators.**
- iii. **NC-OSHA requires that any amount of asbestos >1% requires the abatement to be performed by an asbestos contractor licensed in the State of North Carolina.**
3. 01 1000 Summary 1.5. C. 1. – Fire Protection system shall remain fully active during the entire demolition and construction periods. Does this include both the fire alarm and fire sprinkler?
- a. **The building’s fire alarm and fire sprinkler systems shall remain fully active during the entire demolition and construction periods. Once the floor is released to the contractor, the fire protection systems from the Eighth Floor can be removed.**

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4. 01 1000 Summary 1.5. C. 1. – The drawings show the demolition of both the FA and sprinkler system. When are these activities supposed to take place on the WCOB 8th floor if the systems are to remain active? Please advise.
 - a. **The building fire alarm system shall remain fully active during the entire demolition and construction periods. Once the floor is released to the contractor, the fire alarm devices from the Eighth Floor can be removed. Note: There are fire alarm devices on the Eighth Floor that must remain operational – see Drawings.**
5. 01 3200 Construction Progress Documentation paragraph 2.2.A. states that a bar chart schedule is required, and paragraph 2.3 references a CPM schedule and (3.1) engaging a consultant for CPM who attends all meetings related to the project progress, delays, and time impact. Hiring a CPM consultant is costly. Will a bar chart schedule be acceptable for the duration of the project?
 - a. **A bar-chart schedule is acceptable granted that it clearly shows timeline and milestone dependencies establishing the critical path. The General Contractor is not required to engage an outside CPM consultant. See the correction under SPECIFICATIONS above.**
6. 01 3300 Submittal Procedures 2.1.C.3. - Submit SD in PDF and 3 opaque copies of each submittal. Arch will retain 2 copies, 1 returned. Can the 3 opaque copies requirement be waived?
 - a. **Yes. See the correction under SPECIFICATIONS above.**
7. 01 5000 Temp Facilities & Controls 2.2.B. – Six (6) items are listed of requirements for a field office including furniture, conference room for 10 people with marker board, coffee machine and supplies, drinking water, heat & HVAC, & lighting fixtures. Can this be waived as the entire 8th floor is to be demolished?
 - a. **Items 2-6 may be waived. Project-site documents are required to be kept within the work area at all times for review, documentation, and inspections purposes. The WCOB 11th Floor Conference Room will be utilized for project meetings. See the correction under SPECIFICATIONS above.**
8. 01 7823 O&M Data 1.4.B. - Submit 3 paper copies of O&M Manuals. Arch will return 2 copies. Can this be changed to provide a single copy as the Architect will only keep a single copy per the spec?
 - a. **Yes. See the correction under SPECIFICATIONS above.**
9. 01 7839 Project Record Docs 2.1.A. - Provide as-built surveys. ... Provide 3 copies of survey along with PDF and Auto CAD. A record survey doesn't apply. Can this be waived?
 - a. **Yes. See the correction under SPECIFICATIONS above.**
10. 02 4119 Selective Demo 1.7.D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work. Please confirm the existence of the hazardous materials on this project and the need for abatement procedures.
 - a. **Asbestos-Containing Materials (ACM) are confirmed to exist on the Eighth Floor of the Wake County Office Building. Refer to Addendum No. 1; Sheets D101 and M100; and Specs 02 0760-A, 02 0820, and 02 0840 for guidance on abating ACM. See the correction under SPECIFICATIONS above.**

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11. 02 4119 Selective Demo 1.7.F. - Utility Service: Maintain fire-protection facilities in service during selective demo operations. The sprinkler system and FA are to be demolished according to drawings. Is this meant to be for the rest of the WCOB building?
 - a. **See response to Question No. 3 above.**
12. 02 0760-A 3.08 – Final clean up procedures completed per Section 01 7110 is referenced, however, this specification was not provided. Please provide.
 - a. **Huffman Architects has confirmed with EEC, Inc., the environmental engineer who performed the asbestos testing on the Eighth Floor, that Spec Section 01 7110 is not needed. Please refer to Spec 01 7700 – “Closeout Procedures”, Part 3, Section 3.1 for final cleaning procedures. See the correction under SPECIFICATIONS above.**
13. 08 1416 1.4.B. – Can the AWI Quality Certification Program certificate requirement be waived?
 - a. **Yes. See the correction under SPECIFICATIONS above.**
14. 08 1416 1.5A. Can the Manufacturer’s Certification as a licensed participant in AWI’s Quality Certification Program be waived?
 - a. **Yes. See the correction under SPECIFICATIONS above.**
15. 08 1416 2.3.A.2. Does Premium grade refer to AA grade doors? Please advise.
 - a. **Under the ANSI/WDMA I.S. 1A performance grade required in the Specs, premium grade requires AA-grade veneer. All new conditions should match existing. Use existing conditions and the attached WDMA/AWS comparison chart as guidance for compliance with the Spec.**
16. 08 1416 3.3.A.1. Can the inspection of installed Work through AWI’s Quality Certification Program requirement be waived?
 - a. **Yes. See the correction under SPECIFICATIONS above.**
17. 08 5113 106.C. Please provide detailed documentation on in-house testing.
 - a. **The availability of documentation on in-house testing can’t be guaranteed across all listed manufacturers. See the correction under SPECIFICATIONS above.**
18. 08 7100 1.4.D. Can the door hardware supplier qualification requirement to have a certified Architectural Hardware Consultant (AHC) on staff be waived?
 - a. **A certified Architectural Hardware Consultant (AHC) is required to be on staff with the subcontractor providing door hardware. An AHC is not required to be on staff with the General Contractor.**
19. For Value Engineering purposes, would leaving the skybridge in place after gutting its interior be considered as the cost to demo the skybridge, patch the building openings, provide new windows, etc. will be substantial. The existing overhead rolling doors could be shut and enclosed with drywall which could be easily removed in the event that the skybridge is reopened in the future. Please advise.
 - a. **Currently, Wake County is not considering any changes to the scope of the skybridge demolition work or any associated alternates.**

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20. Sheet G107 - The note at bottom right of page references a qualified installer survey of the existing penetrations. Qualified installer is as defined in specification section 07.84.13. Spec Section 07 84 13 was not included with the RFP documents. Please provide if applicable.

a. **See the correction under SPECIFICATIONS above and the attached Spec Section 07 8413 below.**

21. Sheet A104 WCOB Eleventh Floor does not reference any new HVAC work besides painting the existing grilles to match (Finish Note 6) and cleaning the HVAC diffusers (Finish Note 8). Please confirm no additional HVAC work is required in this area.

a. **The grilles are not indicated to be painted; do not paint. The grilles shall be cleaned. There is no additional work associated with the HVAC system in this area.**

22. Sheet FP100 shows the demolition of all sprinklers and piping on the 8th floor, however, Summary 01 1000 paragraph 1.5.C.1. states that the fire protection system shall remain fully active during the entire demolition and construction periods. At what time is the fire protection system to be removed under this contract?

a. **See response to Question No. 3 above.**

23. Sheet FP100 does not indicate the location of the valve cabinet per Demolition Note 3. Please provide.

a. **See the correction under DRAWINGS above.**

24. Sheet P100 does not reference the two (2) water coolers but are referenced on Sheet D101 to be removed. Please confirm these fixtures are to be removed and capped.

a. **See the correction under DRAWINGS above.**

25. Sheet P100 does not reference the two (2) sinks shown on Sheet D101 to be removed: (1) sink in the room at column line 9/D and the other in the room at column line 10/D1. Please confirm these fixtures are to be removed and capped.

a. **See the correction under DRAWINGS above.**

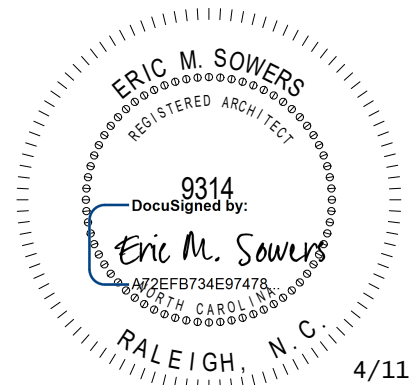
26. Sheet P100 does not reference the water closet fixture in the bathroom at column line 9/D as shown on Sheet D101 to be removed. Please confirm this fixture is to be removed and capped.

a. **See the correction under DRAWINGS above.**

27. Sheet P100 - The men's restroom at column line 3/D1 shows a urinal but is not designated with Demolition Note 3 however, it is referenced on Sheet D101 to be removed. Please confirm the urinal is to be removed and capped.

a. **See the correction under DRAWINGS above.**

END OF ADDENDUM NUMBER TWO



Wake County Office Building – 8th Floor and Skybridge Demolition
RFB #24-018

BID PROPOSAL FORM

(USE THIS FORM ONLY. Bids submitted on anything other than the form(s) provided may be considered non-responsive and subject to rejection)

SINGLE PRIME GENERAL CONSTRUCTION WORK
FORMAL CONTRACT

BIDDERS NAME

_____ License Number: _____

BASE BID PROPOSAL

The undersigned, as Bidder, hereby declares that the only person or persons interested in this Proposal as principal or principals is or are named herein and that no other person than herein mentioned has any interest in this Proposal or in the Contract to be entered into; that this Proposal is made without connection with any other person, company or parties making a Bid or Proposal; and that it is in all respects fair and in good faith without collusion or fraud.

The Bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the specifications for the work and the Contract Documents relative thereto, including addenda, if any, and has read all special provisions furnished prior to the opening of bids; that he has satisfied himself relative to the work to be performed.

The Bidder proposes and agrees if this Proposal is accepted to contract with the County of Wake with a definite understanding that no money will be allowed for extra work except as set forth in the General Conditions and Contract Documents, for the sum of:

Base Bid _____ Dollars (\$_____).

SUBCONTRACTOR LISTING

PLUMBING CONTRACTOR

Name: _____ License Number: _____

\$ _____

HVAC CONTRACTOR

Name: _____ License Number: _____

\$ _____

ELECTRICAL CONTRACTOR

Name: _____ License Number: _____

\$ _____

FIRE ALARM CONTRACTOR

Name: _____ License Number: _____

\$ _____

FIRE SUPPRESSION CONTRACTOR

Name: _____ License Number: _____

\$ _____

DEMOLITION CONTRACTOR

Name: _____ License Number: _____

\$ _____

ABATEMENT CONTRACTOR

Name: _____ License Number: _____

\$ _____

UNIT PRICES

Unit prices are complete for labor, equipment, material, overhead and profit. Base bid includes the stipulated allowance quantity of each item. Unused amount will be credited to the Owner by change order at the end of the project.

Description	Unit Price	Unit Measure	Allowance Units
Abatement of Asbestos Containing TSI		1 Linear Foot	1000
Replacement of Abated TSI		1 Linear Foot	1000

ALLOWANCES

Allowances indicated herein below shall be included in the Base Bid. See Section 01 2100.

- A. Allowance No. 1 – Include the sum of \$20,000 for building permit fees and unforeseen conditions.
- B. Allowance No. 2 – Include the sum of \$4,000 for voice/data.
- C. Allowance No. 3 - Include the sum of \$25,000 for security installation.
- D. Allowance No. 4 – Include a unit cost amount per unit-price requirements in Section 01 2200 “Unit Prices” for Abatement of Asbestos Containing TSI. Allowance of 1000 Linear Feet.
- E. Allowance No. 5 – Include a unit cost amount per unit-price requirements in Section 01 2200 “Unit Prices” for Replacement of Abated TSI. Allowance of 1000 Linear Feet.

MINORITY BUSINESS PARTICIPATION REQUIREMENTS; 143.128.2.c

Provide with the bid - Under GS 143-128.2(c) the bidder shall identify and include **with the bid, Wake County Form MBE-1 Identity of Minority Business Participation**, the minority businesses that it will use on the project with the total dollar value of the bids that will be performed by the minority businesses. **All bidders must submit, with the bid, Wake County Form MBE-1 Identity of Minority Business Participation Form even if there is zero MBE participation.**

Also include with the bid a list of the good faith efforts made to solicit minority participation in the bid effort, **Wake County Form MBE-2 Listing of the Good Faith Effort.**

NOTE: A contractor that performs all of the work with its own workforce may submit **Wake County Form MBE-3-Intent to Perform Contract with Own Workforce**, to that effect in lieu of **Wake County Form MBE-2-Listing of the Good Faith Effort.**

After the bid opening - The Owner will consider all bids and alternates and determine the lowest responsible, responsive bidder. Upon notification of being the apparent lowest responsible, responsive bidder, the bidder must then file within 72 hours of the notification **Wake County Form MBE-4**. It includes that portion of the Work to be Performed by Minority Business. Also included is a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort and **Wake County Form MBE-5** is not necessary,

OR

If less than the 10% goal, **Wake County Form MBE-5** documenting all good faith efforts to meet the goal shall be provided. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the project.

Note: Bidders must always submit **with their bid** the Identification of Minority Business Participation Form listing all MBE contractors, vendors, and suppliers that will be used. If there is no MBE participation, then enter none or zero on the form. **Wake County Form MBE-2** or **Wake County Form MBE-3** as applicable must also be submitted with the bid. Failure to submit a required affidavit or form with the bid or within the time required may be grounds for rejection of the bid.

Attach to Bid Form

**WAKE COUNTY FORM MBE-1 (2002)
IDENTIFICATION OF MINORITY BUSINESS PARTICIPATION FORM**

I _____
(Name of Bidder)

do hereby certify that on this project we will use the following minority business enterprises as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address, Phone No.	Work Type	Minority Category

Minority Categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Socially and Economically Disadvantaged (D)

The total value of minority business contractors will be \$ _____.

Attach to Bid Form

Wake County – Form MBE-2 (2002)

Listing of the Good Faith Effort

Affidavit of _____
(Name of Bidder)

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- 1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- 2. -(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- 3 - (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- 4 - (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- 5 - (10 pts)** Attended prebid meetings scheduled by the public owner.
- 6 - (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- 7 - (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- 8 - (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- 9 - (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- 10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS 143-128.2(d). Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____

Name of Authorized Officer _____

Signature _____

Title: _____



State of North Carolina, County of _____

Subscribed and sworn to before me this __ day of _____ 20__

Notary Public _____

My commission expires _____

Attach to Bid Only If Bidder Performs All Work With Own Workforces

**Wake County Form MBE-3 (2002)
Intent to Perform Contract with Own Workforce**

Affidavit of

(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the project

(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____

Name of Authorized Officer: _____

Signature: _____

Title: _____



State of North Carolina, County of _____

Subscribed and sworn to before me this __ day of _____ 20__

Notary Public _____

My commission expires _____

CERTIFICATION OF PROPOSER:

The Bidder further proposes and agrees hereby to commence work under his Contract on a date to be specified in a written order of Wake County and shall fully complete all work thereunder within the number of consecutive calendar days stipulated in the Supplementary General Conditions. Applicable liquidated damages shall be as stated in Supplementary General Conditions.

The undersigned acknowledges receipt of the following addenda issued during the time of bidding and includes the changes therein in this Proposal:

Addendum Number _____, Dated _____

Addendum Number _____, Dated _____

Addendum Number _____, Dated _____

The undersigned agrees that this Proposal will not be withdrawn for a period of sixty (60) days.

The undersigned agrees to comply with the E-Verify requirements of the General Statutes of North Carolina, all contractors, including any subcontractors employed by the contractor(s), by submitting a bid, proposal or any other response, or by providing any material, equipment, supplies, services, etc., attest and affirm that they are aware and in full compliance with Article 2 of Chapter 64, (NCGS64-26(a)) relating to the E-Verify requirements.

The undersigned agrees not to discriminate in any manner on the basis of race, natural hair or hairstyles, ethnicity, creed, color, sex, pregnancy, marital or familial status, sexual orientation, gender identity or expression, national origin or ancestry, marital or familial status, pregnancy, National Guard or veteran status, religious belief or non-belief, age, or disability with reference to the subject matter of this Contract. The Parties agree to comply with the provisions and intent of Wake County Ordinance SL 2017-4. This anti-discrimination provision shall be binding on the successors and assigns of the Parties with reference to the subject matter of this Contract.

The undersigned further agrees that in the case of failure on his part to execute the said Contract and the Bond within ten (10) consecutive calendar days after written notice being given of the award of the Contract, the check, cash or Bid Bond accompanying this Bid shall be paid into the funds of Owner's Account set aside for this Project, as liquidated damages for such failure; otherwise the check, cash or Bid Bond accompanying this Proposal shall be returned to the undersigned.

Respectfully submitted this ___ day of _____, 20__

PROPOSER SIGNATURE PAGE

(Name of Firm or Corporation making Bid)

By: _____

WITNESS:

(Proprietorship or Partnership)

Title: _____
(Owner, Partner, or Corporation President
or Vice President only)

Address: _____

License Number: _____



Affix Corporate Seal Above

ATTEST:

By: _____

Title: _____
(Corporation Secretary or Assistant Secretary only)

**WAKE COUNTY OFFICE BUILDING
8th Floor and Skybridge Demolition**

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SECTION 07 8413 - PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
 - 3. Penetrations in smoke barriers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Schedule: For each penetration firestopping system. Include location and design designation of qualified testing and inspecting agency.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm experienced in installing penetration firestopping similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its penetration firestopping products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
- B. Fire-Test-Response Characteristics: Penetration firestopping shall comply with the following requirements:
 - 1. Penetration firestopping tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Penetration firestopping is identical to those tested per testing standard referenced in "Penetration Firestopping" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping products bear classification marking of qualified testing and inspecting agency.
 - b. Classification markings on penetration firestopping correspond to designations listed by the following:
 - 1) UL in its "Fire Resistance Directory."

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1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping when ambient or substrate temperatures are outside limits permitted by penetration firestopping manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.6 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping is installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping.
- C. Notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Grace Construction Products.
 - 2. Hilti, Inc.
 - 3. 3M Fire Protection Products.

2.2 PENETRATION FIRESTOPPING

- A. Provide penetration firestopping that is produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings and with penetrating items if any.
- B. Penetrations in Fire-Resistance-Rated Walls: Provide penetration firestopping with ratings determined per ASTM E 814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg (2.49 Pa).
 - 1. Fire-resistance-rated walls include fire walls, fire-barrier walls, smoke-barrier walls and fire partitions.
 - 2. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Smoke Barriers: Provide penetration firestopping with ratings determined per UL 1479.

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1. L-Rating: Not exceeding 5.0 cfm/sq. ft. (0.025 cu. m/s per sq. m) of penetration opening at 0.30-inch wg (74.7 Pa) at both ambient and elevated temperatures.
- D. Exposed Penetration Firestopping: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- E. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
 1. Permanent forming/damming/backing materials, including the following:
 - a. Slag-wool-fiber or rock-wool-fiber insulation.
 - b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
 - c. Fire-rated form board.
 - d. Fillers for sealants.
 2. Temporary forming materials.
 3. Substrate primers.
 4. Collars.
 5. Steel sleeves.

2.3 MIXING

- A. For those products requiring mixing before application, comply with penetration firestopping manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Clean out openings immediately before installing penetration firestopping to comply with manufacturer's written instructions and with the following requirements:
 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping.

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2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent penetration firestopping from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

3.3 INSTALLATION

A. General: Install penetration firestopping to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestopping.

C. Install fill materials for firestopping by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:

1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Designation of applicable testing and inspecting agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

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3.5 FIELD QUALITY CONTROL

- A. As required, Owner will engage a qualified testing agency to perform tests and inspections.
- B. Where deficiencies are found or penetration firestopping is damaged or removed because of testing or construction activities, repair or replace penetration firestopping to comply with requirements.
- C. Proceed with enclosing penetration firestopping with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping is without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping and install new materials to produce systems complying with specified requirements.

END OF SECTION 07 8413

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SECTION 23 0719 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes insulating the following HVAC piping systems:
 - 1. Condensate drain piping, indoors.
 - 2. Chilled-water piping, indoors.
 - 3. Heating hot-water piping, indoors.
 - 4. Dual-temperature piping, indoors

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include thermal conductivity, water-vapor permeance thickness, and jackets (both factory and field applied if any).
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
 - 2. Detail insulation application at pipe expansion joints for each type of insulation.
 - 3. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
 - 4. Detail removable insulation at piping specialties.
 - 5. Detail application of field-applied jackets.
 - 6. Detail application at linkages of control devices.
- C. Qualification Data: For qualified Installer.
- D. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets, with requirements indicated. Include dates of tests and test methods employed.
- E. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

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- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
 - 2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

PART 2 - PRODUCTS**2.1 INSULATION MATERIALS**

- A. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- B. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- C. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- D. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- E. Mineral-Fiber, Preformed Pipe Insulation:
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following]:
 - a. Fibrex Insulations Inc.; Coreplus 1200.
 - b. Johns Manville; Micro-Lok.
 - c. Knauf Insulation; 1000-Degree Pipe Insulation.
 - d. Manson Insulation Inc.; Alley-K.
 - e. Owens Corning; Fiberglas Pipe Insulation.
 - 2. Type I, 850 deg F (454 deg C) Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

2.2 INSULATING CEMENTS

- A. Mineral-Fiber Insulating Cement: Comply with ASTM C 195.

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- B. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.

2.3 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
 - 1. For indoor applications, adhesive shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.4 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
 - 1. For indoor applications, use mastics that have a VOC content of 300 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.
 - 1. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm (0.009 metric perm) at 43-mil (1.09-mm) dry film thickness.
 - 2. Service Temperature Range: Minus 20 to plus 180 deg F (Minus 29 to plus 82 deg C).
 - 3. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
 - 4. Color: White.

2.5 LAGGING ADHESIVES

- A. Description: Comply with MIL-A-3316C, Class I, Grade A and shall be compatible with insulation materials, jackets, and substrates.
 - 1. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
 - 2. Service Temperature Range: 0 to plus 180 deg F (Minus 18 to plus 82 deg C).
 - 3. Color: White.
- B. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.6 SEALANTS

- A. Joint Sealants:
 - 1. Materials shall be compatible with insulation materials, jackets, and substrates.
 - 2. Permanently flexible, elastomeric sealant.
 - 3. Service Temperature Range: Minus 100 to plus 300 deg F (Minus 73 to plus 149 deg C).
 - 4. Color: White or gray.

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5. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. FSK and Metal Jacket Flashing Sealants:

1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F (Minus 40 to plus 121 deg C).
4. Color: Aluminum.
5. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.7 FACTORY-APPLIED JACKETS

- A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.

2.8 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Width: 3 inches (75 mm).
2. Thickness: 11.5 mils (0.29 mm).
3. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

2.9 SECUREMENTS

- A. Staples: Outward-clinching insulation staples, nominal 3/4-inch- (19-mm-) wide, stainless steel or Monel.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.

1. Verify that systems to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

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

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Keep insulation materials dry during application and finishing.
- F. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- G. Install insulation with least number of joints practical.
- H. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 - 1. Install insulation continuously through hangers and around anchor attachments.
 - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
 - 3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- I. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- J. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch- (75-mm-) wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches (100 mm) o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches (38 mm). Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches (50 mm) o.c.
 - a. For below-ambient services, apply vapor-barrier mastic over staples.

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4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
 5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- K. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- L. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- M. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.
- N. For above-ambient services, do not install insulation to the following:
1. Vibration-control devices.
 2. Testing agency labels and stamps.
 3. Nameplates and data plates.
 4. Manholes.
 5. Handholes.
 6. Cleanouts.

3.4 PENETRATIONS

- A. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

3.5 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.
- B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
 2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
 3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
 4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets,

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- valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
 6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
 7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
 8. Stencil or label the outside insulation jacket of each union with the word "union." Match size and color of pipe labels.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
- D. Install removable insulation covers at locations indicated. Installation shall conform to the following:
1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as adjoining pipe insulation.
 2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union long at least two times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless-steel or aluminum bands. Select band material compatible with insulation and jacket.
 3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
 4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless-steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches (50 mm) over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
- 3.6 INSTALLATION OF MINERAL-FIBER INSULATION
- A. Insulation Installation on Straight Pipes and Tubes:
1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
 2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.

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3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6 inches (150 mm) o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch (25 mm), and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.8 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

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3.9 INDOOR PIPING INSULATION SCHEDULE

A. Cold Condensate Drains:

1. NPS 12 (DN 300) and Smaller: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe, Type I: 1 inch thick.

B. Heating-Hot-Water Supply and Return, 200 Deg F and Below:

1. NPS 12 (DN 300) and Smaller: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe, Type I: 2 inches (50 mm) thick.

C. Chilled-Water Supply and Return, 60 Deg F and Below:

1. NPS 12 (DN 300) and Smaller: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe, Type I: 2 inches (50 mm) thick.

D. Dual-temperature Water Supply and Return, 200 Deg F and Below:

1. NPS 12 (DN 300) and Smaller: Insulation shall be the following:

a. Mineral-Fiber, Preformed Pipe, Type I: 2 inches (50 mm) thick.

END OF SECTION 23 0719



WDMA / AWS Comparison Chart

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Prepared by the Window & Door Manufacturers Association -- April 2015

Specifiers need to be aware that "Premium Grade" doors under the AWS, WDMA and QSI specifications have face veneer requirements that can significantly affect door costs. QSI Premium doors require wider flitch width than WDMA and AWS Premium doors. Premium doors under WDMA and AWS standard require higher veneer grade than Custom doors. Specifiers and distributors need to be aware of both the physical and cost-related differences between each of the standards and veneer grades when ordering and furnishing Premium doors. Specifiers should use the current/latest edition of the WDMA standard and AWS standards (with errata) in lieu of older WDMA standards or QSI.

The Architectural Woodwork Standards (AWS) are typically used in installations where the doors are blueprint matched with wall paneling and/or the doors are adjacent to millwork. Therefore, these standards match requirements on the doors to be consistent with the surrounding millwork. However, most architectural and commercial doors are not directly associated with panels/millwork. Thus, the requirements in ANSI/WDMA I.S.1A-13 are more than adequate to assure consistent appearance amongst doors.

WDMA has prepared this comparison table to identify the major construction, aesthetic and other differences between the QSI, AWI, and current and previous ANSI/WDMA I.S.1A standards. There are other minor differences between the QSI, AWS and WDMA standards not listed here which do not materially affect this comparison.

Industry Standard		QSI 8th Edition (2003)	WDMA I.S.1A-04	AWS 2009*	ANSI/WDMA I.S.1A-13	AWS 2nd Edition
Construction						
Door Performance	Solid wood stile	Prescriptive standards	Per manufacturers Performance Duty Level Testing	Per manufacturers Performance Duty Level Testing	Per manufacturers Performance Duty Level Testing	Per manufacturers Performance Duty Level Testing
Stile Dimensions	Particle core	13/16" Lock Stile - 1" Hinge Stile	Per manufacturers Performance Duty Level testing	Per mfrs. Performance Duty Level testing. Wood veneer or HPDL banding requires 1" hardwood backing or material qualified per WDMA TM 15	Per manufacturers Performance Duty Level testing	Per manufacturers Performance Duty Level testing
	Stave, SCL Core	3/8" Hinge and Lock Stile				
Stile Construction	Non rated doors	Hardwood - solid, laminated or veneered. SCL allowed if laminated to hardwood	Per manufacturers Performance Duty Level testing	Per mfrs. Performance Duty Level testing. Wood veneer or HPDL banding requires 1" hardwood backing or material qualified per WDMA TM 15	Per mfrs. Performance Duty Level testing. Edge veneer backing other than hardwood must be qualified per WDMA TM 15	Per mfrs. Performance Duty Level testing. Wood veneer or HPDL banding requires 1" hardwood backing or material qualified per WDMA TM 15
	Fire rated doors	Special construction per label requirements				
Rail Dimensions	Particle core	13/16" Top & Bottom Rails	Per manufacturers Performance Duty Level testing	Per mfrs. Performance Duty Level testing. Wood veneer or HPDL banding requires 1" hardwood backing or material qualified per WDMA TM 15	Per manufacturers Performance Duty Level testing	Per mfrs. Performance Duty Level testing. Wood veneer or HPDL banding requires 1" hardwood backing or material qualified per WDMA TM 15
	Stave	3/8" Top & Bottom Rails				
	SCLC					
Rail Construction	Non rated doors	Wood, or SCL oriented with compressed face out.	Per manufacturers Performance Duty Level testing	Per mfrs. Performance Duty Level testing. Wood veneer or HPDL banding requires 1" hardwood backing or material qualified per WDMA TM 15	Per mfrs. Performance Duty Level testing. Edge veneer backing other than hardwood must be qualified per WDMA TM 15	Per mfrs. Performance Duty Level testing. Wood veneer or HPDL banding requires 1" hardwood backing or material qualified per WDMA TM 15
	Fire rated doors	Special construction per label requirements				
Door / Transom Rail Requirements	Premium	no requirement	no requirement	Type 1 Transom Bottom Rail	no requirement	Type 1 Transom Bottom Rail (full width)
	Custom	no requirement	no requirement	Type 1 or Type 2 Transom Bottom Rail	no requirement	Type 2 Transom Bottom Rail (side rail run through)

Industry Standard		QSI 8th Edition (2003)	WDMA I.S.1A-04	AWS 2009*	ANSI/WDMA I.S.1A-13	AWS 2nd Edition
Other Criteria						
Finishing System Descriptors	Extra Heavy Duty (Example)	Custom Grade	Standard (TR-6)	Manufacturer's Option	Standard (TR-6)	Manufacturer's Option
	Rail Edge and Hardware Prep Areas	Sealed and/or finished top and bottom if required per mfrs. standard warranty	no requirement	Top/bottom edges and hardware prep areas at hinges and lock edges to be sealed	no requirement	Top/bottom edges and hardware prep areas to be sealed
ANSI Approval		No	Yes	No	Yes	No
Appearance						
Face Grade	Premium	AA	A	AA	AA	AA
	Custom	A	A or other if specified	A	A or other if specified	A
	Economy	B	Not Available -- Use Custom	Not Available -- Use Custom	Not Available -- Use Custom	Not Available -- Use Custom
Veneer Species Charts		Ash, Birch, Maple, Poplar, Mahogany, Luan, Meranti, Red and White Oak, Pecan, Hickory, Walnut, Butternut, Cherry	Ash, Beech, Birch, Maple, Poplar, Mahogany, Anegre, Makore, Sapele, Red and White Oak, Pecan, Hickory, Walnut, Cherry	Ash, Beech, Birch, Maple, Poplar, Mahogany, Anegre, Makore, Sapele, Red and White Oak, Pecan, Hickory, Walnut, Cherry, White Pine, Douglas Fir, Redwood	Ash, Beech, Birch, Maple, Poplar, Mahogany, Anegre, Makore, Sapele, Red and White Oak, Pecan, Hickory, Walnut, Cherry, Western Red Alder, White Pine, Douglas Fir, Redwood	Ash, Beech, Birch, Maple, Poplar, Mahogany, Anegre, Makore, Sapele, Red and White Oak, Pecan, Hickory, Walnut, Cherry
Minimum Flitch Leaf Width	AA	Rotary / PI Sliced 6" Quartered 3"	Rotary / PI Sliced 5" Quartered 3"	Rotary / PI Sliced 5" Quartered 3"	Rotary / PI Sliced 5" Quartered 3"	Rotary / PI Sliced 5" Quartered 3"
	A	Rotary / PI Sliced 5" Quartered 3"	Rotary / PI Sliced 4" Quartered 3"	Rotary / PI Sliced 4" Quartered 3"	Rotary / PI Sliced 4" Quartered 3"	Rotary / PI Sliced 4" Quartered 3"
Laminate Face Grades		HPDL	HPDL and LPDL	HPDL	HPDL and LPDL	HPDL and PVC
Face Lay-up	Premium	Center Balance Match	Running Match	Center Balance Match	Center Balance Match	Center Balance Match
	Custom	Running Match	Running Match	Running Match	Running Match	Running Match
Color and grain matching - doors in the same room or area	Premium	no requirement	no requirement	Compatible Color and Grain. Coordination is responsibility of door furnisher.	no requirement	Compatible Color and Grain. Coordination is responsibility of door furnisher.
	Custom	no requirement	no requirement	no requirement	no requirement	no requirement
Molding Requirements	Premium	Same Species	Same Specie	Well Matched Color & Grain	Same Specie	Well Matched Color & Grain
	Custom	Compatible Species	Compatible Specie	Compatible Color and Grain	Compatible Specie	Compatible Color and Grain
Door / Transom Matching	Premium	Continuous or End Match	Continuous or End Match	Continuous Match	Continuous Match	Continuous Match
	Custom	Continuous or End Match	Continuous or End Match	Continuous or End Match	Continuous or End Match	Continuous or End Match

* Including AWS errata in effect as of the date of this comparison table.