

\$4,595,000.00
ORIGINAL

BID OF TRI-NORTH BUILDERS, INC.

2023

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS

CONTRACT NO. 9226

MUNIS NO. 12393

IN

MADISON, DANE COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL
MADISON, WISCONSIN ON MAY 2, 2023

CITY ENGINEERING DIVISION
1600 EMIL STREET
MADISON, WISCONSIN 53713

<https://bidexpress.com/login>

**PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS
CONTRACT NO. 9226**

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Exhibits available in Bid Express:

- Exhibit A: Contract Plan Set
- Exhibit B: Technical Specifications
- Exhibit C: Street Opening Permit DRAFT

This Proposal, and Agreement have
been prepared by:

**CITY ENGINEERING DIVISION
CITY OF MADISON
MADISON, DANE COUNTY, WISCONSIN**

Bryan Cooper For:
James M. Wolfe, P.E., City Engineer

JMW: RW

SECTION A: ADVERTISEMENT FOR BIDS AND INSTRUCTIONS TO BIDDERS

REQUEST FOR BID FOR PUBLIC WORKS CONSTRUCTION CITY OF MADISON, WISCONSIN

A BEST VALUE CONTRACTING MUNICIPALITY

PROJECT NAME:	PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS
CONTRACT NO.:	9226
SBE GOAL	20%
BID BOND	5%
SBE PRE BID MEETING	See Pre Bid Meeting info below
PRE-BID CONFERENCE (9:00 A.M. – 11:00 A.M.)	JANUARY 26, 2023
PREQUALIFICATION APPLICATION DUE (2:00 P.M.)	FEBRUARY 16, 2023
BID SUBMISSION (2:00 P.M.)	FEBRUARY 23, 2023
BID OPEN (2:30 P.M.)	FEBRUARY 23, 2023
PUBLISHED IN WSJ	JAN. 9, 12, 19, 26, & FEB. 2, 9, 16, 2023

SBE PRE BID MEETING: Small Business Enterprise Pre-Bid Meetings are not being held in person at this time. Contractors can schedule one-on-one phone calls with Tracy Lomax in Affirmative Action to count towards good faith efforts. Tracy can be reached at (608) 267-8634 or by email, tlomax@cityofmadison.com.

PRE-BID CONFERENCE: The City of Madison is conducting one (1) Pre-Bid Walk Through session at the project site. The meeting is scheduled 9:00 a.m. to 11:00 a.m., on Wednesday, January 26, 2023, 210 Martin Luther King J. Blvd. Meet in Conference Room 108A. This conference room is located behind the left staircase in the main lobby. All contractors are encouraged to attend the walk through to become fully aware of existing site conditions.

Requests for Substitutions: Any requests for product or equipment substitution shall be submitted directly to the Project Architect and the City Project Manager via email.

- See the contract contact information at the end of Section D-Special Provisions for names and email addresses.
- Emails shall have "**Contract 9226 – Request for Substitution**" in the subject line.

All requestors shall review Specification 00 43 25 Substitution Request Form (During Bidding) prior to submitting their substitution request.

- All requests for substitution shall meet one of the three criteria in Section 1.1.B of the specification. Requests that do not meet the criteria will not be considered.
- All requests for substitution shall be complete in a single PDF document as described in Section 3.1 of the Specification. Requests that do not provide sufficient information, multiple documents, etc. will not be considered.
- Sales solicitations (including solicitations of products or equipment that are not in the plans and specifications) and requests to other than the Project Architect and City Project Manager will not be considered.

The **deadline** for receiving substitution requests shall be **12:00 PM on Tuesday, February 7, 2023**. No additional substitution requests will be received after this deadline.

All approved substitutions shall be published in the form of an addendum.

Questions and Clarifications: Any questions or requests for clarifications regarding plans and specifications shall be submitted directly to the City Project Manager via email.

- See the contract contact information at the end of Section D-Special Provisions for names and email addresses.

- Emails shall have “**Contract 9226 - Questions and Clarifications**” in the subject line. The **deadline** for receiving questions and clarifications shall be **12:00 PM on Tuesday, February 7, 2023**. No additional questions or requests for clarifications will be received after this deadline.

All responses shall be published in the form of an addendum.

Publishing Addendums: The City of Madison shall publish bidding addenda as needed during the bidding period. The last addenda (if needed) shall be published on or before 12:00 PM, Tuesday, February 14, 2023 to give all contractors sufficient time to review the addenda before bids are due. The City of Madison reminds all General Contractors you that you must acknowledge having read all addenda when submitting your bid. Failure to acknowledge all addenda shall disqualify your bid.

PREQUALIFICATION APPLICATION: Forms are available on our website, www.cityofmadison.com/engineering/developers-contractors/contractors/how-to-get-prequalified. If not currently prequalified in the categories listed in Section A, an amendment to your Prequalification will need to be submitted prior to the same due date. Postmark is not applicable.

BIDS TO BE SUBMITTED: by hand to 1600 EMIL ST., MADISON, WI 53713 or online at www.bidexpress.com.

Bids may be submitted on line through Bid Express or in person at 1600 Emil St. The bids will be posted on line after the bid opening. If you have any questions, please call Alane Boutelle at (608) 267-1197, or John Fahrney at (608) 266-9091.

STANDARD SPECIFICATIONS

The City of Madison's Standard Specifications for Public Works Construction - 2022 Edition, as supplemented and amended from time to time, forms a part of these contract documents as if attached hereto.

These standard specifications are available on the City of Madison Public Works website, www.cityofmadison.com/engineering/developers-contractors/standard-specifications.

The Contractor shall review these Specifications prior to preparation of proposals for the work to be done under this contract, with specific attention to Article 102, “BIDDING REQUIREMENTS AND CONDITIONS” and Article 103, “AWARD AND EXECUTION OF THE CONTRACT.” For the convenience of the bidder, below are highlights of three subsections of the specifications.

SECTION 102.1: PRE-QUALIFICATION OF BIDDERS

In accordance with Wisconsin State Statutes 66.0901 (2) and (3), all bidders must submit to the Board of Public Works proof of responsibility on forms furnished by the City. The City requires that all bidders be qualified on a biennial basis.

Bidders must present satisfactory evidence that they have been regularly engaged in the type of work specified herein and they are fully prepared with necessary capital, materials, machinery and supervisory personnel to conduct the work to be contracted for to the satisfaction of the City. All bidders must be pre-qualified by the Board of Public Works for the type of construction on which they are bidding prior to the opening of the bid.

In accordance with Section 39.02(9)(a)l. of the General Ordinances, all bidders shall submit in writing to the Affirmative Action Division Manager of the City of Madison, a Certificate of Compliance or an Affirmative Action Plan at the same time or prior to the submission of the proof of responsibility forms.

The bidder shall be disqualified if the bidder fails to or refuses to, prior to opening of the bid, submit a Certificate of compliance, Affirmative Action Plan or Affirmative Action Data Update, as applicable, as

defined by Section 39.02 of the General Ordinances (entitled Affirmative Action) and as required by Section 102.11 of the Standard Specifications.

SECTION 102.4 PROPOSAL

No bid will be accepted that does not contain an adequate or reasonable price for each and every item named in the Schedule of Unit Prices.

A lump sum bid for the work in accordance with the plans and specifications is required. The lump sum bid must be the same as the total amounts bid for the various items and it shall be inserted in the space provided.

All papers bound with or attached to the proposal form are considered a part thereof and must not be detached or altered when the proposal is submitted. The plans, specifications and other documents designated in the proposal form will be considered a part of the proposal whether attached or not.

A proposal submitted by an individual shall be signed by the bidder or by a duly authorized agent. A proposal submitted by a partnership shall be signed by a member/partner or by a duly authorized agent thereof. A proposal submitted by a corporation shall be signed by an authorized officer or duly authorized registered agent of such corporation, and the proposal shall show the name of the State under the laws of which such corporation was chartered. The required signatures shall in all cases appear in the space provided thereof on the proposal.

Each proposal shall be placed, together with the proposal guaranty, in a sealed envelope, so marked as to indicate name of project, the contract number or option to which it applies, and the name and address of the Contractor or submitted electronically through Bid Express (www.bidexpress.com). Proposals will be accepted at the location, the time and the date designated in the advertisement. Proposals received after the time and date designated will be returned to the bidder unopened.

SECTION 102.5: BID DEPOSIT (PROPOSAL GUARANTY)

All bids, sealed or electronic, must be accompanied with a Bid Bond (City of Madison form) equal to at least 5% of the bid or a Certificate of Annual/Biennial Bid Bond or certified check, payable to the City Treasurer. Bid deposit of the successful bidders shall be returned within forty-eight (48) hours following execution of the contract and bond as required.

MINOR DISCREPENCIES

Bidder is responsible for submitting all forms necessary for the City to determine compliance with State and City bidding requirements. Notwithstanding any language to the contrary contained herein, the City may exercise its discretion to allow bidders to correct or supplement submissions after bid opening, if the minor discrepancy, bid irregularity or omission is insignificant and not one related to price, quality, quantity, time of completion or performance of the contract.

Bidders for this Contract(s) must be Pre-Qualified for at least one of the following type(s) of construction denoted by an

Building Demolition

- 101 Asbestos Removal
- 120 House Mover

- 110 Building Demolition

Street, Utility and Site Construction

- 201 Asphalt Paving
- 205 Blasting
- 210 Boring/Pipe Jacking
- 215 Concrete Paving
- 220 Con. Sidewalk/Curb & Gutter/Misc. Flat Work
- 221 Concrete Bases and Other Concrete Work
- 222 Concrete Removal
- 225 Dredging
- 230 Fencing
- 235 Fiber Optic Cable/Conduit Installation
- 240 Grading and Earthwork
- 241 Horizontal Saw Cutting of Sidewalk
- 242 Hydro Excavating
- 243 Infrared Seamless Patching
- 245 Landscaping, Maintenance
- 246 Ecological Restoration
- 250 Landscaping, Site and Street
- 251 Parking Ramp Maintenance
- 252 Pavement Marking
- 255 Pavement Sealcoating and Crack Sealing
- 260 Petroleum Above/Below Ground Storage Tank Removal/Installation
- 262 Playground Installer

- 265 Retaining Walls, Precast Modular Units
- 270 Retaining Walls, Reinforced Concrete
- 275 Sanitary, Storm Sewer and Water Main Construction
- 276 Sawcutting
- 280 Sewer Lateral Drain Cleaning/Internal TV Insp.
- 285 Sewer Lining
- 290 Sewer Pipe Bursting
- 295 Soil Borings
- 300 Soil Nailing
- 305 Storm & Sanitary Sewer Laterals & Water Svc.
- 310 Street Construction
- 315 Street Lighting
- 318 Tennis Court Resurfacing
- 320 Traffic Signals
- 325 Traffic Signing & Marking
- 332 Tree pruning/removal
- 333 Tree, pesticide treatment of
- 335 Trucking
- 340 Utility Transmission Lines including Natural Gas, Electrical & Communications
- 399 Other _____

Bridge Construction

- 501 Bridge Construction and/or Repair

Building Construction

- 401 Floor Covering (including carpet, ceramic tile installation, rubber, VCT)
- 402 Building Automation Systems
- 403 Concrete
- 404 Doors and Windows
- 405 Electrical - Power, Lighting & Communications
- 410 Elevator - Lifts
- 412 Fire Suppression
- 413 Furnishings - Furniture and Window Treatments
- 415 General Building Construction, Equal or Less than \$250,000
- 420 General Building Construction, \$250,000 to \$1,500,000
- 425 General Building Construction, Over \$1,500,000
- 428 Glass and/or Glazing
- 429 Hazardous Material Removal
- 430 Heating, Ventilating and Air Conditioning (HVAC)
- 433 Insulation - Thermal
- 435 Masonry/Tuck pointing

- 437 Metals
- 440 Painting and Wallcovering
- 445 Plumbing
- 450 Pump Repair
- 455 Pump Systems
- 460 Roofing and Moisture Protection
- 464 Tower Crane Operator
- 461 Solar Photovoltaic/Hot Water Systems
- 465 Soil/Groundwater Remediation
- 466 Warning Sirens
- 470 Water Supply Elevated Tanks
- 475 Water Supply Wells
- 480 Wood, Plastics & Composites - Structural & Architectural
- 499 Other _____

State of Wisconsin Certifications

- 1 Class 5 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for quarries, open pits and road cuts.
- 2 Class 6 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for trenches, site excavations, basements, underwater demolition, underground excavations, or structures 15 feet or less in height.
- 3 Class 7 Blaster - Blasting Operations and Activities for structures greater than 15 ' in height, bridges, towers, and any of the objects or purposes listed as "Class 5 Blaster or Class 6 Blaster".
- 4 Petroleum Above/Below Ground Storage Tank Removal and Installation (Attach copies of State Certifications.)
- 5 Hazardous Material Removal (Contractor to be certified for asbestos and lead abatement per the Wisconsin Department of Health Services, Asbestos and Lead Section (A&LS).) See the following link for application: www.dhs.wisconsin.gov/Asbestos/Cert. State of Wisconsin Performance of Asbestos Abatement Certificate must be attached.
- 6 Certification number as a Certified Arborist or Certified Tree Worker as administered by the International Society of Arboriculture
- 7 Pesticide application (Certification for Commercial Applicator For Hire with the certification in the category of turf and landscape (3.0) and possess a current license issued by the DATCP)
- 8 State of Wisconsin Master Plumbers License.

SECTION B: PROPOSAL

Please refer to the
Bid Express Website
at <https://bidexpress.com>
look up contract number
and go to
Section B: Proposal Page

You can access all City of Madison bid solicitations for FREE at www.bidexpress.com

Click on the "Register for Free" button and follow the instructions to register your company and yourself. You will be asked for a payment subscription preference, since you may wish to bid online someday. Simply choose the method to pay on a 'per bid' basis. This requires no payment until / unless you actually bid online. You can also choose the monthly subscription plan at this time. You will, however, be asked to provide payment information. Remember, you can change your preference at anytime. You will then be able to complete your free registration and have full access to the site. Your free access does not require completion of the 'Digital ID' process, so you will have instant access for viewing and downloading. To be prepared in case you ever do wish to bid online, you may wish to establish your digital ID also, since you cannot bid without a Digital ID.

If you have any problems with the free registration process, you can call the bidexpress help team, toll free at 1-888-352-2439 (option 1, option1).

SECTION C: SMALL BUSINESS ENTERPRISE

Instructions to Bidders City of Madison SBE Program Information

2 Small Business Enterprise (SBE) Program Information

2.1 Policy and Goal

The City of Madison reaffirms its policy of nondiscrimination in the conduct of City business by maintaining a procurement process which remains open to all who have the potential and ability to sell goods and services to the City. It is the policy of the City of Madison to allow Small Business Enterprises (SBE) maximum feasible opportunity to participate in City of Madison contracting. The bidder acknowledges that its bid has been submitted in accordance with the SBE program and is for the public's protection and welfare.

Please refer to the "ADVERTISEMENT FOR BIDS" for the goal for the utilization of SBEs on this project. SBEs may participate as subcontractors, vendors and/or suppliers, which provide a commercially useful function. The dollar value for SBE suppliers or 'materials only' vendors shall be discounted to 60% for purposes of meeting SBE goals.

A bidder which achieves or exceeds the SBE goal will be in compliance with the SBE requirements of this project. In the event that the bidder is unable to achieve the SBE goal, the bidder must demonstrate that a good faith effort to do so was made. Failure to either achieve the goal or demonstrate a good faith effort to do so will be grounds for the bidder being deemed a non-responsible contractor ineligible for award of this contract.

A bidder may count towards its attainment of the SBE goal only those expenditures to SBEs that perform a commercially useful function. For purposes of evaluating a bidder's responsiveness to the attainment of the SBE goal, the contract participation by an SBE is based on the percentage of the total base bid proposed by the Contractor. The total base bid price is inclusive of all addenda.

Work performed by an SBE firm in a particular transaction can be counted toward the goal only if it involves a commercially useful function. That is, in light of industry practices and other relevant considerations, does the SBE firm have a necessary and useful role in the transaction, of a kind for which there is a market outside the context of the SBE Program, or is the firm's role a superfluous step added in an attempt to obtain credit towards goals? If, in the judgment of the Affirmative Action Division, the SBE firm will not perform a commercially useful function in the transaction, no credit towards goals will be awarded.

The question of whether a firm is performing a commercially useful function is completely separate from the question of whether the firm is an eligible SBE. A firm is eligible if it meets the definitional criteria and ownership and control requirements, as set forth in the City of Madison's SBE Program.

If the City of Madison determines that the SBE firm is performing a commercially useful function, then the City of Madison must then decide what that function is. If the commercially useful function is that of an SBE vendor / supplier that regularly transacts business with the respective product, then the City of Madison will count 60% of the value of the product supplied toward SBE goals.

To be counted, the SBE vendor / supplier must be engaged in selling the product in question to the public. This is important in distinguishing an SBE vendor / supplier, which has a regular trade with a variety of customers, from a firm which performs supplier-like functions on an ad hoc basis or for only one or two contractors with whom it has a special relationship.

A supplier of bulk goods may qualify as an eligible SBE vendor / supplier if it either maintains an inventory or owns or operates distribution equipment. With respect to the distribution equipment; e.g., a fleet of trucks, the term "operates" is intended to cover a situation in which the supplier leases the equipment on a regular basis for its entire business. It is not intended to cover a situation in which the firm simply provides drivers for trucks owned or leased by another party; e.g., a prime contractor, or leases such a party's trucks on an ad hoc basis for a specific job.

If the commercially useful function being performed is not that of a qualified SBE vendor / supplier, but rather that of delivery of products, obtaining bonding or insurance, procurement of personnel, acting as a broker or manufacturer's representative in the procurement of supplies, facilities, or materials, etc., only the fees or commissions will apply towards the goal.

For example, a business that simply transfers title of a product from manufacturer to ultimate purchaser; e. g., a sales representative who re-invoices a steel product from the steel company to the Contractor, or a firm that puts a product into a container for delivery would not be considered a qualified SBE vendor / supplier. The Contractor would not receive credit based on a percentage of the cost of the product for working with such firms.

Concerning the use of services that help the Contractor obtain needed supplies, personnel, materials or equipment to perform a contract: only the fee received by the service provider will be counted toward the goal. For example, use of a SBE sales representative or distributor for a steel company, if performing a commercially useful function at all, would entitle the Contractor receiving the steel to count only the fee paid to the representative or distributor toward the goal. This provision would also govern fees for professional and other services obtained expressly and solely to perform work relating to a specific contract.

Concerning transportation or delivery services: if an SBE trucking company picks up a product from a manufacturer or a qualified vendor / supplier and delivers the product to the Contractor, the commercially useful function it is performing is not that of a supplier, but simply that of a transporter of goods. Unless the trucking company is itself the manufacturer or a qualified vendor / supplier in the product, credit cannot be given based on a percentage of the cost of the product. Rather, credit would be allowed for the cost of the transportation service.

The City is aware that the rule's language does not explicitly mention every kind of business that may contribute work on this project. In administering these programs, the City would, on a case-by-case basis, determine the appropriate counting formula to apply in a particular situation.

2.2 Contract Compliance

Questions concerning the SBE Program shall be directed to the Contract Compliance Officer of the City of Madison Department of Civil Rights, Affirmative Action Division, 210 Martin Luther King, Jr. Blvd., Room 523, Madison, WI 53703; telephone (608) 266-4910.

2.3 Certification of SBE by City of Madison

The Affirmative Action Division maintains a directory of SBEs which are currently certified as such by the City of Madison. Contact the Contract Compliance Officer as indicated in Section 2.2 to receive a copy of the SBE Directory or you may access the SBE Directory online at www.cityofmadison.com/civil-rights/contract-compliance/targeted-business-enterprise-programs/targeted-business-enterprise.

All contractors, subcontractors, vendors and suppliers seeking SBE status must complete and submit the **Targeted Business Certification Application** to the City of Madison Affirmative Action Division by the time and date established for receipt of bids. A copy of the Targeted Business Certification Application is available by contacting the Contract Compliance Officer at the address and telephone indicated in Section 2.2 or you may access the Targeted Business Certification Application online at www.cityofmadison.com/civil-rights/contract-compliance/targeted-business-enterprise-programs/targeted-business-enterprise. Submittal of the Targeted Business Certification Application by the time specified does not guarantee that the applicant will be certified as a SBE eligible to be utilized towards meeting the SBE goal for this project.

2.4 Small Business Enterprise Compliance Report

2.4.1 Good Faith Efforts

Bidders shall take all necessary affirmative steps to assure that SBEs are utilized when possible and that the established SBE goal for this project is achieved. A contractor who self performs a portion of the work, and is pre-qualified to perform that category of work, may subcontract that portion of the work, but shall not be required to do so. When a bidder is unable to achieve the established SBE goal, the bidder must demonstrate that a good faith effort to do so was made. Such a good faith effort should include the following:

- 2.4.1.1 Attendance at the pre-bid meeting.
- 2.4.1.2 Using the City of Madison's directory of certified SBEs to identify SBEs from which to solicit bids.
- 2.4.1.3 Assuring that SBEs are solicited whenever they are potential sources.
- 2.4.1.4 Referring prospective SBEs to the City of Madison Affirmative Action Division for certification.
- 2.4.1.5 Dividing total project requirements into smaller tasks and/or quantities, where economically feasible, to permit maximum feasible SBE participation.
- 2.4.1.6 Establishing delivery schedules, where requirements permit, which will encourage participation by SBEs.
- 2.4.1.7 Providing SBEs with specific information regarding the work to be performed.
- 2.4.1.8 Contacting SBEs in advance of the deadline to allow such businesses sufficient time to prepare a bid.
- 2.4.1.9 Utilizing the bid of a qualified and competent SBE when the bid of such a business is deemed reasonable (i.e. 5% above the lowest bidder), although not necessarily low.
- 2.4.1.10 Contacting SBEs which submit a bid, to inquire about the details of the bid and confirm that the scope of the work was interpreted as intended.
- 2.4.1.11 Completion of Cover Page (page C-6), Summary Sheet (page C-7) and SBE Contact Reports (pages C-8 and C9) if applicable.

2.4.2 Reporting SBE Utilization and Good Faith Efforts

The Small Business Enterprise Compliance Report is to be submitted by the bidder with the bid: This report is due by the specified bid closing time and date. Bids submitted without a completed SBE Compliance Report as outlined below may be deemed non-responsible and the bidder ineligible for award of this contract. Notwithstanding any language to the contrary contained herein, the City may exercise its discretion to allow bidders to correct or supplement submissions after bid opening, if the minor discrepancy, bid irregularity or omission is insignificant and not one related to price, quality, quantity, time of completion, performance of the contract, or percentage of SBE utilization.

2.4.2.1 If the Bidder meets or exceeds the goal established for SBE utilization, the Small Business Enterprise Compliance Report shall consist of the following:

2.4.2.1.1 **Cover Page**, Page C-6; and

2.4.2.1.2 **Summary Sheet**, C-7.

2.4.2.2 If the bidder does not meet the goal established for SBE utilization, the Small Business Enterprise Compliance Report shall consist of the following:

2.4.2.2.1 **Cover Page**, Page C-6;

2.4.2.2.2 **Summary Sheet**, C-7; and

2.4.2.2.3 **SBE Contact Report**, C-8 and C-9. (A separate Contact Report must be completed for each applicable SBE which is not utilized.)

2.5 Appeal Procedure

A bidder which does not achieve the established goal and is found non-responsible for failure to demonstrate a good faith effort to achieve such goal and subsequently denied eligibility for award of contract may appeal that decision to the Small Business Enterprises Appeals Committee. All appeals shall be made in writing, and shall be delivered to and received by the City Engineer no later than 4:30 PM on the third business day following the bidder's receipt of the written notification of ineligibility by the Affirmative Action Division Manager. Postmark not acceptable. The notice of appeal shall state the basis for the appeal of the decision of the Affirmative Action Division Manager. The Appeal shall take place in accordance with Madison General Ordinance 33.54.

2.6 SBE Requirements After Award of the Contract

The successful bidder shall identify SBE subcontractors, suppliers and vendors on the subcontractor list in accordance with the specifications. The Contractor shall submit a detailed explanation of any variances between the listing of SBE subcontractors, vendors and/or suppliers on the subcontractor list and the Contractor's SBE Compliance Report for SBE participation.

No change in SBE subcontractors, vendors and/or suppliers from those SBEs indicated in the SBE Compliance Report will be allowed without prior approval from the Engineer and the Affirmative Action Division. The contractor shall submit in writing to the City of Madison Affirmative Action Division a request to change any SBE citing specific reasons which necessitate such a change. The Affirmative Action Division will use a general test of reasonableness in approving or rejecting the contractor's request for change. If the request is approved, the Contractor will make every effort to utilize another SBE if available.

The City will monitor the project to ensure that the actual percentage commitment to SBE firms is carried out.

2.7 SBE Definition and Eligibility Guidelines

A Small Business Enterprise is a business concern awarded certification by the City of Madison. For the purposes of this program a Small Business Enterprise is defined as:

- A. An independent business operated under a single management. The business may not be a subsidiary of any other business and the stock or ownership may not be held by any individual or any business operating in the same or a similar field. In determining whether an entity qualifies as a SBE, the City shall consider all factors relevant to being an independent business including, but not limited to, the date the business was established, adequacy of its resources for the work in which it proposes to involve itself, the degree to which financial, equipment leasing and other relationships exist with other ineligible firms in the same or similar lines of work. SBE owner(s) shall enjoy the customary incidents of ownership and shall share in the risks and profits commensurate with their enjoyment interests, as demonstrated by an examination of the substance rather than form or arrangements that may be reflected in its ownership documents.
- B. A business that has averaged no more than \$4.0 million in annual gross receipts over the prior three year period and the principal owner(s) do not have a personal net worth in excess of \$1.32 million.

Firm and/or individuals that submit fraudulent documents/testimony may be barred from doing business with the City and/or forfeit existing contracts.

SBE certification is valid for one (1) year unless revoked.

SECTION D: SPECIAL PROVISIONS

PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS CONTRACT NO. 9226

It is the intent of these Special Provisions to set forth the final contractual intent as to the matter involved and shall prevail over the Standard Specifications and plans whenever in conflict therewith. In order that comparisons between the Special Provisions can be readily made, the numbering system for the Special Provisions is equivalent to that of the Specifications.

Whenever in these Specifications the term "Standard Specifications" appears, it shall be taken to refer to the City of Madison Standard Specifications for Public Works Construction and Supplements thereto.

SECTION 102.8 EXAMINATION OF SITES OF WORK

The City of Madison is conducting a Pre-Bid Walk Through session for this project located in the City-County Building, 210 Martin Luther King Jr. Blvd. on Wednesday, January 26, 2023 from 9:00am to 11:00am. Contractors shall meet the City Project Manager and Project Architects in Conference Room 108A. This conference room is behind the left staircase in the main entrance lobby.

SECTION 102.9 BIDDERS UNDERSTANDING

All Contractors are reminded that this is a Public Works contract for the City of Madison and is exempt from State Sales Tax. Refer to this section of the City Standard Specification for Public Works and Specification 00 62 76.13 in Exhibit B for more information.

SECTION 102.11 BEST VALUE CONTRACTING

This Contract shall be considered a Best Value Contract if the Contractor's bid is equal to or greater than \$74,000 for a single trade contract; or equal to or greater than \$360,500 for a multi-trade contract pursuant to MGO 33.07(7).

ARTICLE 103 AWARD AND EXECUTION OF THE CONTRACT

The bidder must completely fill in the unit price and total bid for each bid item shown on the proposal page and provide the grand total at the bottom of the page.

After the initial bid advertisement and prior to bid opening the City will establish a Construction Budget Dollar Value. This contract shall be awarded to the lowest bidder whose grand total bid is below the Construction Budget Dollar Value.

The City shall have the right to reject all bids regardless of the value of the bids submitted.

The Awarded Contractor shall completely execute the signing of all contract documents and submit them to City Engineering (1600 Emil St) prior to **12:00pm on Thursday, March 23, 2023.** Delays in turning in the required completed contract documents will not adjust the project completion date.

Payment and Performance Bonds shall be dated no sooner than Wednesday March 22, 2023.

ARTICLE 104 SCOPE OF WORK

This contract is for the INTERIOR REMODELING of existing City of Madison office spaces located within the City-County Building (CCB) at 210 Martin Luther King Jr. Blvd. Existing spaces to be included in this contract include the following:

- CCB First Floor:
 - Room 101 – Assessor Office
 - Room 103 – Clerk Office
 - Room 107 – Treasurer Office
 - Portions of existing Lobby and Corridors as needed
- CCB Fifth Floor:
 - Portions of Room 501 – Former Human Resources Office
 - Portions of existing Corridors as needed
- Portions of other rooms above, below, or adjacent to the designated contract spaces for plumbing, heating, electrical, and telecommunication demolition and construction.

The scope of work as detailed in the plans and specifications shall include but not be limited to all of the following:

- Demolition and construction.
- Installation of finish materials.
- Installation of electrical, lighting and heating equipment and materials.
- Installation of built-in cabinetry.
- Cooperation with other contractors doing work for the City of Madison or Dane County within the contract work spaces as noted in section 105.12 below.

The scope of work for the bidding contractor and all sub-contractors includes the furnishing of all labor, materials, equipment, tools, and other services necessary to complete the work in accordance with the intent of this contract. All Contractors shall use properly functioning equipment capable of performing the tasks required. All Contractors shall furnish workers who perform quality work and who are experienced and knowledgeable in the work proposed.

In addition, the Contractors shall include all costs of disposal, equipment rental, utility service installations, temporary services, and any other costs whatsoever which may be required for execution of this contract.

SECTION 104.1 LANDS FOR WORK

All work under this contract shall be conducted within the City-County Building (CCB) as noted within the plans and specifications.

All Contractors shall be aware that this site is actively used by multiple City and County Agencies and the general public on a daily basis. The building is publicly open from 7:30 am until 5:00 pm Monday through Friday.

SECTION 104.2 INTENT AND COORDINATION OF CONTRACT DOCUMENTS

The contract documents are complimentary of each other and consist of all of the following:

- The City of Madison Standard Specifications for Public Works Construction, 2023 Edition
- These Special Provisions
- All Addendums to the bidding documents
- Exhibit A: Plans and Details
- Exhibit B: Technical Specifications
- Exhibit C: Street Occupancy Permit

SECTION 105.5 INSPECTION OF WORK

The Contractor shall be responsible for coordinating all required regulatory inspections associated with items and installations during the execution of this contract.

The Contractor shall provide access to all of the work associated with this contract to the staff and consultants of the City design team.

The Contractor shall be aware that additional city staff shall review work for quality control compliance to the City Standard Specifications for Public Works, contract plans and specifications. QC reviews are in addition to any code required inspections under various permits. QC review may require higher levels of materials and workmanship under the City Standard Specifications for Public Works than what is typically required by Building Inspection for code compliance. These reviews shall include but not be limited to excavation, base, paving, storm, sanitary, water, and building installations.

The Contractor shall provide for a walkthrough by the AE, CPM and other staff/related Contractors prior to installing wall finish materials at all areas requiring backer board to ensure sufficient blocking and coverage is complete.

SECTION 105.6 CONTRACTORS RESPONSIBILITY FOR WORK

The Contractor shall not take advantage of any discrepancy in the plans or specifications. This shall include but not be limited to apparent errors, omissions, and interpretations involving codes, regulations, and standards.

All Contractors have a responsibility to review all contract documents noted in Section 104.2 above. No Contractor shall assume that information shown incorrectly on plans for other trades is not their responsibility.

Any Contractor who identifies such a discrepancy during the bidding process shall notify the City Project Manager of the discrepancy prior to the "Questions and Clarifications Deadline" as noted in Section A of the bid documents for clarification of the bid documents, by addendum, prior to the bid due deadline.

Any Contractor who identifies such a discrepancy after the contract has been awarded shall immediately notify the City Project Manager of the discrepancy through the RFI (Request For Information) process for clarification prior to ordering materials and or beginning work.

SECTION 105.12 COOPERATION BY THE CONTRACTOR

The Contractor shall thoroughly review all written specifications in Exhibit B of the Contract Documents. The following information shall apply to the specification noted:

- Specification 01 31 13 Project Coordination: The Contractor shall be aware of the following contracts running concurrent with this contract. The contractor shall make space available for these contractors, their design teams and inspection teams as necessary. The contractor shall also coordinate with the project managers for these contracts for any scheduling and work to avoid conflicts in order to complete all work in a timely fashion.
 - Window Replacement Contract. Managed by Dane County Public Works and Facility Management. The window replacement contract will be running concurrent with our remodeling contract. The timeline and order of completion is not known at this time.
 - Furniture, Fixture, and Equipment Contracts. The City of Madison-Facility Management Team will be running multiple FF&E contracts for this remodeling contract. The contractor shall be aware of these contracts and assist the team in scheduling as needed.
 - System furniture contract to include but not be limited to cubicles and related office furniture, conference room and break room furniture. Delivery to be at the end of the project around substantial compliance.
 - Audio Visual Equipment. This contract will include the installation of all monitors and monitor mounts, speakers, microphones, and ancillary equipment. Delivery to be at the end of the project around substantial compliance.
 - The contractor and his/her sub-contractors shall review all drawings, details, and specifications for a thorough understanding of items being installed in advance of the AV Equipment contract. (IE Backer boards, conduits, data cables, etc.

- Signage. This contract shall be for all signage other than code required signage (exiting, toilet rooms, etc.). This contract will include the city logo and office identification signage, office hours and similar signage. Delivery to be at the end of the project around substantial compliance.
 - The contractor and his/her sub-contractors shall review all drawings, details, and specifications for a thorough understanding of items being installed in advance of the Signage contract. (IE Backer boards, etc.)
- Specifications 01 32 19 Submittals Schedule and 01 33 23 Submittals: The contractor shall work with his/her sub-contractors to complete all administrative submittals within the first 30 days of start work. In addition all contractors shall prioritize turning in their submittals by submitting critical path and long lead time submittals first. Ensure the priority review box on the submittal form is checked.

SECTION 105.13 ORDER OF COMPLETION

The Contractor shall be responsible for all means and methods associated with scheduling the completion of all work related with this contract to include but not be limited to incorporating work by others into their schedule as noted in Section 105.12 above.

After receiving the SWL and mobilizing to the work area the contractor shall construct temporary construction walls with minimal openings to segregate the construction areas from the general public and other building tenants. Temporary walls shall be of sound construction, secure, and dust proof.

- Minimize openings to the construction area. No opening will be permitted at the public elevator lobby adjacent to the existing room 103.
- All existing marble wall panels within the construction area shall be protected at all times and no fasteners shall be used into the marble.

SECTION 105.15 SUBSTANTIAL COMPLETION

The Contractor shall refer to Specification 01 77 00 Closeout Procedures for definitions and procedures related to Substantial Completion.

SECTION 107.1 PUBLIC CONVENIENCE AND SAFETY

The City of Madison shall apply for, and pay fees for, a Street Occupancy Permit (refer to Exhibit C Street Occupancy Permit for additional information). The permit shall be for specific parking stalls and durations on W. Doty St. for the Contractors use. The Contractor shall comply with and be responsible for, all the conditions of the approved permit and the following conditions of the contract:

- The Contractor shall only use the area designated by the permit (Here after referred to as 'Area').
- The Contractor shall provide and maintain all traffic control barricades, barrels, construction fencing and signage required under the permit.
- The Contractor may use the Area for locating dumpsters, providing space for material delivery, and temporary parking by contractors for loading or unloading equipment from vehicles. The Area is not to be used for permanent parking of contractor vehicles or a job trailer.
- The Contractor shall not block the public sidewalk except when actively using the Area for loading and unloading. During periods of loading and un-loading the Contractor shall provide at least one person to oversee the work being performed for the safety of the public.
- The Contractor shall be responsible for maintaining the Area (including but not limited to the route between the building and the Area) free of construction related debris and materials.
 - No debris, materials, or equipment shall be staged on the public sidewalk or in the landscaped areas.
- The Contractor shall provide all construction fencing, stakes, plywood sheathing and other materials as required to protect existing landscaping and trees as designated on the plan.

- The contractor will be required to repair or replace any damaged landscaping as designated by the City Project Manager and the County Maintenance Supervisor at the Contractors expense for materials and labor at no additional cost to the contract.
- The contractor shall be responsible for the construction and proper identification of any ramps needed due to steps or other changes in grade between the sidewalk and the building.
- The City Project Manager, during the progression of the project, may reduce the scope of the Street Occupancy Permit once the majority of demolition has been completed and construction materials have been received on site.

SECTION 108.2 PERMITS AND LICENSING

The Contractor and his/her sub-contractors shall be responsible for all building, electrical, and other permits as required by City of Madison Ordinances.
 The Contractor and his/her sub contractors shall be responsible for all City of Madison Building Inspection review applications and fees.

Where a fee covers initial inspections associated with the permit the Contractor shall be responsible for paying for any fees associated with re-inspections.

SECTION 109.7 TIME OF COMPLETION

Work shall begin only after the contract is completely executed and the Start Work Letter is received. It is anticipated that the start work letter shall be issued on or about March 31, 2023.

The contractor shall refer to Exhibit B, Specification 01 77 00 Closeout Procedures, Section 1.3 for definitions related to project completion. The Contractor shall have reached a level of **Construction Closeout - NO LATER THAN Friday, December 1, 2023**. All of the following shall have been completed by this date:

- Construction Completion including HVAC Flush Out
- Substantial Compliance
- Certificate of Occupancy
- Certificate of Substantial Completion

SECTION 109.9 LIQUIDATED DAMAGES

The fixed, agreed upon, liquidated damages for failure to complete all work within the Contract time, shall be calculated at a rate of \$500 per calendar day.

SECTION 109.14 MOBILIZATION

Only one Mobilization (see City Standard Specifications for Public Works) shall be permitted for this contract. Additional mobilizations shall not be permitted due to weather, contract scheduling, material/equipment deliveries and other similar reasons.

STANDARD BID ITEMS

Notes: The Contractor shall be responsible for reviewing the descriptions, methods of measurement, and basis of payment of all Standard Bid Items as described below.

BID ITEM 10701 – TRAFFIC CONTROL

DESCRIPTION

Bid Item 10701 shall include all of the following as outlined in these Special Provisions, Specifications, and Exhibit C-Street Occupancy Permit:

- Provide, install, and remove all fencing, traffic barrels, fence posts and traffic signage as required by the Occupancy Permit.
- Maintain all fencing, traffic barrels, fence posts and traffic signage while installed.
- Remove or modify fencing, traffic barrels, fence posts and traffic signage as required.

METHOD OF MEASUREMENT

Bid Item 10701 shall be measured as LUMP SUM for all work and materials as specified in the description above. Partial payments shall be requested as indicated in Exhibit B Specifications 01 29 73 Schedule of Values and 01 29 76 Progress Payment Procedure.

BASIS OF PAYMENT

Bid Item 10701 shall be paid at the contract unit price as follows:

- 50% of the total bid price at the time traffic control has been properly established according to the Street Occupancy Permit.
- 50% when the Street Occupancy Permit has been closed and traffic control is no longer needed.

NON STANDARD BID ITEMS

Notes: The Contractor shall be responsible for reviewing the descriptions, methods of measurement, and basis of payment of all Non Standard bid items as described below.

BID ITEM 90000 – BASE BID

DESCRIPTION

Bid Item 90000 shall include all of the following as outlined in the plans, specifications, bid documents and supplementary construction documents posted during the course of the contract:

- Demolition.
- Construction and installation of all building and utility components.
- Accepted testing and balancing of systems, including flush out.
- Accepted completion and turn-in of all required deliverables.

METHOD OF MEASUREMENT

Bid Item 90000 shall be measured as LUMP SUM for all work and disposal of materials as specified in the description above. Partial payments shall be requested as indicated in Exhibit B Specifications 01 29 73 Schedule of Values and 01 29 76 Progress Payment Procedure.

BASIS OF PAYMENT

Bid Item 90000 shall be paid at the contract unit price. Partial payments shall be reviewed and authorized as described in the above referenced specifications.

POINTS OF CONTACT

We ask all Contractors with questions and concerns, and requests for substitutions, regarding the bidding documents, to contact the Project Architect and the City Project Manager by e-mail so we may properly log, track and respond to all issues. Please refer to Section A of the bid documents for other requirements and deadlines.

The Project Architect for this contract is:

Corey Lapworth, Architect
 Continuum Architects & Planners
 PH: (608) 267-8679
 Email: clapworth@continuumarchitects.com

The Project Manager for City Engineering, Facility Management for this contract is:

Randy Wiesner

PH: (608) 267-8679

Email: RWiesner@cityofmadison.com

The Construction Manager for City Engineering, Facility Management for this contract is:

Mike Schuchardt

PH: (608) 261-9249

Email: MSchuchardt@cityofmadison.com



Department of Public Works
Engineering Division
James M. Wolfe, P.E., City Engineer
City-County Building, Room 115
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Phone: (608) 266-4751
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engineering@cityofmadison.com
www.cityofmadison.com/engineering

Assistant City Engineer
Bryan Cooper, AIA
Gregory T. Fries, P.E.
Chris Petykowski, P.E.
Deputy Division Manager
Kathleen M. Cryan
Principal Engineer 2
John S. Fahrney, P.E.
Janet Schmidt, P.E.
Principal Engineer 1
Mark D. Moder, P.E.
Financial Manager
Steven B. Danner-Rivers

February 20, 2023

**NOTICE OF ADDENDUM
ADDENDUM NO. 1**

**CONTRACT NO. 9226, PROJECT NO. 12393
Phase 2 CCB City Office Remodels, First and Fifth Floors**

This addendum is issued to modify, explain or correct the original Drawings, Specifications, or Contract Documents marked as *Phase 2 CCB City Office Remodels, First and Fifth Floors, City of Madison Project 12393, Contract #9226, as issued on January 9, 2023* and is hereby made a part of the contract documents. This addendum consists of four (4) pages and the referenced exhibits. This addendum represents clarifications of the original documents and an extension to the bidding schedule and related dates.

This addendum does include a change to the bid due date.

Please acknowledge this addendum on page E1 of the contract documents and/or in Section E: Bidder's Acknowledgement on Bid Express.

An electronic version of these documents can be found on the Bid Express web site at:
<http://www.bidexpress.com>

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

For questions regarding this bid, contact:

Randy Wiesner
City of Madison Engineering
Phone: 608-267-8679
Fax: 608-264-9275
Email: RWiesner@cityofmadison.com

Mike Schuchardt
City of Madison Engineering
Phone: 608-261-9249
Fax: 608-264-9275
Email: MSchuchardt@cityofmadison.com

Sincerely,

Bryan Cooper for:
James M. Wolfe, P.E., City Engineer

Cc: Greg Fries
Bryan Cooper



1. **GENERAL CONTRACT CONDITIONS**

A. Changes to Section A: Advertisement for Bids and Instructions to Bidders.

1. Prequalification Application due date has been extended to 2:00 PM, Thursday March 30, 2023.
2. Bid Submission has been extended to 2:00 PM, Thursday April 6, 2023.
3. Bid Opening will be at 2:30 PM, Thursday April 6, 2023.
4. Additional Pre-bid Walk-Throughs will be scheduled by appointment only. Contact Mike or Randy (see contact info in addendum cover letter above) for an appointment. Minimum of 2 working day notice is required. Deadline for appointments shall be 12:00 PM Wednesday March 15, 2023.
5. The deadline for Requests for Substitutions has been extended to 12:00 PM, Tuesday, March 21, 2023.
6. The deadline for Questions and Clarifications has been extended to 12:00 PM, Tuesday, March 21, 2023.
7. The last addenda (if needed) shall be published on or before 12:00 PM, Tuesday March 28, 2023.

B. Changes to Section D: Special Provisions

1. Section 102.8 – Examination of Sites of Work. See item 1.A.4. above.
2. Article 103 – Award and Execution of the Contract
 - i. Signed Contract Documents shall be submitted to City Engineering (1600 Emil St) prior to Thursday May 4, 2023.
 - ii. Payment and Performance Bonds shall be dated no sooner than Wednesday, May 3, 2023.
3. Section 104.2 Intent and Coordination of the Drawing Documents
 - i. Add Exhibit D – Addendum 1 Revised Specifications, see descriptions of specification revisions in item 4 below.
 - ii. Add Exhibit E – Addendum 1 Revised Drawings, see descriptions of drawing revisions in item 5 below.
4. Section 109.7 Time of Completion
 - i. It is anticipated the start work letter will be issued on or about May 12, 2024.
 - ii. The Contractor shall have reached a level of **Construction Closeout – NO LATER THAN Friday January 19, 2024.**
 - iii. All other information in this section shall still be applicable to meeting this new date.

2. **GENERAL QUESTIONS/ANSWERS and CLARIFICATIONS**

There have been no general questions or document clarifications requested.

3. **ACCEPTABLE EQUIVALENTS**

- A. Wall Mounted and Ceiling Mounted Acoustical Panels (AWP-X). Also refer to amended specification 09 84 11 (see section 4 below).
1. CSI Creative Soundcore Profile Surfaces ZI009, Kristin Haglind, projects@csicreative.com, Ph: 952-221-0156

4. **SPECIFICATIONS (consolidated into Exhibit D-Revised Specifications-Addendum 1)**

- A. 07 92 00 Joint Sealants, dated 021323, updated as noted.
B. 09 84 11, Wall Mounted Acoustical Panels, dated 021323, updated as noted.

5. **DRAWINGS (consolidated into Exhibit E-Revised Plan Sheets-Addendum 1)**

- A. A201N - NEW WORK PLAN - LEVEL 01 - OVERVIEW – NORTH: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- B. A202N - NEW WORK PLAN - LEVEL 05 - OVERVIEW – NORTH: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- C. A301N - REFLECTED CEILING PLAN - LEVEL 01 - OVERVIEW – NORTH: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- D. A302N - REFLECTED CEILING PLAN - LEVEL 05 - OVERVIEW – NORTH: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- E. A601N - ENLARGED PLAN - LEVEL 01 - LOBBY, TREASURER, ASSESSOR: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- F. A602N - ENLARGED PLAN - LEVEL 01 - CLERK, SHARED BREAK + CONFERENCE ROOMS: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- G. A604N - ENLARGED PLAN - LEVEL 05 - COMMON COUNCIL, OIM, SHARED BREAKROOM: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.



CONTRACT NO. 9226, PROJECT NO. 12393
Phase 2 CCB City Office Remodels, First and Fifth Floors

- H. A611N - ENLARGED REFLECTED CEILING PLAN - LEVEL 01 - TREASURER, ASSESSOR: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- I. A612N - ENLARGED REFLECTED CEILING PLAN - LEVEL 01 - CLERK, SHARED BREAK + CONFERENCE ROOMS: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- J. A614N - ENLARGED REFLECTED CEILING PLAN - LEVEL 05 - COMMON COUNCIL, OIM, SHARED BREAKROOM: ADDED NOTE REGARDING FILLING PENETRATIONS FROM FLOOR ABOVE OR BELOW, AS NOTED.
- K. A702N - INTERIOR ELEVATIONS: UPDATED DETAIL 7, 8, 15, AS NOTED.
- L. A703N - INTERIOR ELEVATIONS: UPDATED DETAIL 14, AS NOTED.
- M. A901N - ROOM FINISH SCHEDULE AND FINISH PLANS – LEVELS 01 AND 05 – NORTH: MODIFIED FINISHES SCHEDULE, ROOM FINISH SCHEDULES, UPDATED DETAIL 1, AS NOTED.
- N. E211- ENLARGED PLAN – LEVEL 01 – TREASURER AND ASSESSOR – POWER SYSTEMS: Add the following General Note, "E.C. SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING THE ROUGH-INS, CONSISTING OF EMPTY JUNCTION BOXES AND CONDUITS, AS REQUIRED FOR ALL LOW VOLTAGE SYSTEMS DEVICES/EQUIPMENT SHOWN ON THE TECHNOLOGY PLANS (SHEETS T00N THRU T600N). COORDINATE ALL REQUIREMENTS WITH TECHNOLOGY CONTRACTORS."
- O. E212N - ENLARGED PLAN – LEVEL 01 – CLERK, SHARED BREAK AND CONFERENCE ROOMS – POWER SYSTEMS: Add the following General Note, "E.C. SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING THE ROUGH-INS, CONSISTING OF EMPTY JUNCTION BOXES AND CONDUITS, AS REQUIRED FOR ALL LOW VOLTAGE SYSTEMS DEVICES/EQUIPMENT SHOWN ON THE TECHNOLOGY PLANS (SHEETS T00N THRU T600N). COORDINATE ALL REQUIREMENTS WITH TECHNOLOGY CONTRACTORS."
- P. E214N – ENLARGED PLAN – LEVEL 05 – COMMON COUNCIL, OIM, SHARED BREAKROOM – POWER SYSTEMS: Add the following General Note, "E.C. SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING THE ROUGH-INS, CONSISTING OF EMPTY JUNCTION BOXES AND CONDUITS, AS REQUIRED FOR ALL LOW VOLTAGE SYSTEMS DEVICES/EQUIPMENT SHOWN ON THE TECHNOLOGY PLANS (SHEETS T00N THRU T600N). COORDINATE ALL REQUIREMENTS WITH TECHNOLOGY CONTRACTORS."
- Q. M203N – ENLARGED NEW WORK PLAN – LEVEL 01 – NORTH – HVAC DUCT: Added transfer grilles and ducts to the following rooms: A05, A06 and T08.
- R. M801N – SCHEDULES – HVAC: Added TG-4 to the Air Device schedule

6. **PROPOSAL**

There are no changes to the proposal page.

End of Contract 9226 Addendum 1.

SECTION A: ADVERTISEMENT FOR BIDS AND INSTRUCTIONS TO BIDDERS

REQUEST FOR BID FOR PUBLIC WORKS CONSTRUCTION CITY OF MADISON, WISCONSIN

A BEST VALUE CONTRACTING MUNICIPALITY

PROJECT NAME:	PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS
CONTRACT NO.:	9226
SBE GOAL	20%
BID BOND	5%
SBE PRE BID MEETING	See Pre Bid Meeting info below
PRE-BID CONFERENCE (9:00 A.M. – 11:00 A.M.)	JANUARY 26, 2023
PREQUALIFICATION APPLICATION DUE (2:00 P.M.)	MARCH 30, 2023
BID SUBMISSION (2:00 P.M.)	APRIL 6, 2023
BID OPEN (2:30 P.M.)	APRIL 6, 2023
PUBLISHED IN WSJ	JAN. 9, 12, 19, 26, & FEB. 2, 9, 16, 23 & March 2, 9, 16, 23, & 30, 2023

SBE PRE BID MEETING: Small Business Enterprise Pre-Bid Meetings are not being held in person at this time. Contractors can schedule one-on-one phone calls with Tracy Lomax in Affirmative Action to count towards good faith efforts. Tracy can be reached at (608) 267-8634 or by email, tlomax@cityofmadison.com.

PRE-BID CONFERENCE: The City of Madison is conducting one (1) Pre-Bid Walk Through session at the project site. The meeting is scheduled 9:00 a.m. to 11:00 a.m., on Wednesday, January 26, 2023, 210 Martin Luther King J. Blvd. Meet in Conference Room 108A. This conference room is located behind the left staircase in the main lobby. All contractors are encouraged to attend the walk through to become fully aware of existing site conditions.

Requests for Substitutions: Any requests for product or equipment substitution shall be submitted directly to the Project Architect and the City Project Manager via email.

- See the contract contact information at the end of Section D-Special Provisions for names and email addresses.
- Emails shall have "**Contract 9226 – Request for Substitution**" in the subject line.

All requestors shall review Specification 00 43 25 Substitution Request Form (During Bidding) prior to submitting their substitution request.

- All requests for substitution shall meet one of the three criteria in Section 1.1.B of the specification. Requests that do not meet the criteria will not be considered.
- All requests for substitution shall be complete in a single PDF document as described in Section 3.1 of the Specification. Requests that do not provide sufficient information, multiple documents, etc. will not be considered.
- Sales solicitations (including solicitations of products or equipment that are not in the plans and specifications) and requests to other than the Project Architect and City Project Manager will not be considered.

The **deadline** for receiving substitution requests shall be **12:00 PM on Tuesday, March 21, 2023**. No additional substitution requests will be received after this deadline.

All approved substitutions shall be published in the form of an addendum.

Questions and Clarifications: Any questions or requests for clarifications regarding plans and specifications shall be submitted directly to the City Project Manager via email.

- See the contract contact information at the end of Section D-Special Provisions for names and email addresses.
- Emails shall have "**Contract 9226 - Questions and Clarifications**" in the subject line.

The **deadline** for receiving questions and clarifications shall be **12:00 PM on Tuesday, March 21, 2023** additional questions or requests for clarifications will be received after this deadline.

All responses shall be published in the form of an addendum.

Publishing Addendums: The City of Madison shall publish bidding addenda as needed during the bidding period. The last addenda (if needed) shall be published on or before 12:00 PM, Tuesday, March 28, 2023 to give all contractors sufficient time to review the addenda before bids are due. The City of Madison reminds all General Contractors you that you must acknowledge having read all addenda when submitting your bid. Failure to acknowledge all addenda shall disqualify your bid.

PREQUALIFICATION APPLICATION: Forms are available on our website, www.cityofmadison.com/engineering/developers-contractors/contractors/how-to-get-prequalified. If not currently prequalified in the categories listed in Section A, an amendment to your Prequalification will need to be submitted prior to the same due date. Postmark is not applicable.

BIDS TO BE SUBMITTED: by hand to 1600 EMIL ST., MADISON, WI 53713 or online at www.bidexpress.com.

Bids may be submitted on line through Bid Express or in person at 1600 Emil St. The bids will be posted on line after the bid opening. If you have any questions, please call Alane Boutelle at (608) 267-1197, or John Fahrney at (608) 266-9091.

STANDARD SPECIFICATIONS

The City of Madison's Standard Specifications for Public Works Construction - 2022 Edition, as supplemented and amended from time to time, forms a part of these contract documents as if attached hereto.

These standard specifications are available on the City of Madison Public Works website, www.cityofmadison.com/engineering/developers-contractors/standard-specifications.

The Contractor shall review these Specifications prior to preparation of proposals for the work to be done under this contract, with specific attention to Article 102, "BIDDING REQUIREMENTS AND CONDITIONS" and Article 103, "AWARD AND EXECUTION OF THE CONTRACT." For the convenience of the bidder, below are highlights of three subsections of the specifications.

SECTION 102.1: PRE-QUALIFICATION OF BIDDERS

In accordance with Wisconsin State Statutes 66.0901 (2) and (3), all bidders must submit to the Board of Public Works proof of responsibility on forms furnished by the City. The City requires that all bidders be qualified on a biennial basis.

Bidders must present satisfactory evidence that they have been regularly engaged in the type of work specified herein and they are fully prepared with necessary capital, materials, machinery and supervisory personnel to conduct the work to be contracted for to the satisfaction of the City. All bidders must be pre-qualified by the Board of Public Works for the type of construction on which they are bidding prior to the opening of the bid.

In accordance with Section 39.02(9)(a)l. of the General Ordinances, all bidders shall submit in writing to the Affirmative Action Division Manager of the City of Madison, a Certificate of Compliance or an Affirmative Action Plan at the same time or prior to the submission of the proof of responsibility forms.

1 SECTION 079200 - JOINT SEALANTS

2 PART 1 - GENERAL

3 1.1 RELATED DOCUMENTS

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

6 1.2 SUMMARY

7 A. Section Includes:

- 8 1. Silicone joint sealants.
- 9 2. Urethane joint sealants.
- 10 3. Latex joint sealants.
- 11 4. Acoustical joint sealants.
- 12 ~~4-5.~~ Floor penetration sealant

13 B. Related Sections:

- 14 1. Section 092900 "Gypsum Board" for sealing perimeter joints.
- 15 2. Section 093013 "Ceramic Tiling" for sealing tile joints.
- 16 3. Section 095123 "Acoustical Tile Ceilings" for sealing edge moldings at perimeters with acoustical sealant.

17 1.3 PRECONSTRUCTION TESTING

18 A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated
19 below, samples of materials that will contact or affect joint sealants.

20 1. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on
21 previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with,
22 joint substrates and other materials matching those submitted.

23 B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint
24 substrates as follows:

- 25 1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
- 26 2. Conduct field tests for each application indicated below:

27 a. Each kind of sealant and joint substrate indicated.

- 28 3. Notify Architect seven days in advance of dates and times when test joints will be erected.
- 29 4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.

30 a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab,
31 in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.

32 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend
33 cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

- 1 5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance
- 2 used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until
- 3 satisfactory adhesion is obtained.
- 4 6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from
- 5 testing, in absence of other indications of noncompliance with requirements, will be considered
- 6 satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

7 1.4 ACTION SUBMITTALS

- 8 A. Product Data: For each joint-sealant product indicated.
- 9 B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full
- 10 range of colors available for each product exposed to view.
- 11 C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in
- 12 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed
- 13 surfaces adjacent to joint sealants.
- 14 D. Joint-Sealant Schedule: Include the following information:
 - 15 1. Joint-sealant application, joint location, and designation.
 - 16 2. Joint-sealant manufacturer and product name.
 - 17 3. Joint-sealant formulation.
 - 18 4. Joint-sealant color.

19 1.5 INFORMATIONAL SUBMITTALS

- 20 A. Qualification Data: For qualified Installer.
- 21 B. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
- 22 C. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be
- 23 validated by SWRI's Sealant Validation Program.
- 24 D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency,
- 25 indicating that sealants comply with requirements.
- 26 E. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - 27 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and
 - 28 adhesion with joint sealants.
 - 29 2. Interpretation of test results and written recommendations for primers and substrate preparation needed
 - 30 for adhesion.
- 31 F. Preconstruction Field-Adhesion Test Reports: Indicate which sealants and joint preparation methods resulted in
- 32 optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- 33 G. Field-Adhesion Test Reports: For each sealant application tested.
- 34 H. Warranties: Sample of special warranties.

- 1 1.6 QUALITY ASSURANCE
- 2 A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of
- 3 units required for this Project.
- 4 B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- 5 C. Product Testing: Test joint sealants using a qualified testing agency.
- 6 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to
- 7 conduct the testing indicated.
- 8 2. Test according to SWRI's Sealant Validation Program for compliance with requirements specified by
- 9 reference to ASTM C 920 for adhesion and cohesion under cyclic movement, adhesion-in-peel, and
- 10 indentation hardness.
- 11 D. Preinstallation Conference: Conduct conference at Project site.
- 12 1.7 PROJECT CONDITIONS
- 13 A. Do not proceed with installation of joint sealants under the following conditions:
- 14 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant
- 15 manufacturer or are below 40 deg F .
- 16 2. When joint substrates are wet.
- 17 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
- 18 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.
- 19 1.8 WARRANTY
- 20 A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint
- 21 sealants that do not comply with performance and other requirements specified in this Section within specified
- 22 warranty period.
- 23 1. Warranty Period: Two years from date of Substantial Completion.
- 24 B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to
- 25 furnish joint sealants to repair or replace those that do not comply with performance and other requirements
- 26 specified in this Section within specified warranty period.
- 27 1. Warranty Period: Five years from date of Substantial Completion.
- 28 C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
- 29 1. Movement of the structure caused by structural settlement or errors attributable to design or construction
- 30 resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant
- 31 elongation and compression.
- 32 2. Disintegration of joint substrates from natural causes exceeding design specifications.
- 33 3. Mechanical damage caused by individuals, tools, or other outside agents.
- 34 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

1 PART 2 - PRODUCTS

2 2.1 MATERIALS, GENERAL

3 A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another
4 and with joint substrates under conditions of service and application, as demonstrated by joint-sealant
5 manufacturer, based on testing and field experience.

6 B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall
7 comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method
8 24):

- 9 1. Architectural Sealants: 250 g/L.
10 2. Sealant Primers for Nonporous Substrates: 250 g/L.
11 3. Sealant Primers for Porous Substrates: 775 g/L.

12 C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied
13 joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related
14 to exposure and joint substrates.

15 1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be
16 continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247.
17 Liquid used for testing sealants is deionized water, unless otherwise indicated.

18 D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide
19 products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates
20 indicated for Project.

21 E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with
22 food, provide products that comply with 21 CFR 177.2600.

23 F. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

24 2.2 SILICONE JOINT SEALANTS

25 A. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for
26 Use NT.

27 B. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use
28 NT.

29 C. Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use
30 NT.

31 D. Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.

32 E. Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS,
33 Class 25, for Use NT.

34 F. Mildew-Resistant, Single-Component, Acid-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for
35 Use NT.

36 2.3 URETHANE JOINT SEALANTS

37 A. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 100/50, for Use NT.

- 1 B. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.
- 2 C. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
- 3 D. Single-Component, Nonsag, Traffic-Grade, Urethane Joint Sealant: ASTM C 920. Type S, Grade NS, Class 25, for Use
- 4 T.
- 5 2.4 LATEX JOINT SEALANTS
- 6 A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
- 7 2.5 ACOUSTICAL JOINT SEALANTS
- 8 A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with
- 9 ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in
- 10 building construction as demonstrated by testing representative assemblies according to ASTM E 90.
- 11 2.6 JOINT SEALANT BACKING
- 12 A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants,
- 13 primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field
- 14 experience and laboratory testing.
- 15 B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density
- 16 to control sealant depth and otherwise contribute to producing optimum sealant performance.
- 17 C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing
- 18 sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive
- 19 tape where applicable.
- 20 2.7 MISCELLANEOUS MATERIALS
- 21 A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint
- 22 substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- 23 B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing
- 24 materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent
- 25 nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- 26 C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- 27 D. Structural Polyurethane Injection Foam and Adhesive: Hydrophobic polyurethane designed to be used in
- 28 conjunction with carbon fiber staples for the repair of large (3/16" or wider) structural foundation cracks. When
- 29 product (parts A and B) is mixed, it reacts and forms a closed cell foam barrier within 45 seconds without further
- 30 addition or presence of water. It adheres tenaciously to practically all substrates, wet or dry. Product may also be
- 31 used to fill leaking voids between wall and ceilings, cold joints and pipe intrusions.
- 32 1. Adhesive is used for bonding, sealing, and repairing a wide range of properly prepared substrates including
- 33 difficult-to-adhere-to plastics, metals and concrete. This high strength, two-part, room temperature curing
- 34 adhesive system is resistant when exposed to elevated temperatures, moisture, fuels, and most solvents
- 35 and chemicals. Product is recommended for use as a concrete crack surface sealer and is especially suited
- 36 for shorter cracks. The speed of cure minimizes wasted applicator down time prior to injection. The
- 37 adhesive has outstanding cured strength. It can also be used as a blow hole repair material and fast setting
- 38 surface port adhesive. Low odor - specially formulated for odor sensitive environments.
- 39 2. Design Basis: Emecole Metro LLC – Pipe Penetration Kit. Low Pressure Injection including
- 40 a. 120 Structural Polyurethane Foam
- 41 C-b. 455 Bonding Adhesive and Surface Seal

1 PART 3 - EXECUTION

2 3.1 EXAMINATION

3 A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint
4 configuration, installation tolerances, and other conditions affecting joint-sealant performance.

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

6 3.2 PREPARATION

7 A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant
8 manufacturer's written instructions and the following requirements:

9 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant,
10 including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion
11 and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents,
12 water, surface dirt, and frost.

13 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these
14 methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants.
15 Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with
16 oil-free compressed air. Porous joint substrates include the following:

- 17 a. Concrete.
- 18 b. Masonry.
- 19 c. Unglazed surfaces of ceramic tile.

20 3. Remove laitance and form-release agents from concrete.

21 4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm
22 substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint
23 substrates include the following:

- 24 a. Metal.
- 25 b. Glass.
- 26 c. Porcelain enamel.
- 27 d. Glazed surfaces of ceramic tile.

28 B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by
29 preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant
30 manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or
31 migration onto adjoining surfaces.

32 C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces
33 that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to
34 remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

35 3.3 INSTALLATION OF JOINT SEALANTS

36 A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications
37 indicated, unless more stringent requirements apply.

38 B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable
39 to materials, applications, and conditions indicated.

- 1 C. Install sealant backings of kind indicated to support sealants during application and at position required to produce
2 cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant
3 movement capability.
- 4 1. Do not leave gaps between ends of sealant backings.
5 2. Do not stretch, twist, puncture, or tear sealant backings.
6 3. Remove absorbent sealant backings that have become wet before sealant application and replace them
7 with dry materials.
- 8 D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of
9 joints.
- 10 E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
- 11 1. Place sealants so they directly contact and fully wet joint substrates.
12 2. Completely fill recesses in each joint configuration.
13 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant
14 movement capability.
- 15 F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool
16 sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of
17 configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
- 18 1. Remove excess sealant from surfaces adjacent to joints.
19 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or
20 adjacent surfaces.
21 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
22 4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
23 5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C
24 1193.
- 25 a. Use masking tape to protect surfaces adjacent to recessed tooled joints.
- 26 G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at
27 perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant.
28 Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C
29 919 and with manufacturer's written recommendations.
- 30 G.H. Floor Penetrations: At all penetrations through the floor, new or existing seal all cracks with structural
31 polyurethane foam, bonding adhesive and surface seal. Install per manufacturers requirements.
- 32 3.4 FIELD QUALITY CONTROL
- 33 A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
- 34 1. Extent of Testing: Test completed and cured sealant joints as follows:
- 35 a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
36 b. Perform 1 test for each 1000 feet of joint length thereafter or 1 test per each floor per elevation.
- 37 2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in
38 Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
- 39 a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along
40 one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
- 41 3. Inspect tested joints and report on the following:

- 1 a. Whether sealants filled joint cavities and are free of voids.
 2 b. Whether sealant dimensions and configurations comply with specified requirements.
 3 c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or
 4 tore cohesively. Include data on pull distance used to test each kind of product and joint substrate.
 5 Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-
 6 pull test criteria.
- 7 4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of
 8 persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and
 9 percent elongations, sealant fill, sealant configuration, and sealant dimensions.
- 10 5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to
 11 seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- 12 B. Evaluation of Field-Adhesion Test Results: Sealants not evidencing adhesive failure from testing or noncompliance
 13 with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint
 14 substrates during testing or to comply with other requirements. Retest failed applications until test results prove
 15 sealants comply with indicated requirements.
- 16 3.5 CLEANING
- 17 A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning
 18 materials approved in writing by manufacturers of joint sealants and of products in which joints occur.
- 19 3.6 PROTECTION
- 20 A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage
 21 resulting from construction operations or other causes so sealants are without deterioration or damage at time of
 22 Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged
 23 or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original
 24 work.
- 25 3.7 JOINT-SEALANT SCHEDULE
- 26 A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces subject to water immersion.
- 27 1. Joint Locations:
- 28 a. Joints in pedestrian plazas or areas that have a concrete topping over rigid insulation and water
 29 proof membrane.
 30 b. Other joints as indicated.
- 31 2. Urethane Joint Sealant: Immersible, single component, nonsag, traffic grade.
 32 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- 33 B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
- 34 1. Joint Locations:
- 35 a. Construction joints in cast-in-place concrete.
 36 b. Control and expansion joints in unit masonry.
 37 c. Joints between metal panels.
 38 d. Joints between different materials.
 39 e. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
 40 f. Control and expansion joints in overhead surfaces.

- 1 g. Other joints as indicated.
- 2 2. Silicone Joint Sealant: Single component, nonsag, neutral curing, Class 100/50.
- 3 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- 4 C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
- 5 1. Joint Locations:
- 6 a. Isolation joints in cast-in-place concrete slabs.
- 7 b. Control and expansion joints in tile flooring.
- 8 c. Other joints as indicated.
- 9 2. Urethane Joint Sealant: Single component, nonsag, traffic grade.
- 10 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- 11 D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
- 12 1. Joint Locations:
- 13 a. Control and expansion joints on exposed interior surfaces of exterior walls.
- 14 b. Perimeter joints of exterior openings where indicated.
- 15 c. Vertical joints on exposed surfaces of interior unit masonry, concrete, walls, and partitions.
- 16 d. Perimeter joints between interior wall surfaces and frames of interior doors, coiling doors,
- 17 windows/storefronts, window sills, glazing frames, and elevator entrances.
- 18 e. Joints between casework, countertops, reception desks, textured panels, and wall surfaces.
- 19 f. Other joints as indicated.
- 20 2. Joint Sealant: Latex.
- 21 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- 22 E. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
- 23 1. Joint Sealant Location:
- 24 a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
- 25 b. Tile control and expansion joints.
- 26 c. Other joints as indicated.
- 27 2. Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, Silicone.
- 28 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- 29 F. Joint-Sealant Application: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.
- 30 1. Joint Location:
- 31 a. Acoustical joints.
- 32 b. Joints between materials penetration acoustically rated partitions and the partition.
- 33 c. Other joints as indicated.
- 34 2. Joint Sealant: Acoustical.
- 35 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range.
- 36 END OF SECTION 079200

1 SECTION 098411 - WALL-MOUNTED ACOUSTIC PANELS

2 PART 1 - GENERAL

3 1.1 DESCRIPTION OF WORK

4 A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section including
5 the following.

- 6 1. Wall-mounted acoustic panels.
- 7 2. Ceiling -mounted acoustic panels

8 B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

- 9 1. Section 061000 - Rough Carpentry; concealed blocking and supports.

10 1.2 SUBMITTALS

11 A. Product Data: Submit for each product indicating materials, dimensions, profiles, textures and colors. Include
12 installation instructions.

13 B. Shop Drawings: Submit shop drawings indicating plans, elevations, details of construction, and relationship with
14 adjacent construction.

- 15 1. Review light fixture locations with electrical contractor for including in shop drawing.

16 C. Verification Samples: Submit representative sample of felt in color specified.

17 1.3 QUALITY ASSURANCE

18 A. Manufacturer: Minimum of 2 years manufacturing similar products.

19 B. Installer: Minimum of 2 years installing similar products.

20 1.4 DELIVERY, STORAGE, AND HANDLING

21 A. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels
22 intact.

23 B. Storage and Handling: Comply with manufacturer's recommendations for storage and handling. Protect from
24 weather damage.

25 1.5 WARRANTY

26 A. Warranty: Provide manufacturer's standard limited warranty against defects in manufacturing.

27 PART 2 - PRODUCTS

28 2.1 WALL-MOUNTED & CEILING MOUNTED ACOUSTIC PANELS (AWP-X)

29 A. Basis-of-Design: MDC Zintra, As indicated in drawings.

30 1. Acceptable Manufacturer: CSI Creative Soundcore Profile Surfaces ZI009

31 a. Kristin Haglind: projects@csicreative.com / Ph: 952-221-0156

32 ~~1.2.~~ Alternate manufacturers are to be approved in writing by Architect.

33 ~~2.3.~~ Materials:

- 1 a. Felt: 100% Wool Design Felt, 100 percent biodegradable.
2 b. Substrate: 100 percent recyclable.
3 c. Contains no formaldehyde, chemical irritants, or harmful substances.
4 d. VOC free.
5 e. Class A Fire Rating
- 6 ~~3.4.~~ Panel Thickness: 1/2 in
7 ~~4.5.~~ Panel Size: See drawings.
8 ~~5.6.~~ Primary Design Element Height: See drawings and manufacturers designations.
9 ~~6.7.~~ Color Configuration: See Drawings.
10 ~~7.8.~~ Trim: Baseboard Trim and as required by field condition.
- 11 a. Material: Extruded Aluminum
12 b. Finish: Clear Anodized
13 c. Shape: "J" shape trim
- 14 ~~8.9.~~ Mounting Method: Direct Adhesion to the Substrate.
15 ~~9.10.~~ Properties:
- 16 a. NRC (ASTM C423): 0.60.
17 b. SAA (ASTM C423): 0.57.
18 c. Colorfastness to Light Class: 4-5 (40 hours).
19 d. Colorfastness to Crocking: Class 3-4 (wet), Class 4-5 (dry).
20 e. Environmental: Oeko-Tex Standard 100 Certified Product Class II (100% Wool Design Felt + Acoustic
21 Substrate).

22 PART 3 - EXECUTION

23 3.1 EXAMINATION

- 24 A. Examine existing conditions to determine that they are suitable for installation. Proceed with installation only when
25 unsatisfactory conditions have been corrected.

26 3.2 INSTALLATION

- 27 A. Clean substrates of projections and substances detrimental to application.
- 28 B. Install units in accordance with manufacturer's instructions, approved submittals, and in proper relationship to
29 adjacent construction.
- 30 C. Refer to drawings for patterns of install, and location of metal trim. Provide metal trim at all exposed edges.
- 31 D. At wall/ceiling install provide full spread adhesive install. Per manufacturer recommendations.
- 32 E. Cut required opening in panels clean with no tear or rough edges. Maximum gap between penetration and wall
33 panel is 1/16".

- 34 1. Coordinate penetration location with wall panel pattern.

35 3.3 ADJUSTING AND CLEANING

- 36 A. Adjust units for proper position, uniform appearance, and operation.
- 37 B. Clean exposed and semi-exposed surfaces using materials acceptable to manufacturer.

38 END OF SECTION



Department of Public Works
Engineering Division
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Kathleen M. Cryan

Principal Engineer 2
John S. Fahrney, P.E.
Janet Schmidt, P.E.

Principal Engineer 1
Mark D. Moder, P.E.
Andy Zweg, P.E.

Financial Manager
Steven B. Danner-Rivers

March 24, 2023

**NOTICE OF ADDENDUM
ADDENDUM NO. 2**

**CONTRACT NO. 9226, PROJECT NO. 12393
Phase 2 CCB City Office Remodels, First and Fifth Floors**

This addendum is issued to modify, explain or correct the original Drawings, Specifications, or Contract Documents marked as *Phase 2 CCB City Office Remodels, First and Fifth Floors, City of Madison Project 12393, Contract #9226, as issued on January 9, 2023 and Addendum #1 as issued on February 20, 2023*. This addendum is hereby made a part of the contract documents, represents clarifications of the previously released documents, consists of two (2) pages, and the referenced exhibits.

This addendum does not include a change to the bid due date.

Please acknowledge this addendum on page E1 of the contract documents and/or in Section E: Bidder's Acknowledgement on Bid Express.

An electronic version of these documents can be found on the Bid Express web site at:
<http://www.bidexpress.com>

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

For questions regarding this bid, contact:

Randy Wiesner
City of Madison Engineering
Phone: 608-267-8679
Fax: 608-264-9275
Email: RWiesner@cityofmadison.com

Mike Schuchardt
City of Madison Engineering
Phone: 608-261-9249
Fax: 608-264-9275
Email: MSchuchardt@cityofmadison.com

Sincerely,

Bryan Cooper For:
James M. Wolfe, P.E., City Engineer

Cc: Greg Fries
Bryan Cooper



1. **GENERAL CONTRACT CONDITIONS**

No additional changes to General Contract Conditions or Section D Special Provisions.

2. **GENERAL QUESTIONS/ANSWERS and CLARIFICATIONS**

There have been no general questions or document clarifications requested.

3. **ACCEPTABLE EQUIVALENTS**

A. Wood Panel Ceilings (LW-1). Please add the following information to Specification 09 50 00, Section 2.1 Manufacturers.

1. 9Wood-Linear Wood Ceiling Systems, 2300 Series, Greg Schroeder, gregschro@aol.com, Ph: 262-628-9800.

4. **SPECIFICATIONS (consolidated into Exhibit F - Revised Specifications-Addendum 2)**

A. 23 09 23 Direct Digital Control System for HVAC – Revised the scope on page 1 of the section.

B. 27 41 00, Replace Specification 27 41 00 Professional Audio-Visual System dated 12/22/22 from Exhibit B with this revised Specification 27 41 00 dated 03/22/23 from Exhibit G. The updated specification has been reprinted in its entirety.

5. **DRAWINGS (consolidated into Exhibit G - Revised Plan Sheets-Addendum 2)**

A. The following sheets have been modified. Clouds and notes identify the changes on each sheet.

1. Sheet M301N – Revised the existing air handler ID number.
2. Sheet M302N – Revised the existing air handler ID number.
3. Sheet M501N – Revise keyed note 1 as shown. Existing pump housing and impeller to be removed.
4. Sheet M502N – Revise keyed note 1 as shown. Provide new pump housing and impeller. Existing pump motor to be reused.
5. Sheet M801 – Pump Schedule: Updated pump schedule to reflect replacement of both the housings and impellers on existing pumps P-1 and P-2. VAV Terminal Unit with Reheat Schedule: Updated the existing air handler system number associated with each VAV terminal Unit. Control Damper Schedule: Updated the existing air handler system number associated with each new control damper/AFMS.
6. Sheet E201N – Revise the switching of all type C6, C6E, C8, and C8E fixtures as shown. Add additional dimmers accordingly as shown. Modify certain touchpads as shown. Modify certain type C8 fixtures to type C4 fixtures as shown. Amend keyed note L1 as shown.
7. Sheet E202N – Revise the switching of all type C6, C6E, C8, and C8E fixtures as shown. Revise the switching of certain type D4E and D6 fixtures as shown. Add additional dimmers accordingly as shown. Modify certain touchpads as shown. Modify certain type C8 fixtures to type C4 fixtures as shown. Amend keyed notes L3 and L4 as shown.
8. Sheet E204N – Revise the switching of all type C6, C6E, C8, and C8E fixtures as shown. Revise the switching of certain type D6 fixtures as shown. Add additional dimmers accordingly as shown. Modify certain type C6 and C6E fixtures to type C3 and C3E fixtures as shown.
9. Sheet E801N – Luminaire Schedule – Add fixture types C3, C3E, and C4 as shown. Modify the model numbers for fixture types A2E, A4E, C4E, C6E, C8E, D4, D4E, D6, and H as shown. Modify the notes for fixture types AD, ADE, DB, and DBE as shown. Add notes #5 and #6 as shown.
10. Sheet T00N - Replace sheet T00N dated 12/22/22 with Sheet T00N dated 03/22/23.
11. Sheet T101N - Replace sheet T101N dated 12/22/22 with Sheet T101N dated 03/22/23.
12. Sheet T203N - Replace sheet T203N dated 12/22/22 with Sheet T00N dated 03/22/23.
13. Sheet T204N - Replace sheet T204N dated 12/22/22 with Sheet T00N dated 03/22/23.
14. Sheet T205N - Replace sheet T205N dated 12/22/22 with Sheet T00N dated 03/22/23.
15. Sheet T300N - Replace sheet T300N dated 12/22/22 with Sheet T00N dated 03/22/23.
16. Sheet T500N - Replace sheet T500N dated 12/22/22 with Sheet T00N dated 03/22/23.
17. Sheet T501N - Replace sheet T501N dated 12/22/22 with Sheet T00N dated 03/22/23.
18. Sheet T600N - Replace sheet T600N dated 12/22/22 with Sheet T00N dated 03/22/23.

6. **PROPOSAL**

There are no changes to the proposal page.

End of Contract 9226 Addendum 2.

**SECTION 23 09 23
DIRECT DIGITAL CONTROL SYSTEM FOR HVAC**

PART 1 - GENERAL

SCOPE

The existing building utilizes a Niagara direct digital control (DDC) system with Distech field devices. This scope of this project will include the following:

- First Floor
 - Add (20) new air terminal units and (13) sections of steam convector with DDC control that will be integrated into the existing building Niagara DDC system.
 - Add (1) new exhaust air fan with DDC control that will be integrated into the existing building Niagara DDC system.
 - Add (1) new transfer air fan with DDC control that will be integrated into the existing building Niagara DDC system.
 - Add (1) new ductless split heat pump system with DDC control that will be integrated into the existing building Niagara DDC system.
- Fifth Floor
 - Add (11) new air terminal units and (9) sections of steam convector with DDC control that will be integrated into the existing building Niagara DDC system.
- Ground Floor Air Handler – AHU-3
 - Remove existing DDC controlled and pneumatically operated minimum outside air damper and replace with new DDC controlled and electronically operated minimum outside air damper with integral airflow monitoring station. Integrate new damper and AFMS into existing Allerton Control system. Provide new updated air handler graphics, points, sequence and alarms for damper and AFMS.
- Fourth Floor Air Handler – AHU-4
 - Remove existing DDC controlled and electronically operated outside air damper and replace with new DDC controlled and electronically operated outside air damper with integral airflow monitoring station. Integrate new damper and AFMS into existing Niagara Control system. Provide new updated air handler graphics, points, sequence and alarms for damper and AFMS.

Additionally, this project shall provide:

- New Distech ECB-VAV controllers required to integrate all new VAV air terminals and associated steam convectors into the existing building automation system.
- New Distech controllers required to integrate all other devices into the existing building automation system.
- Any required module expansion devices for integration of new outside air dampers with integral AFMS into existing DDC control systems.
- New hot water reheat DDC temperature control valves for new VAV air terminals.
- New steam DDC temperature control valves for existing steam convectors.
- New Distech space temperature sensors associated with each VAV air terminal.
- New Distech space temperature sensors associated with transfer fans TF-1 and TF-2.
- New Distech space temperature sensors associated with each new ductless heat pump system.
- New CO2 sensors associated with select VAV air terminals / zones.
- All control wiring (low and line voltage) for a complete operating system.

Addendum 2

- *Update of the existing 1st and 5th floor City County Building automation graphics to include new air terminals, sensors, convectors, outside air dampers, AFMS, etc. associated with this project.*
- *Additional Information - 1st Floor*
 - *New controllers shall be integrated directly into the N4 supervisor via MSTP to IP BACnet router.*
 - *Provide all required MSTP to IP BACnet routers.*
 - *Provide cabling from new routers to County Network.*
- *Additional Information - 5th Floor:*
 - *Route new 5th floor air terminal and convector control to the existing JACE located on 5th floor.*
 - *Update the software on the existing 5th floor JACE from AX to N4.*
- *New Niagara N4 supervisor(s) as required to integrate new DDC controls on 1st and 5th floors into the existing Niagara DDC system.*

All new air terminals and air terminal controls shall be integrated into the Niagara DDC system.

All new controllers, control wiring and temperature control valves shall follow new City County Building Basis of Design protocols to provide building continuity in regards to controllers, wiring and equipment.

1 Work in this section includes Direct Digital Control (DDC) panels, main communication trunk, software programming,
2 and other equipment and accessories necessary to constitute a complete Direct Digital Control (DDC) system.

3
4 **PART 1 - GENERAL**

- 5 Scope
- 6 Related Work
- 7 Reference
- 8 Reference Standards
- 9 Commissioning
- 10 LEED Certification
- 11 Quality Assurance
- 12 Submittals
- 13 Operation and Maintenance Data
- 14 Material Delivery and Storage

15
16 **PART 2 - PRODUCTS**

- 17 General
- 18 VAV Controllers (Application Specific Controllers)
- 19 Control Valves
- 20 Thermostats
- 21 Carbon Dioxide Sensors and Transmitters
- 22 Control Dampers with Integral Airflow Monitoring

23
24 **PART 3 - EXECUTION**

- 25 General
- 26 Installation
- 27 Control Dampers with Integral Airflow Monitoring
- 28 Commissioning, Verification and Closeout
- 29 Sequence of Operation
- 30 Owner Training
- 31 Points List

32
33 **RELATED WORK**

34 Applicable provisions of Division 1 govern work under this Section.

35
36 **REFERENCE**

37 Applicable provisions of Division 1 govern work under this section.

38
39 **REFERENCE STANDARDS**

40 FCC Part 15, Subpart J, Class A - Digital Electronic Equipment to Radio Communication Interference

41
42 **COMMISSIONING**

43 The systems will be commissioned by an independent third party in accordance with USGBC LEED Energy and
44 Atmosphere Credit C3 – Enhanced Commissioning. Refer to Sections 01 91 02 – Commissioning Process, for additional
45 requirements.

46
47 **LEED CERTIFICATION**

48 The project will be LEED Certified thru the United States Green Building Council's (USGBC) Leadership in Energy and
49 Environmental Design (LEED) program. Refer to Section 01 81 13 – Sustainable Design Requirements for additional
50 requirements.

51
52 **QUALITY ASSURANCE**

53
54 **APPROVED MANUFACTURER:**

55 Niagra.

56
57 **INSTALLER:**

58 The installer shall be specialized and experienced in Niagra DDC control systems and installation for not less than 5
59 years. All engineering work shall be done by qualified employees of Niagra, or qualified employees of an Niagra
60 Authorized Representative that provides engineering and commissioning of Alerton control equipment. Where
61 installing contractor is an authorized representative of Niagra, submit written confirmation of such authorization.
62 Indicate in letter of authorization that the installing contractor has successfully completed all necessary training
63 required for the engineering, installation, and commissioning of equipment and systems to be provided for the

1 project and that such authorization has been in effect for a period of not less than three years. The letter of
2 authorization should also indicate that the installing contractor is authorized to install Niagra DDC equipment at the
3 project location at the time the project is bid. Installation of the equipment shall be done by qualified mechanics
4 and/or electricians in the direct employ or be directly subcontracted and under the supervision of Niagra or
5 Authorized Niagra Representative. The contractor providing and installing the equipment under this specification
6 section shall be the same contractor providing and installing equipment under the 23 09 14 specification section.

7
8 **RESPONSE TIME:**

9 During warrantee period, three (3) hours or less, 24-hours/day, 7 days/week.

10
11 **ELECTRICAL STANDARDS:**

12 Provide electrical products, which have been tested, listed and labeled by Underwriters' Laboratories (UL) and comply
13 with NEMA standards.

14
15 **DDC Standards:** DDC manufacturer shall provide written proof with shop drawings that the equipment being provided
16 is in compliance with F.C.C. rules governing the control of interference caused by Digital Electronic Equipment to
17 Radio Communications (Part 15, Subpart J, Class A).

18
19 **SUBMITTALS**

20 Provide submittals on all DDC control work.

21
22 Details of construction, layout, and location of each temperature control panel within the building, including
23 instruments location in panel and labeling. Indicate which piece of mechanical equipment is associated with each
24 controller and what area within the building is being served by that equipment. For terminal unit control, provide a
25 room schedule that would list mechanical equipment tag, room number of space served, address of DDC controller,
26 and any other pertinent information required for service.

27
28 A complete description of each control sequence for equipment that is not controlled by direct digital controls. Direct
29 digital controlled equipment control sequences will be provided by the DDC control contractor.

30
31 **PRODUCT DATA**

32 Submit manufacturer's specifications for each control device furnished, including installation instructions and start-up
33 instructions. General catalog sheets showing a series of the same device is not acceptable unless the specific model is
34 clearly marked. Annotated software program documentation shall be submitted for system sequences, along with
35 descriptive narratives of the sequence of operation of the entire system involved. Submit wiring diagram for each
36 electrical control device along with other details required to demonstrate that the system has been coordinated and
37 will function as a system.

38
39 **MAINTENANCE DATA**

40 Submit maintenance data and spare parts lists for each control device. Include this data in maintenance manual.

41
42 **RECORD DRAWINGS**

43 Provide as-built record control drawings, including sequences, for the installation of all DDC controls.

44
45 **OPERATION AND MAINTENANCE DATA**

46 All operations and maintenance data shall comply with the submission and content requirements specified under
47 Section 23 05 00 and Division 1, General Requirements, Closeout Procedures.

48
49 **MATERIAL DELIVERY AND STORAGE**

50 Provide factory shipping cartons for each piece of equipment and control device. This contractor is responsible for
51 storage of equipment and materials inside and protected from the weather.

52
53
54 **PART 2 - PRODUCTS**

55
56 **GENERAL**

57 Provide DDC control and actuation to accomplish Sequence of Operation (indicated below) and DDC Points list.
58 Provide all controllers, temperature control panels, wiring, etc. for a complete installation.

59 Controls installed as part of this project shall be fully compatible with existing DDC controls located within the facility.

60 Provide updated DDC/BAS graphics reflecting new work and sequences of control.
61
62
63

1 Provide all required installation, termination, wiring, power, graphics and programming for a complete operating
2 system.

3

4 **VAV CONTROLLERS (APPLICATION SPECIFIC CONTROLLERS)**

5 VAV controllers (ECB-VAV) shall be by Distech. No others will be allowed.

6

7 Provide minimum of 12-point VAV controller.

8

9 Each supervisory controller shall be able to extend its monitoring and control through the use of stand-alone
10 application specific controllers (ASC's).

11

12 Each ASC shall operate as a stand-alone controller capable of performing its specified control responsibilities
13 independently of other controllers in the network. Each ASC shall be a microprocessor based, multi-tasking, real-time
14 digital control processor.

15

16 Each ASC shall have sufficient memory to support its own operating system and databases including: Control
17 Processes, Energy Management Applications and Operator I/O (Portable Service Terminal).

18

19 The operator interface to any ASC point or program shall be through the supervisory controller connection to any ASC
20 on the network.

21

22 ASC's shall directly support the temporary use of a portable service terminal that can be connected to the ASC via
23 zone temperature or directly at the controller. The capabilities of the portable service terminal shall include, but not
24 be limited to, the following information for the:

25

- 26 • Display temperatures
- 27 • Display status
- 28 • Display setpoints
- 29 • Display control parameters
- 30 • Override binary output control
- 31 • Override analog output control
- 32 • Override analog setpoints
- 33 • Modification of gain and offset constants

34

35 All system setpoints, proportional bands, control algorithms, and any other programmable parameters shall be stored
36 such that a power failure of any duration does not necessitate reprogramming the ASC.

37

38 ASC's shall support, but not be limited to, the following configurations of systems to address current requirements as
39 described in Sections 23 09 14 and 23 09 93 portions of this specification, and for future expansion of air handling
40 units:

41

- 42 • Variable Air Volume Terminals
- 43 • Reheat Terminals

44

45 For butterfly type Variable Air Volume (VAV) Terminals, provide differential pressure transducers and damper
46 actuators for flow measurement and actuation of the VAV terminal damper. Pressure transducers for VAV box flow
47 applications do not need to have adjustable pressure ranges or integral display. Provide filter on high side of flow
48 pickups if flow measurement device requires airflow through the device. All differential pressure transducer inputs for
49 airflow measurement shall have a method to compensate for sensor drift to calibrate the zero point of the input. The
50 differential pressure transducers and damper actuators can be integrated into the terminal unit controller or be
51 discrete devices.

52

53 Provide a method to view and print a summary of current K-factors for flow correction for each VAV terminal through
54 the DDC system. The summary shall have a minimum of 50 K-factors per group of VAV terminals.

55

56 All system setpoints, proportional bands, control algorithms, calibration constants, and any other programmable
57 parameters shall be stored such that a power failure of any duration does not necessitate reprogramming the ASC.

58

59 All application specific controllers shall be fully programmable. Question and answer or template programming is not
60 acceptable unless this is used to generate the initial application program and the result is able to be freely modified
61 without restriction. Control sequences for terminal unit control that utilize devices wired directly to the terminal unit
62 application controller shall be programmed in the application specific controller and shall be stand-alone in function,
63 i.e. occupancy sensing, temperature setpoint setback, etc. Supervisory controllers shall not be involved in the control
64 sequence logic unless it involves sharing data between or from individual terminal unit controllers to be utilized in a
65 global sequence, i.e. trim and respond strategies, terminal unit grouping, etc.

1 SUPERVISORY CONTROLLERS

2 The existing JACE8 controller located on the 5th floor of the City County Building shall be used as the supervisory
3 controller for this project.

4 SOFTWARE LICENSE AGREEMENT

5 For Niagara based systems, it is the express goal of this specification to implement an open system that will allow
6 products from various suppliers to be integrated into a unified system in order to provide flexibility for expansion,
7 maintenance, and service of the system. The user Agency shall be the named license holder of all software associated
8 with any and all incremental work on the project(s). All Niagara software licenses shall have the "accept.station.in=*";
9 "accept.station.out=*"; and "accept.wb.in=*"; and "accept.wb.out=*"; section of the software licenses. The intent is to
10 ensure that the installed Niagara products may be completely open for integrations. The user Agency shall be free to
11 direct the modification of the any software license, regardless of supplier. In addition, the user Agency shall receive
12 ownership of all job specific software configuration documentation, data files, and application-level software
13 developed for the project. This shall include all custom, job specific software code and documentation for all
14 configuration and programming that is generated for a given project and /or configured for use within Niagara
15 Framework (Niagara) based controllers and/or servers and any related LAN / WAN / Intranet and Internet connected
16 routers and devices. Any and all required Ids and passwords for access to any component or software program shall
17 be provided to the user Agency. Provide all software necessary for developing software algorithms in all supervisory,
18 programmable, and application specific direct digital controllers which is licensed to the owner.

19
20
21 Programming tools for programmable and application specific controllers that utilize the Niagara Framework shall not
22 be restricted to any specific brand of Jace. Tools and controllers shall be able to connect to any brand of Jace that are
23 provided under this specification Section.

24 OPERATOR INTERFACE REQUIREMENTS

25 The existing web-based browser interface and graphic-based display shall be used, expanded and modified to reflect
26 the floor plan and direct digital control modifications and expansions as required as part of this project.

27 CONTROL VALVES

28 Manufacturer: Belimo (Valve and Actuator) only.

29
30 Provide all control valves as shown on the plans/details and as required to perform functions specified. Spring ranges
31 must be selected to prevent overlap of operation and simultaneous heating and cooling.

32
33 Size operators to allow smooth and positive operation of devices served and to provide sufficient torque capacity for
34 tight shutoff against system temperatures and pressure encountered. Use fully proportional actuators with 0-10VDC
35 inputs and zero and span adjustments unless specified otherwise. If TriState with feedback is specified, valve position
36 shall be fed back to the controller and controller shall position valve based on this feedback. Electric actuators, for
37 applications other than terminal units, shall be provided with a manual override capability. All electric actuators shall
38 be provided with a visible position indicator.

39
40 All power required for electric actuation shall be provided by this contractor if it is not able to be directly provided
41 from the DDC controller.

42 Provide operators that are full proportioning or two-position, as required for specified sequence of operation.

43 Provide operators with linkages and brackets for mounting on device served.

44 All valves unless specifically noted on the plans or indicated below shall be ball style valves.

VALVE SERVING	TYPE	SIGNAL	SPRING RETURN	FAIL POSITION
Reheat Coil	Ball	0-10 VDC	No	Last Position
Perimeter Radiation	Valve - Belimo – B215HT186 (1/2", Cv=1.86) Actuator – Belimo – TR24-SR US			

51 Use equal percentage valves for two-way control valves; size for a pressure drop not less than 4 psi or more than 6
52 psi. Note: For low flows, the required minimum Cv size will result in lower pressure drop than 4 psi.

53
54
55 Globe valves 2" and smaller: Cast bronze or forged brass body, brass plug and brass or stainless steel seat, stainless
56 steel stem, screwed ends, suitable for use on water systems at 150 psig and 240° F. Seat leakage with actuator
57 supplied will meet ANSI class IV leakage (0.01%). For globe valves that are specified to fail in place, valves shall be

1 open when the stem is up. Only the following globe valve body styles will be acceptable for terminal unit control.
2 Valves and actuators shall be by Belimo.

4 THERMOSTATS

5 Thermostats shall be by Distech.

7 Thermostats shall match existing thermostat functionality located in adjacent areas of the City County Building.

9 Terminal unit space sensors shall be provided with digital displays with setpoint adjustments and manual occupancy
10 override and indication of occupancy status. Provide information to the AE on sensor colors offered by the
11 manufacturer and obtain approval on what color should be provided on the project. Provide setpoint adjustment as
12 specified in the DDC Input/Output Summary Table and sequence of operation

14 CARBON DIOXIDE SENSORS AND TRANSMITTERS

15 Subject to compliance with requirements, provide products by one of the following: Building Automation Products
16 Inc.; BAPI; Telaire; a brand of Amphenol Thermometrics Inc; Vaisala, Veris Industries or Approved Equal.

18 Description:

19 NDIR technology or equivalent technology providing long-term stability and reliability. Two-wire, 4-20 mA output
20 signal, linearized to carbon-dioxide concentration in PPM.

22 Construction:

23 House electronics in an ABS plastic enclosure. Provide equivalent of NEMA 250, Type 1 enclosure for wall-mounted
24 space applications and NEMA 250, Type 4 for duct-mounted applications.

26 Equip with digital display for continuous indication of carbon-dioxide concentration.

28 Performance:

29 Measurement Range: Zero to 2000 ppm.

30 Accuracy within 2 percent of reading, plus or minus 30 ppm.

31 Repeatability within 1 percent of full scale.

32 Temperature Dependence within 0.05 percent of full scale over an operating range of 25 to 110 deg F.

33 Long-Term Stability within 5 percent of full scale after more than five years.

34 Response Time within 60 seconds.

35 Warm-up Time within five minutes.

36 Provide calibration kit. Turn over to Owner at start of warranty period.

38 CONTROL DAMPERS WITH INTEGRAL AIRFLOW MONITORING

39 Manufacturer: Ebtron or prior approved equal only.

41 Provide integral airflow measuring device as follows:

- 42 • Provide one thermal dispersion airflow/temperature measuring device (ATMD) for each location.
- 43 • Each ATMD shall consist of one or more sensor probes and a single, remote mounted transmitter.
- 44 • Each sensor node shall consist of two hermetically sealed bead-in-glass thermistors.
- 45 • Thermistors shall be potted in an engineering thermoplastic assembly using water-proof, marine epoxy and
46 shall not be damaged by moisture, direct contact with water or exposure to atmospheric acids.
- 47 • Each sensing node shall be individually wind tunnel calibrated at 16 points to NIST traceable airflow
48 standards.
- 49 • Each sensor probe shall be provided with a UL listed, FEP jacketed, plenum rated cable(s) between sensor
50 probes and the remote transmitter.
- 51 • The ATMD shall be capable of measuring airflow rates over the full range of 0 to 5,000 FPM between -20 °F
52 and 160 °F.
- 53 • Each sensing node shall have a temperature accuracy of +/- 0.15 °F.
- 54 • Each sensing node shall have a calibrated airflow accuracy of +/- 2% of reading.
- 55 • The transmitter shall be microprocessor-based and powered by 24 VAC/DC, be over-voltage and over-
56 current protected, and have a watchdog circuit to provide continuous operation after power failures and/or
57 brown-outs.
- 58 • The power requirement for the ATMD shall not exceed 22 V-A.
- 59 • The transmitter shall determine the average airflow rate and temperature of each sensor node.
- 60 • Provide with two analog outputs and one RS-485 BACnet/Modbus network connection
- 61 • All analog output signals and network connections shall be isolated.
- 62 • Provide a Bluetooth, low-energy interface card, to interface with Android or iOS devices.

- 1 • Provide free Android® or iOS® software that allows real-time airflow and temperature monitoring and
- 2 airflow and temperature traverses. Software shall capture, save or e-mail airflow/temperature data,
- 3 transmitter settings and diagnostics information.
- 4 • BACnet® shall be BTL® listed.
- 5 • The ATMD shall be UL/cUL873 listed.
- 6 • The ATMD shall be FCC Part 15 listed.

7
8 **Transmitter**

- 9 • 0-10vDC or 4-20mA in FPM and temperature
- 10 • Provide with remote mounted electronics box/transmitter with minimum 25 foot cable from probes to
- 11 transmitter.
- 12 • BACnet MS/TP compatible.

13
14 **Provide an aluminum extruded Control Damper Assembly as follows:**

- 15 • Control dampers shall be custom made to required size, with blade stops not exceeding 1¼" in height.
- 16 • Control Dampers shall be AMCA rated for Leakage Class 1A at 1 in w.g. [0.25 kPa] static pressure
- 17 differential. Standard air leakage data to be certified under the AMCA Certified Ratings Program.
- 18 • Provide either opposed blade action or parallel blade action.
- 19 • Provide an extruded aluminum (6063T5) sleeve, not less than .080" thick, for factory mounting of the
- 20 specified duct and plenum AMD.
- 21 • Provide an aluminum radiused entry flare not less than .060" thick.
- 22 • Provide extruded aluminum (6063T5) damper frames, not less than .080" thick and 4" deep. Frame to be
- 23 assembled using mounting fasteners. Welded frames are not acceptable.
- 24 • Provide extruded aluminum (6063T5) damper blade profiles.
- 25 • Blade and frame seals shall be extruded silicone. Seals shall be mechanically fastened.
- 26 • Provide a dual bearing system fixed around a 7/16" aluminum hexagon blade pivot pins, rotating within a
- 27 polycarbonate outer bearing inserted in the frame.
- 28 • Provide a hexagonal, adjustable length, 7/16" control shaft that is an integral part of the blade axle.
- 29 • Linkage hardware shall be installed in the frame side, complete with stainless steel trunnions and cup-point
- 30 trunnion screws for a slip-proof grip.
- 31 • Dampers shall be designed for operation in temperatures ranging between -72 °F and 212 °F.

32
33 **PART 3 - EXECUTION**

34
35 **GENERAL**

36 All electronic work required as an integral part of the Direct Digital Control system work is the responsibility of this

37 contractor.

38
39 This contractor shall provide all labor, materials, engineering, software, permits, tools, checkout and certificates

40 required to install a complete Direct Digital Control system as herein specified.

41 This Direct Digital Control system as herein specified shall be fully integrated and completely installed by this section.

42 It shall include all required computer CPU software and hardware. Include the engineering, installation, supervision,

43 calibration, software programming, and checkout necessary for a fully operational system.

44
45 **INSTALLATION**

46 All work and materials are to conform in every detail to the rules and requirements of the National Electrical Code

47 and present manufacturing standards. All material shall be UL approved.

48
49 Install system and materials in accordance with manufacturer's instructions, rough-in drawings and details on

50 drawings.

51
52 Any line voltage wiring to be by this contractor.

53
54 Label all control devices with the exception of dampers, valves, and terminal unit devices with permanent printed

55 labels that correspond to control drawings. Temperature control junction and pullboxes shall be identified utilizing

56 spray painted green covers. Other electrical system identification shall follow the 26 05 53 specification.

57
58 All control devices and electrical boxes mounted on insulated ductwork shall be mounted over the insulation. Provide

59 mounting stand-offs where necessary for adequate support. Cutting and removal of insulation to mount devices

60 directly on ductwork is not acceptable. This contractor shall coordinate with the insulation contractor to provide for

61 continuous insulation of ductwork.

62

1 Provide all electrical relays and wiring, line and low voltage, for control systems, devices and components. Install all
2 high voltage and low voltage wiring (includes low voltage cable) in rigid metal conduit. All conduit must be installed in
3 accordance with electrical sections (Division 26) of this specification and the National Electrical code.

4
5 Conduit shall be a minimum of 1/2 " for low voltage control provided the pipe fill does not exceed 40%.

6
7 Minimum low voltage wiring gauge to be 18 AWG for outputs and 20 AWG for inputs. All low voltage wiring to be
8 stranded.

9
10 Low voltage wiring can be run without conduit above accessible lay-in tile ceilings. All wiring in mechanical rooms,
11 above inaccessible hard ceilings, exterior locations, and in any exposed areas, and in all other locations should be in
12 conduit. Wire for wall sensors must be run in conduit. Wiring for radiation valves shall be run in conduit where
13 routed through walls.

14
15 Where wiring is installed free-air, installation shall consider the following:

- 16 • Wiring shall utilize the cable tray wherever possible.
- 17 • Wiring shall run at right angles and be kept clear of other trades work.
- 18 • Wiring shall be supported utilizing "J" or "Bridal-type" steel mounting rings anchored to ceiling concrete, piping
19 supports, walls above ceiling or structural steel beams. Mounting rings shall be of open design (not a closed
20 loop) to allow additional wire to be strung without being threaded through the ring. For mounting rings that do
21 not completely surround the wire, attach the wire to the mounting ring with a strap.
- 22 • Supports shall be spaced at a maximum 4-foot interval unless limited by building construction. If wiring "sag" at
23 mid-span exceeds 6-inches; another support shall be used.
- 24 • Wiring shall never be laid directly on the ceiling grid or attached in any manner to the ceiling grid wires.
- 25 • Wall penetrations shall be sleeved.

26
27 Wiring shall not be attached to existing cabling, existing tubing, plumbing or steam piping, ductwork, ceiling supports
28 or electrical or communications conduit.

29
30 Mount control panels adjacent to associated equipment on vibration-free walls or free-standing angle iron supports.
31 One cabinet may accommodate more than one system in same equipment room. Provide engraved plastic
32 nameplates for instruments and controls inside cabinet and on cabinet face.

33
34 Provide as-built control drawings of all systems served by each local panel in a location adjacent to or inside of panel
35 cover. Provide a protective cover or envelope for drawings.

36
37 Provide all necessary routers and or repeaters to accomplish connection to the BAN via the panel-mounted port
38 provided.

39
40 All tubing, cable and individual wiring is to be permanently tagged, with numbers corresponding with "Record
41 Drawings", spares are to be labelled as "Spare".

42
43 Provide technician to work with air balancing contractor and/or provide balancing contractor with necessary
44 hardware to over-ride DDC controllers for air balancing.

45
46 Provide documentation to demonstrate that all points, input and output, have been checked out and verified
47 operational, note any points not operating properly with notation of reason.

48
49 **CONTROL DAMPERS WITH INTEGRAL AIRFLOW MONITORING**

50 Install units in accordance with manufacturers recommendations and requirements.

51
52 **COMMISSIONING, VERIFICATION AND CLOSEOUT**

53 The controls contractor shall participate in all aspects of building commissioning as required in Sections 01 91 00 –
54 Commissioning and 01 95 01 – Monitoring-Based Commissioning.

55
56
57
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64

1 **SEQUENCE OF OPERATION**

2
3 VARIABLE AIR VOLUME TERMINALS WITH HOT WATER REHEAT

4 Systems consist of:

- 5 • Variable air volume terminal
- 6 • DDC VAV unit controller.
- 7 • Discharge air temperature sensor.
- 8 • Hot water reheat coil with modulating 2-way or 3-way temperature control valve.
- 9 • DDC space sensor.
- 10 • DDC CO2 space monitor (select locations)
- 11 • Lighting occupancy sensor and relay (provided and installed by Division 26).

12
13 Provide all line and low voltage wiring for a complete operating system.

14
15 Mount discharge air temperature sensor a minimum of 3 duct diameters downstream of reheat coil.

16
17 Provide all control wiring between occupancy sensor and VAV controller.

18
19 Provide a DDC space temperature sensor to control, in sequence, a modulating electronic control valve for the hot
20 water reheat coil and actuator for terminal air flow. When space temperature is below setpoint, the air terminal
21 damper shall modulate toward the cooling minimum flow position. After the air terminal damper is at its minimum
22 flow, the hot water valve shall modulate open to maintain space temperature. If the air terminal has a heating
23 airflow, the hot water control valve and air terminal shall open in parallel.

24
25 The reverse shall occur when space temperature is below setpoint. The heating coil valve shall be commanded closed
26 whenever the associated AHU is off. Provide a discharge air temperature sensor for monitoring purposes.

27
28 Each space temperature sensor shall have a manual override button that shall index the space to the occupied mode
29 for a period of two hours (adj.). If an occupancy sensor is specified, it shall index the terminal unit DDC controller to
30 occupied mode for a minimum of 30 minutes (adj.).

31
32 Provide separate adjustable cooling and heating setpoints for both the occupied and unoccupied modes. When the
33 space temperature is between the heating and cooling setpoints, the heating valve shall be closed and the airflow at
34 heating and cooling minimum flow.

35
36 Occupancy sensors will be provided by the Division 26 contractor. Provide wiring from all occupancy sensor contacts
37 to building automation system for space occupied/unoccupied control. When the occupancy sensor signals the zone
38 is unoccupied, the minimum flow setpoint shall be zero CFM (adj.) and the heating and cooling temperature setpoints
39 will be maintained at either the occupied or unoccupied heating and cooling setpoints as defined by the weekly
40 schedule (grouped or individually). When the occupancy sensor signals the zone is occupied, the occupied minimum
41 flow setpoint shall be as scheduled and the occupied heating and cooling temperature setpoints shall be maintained
42 regardless of the weekly schedule. All programming for the above sequence shall reside in the terminal unit
43 controller and a supervisory controller shall not be required to reset any flow or temperature setpoints based on the
44 occupancy sensor.

45
46 Where there are multiple occupancy sensors associated with a VAV zone that serves multiple spaces, all occupancy
47 sensors must be "unoccupied" for the air terminal to move to zero airflow setpoint.

48
49 VARIABLE AIR VOLUME TERMINALS WITH HOT WATER REHEAT AND PERIMETER STEAM RADIATION

50 Systems consist of:

- 51 • Variable air volume terminal
- 52 • DDC VAV unit controller.
- 53 • Discharge air temperature sensor.
- 54 • Hot water reheat coil with 2-way temperature control valve.
- 55 • Existing steam convector(s) with new DDC modulating steam control valve and actuator
- 56 • DDC discharge air sensor.
- 57 • DDC space sensor.
- 58 • DDC CO2 space monitor (select locations)

- 1 Provide all line and low voltage wiring for a complete operating system.
2
3 Mount discharge air temperature sensor a minimum of 3 duct diameters downstream of reheat coil.
4
5 Provide all control wiring between occupancy sensor and VAV controller.
6
7 Provide a DDC space temperature sensor to control, in sequence, a modulating electronic control valve for the hot
8 water reheat coil and actuator for terminal air flow. When space temperature is below setpoint, the air terminal
9 damper shall modulate toward the cooling minimum flow position. After the air terminal damper is at its minimum
10 flow, the hot water reheat valve and perimeter steam radiation valve(s) shall modulate open in parallel to maintain
11 space temperature.
12
13 Where multiple steam radiation convectors (each with a temperature control valve) are located within the same VAV
14 zone, the convectors shall each have a control valve and be controlled in unison.
15
16 The reverse shall occur when space temperature is below setpoint.
17
18 The heating coil valves shall be commanded closed whenever the associated AHU is off. Provide a discharge air
19 temperature sensor for monitoring purposes.
20
21 Each space temperature sensor shall have a manual override button that shall index the space to the occupied mode
22 for a period of two hours (adj.). If an occupancy sensor is specified, it shall index the terminal unit DDC controller to
23 occupied mode for a minimum of 30 minutes (adj.).
24
25 Provide separate adjustable cooling and heating setpoints for both the occupied and unoccupied modes. When the
26 space temperature is between the heating and cooling setpoints, the heating valve shall be closed and the airflow at
27 heating and cooling minimum flow.
28
29 When the building is in the unoccupied mode and there is a call for heat in any perimeter zone, the perimeter steam
30 radiation shall be used from setback heating. The VAV terminal heating coil control valve shall remain closed and air
31 handler remain off.
32
33 Occupancy sensors will be provided by the Division 26 contractor. Provide wiring from all occupancy sensor contacts
34 to building automation system for space occupied/unoccupied control. When the occupancy sensor signals the zone
35 is unoccupied, the minimum flow setpoint shall be zero CFM (adj.) and the heating and cooling temperature setpoints
36 will be maintained at either the occupied or unoccupied heating and cooling setpoints as defined by the weekly
37 schedule (grouped or individually). When the occupancy sensor signals the zone is occupied, the occupied minimum
38 flow setpoint shall be as scheduled and the occupied heating and cooling temperature setpoints shall be maintained
39 regardless of the weekly schedule. All programming for the above sequence shall reside in the terminal unit
40 controller and a supervisory controller shall not be required to reset any flow or temperature setpoints based on the
41 occupancy sensor.
42
43 On a CO2 level of 750 PPM (adjustable) or above with the space occupied, the terminal shall enter CO2 mode. The
44 terminal damper shall modulate open and the reheat coil shall remain in control to maintain space temperature
45 setpoint. The terminal damper shall be allowed to modulate to its maximum position in a timed fashion. Upon a
46 drop in space CO2 level below 750 FPM, the terminal shall leave CO2 mode and return to normal operation. If the
47 space CO2 level does not fall below 750 PPM (adjustable), with the terminal damper in its maximum position, the
48 associated air handler outside air damper shall modulate open. See air handler sequence for additional information.
49
50 TRANSFER AIR FAN (EF-1)
51 Systems consist of:
52 • Ceiling mounted exhaust fan.
53
54 Fan shall operate whenever the air handler is in the occupied mode.
55
56 When the air handler is in the unoccupied mode, the exhaust fan shall be off.
57
58

1 TRANSFER AIR FAN (TF-1)

2 Systems consist of:

- 3 • Ceiling mounted transfer air fan with ECM motor.
4 • DDC space sensor.

5
6 On a rise in space temperature above setpoint, the fan shall cycle on.

7
8 On a drop in space temperature below setpoint, the fan shall cycle off.

9
10 DUCTLESS SPLIT HEAT PUMP

11 Systems consist of:

- 12 • Ductless split high wall mounted evaporator (indoor unit)
13 • Ductless split heat pump (outdoor unit).
14 • Integral ductless split controls
15 • DDC space sensor.

16
17 The ductless split system shall be controlled via its own integral stand-alone control system.

18 The DDC space temperature sensor shall be for monitoring and alarming thru the BAS.

19
20 AHU-3 – Minimum Outside Air Damper

21 Outside Air Damper Modifications consist of:

- 22 • Removal of existing minimum outside air damper and actuator.
23 • New outside air damper and motorized actuator with integral airflow monitoring.

24
25 Integrate outside airflow monitoring into the BAS system and BAS air handler graphic for monitoring and alarming
26 purposes. Integrate the following outside air damper sequence:

27
28 Outside Air Damper

29 When the building and system is in the unoccupied mode, the outside air damper shall be closed.

30
31 When the building and system are in morning warm-up or cool-down, the outside air damper shall be
32 closed.

33
34 When the building and system are in the occupied mode, the damper shall be open to its minimum position.

35
36 If there is a zone CO2 alarm, with the associate zone air terminal unit damper in its maximum position, the
37 air handler outside air damper shall further modulate open from its minimum position in a stepped fashion.

38
39 Upon release of the zone CO2 alarm, the outside air damper shall return to its minimum position.

40
41 AHU-4 – Outside Air Damper

42 Outside Air Damper Modifications consist of:

- 43 • Removal of existing minimum outside air damper and actuator.
44 • New outside air damper and motorized actuator with integral airflow monitoring.

45
46 Integrate outside airflow monitoring into the BAS system and BAS air handler graphic for monitoring and alarming
47 purposes. Integrate the following outside air damper sequence:

48
49 Outside Air Damper

50 When the building and system is in the unoccupied mode, the outside air damper shall be closed.

51
52 When the building and system are in morning warm-up or cool-down, the outside air damper shall be
53 closed.

54
55 When the building and system are in the occupied mode, the damper shall be open to its minimum position
56 (if in economizer mode the outside air damper shall be controlled by the economizer sequence).

57

1 SECTION 274100 - PROFESSIONAL AUDIO/VIDEO SYSTEM

2 PART 1 - GENERAL

3 1.1 This specification is for informational purposes only. The scope of work outlined in this specification shall be
4 provided in a separate contract with the Owner.

5 1.2 SECTION INCLUDES

- 6 A. System Components
- 7 B. Audio Connectors
- 8 C. Audio Cabling
- 9 D. Video Connectors
- 10 E. Digital Video Cabling
- 11 F. Transmission Connectors
- 12 G. Transmission Cabling
- 13 H. Control Cabling
- 14 I. Horizontal Copper and Fiber Cabling and Connectors

15 1.3 RELATED WORK

- 16 A. Section 270500 - Basic Communications Requirements
- 17 B. Section 270526 - Communications Bonding
- 18 C. Section 271100 - Communication Equipment Rooms
- 19 D. Section 270528 - Interior Communications Pathway
- 20 E. Section 271500 - Horizontal Cabling Requirements

21 1.4 QUALITY ASSURANCE

- 22 A. Manufacturer: The manufacturer of equipment shall have a complete service organization for all products in the
23 manufacturer's line.
- 24 B. Integrator/Dealer: The Contractor shall be a factory-authorized and certified integrator/dealer specializing in each
25 selected manufacturer's products, with demonstrated prior experience with the selected manufacturer's system
26 installation and programming.
- 27 C. The following qualifications have been endorsed by the AudioVisual and Integrated Experience Association (AVIXA),
28 which is formerly known as InfoComm International.
 - 29 1. The Contractor shall have the services of a Certified Technology Specialist on staff and supervising the
30 project. This service shall not be subcontracted. In addition to supervising the project, the CTS-I shall
31 perform the following tasks on the project:
 - 32 a. Review submittals and provide a letter stating the submittals are in compliance with the contract
33 documents.
 - 34 b. Provide written and dated confirmation of an observation of the contractor's installation activities
35 no less than every 2 weeks month during the construction period.
 - 36 c. Provide a final written and dated confirmation of a final construction review prior to testing.
 - 37 d. Review final testing and calibration of the systems and provide a letter with the documented results
38 or transmittal of the results stating the test results and calibration compliance with the contract
39 documents.
- 40 D. A certification of CCENT or CCNA from CISCO. CCNP certification satisfies either of these requirements.

- 1 E. The Contractor shall have in-house services of a Microsoft Certified Systems Engineer (MCSE) or equivalent
2 technician for the purposes of server deployment, software configuration, and system integration for those
3 systems that reside in a Microsoft environment.
- 4 F. Control System Dealer: The media control system shall be provided, terminated, installed, and programmed by a
5 factory-authorized and certified dealer and integrator in good standing with the manufacturer. The dealer shall
6 have direct purchasing and support authority. These services shall not be subcontracted.
- 7 G. Control System Programmer: The media control system shall be programmed by a factory-trained and certified
8 programmer.
- 9 1. The Contractor shall have all certifications required by the manufacturer(s) for the installed system
10 components on staff for the appropriate duties and responsibilities required by the manufacturer.
- 11 a. The control system programmer shall have all refresher courses completed for the latest features of
12 the control platform prior to bidding the project to ensure that the Contractor is up to date with the
13 latest software features.
- 14 b. The control system programmer shall have achieved the highest programmer level obtainable by the
15 installed control manufacturer (e.g., master programmer).
- 16 2. The Contractor shall be fluent in the control systems preferred language (e.g., Python, C#, Java, JavaScript,
17 SQL, PHP, etc.) required to complete the programming requirements of the AV system.
- 18 H. Audio System Programmer: All digital sound processing equipment (DSP) used on the project shall be setup,
19 programmed and calibrated by a factory-trained and certified technician. All audio signals shall be delivered via
20 Dante. Programmer shall provide the Owner with an auto-mixed program output as well as pre-fade signals from
21 each source/input.
- 22 1. The audio system programmer shall have the following complementary certifications:
23 a. Associated manufacturer certifications
24 b. Dante Level III
25
- 26 I. Video System Programmer: All video distribution and processing used on the project shall be setup, programmed
27 and calibrated by a factory-trained and certified technician.
- 28 J. The Contractor shall have acquired and maintained all certifications for a minimum of one (1) month prior to the
29 posted bid date of this project.
- 30 K. Servicing Contractor: The installer must be factory certified to provide service on the installed manufacturer's
31 equipment and must have local service representatives within a 100 mile radius of the project site.
- 32 1.5 REFERENCES
- 33 A. ADA - Americans with Disabilities Act
34 B. ADAAG - Americans with Disability Accessibility Guidelines
35 C. ANSI - American National Standards Institute
36 D. AVIXA - Audiovisual and Integrated Experience Association (Formerly InfoComm)
37 E. ANSI/InfoComm A102.01:2017 - Audio Coverage Uniformity
38 F. ANSI/InfoComm 2M-2010 - Standard Guide for Audiovisual Systems Design and Coordination Processes
39 G. ANSI/InfoComm F501.01:2015 - Cable Labeling for Audiovisual Systems
40 H. ANSI/InfoComm 10:2013 - Audiovisual Systems Performance Verification
41 I. ANSI/AVIXA V202.01:2016 - Display Image Size for 2D Content in Audiovisual Systems
42 J. ANSI/InfoComm 3M-2011 - Projected Image System Contrast Ratio
43 K. IBC - International Building Code
44 L. IEC - International Electrotechnical Commission
45 M. NFPA 70 - National Electrical Code (NEC)

- 1 N. UL 813 - Commercial Audio Equipment
2 O. UL 1419 - Professional Video and Audio Equipment
3 P. UL 1480 - Speakers for Fire Alarm, Emergency, and Commercial and Professional Use
4 Q. UL 1492 - Audio/Video Products and Accessories
- 5 1.6 SUBMITTALS
- 6 A. Submit shop drawings and product data under provisions of Section 270500.
- 7 B. General Requirements:
- 8 1. Submittals will be submitted in multiple passes over the course of construction. Each pass will be a
9 dedicated single submission for review as outlined in the general submittal requirements outlined in section
10 270500.
11 2. Should the Contractor not provide shop drawings in a timely fashion, not complete requirements, or extend
12 the time of any resubmittals so as to jeopardize schedules, cause delay, or limit access for field work, the
13 Contractor bears responsibility for impact and delay that may occur. This includes access or lift to overhead
14 positions and associated protection of work already in place.
- 15 C. First Pass Submittals: To be submitted after the project is awarded but before equipment is submitted, purchased
16 and installed.
- 17 1. Contractor(s) resume of qualifications.
18 2. All certifications shall be current and valid. Any certificate with expired dates will not be accepted.
19 3. All applicable AudioVisual and Integrated Experience Association (AVIXA) certifications. Qualifications from
20 InfoComm that have not expired will be accepted.
21 4. All certifications outlined in the qualifications shall be included in this submittal. Refer to the qualifications
22 section for additional information. Certifications include, but are not limited to:
- 23 a. All installed manufacturer certifications required by the manufacturer.
24 b. Control system authorized dealer certification.
25 c. Control system certified programmer certification(s).
26 d. Audio system DSP dealer certification.
27 e. Audio system DSP programmer certification.
28 f. Video system dealer certification(s).
29 g. All other applicable dealer, installation and programming certifications.
30 h. All applicable Microsoft certifications.
31 i. All applicable networking certifications.
- 32 5. Audio and video calibration equipment certifications.
33 6. Audio and video testing and calibration equipment and software procedures and manufacturer-specific
34 equipment calibration certificates.
- 35 D. Second Pass Submittals: To be submitted after all initial submittals have been approved but before equipment is
36 purchased, installed, configured, and programmed. This can be submitted with the first pass submittal but will
37 require to be submitted as a separate document.
- 38 1. Product Data: Provide manufacturer's technical product specification sheet for each individual component
39 type. Submitted data shall show the following:
- 40 a. Compliance with each requirement of these documents.
41 b. All component options and accessories specific to this project.
42 c. Electrical power consumption rating and voltage.
43 d. Wiring requirements.
44 e. Pre-terminated cable distances and requirements identified by each room where required.
45 f. Product manuals are not an acceptable format and will be rejected.

1 E. Final Pass Submittals: To be submitted after all initial submittals have been approved but before the equipment is
2 installed, configured and programmed. These should not be submitted until after the pre-installation meeting
3 outlined in Part 3.

4 1. System Drawings: Project-specific system drawings shall be provided as follows:

- 5 a. Provide a system block diagram noting system components and interconnection between
6 components. The interconnection of components shall clearly indicate all wiring required in the
7 system. When multiple pieces of equipment are required in the exact same configuration (e.g.,
8 multiple identical controllers), the diagram may show one device and refer to the others as "typical"
9 of the device shown.
- 10 b. Submittals shall contain shop drawings indicating physical plan locations and placement of installed
11 devices and accessories with associated scope or field conditions for review and coordination.
12 Provide mounting details, suspensions, and rough-in notes with trade demarcations.

- 13 1) Identify any non-standard back boxes or mounting assembly required by product or
14 specifications and elaborate contractor means and methods for mounting.
- 15 2) Provide rack drawing(s) showing the mounting of equipment in each rack or cabinet on the
16 project.
- 17 3) All display mounts shall be coordinated with the Architect to verify the exact vertical and
18 horizontal positioning of the display. Coordinate in-wall stud locations for installation of
19 recessed display mounts to install in the exact location as coordinated with the architectural
20 drawings.
- 21 4) Projector mounts shall be coordinated with other utilities on the ceiling and wall to
22 minimize any potential obstructions for the visual beam of the projector prior to installation
23 of the projector mount.
- 24 5) Projector mounts, projector screens, recessed ceiling speakers, in-ceiling microphones, and
25 all other above ceiling devices shall be coordinated with other trades in the field (e.g.,
26 mechanical ductwork, lights, diffusers, etc.) to minimize changes that will impact the
27 performance of the system design.

- 28 c. Submit wiring and cable path requirements, including field wiring, path verification, signal
29 separation, and outside diameter of cables for conduit sizing and verification that can be used for
30 field installation and electrical coordination.
- 31 d. Reproduction of contract documents is not acceptable for submittals. Wire CAD type drawings and
32 cable tag lists or schedules, or typical manufacturer's abbreviated single lines alone, are not
33 complete.

34 2. The Contractor shall submit graphic or emulated representations of the control system touch panels for
35 each unique space and layout prior to purchase, installation and programming for review and comment by
36 the Architect/Engineer and Owner. These shall show and describe the intended programming/macro
37 control features and functions of each button/icon for all pages.

38 3. The Contractor shall submit graphic or emulated representations of the control system keypads for each
39 unique space and layout prior to purchase, installation and programming for review and comment by the
40 Architect/Engineer and Owner. These shall show and describe the intended programming/macro control
41 features and functions of each button/knob.

42 4. The Contractor shall submit the actual DSP audio processor files or single line audio path file diagram prior
43 to installation for review and comment by the Architect/Engineer. Provide preliminary settings with
44 processor blocks identified and note resources allocated.

45 5. The Contractor shall submit the number of IP addresses, VLANS, and subnetworks that will be required from
46 the Owner's Information Systems Department.

47 6. Submit meeting agenda for planning/programming meetings as required in Part 3 of this specification.

48 7. Submit detailed description of Owner training to be conducted at project end, including specific training
49 times and typical attendees expected.

50 8. Provide rack drawing(s) showing the mounting of equipment in each rack or cabinet on the project. Rack
51 drawings shall include the following:

- 52 a. Equipment placement including mounting on the front or rear of the rack.

- 1 b. Spacing separation as required by equipment for adequate airflow and heat dissipation.
2 c. Signal separation based on AVIXA standards as required by the design.
3 d. Heating/cooling load requirements for submitted equipment to verify the heating/cooling load of
4 the rack. This shall include Owner-provided equipment coordinated with the Owner.
5 e. Power requirements for each rack including plug type and loads based on the final approved
6 products.
- 7 F. Discontinued Products and New Model Releases:
- 8 1. For each product, the Contractor shall submit (in addition to the specified product) a product cut sheet if
9 the specified product has been replaced, improved upon, phased out or otherwise upgraded at the time of
10 shop drawing submittal.
- 11 a. The intent of this requirement is for the Contractor to submit only direct replacements for the
12 specified products. A direct replacement shall be defined as a product of newer release that has
13 equal or greater capabilities, which is available for not more than a 10% premium over the specified
14 product's bid unit cost. The Contractor shall submit a letter from the manufacturer with a direct
15 replacement that includes both model numbers to clarify the replacement.
- 16 b. It is not the intent of this requirement for the Contractor to submit new products or other product
17 options that significantly differ in capability and/or cost from the specified product.
- 18 G. Coordination Drawings:
- 19 1. Include all ceiling-mounted devices in composite electronic coordination files. Refer to Section 270500 for
20 coordination drawing requirements.
- 21 1.7 SYSTEM DESCRIPTION
- 22 A. This specification section describes the furnishing, installation, commissioning and programming of audio/video
23 components and systems.
- 24 B. Performance Statement: This specification section and the accompanying Contract Documents are performance
25 based, describing the minimum material quality, required features, and operational requirements of the system.
26 These documents do not convey every wire that must be installed, every equipment connection that must be made
27 and every feature and function that must be programmed and configured. Based on the equipment constraints
28 described and the performance required of the system, as presented in these documents, the Vendor and the
29 Contractor are solely responsible for determining all wiring, programming and miscellaneous equipment required
30 for a complete and operational system.
- 31 C. This document describes the major components of the system. All additional hardware, subassemblies, supporting
32 equipment and other miscellaneous equipment required for proper system installation and operation shall be
33 provided by the Contractor.
- 34 D. This document describes the major programming features and functions of the system. All additional programming,
35 configuration and integration required for proper system installation and operation shall be provided by the
36 Contractor.
- 37 E. When a specific manufacturer is not provided in this document for minor pieces of equipment, the Contractor shall
38 provide only those materials considered to be of the same industry commercial and professional quality level as the
39 major equipment manufacturers.
- 40 F. General System Description:
- 41 1. The purpose of this section is to define the overall AV system requirements for each space identified on the
42 project drawings. This is to represent the end-user needs, applications, tasks and Functions and features for
43 each space to assist with identifying programing requirements for each space.

1 2. For integrated audio visual systems where public events will be held: PTZ cameras, Dante-enabled audio
2 components that are compatible with Dante Domain Manager, equipment to convert presentation content
3 to SDI, and SDI-over-fiber transport equipment be installed to allow for the City of Madison IT Media Team
4 to record, stream, and broadcast.

- 5 a. Conference SCR01
- 6 b. Conference/Hearing DCR22

7 1.8 LICENSING REQUIREMENTS

8 A. All user licenses required for system operation shall be included in the Contractor's bid. User licenses shall include,
9 but not be limited to, server and workstation software and any other licensing that is required by the manufacturer
10 for operation of any system component.

11 1. Licenses shall be provided on a one-to-one basis. One license shall be provided for each server, workstation,
12 and device requiring a license. In the event the manufacturer requires the purchase of a block of licenses,
13 the minimum standard licensing package to support all devices shall be provided.

14 1.9 INTELLECTUAL PROPERTY OWNERSHIP

15 A. All supporting documentation, programming, uncompiled source code, graphic files, DSP code and diagrams,
16 written and electronic files, including all latest versions of the documentation and software necessary to edit and
17 adapt the system(s), shall be provided to the City of Madison for all spaces and all systems. The integrator and/or
18 programmer shall also maintain a current copy to be provided at the Owner's request.

- 19 1. Vendor may request source code from existing City of Madison systems.
- 20 2. The City of Madison shall have the right to modify the intellectual property directly, or to have the
- 21 intellectual property modified by any party of the Owner's choosing.

22 1.10 PROJECT RECORD DOCUMENTS

- 23 A. Submit documents under the provisions of Section 270500.
- 24 B. Provide all applicable certifications.
- 25 C. Provide statement that system checkout test, as outlined in the shop drawing submittal, is complete and
26 satisfactory.
- 27 D. Provide schedules documenting all terminal block wiring, including cable numbers.
- 28 E. Warranty: Submit written warranty and complete all Owner registration forms.
- 29 F. Complete all operation and maintenance manuals as described below.
- 30 G. The Contractor shall include all factory-provided test results for equipment installed on the project.
- 31 H. The Contractor shall include all test results from system demonstration and performance testing specified in this
32 document.
- 33 I. Record Drawings shall minimally include:
 - 34 1. All revisions to, or deviations from the original drawings, as well as final dimensions, cable routes, connector
35 panel drawings, cable numbering charts, and control system programming documentation. A complete as-
36 installed equipment list, listed by room, and with manufacturers' names, model numbers, serial numbers,
37 and quantities of each item.

- 1 2. A complete and correct system schematic, showing detailed connections for all parts of the system,
2 including wire numbers, terminal block numbers and layouts, and other designations and programming
3 code.
- 4 3. Complete equipment rack layouts showing locations of all rack-mounted equipment items.
- 5 4. Additional information, diagrams or explanations as designated under respective equipment or systems
6 specification section.

- 7 J. Within each equipment room, the appropriate floor plan for which that equipment room serves shall be laminated
8 and mounted for use by the Owner. Functional drawings shall be posted at each AV closet or included at every AV
9 rack within a room.

- 10 K. Upon completion and final acceptance of the project, the Contractor shall provide the Owner a copy of the
11 programming code for any and all AV systems and devices programmed by the Contractor.
- 12 1. For any subsequent modifications to the programming code, an updated copy of the code shall be provided
13 to the Owner.

- 14 1.11 OPERATION AND MAINTENANCE DATA

- 15 A. Submit documents under the provisions of Section 270500.

- 16 B. Manuals: Final copies of the manuals shall be delivered after completing the installation. Each manual's contents
17 shall be identified on the cover. The manual shall include names, addresses, and telephone numbers of the
18 Contractor responsible for the installation and maintenance of the system and the factory representatives for each
19 item of equipment for each system. The manuals shall have a table of contents and labeled sections. The final
20 copies delivered after completion of the installation shall include all modifications made during installation,
21 checkout, and acceptance. Manuals shall be submitted in electronic format. The manuals shall consist of the
22 following:
 - 23 1. Functional Design Manual: The functional design manual shall identify the operational requirements for the
24 system and explain the theory of operation, design philosophy, and specific functions. A description of
25 hardware and software functions, interfaces, and requirements shall be included.
 - 26 2. Hardware Manual: The manual shall describe all equipment furnished including:
 - 27 a. General description and specifications.
 - 28 b. Installation and checkout procedures.
 - 29 c. Equipment layout and electrical schematics to the component level.
 - 30 d. System layout drawings and schematics.
 - 31 e. Alignment and calibration procedures.
 - 32 f. Manufacturers repair parts list indicating sources of supply.
 - 33 3. Software Manual: The software manual shall describe the functions of all software and shall include all
34 other information necessary to enable proper loading, testing, and operation. The manual shall include:
 - 35 a. Definition of terms and functions.
 - 36 b. System use and application software.
 - 37 c. Initializations, startup, and shutdown.
 - 38 d. Reports generation.
 - 39 e. Details on forms customization and field parameters.
 - 40 4. Operator's Manual: The operator's manual shall fully explain all procedures and instructions for the
41 operation of the system including:
 - 42 a. Computers and peripherals.
 - 43 b. System startup and shutdown procedures.
 - 44 c. Use of system, command, and applications software.
 - 45 d. Recovery and restart procedures.

- 1 e. Use of report generator and generation of reports.
- 2 f. Data entry.
- 3 g. Operator commands.
- 4 h. Alarm messages and reprinting formats.
- 5 i. System permissions functions and requirements.

- 6 5. Maintenance Manual: The maintenance manual shall include descriptions of maintenance for all equipment
7 including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of
8 defective components.

- 9 C. Audio Calibration Data: Provide documentation on all EQ settings, crossover points, limiter settings, gate settings
10 and all other applicable settings.

- 11 D. Intellectual Property Ownership: Provide all uncompiled source code and DSP programming for all systems and
12 spaces as described in Part 3 of this specification section.

- 13 1.12 WARRANTY

- 14 A. Unless otherwise noted, provide warranty for one (1) year after Date of Substantial Completion for all materials
15 and labor.

- 16 B. Onsite Work During Warranty Period: This work shall be included in the Contractor's bid and performed during
17 regular working hours, Monday through Friday.

- 18 1. Inspections: The Contractor shall perform two (2) minor inspections at even intervals (or more often if
19 required by the manufacturer), and two (2) major inspections offset equally between the minor inspections.
20 2. Minor Inspections: These inspections shall include:
 - 21 a. Visual checks and operational tests of all equipment, field hardware, and electrical and mechanical
22 controls.
 - 23 b. Mechanical adjustments if required on any mechanical or electromechanical devices.

- 24 3. Major Inspections: These inspections shall include all work described under paragraph Minor Inspections
25 and the following work:
 - 26 a. Clean all equipment, including filters, interior and exterior surfaces.
 - 27 b. Perform diagnostics on all equipment.
 - 28 c. Check, test, and calibrate (if required) any sensors or other equipment that contain settings.
 - 29 d. Check zoom and focus of all projectors.
 - 30 e. Run all system software diagnostics and correct all diagnosed problems.

- 31 C. Operation: Upon the performance of any scheduled adjustments or repairs, Contractor shall verify operation of the
32 systems.

- 33 D. Emergency Service: The Owner will initiate service calls when the systems are not functioning properly. Qualified
34 personnel shall be available to provide service within the distance defined within this specification section. The
35 Owner shall be furnished with telephone number(s) where service personnel can be reached 24/7/365. Service
36 personnel shall be at site within 24 hours after receiving a request for service.

- 37 E. Records and Logs: The Contractor shall keep records and logs of each task completed under warranty. The log shall
38 contain all initial settings at substantial completion. Complete logs shall be kept and shall be available for review on
39 site, demonstrating that planned and systematic adjustments and repairs have been accomplished for the systems.

- 1 F. Work Requests: The Contractor shall separately record each service call request on a service request form. The
2 form shall include the model and serial number identifying the component involved, its location, date and time the
3 call was received, specific nature of trouble, names of service personnel assigned to the task, instructions
4 describing what must be done, the amount and nature of the materials used, the time and date work started, and
5 the time and date of completion. The Contractor shall deliver a record of the work performed within five (5)
6 business days after work is accomplished.
- 7 G. System Modifications: The Contractor shall make any recommendations for system modification in writing to the
8 Owner. No system modifications shall be made without prior approval of the Owner. Any modifications made to
9 the system shall be incorporated into the operations and maintenance manuals, and other documentation
10 affected. To the fullest extent possible, the Owner shall be provided with electronic restorable versions of all
11 configurations prior to the modifications being made.
- 12 H. Software: The Contractor shall provide all software and firmware updates during the period of the warranty and
13 verify operation of the system upon installation. These updates shall be accomplished in a timely manner, fully
14 coordinated with system operators, shall include training for the new changes/features, and shall be incorporated
15 into the operations and maintenance manuals, and software documentation.
- 16 I. Refer to the individual product sections for further warranty requirements of individual system components.
- 17 1.13 ANNUAL SERVICE CONTRACT
- 18 A. Provide annual cost for extended service and maintenance warranty after the first year for the audio/video systems
19 according to the following terms:
- 20 1. The term of the warranty shall begin on the system acceptance date and shall continue for one (1) year. The
21 extended service and maintenance warranty may begin following this first year if accepted by the Owner.
22 The term may be automatically renewed for successive one-year periods unless canceled by the Owner. The
23 service and maintenance agreement shall include the following basic services to the Owner, including all
24 necessary parts, labor and service equipment:
- 25 a. Repair or replace any equipment item that fails to perform as initially installed, as specified, or as
26 determined per the manufacturer's performance criteria.
- 27 b. Perform semi-annual preventive maintenance on the equipment. This preventive maintenance shall
28 include, but is not limited to, cleaning, realignment, bulb replacement, filter cleaning and
29 replacement, inspection, re-calibration, and testing of devices. The Owner shall receive a written
30 report of these inspections that identifies the device's status and, if required, a list of all necessary
31 repairs or replacements.
- 32 c. Provide software and firmware maintenance on the system. Contractor shall install and configure
33 any software and firmware updates that the manufacturer provides at no cost. Any additional
34 software or firmware options, updates, or enhancements purchased by the Owner shall be installed.
35 The Contractor shall not be responsible for the purchase of additional software packages or the
36 maintenance of Owner data.
- 37 2. The Contractor shall be compensated for any repairs or maintenance provided as a result of Owner abuse,
38 misuse, intentional damage, accidental damage, or power fluctuations exceeding specified equipment
39 tolerances.
- 40 3. System defects or failures shall be corrected within four (4) hours on the same business day if the Owner
41 makes a service request before 11:00 am, or before 12:00 noon the next business day if the Owner makes
42 the request after 11:00 am. If requested by the Owner, the Contractor shall respond or remain at the site
43 after normal business hours, and the Owner shall reimburse the Contractor for the incremental cost
44 difference between premium labor rates and standard labor rates. This reimbursement applies to premium
45 labor rates that do not exceed time-and-one-half rates after normal business hours and double-time rates
46 for Sundays and holidays. The Contractor's services shall be performed in a good and workmanlike manner
47 and remain free from defects for a period of one (1) year.
- 48 B. Provide complete terms and conditions of warranty and service.

- 1 C. The Owner will enter into a contract directly with the vendor. This specification is not a contract between the
2 Owner and the vendor to perform these services.

3 PART 2 - PRODUCTS

4 2.1 SYSTEM COMPONENTS

- 5 A. Refer to the project drawings for basis of design system components. Equivalent products shall meet or exceed all
6 requirements defined on the project drawings. The following product information represents the minimum
7 additional requirements for equivalent products:

8 B. Audio/Video GUI Control Systems:

- 9 1. Contractor shall furnish a programmable software-based audio/video control system. The system shall be
10 field configurable and programmable by the factory and/or a factory-trained programmer.
11 2. The control system shall be TCP/IP based allowing direct connection of the system processors to a
12 10/100BaseT compatible Ethernet network.
13 3. Vendor shall configure and program all Crestron components so that they can be monitored and controlled
14 by Crestron Fusion. Vendor shall provide X-Panels of all touch panels that can be accessed by Crestron
15 Fusion.

16 C. Microphone Systems:

17 1. Wireless Microphones:

- 18 a. Wireless microphones shall not operate in the 516 to 865 MHz band (channels 38 to 69).
19 b. Features:
20 1) Dual antenna reception with true diversity reception.
21 c. Microphone systems that are common (shared) by multiple spaces or when the receivers are in a
22 remote area shall include a compatible wireless antenna distribution system by the same
23 manufacturer as the wireless microphone system.

24 D. Audio Amplifiers:

25 1. Power Amplifier(s), 25, 70.7 and 100 Volt:

- 26 a. Power: The following calculation shall be used to determine the minimum required output of the
27 amplifier(s):

- 28 1) Calculate the total power tap value of each transformer with insertion loss using the
29 following equation:

- 30 a) Tap wattage $\times 10^{(x\text{dB}/10)}$ where x = the rated insertion loss at 1,000Hz.

- 31 2) Calculate the total wattage loss based on cable distance, cable gauge and cable resistance.
32 3) Add together all the speaker taps' total power values that will be on a single channel of the
33 amplifier. Multiply that total by 1.2, which will allow for a 20% future expansion. Multiply
34 that number by 1.25 to ensure the amplifier never exceeds 75% of its total output. Utilize
35 the final number to determine the minimum amplifier power requirements.

36 E. Assisted Listening Systems (ALS):

- 37 1. Assisted listening requirements for this project shall follow the local jurisdiction's requirements to quantify
38 the number of devices for use on this project.

- 1 2. All spaces with amplified audible communications require an ALS. The Contractor shall refer to the ADA and
2 ADAAG guidelines, as well as IBC Section 1108.2.7 for ALS rules, regulations and guidelines. Refer to the
3 table below for the required number of receivers to be provided for each space (Source: IBC, Table
4 1108.2.7.1). Alternatively, if the building is managed by a single entity and all systems are fully compatible
5 and interoperable, the total number of seats for all areas can be used in accordance with the table below.
6

Capacity of Seating in Assemble Areas	Minimum Required Number of Receivers	Minimum Number of Receivers to be Hearing-aid (T-coil) Compatible
50 or less	2	2
51 to 200	2, plus 1 per 25 seats over 50 seats	2
201 to 500	2, plus 1 per 25 seats over 50 seats	1 per 4 receivers
501 to 1,000	20, plus 1 per 33 seats over 500 seats	1 per 4 receivers
1,101 to 2,000	35, plus 1 per 50 seats over 1,000 seats	1 per 4 receivers
Over 2,000	55, plus 1 per 100 seats over 2,000 seats	1 per 4 receivers

- 7
8 3. Receivers required to be hearing-aid compatible shall interface with telecoils in hearing aids through the
9 provision of neckloops and shall be over-the-ear type headphones. Earbuds are not acceptable for this use.
10 4. Receivers shall include a 1/8" (3.2mm) standard mono output jack.
11 5. Refer to the Access Board Research "Large Area Assistive Listening Systems: Review and Recommendations"
12 ALS report for additional recommendations.

13 F. Power Conditioning and Surge Protective Devices:

- 14 1. All equipment shall be plugged in through a power conditioning surge arrestor.
15 2. Provide a minimum of 50 dB noise attenuation.
16 3. Provide a minimum of 1,500 joules of surge protection.
17 4. UL 1449 Standard for Safety for Surge Protective Devices listed to 330 volt clamping voltage.
18 5. Refer to the project drawings for additional information.

19 G. Digital Video Signal Equalizers and Regenerators:

- 20 1. For any cable run that exceeds the manufacturer-recommended distances or fails to transmit video or audio
21 due to cable length, the Contractor shall provide and install a signal equalizer at the far end (sink) with the
22 following minimum features:
- 23 a. HDMI/DVI equalizers shall be HDCP compliant and support actively buffered DDC transmission.
24 b. Display port equalizers shall be HDCP and DPCP compliant, support actively buffered DDC
25 transmission, and be DP+ compatible.
26 c. Provide automatic equalization.
27 d. Pass all embedded audio and metadata.
28 e. Have an auxiliary power input when adequate power is not available on the cable.
29 f. Provide output reclocking and jitter reduction for multi-rate SDI signals.
- 30 2. For any cable run that that fails to transmit video or audio due to a weak source signal, the Contractor shall
31 provide and install a signal regenerator at the near end (source) with the following minimum features:
- 32 a. HDMI/DVI regenerators shall be HDCP compliant and support actively buffered DDC.
33 b. Display port regenerators shall be HDCP and DPCP compliant, support DDC transmission, and be DP+
34 compatible.
35 c. Provide automatic output reclocking and jitter reduction.
36 d. Pass all embedded audio and metadata.
37 e. Have an auxiliary power input when adequate power is not available on the cable.

- 1 H. Extended Display Identification Data (EDID) Emulators:
 - 2 1. If any source or Owner-furnished equipment (OFE) is not outputting video properly, the Contractor shall
 - 3 provide and install an EDID Emulator and set it to the highest common EDID table of the displays (sinks)
 - 4 being outputted to, with the following minimum features:
 - 5 a. EDID capture mode from a display.
 - 6 b. Have an auxiliary power input when adequate power is not available on the cable.
 - 7 I. Audio Unbalanced to Balanced Converters, Balanced to Unbalanced Converters, Combiners, Dividers, Isolation
 - 8 Transformers, and Line Drivers Minimum Requirements:
 - 9 1. Unbalanced to Balanced Active Converter:
 - 10 a. Provide signal isolation from the audio signals of differing channels.
 - 11 b. Provide output trim gain and set to optimal output level while preventing over amplification and
 - 12 clipping of the signal.
 - 13 c. Minimum frequency response of 20 Hz to 20 kHz ($\pm 0.5\text{dB}$).
 - 14 d. Provide with appropriate power supply and mounting kit for rack or wall use.
 - 15 e. Provide appropriate converter for mono to mono, mono to stereo, stereo to stereo, or stereo to
 - 16 mono to match the input of the equipment to which it is being connected.
 - 17 2. Balanced to Unbalanced Passive Converter:
 - 18 a. Provide transformer isolation from the input to output.
 - 19 b. Provide output trim attenuation and set to optimal output level while preventing over-amplification
 - 20 and clipping of the signal.
 - 21 c. Minimum frequency response of 20 Hz to 20 kHz ($\pm 0.5\text{dB}$).
 - 22 d. Provide with appropriate mounting kit for rack or wall use.
 - 23 e. Provide appropriate converter for mono to mono, mono to stereo, stereo to stereo, or stereo to
 - 24 mono to match the input of the equipment to which it is being connected.
 - 25 J. Refer to project drawings for all other equipment not listed.
- 26 2.2 AUDIO CONNECTORS
 - 27 A. This article includes minimum requirements for all connectors that are acceptable on this project. Should the
 - 28 Contractor request an alternative connector, it shall be submitted with the product submittals and clearly identified
 - 29 with which connector it will be replaced.
 - 30 B. XLR Jack:
 - 31 1. Panel Mount: Professional grade, crimped insert for vibration control, nickel shell, silver pins, pin quantity as
 - 32 required for application.
 - 33 2. Manufacturers:
 - 34 a. Switchcraft
 - 35 b. Neutrik
 - 36 c. Mogami
 - 37 C. XLR Plug:
 - 38 1. Professional grade, 360° strain relief, nickel shell, silver pins. Provide colored boot.
 - 39 2. Manufacturers:
 - 40 a. Switchcraft
 - 41 b. Neutrik
 - 42 c. Mogami

- 1 D. Loudspeaker Connector:
- 2 1. Panel Mount: Twist-lock type, 4-conductor.
- 3 2. Manufacturers:
- 4 a. Neutrik
- 5 b. Speakon
- 6 2.3 AUDIO CABLING
- 7 A. Refer to Section 270500 for cable rating requirements.
- 8 B. Microphone Level Audio Cabling:
- 9 1. For patch cables less than or equal to 25 feet:
- 10 a. 24 AWG 2-conductor, twisted, stranded (19x36) tinned bare copper.
- 11 b. Single Layer Shield:
- 12 1) Shield: 100% aluminum foil shield
- 13 c. Nominal Capacitance: 30.0 pF/Ft
- 14 1) Belden
- 15 2) West Penn
- 16 3) Liberty
- 17 2. For cable runs greater than or equal to 25 feet:
- 18 a. 22 AWG 2-conductor, twisted, stranded (16x34) tinned bare copper.
- 19 b. Dual Layer Shield:
- 20 1) Shield: 85% total tinned copper braid shield
- 21 c. Nominal Capacitance: 18.0 pF/Ft
- 22 d. Manufacturers:
- 23 1) Belden
- 24 2) West Penn
- 25 3) Liberty
- 26 C. Line Level Audio Cabling:
- 27 1. For patch cables less than or equal to 25 feet:
- 28 a. 22 AWG 2-conductor, twisted, stranded (7x30) tinned bare copper.
- 29 b. Single Layer Shield:
- 30 1) Shield: 100% aluminum foil shield
- 31 c. Nominal Capacitance for non-plenum cable: 24.0pF/Ft
- 32 d. Nominal Capacitance for plenum cable: 35.0 pF/Ft
- 33 e. Manufacturers:
- 34 1) Belden
- 35 2) West Penn
- 36 3) Liberty

- 1 2. For cable runs greater than or equal to 25 feet:
- 2 a. 18 AWG 2-conductor, twisted, stranded (16x30) tinned bare copper.
- 3 b. Single Layer Shield:
- 4 1) Shield: 100% aluminum foil shield
- 5 c. Manufacturers:
- 6 1) Belden
- 7 2) West Penn
- 8 3) Liberty
- 9 D. Constant Voltage Speaker Cabling:
- 10 1. Class 2, stranded, twisted, 2-conductor, minimum of 16-gauge wire for all 25/70.7/100-volt applications
- 11 unless noted otherwise.
- 12 2. The Contractor shall size cabling as required for distance power and shall provide larger gauge cable as
- 13 required.
- 14 3. Manufacturers:
- 15 a. Belden
- 16 b. Liberty
- 17 c. Or pre-approved equal
- 18 2.4 DIGITAL VIDEO CABLING
- 19 A. All digital video cabling shall be pre-assembled and tested in a factory and not field terminated. The contractor shall
- 20 field verify the cable distance and provide the proper cable type and length.
- 21 B. High Definition Multi-Media Interface (HDMI) "High Speed" Cable:
- 22 1. For any cable run that exceeds the manufacturer-recommended distances or fails to transmit video or audio
- 23 due to cable length, the Contractor shall provide and install an HDCP-compliant signal equalizer at the far
- 24 end (sink).
- 25 2. Provide HDMI cabling meeting HDMI 2.0 standards or greater:
- 26 a. HDCP compliant.
- 27 b. Manufacturers:
- 28 1) Belden
- 29 2) Or pre-approved equal
- 30 C. Display Port Cable:
- 31 1. For any cable run that exceeds the manufacturer-recommended distances, the Contractor shall provide and
- 32 install an HDCP and DPCP compliant signal equalizer at the far end (sink).
- 33 2. Supports a maximum digital data rate of 8.64 Gbit/s.
- 34 3. Supports HDCP and DPCP.
- 35 4. Manufacturers:
- 36 a. Blue Jeans Cable
- 37 b. Or pre-approved equal

- 1 D. High Definition Serial Digital Interface (HD-SDI) Cabling:
- 2 1. For patch cables less than or equal to 25 feet:
- 3 a. RG-59, center conductor: 22 AWG stranded (7x29) bare copper, 0.023" OD (nominal), polyethylene
4 dielectric.
- 5 b. Single Layer Shield:
- 6 1) Outer Shield: 98% tinned copper braid
- 7 c. Nominal Impedance: 75 ohms
- 8 d. Nominal Capacitance: 21.0 pF/Ft
- 9 e. Velocity of Propagation: 66%
- 10 f. Maximum Attenuation (per 100 feet):
- 11 1) at 1-MHz: 0.3 dB
- 12 2) at 71.5-MHz: 2.5 dB
- 13 3) at 360-MHz: 6.0 dB
- 14 4) at 750-MHz: 8.9 dB
- 15 5) at 1000-MHz: 10.5 dB
- 16 g. Manufacturers:
- 17 1) Belden
- 18 2) CommScope
- 19 3) Liberty
- 20 4) Extron
- 21 2. For horizontal cable runs less than or equal to 100 feet:
- 22 a. RG-59, center conductor: 20 AWG solid bare copper, 0.031" OD (nominal), FEP insulation.
- 23 b. Double Layer Shield:
- 24 1) Outer Shield: 95% tinned copper braid outside and bonded foil inside.
- 25 c. Nominal Impedance: 75 ohms
- 26 d. Nominal Capacitance: 16.1 pF/Ft
- 27 e. Velocity of Propagation: 83%
- 28 f. Maximum insertion loss (per 100 feet):
- 29 1) at 1-MHz: 0.3 dB
- 30 2) at 71.5-MHz: 2.1 dB
- 31 3) at 360-MHz: 4.4 dB
- 32 4) at 750-MHz: 6.5 dB
- 33 5) at 1000-MHz: 7.6 dB
- 34 g. Manufacturers:
- 35 1) Belden non-plenum or plenum
- 36 2) CommScope
- 37 3) Liberty
- 38 4) Extron

- 1 3. For horizontal cable runs greater than or equal to 100 feet:
- 2 a. For any cable run that exceeds the manufacturer-recommended distances or fails to transmit video
- 3 or audio due to cable length, the Contractor shall provide and install a signal equalizer at the far end
- 4 (sink).
- 5 b. RG-6, center conductor: 18 AWG solid bare copper, 0.274" OD (nominal),.
- 6 c. Double Layer Shield:
 - 7 1) Inner Shield: 100% non-bonded aluminum foil tape
 - 8 2) Outer Shield: 95% tinned copper braid
- 9 d. Nominal Impedance: 75 ohms
- 10 e. Nominal Capacitance: 15.9 pF/Ft
- 11 f. Velocity of Propagation: 84.5%
- 12 g. Maximum attenuation for non-plenum cable (per 100 feet):
 - 13 1) at 1-MHz: 0.2 dB
 - 14 2) at 71.5-MHz: 1.6 dB
 - 15 3) at 360-MHz: 3.5 dB
 - 16 4) at 750-MHz: 5.1 dB
 - 17 5) at 1000-MHz: 5.9 dB
- 18 h. Manufacturers:
 - 19 1) Belden
 - 20 2) CommScope
 - 21 3) Liberty
 - 22 4) Extron

23 2.5 TRANSMISSION CABLING

- 24 A. For patch cables less than or equal to 25 feet:
 - 25 1. RG-174, center conductor: 26 AWG stranded (7x34) copper-covered steel; 0.019" OD (nominal);
 - 26 polyethylene insulation.
 - 27 2. Single Layer Shield:
 - 28 a. Outer Shield: 90% tinned copper braid shield
 - 29 3. Nominal Impedance: 50 ohms
 - 30 4. Nominal Capacitance: 30.8 pF/Ft
 - 31 5. Velocity of Propagation: 66%
 - 32 6. Maximum Attenuation (per 100 feet):
 - 33 a. at 1-MHz: 1.9 dB
 - 34 b. at 50-MHz: 5.8 dB
 - 35 c. at 400-MHz: 19.0 dB
 - 36 d. at 700-MHz: 27.0 dB
 - 37 e. at 1000-MHz: 34.0 dB
 - 38 7. Cable shall be installed in conduit within plenum areas.
 - 39 8. Manufacturers:
 - 40 a. Belden
 - 41 b. CommScope
 - 42 c. Liberty
 - 43 d. Times Fiber

- 1 B. For horizontal cables less than or equal to 50 feet:
- 2 1. RG-58, center conductor: 20 AWG bare solid copper; 0.037" OD (nominal); polyethylene insulation for non-
- 3 plenum and FEP Teflon dielectric for plenum.
- 4 2. Single Layer Shield:
- 5 a. Outer Shield: 95% tinned copper braid shield
- 6 3. Nominal Impedance: 50 ohms
- 7 4. Nominal Capacitance for non-plenum cable: 28.5 pF/Ft
- 8 5. Nominal Capacitance for plenum cable: 26.4 pF/Ft
- 9 6. Velocity of Propagation for non-plenum cable: 66%
- 10 7. Velocity of Propagation for plenum cable: 69.5%
- 11 8. Maximum attenuation for non-plenum cable (per 100 feet):
- 12 a. at 1-MHz: 0.3 dB
- 13 b. at 50-MHz: 2.5 dB
- 14 c. at 400-MHz: 8.4 dB
- 15 d. at 700-MHz: 11.7 dB
- 16 e. at 1000-MHz: 14.5 dB
- 17 9. Maximum attenuation for plenum cable (per 100 feet):
- 18 a. at 1-MHz: 0.5 dB
- 19 b. at 50-MHz: 3.0 dB
- 20 c. at 400-MHz: 9.7 dB
- 21 d. at 700-MHz: 13.7 dB
- 22 e. at 1000-MHz: 17.3 dB
- 23 10. Manufacturers:
- 24 a. Belden plenum
- 25 b. CommScope
- 26 c. Liberty
- 27 d. Times Fiber
- 28 C. For horizontal cables greater than or equal to 50 feet:
- 29 1. RG-8 center conductor: 10 AWG bare solid copper; 0.108" OD (nominal); foam HDPE insulation for non-
- 30 plenum and foam FEP dielectric for plenum.
- 31 2. Two Layer Shield:
- 32 a. Inner Shield: non-bonded aluminum foil tape
- 33 b. Outer Shield: 90% tinned copper braid shield
- 34 3. Nominal Impedance: 50 ohms
- 35 4. Nominal Capacitance for non-plenum cable: 24.8 pF/Ft
- 36 5. Nominal Capacitance for plenum cable: 24.2 pF/Ft
- 37 6. Velocity of Propagation for non-plenum cable: 82%
- 38 7. Velocity of Propagation for plenum cable: 84%
- 39 8. Maximum attenuation for non-plenum cable (per 100 feet):
- 40 a. at 1-MHz: 0.4 dB
- 41 b. at 50-MHz: 1.0 dB
- 42 c. at 400-MHz: 2.6 dB
- 43 d. at 700-MHz: 3.6 dB
- 44 e. at 1000-MHz: 4.4 dB
- 45 f. at 4000-MHz: 9.9 dB

- 1 9. Maximum attenuation for plenum cable (per 100 feet):
- 2 a. at 1-MHz: 0.1 dB
- 3 b. at 50-MHz: 1.1 dB
- 4 c. at 400-MHz: 3.2 dB
- 5 d. at 700-MHz: 4.5 dB
- 6 e. at 1000-MHz: 5.9 dB
- 7 f. at 4000-MHz: 14.1 dB
- 8 10. Manufacturers:
- 9 a. Belden non-plenum or plenum
- 10 b. CommScope
- 11 c. Liberty
- 12 d. Times Fiber
- 13 2.6 CONTROL CABLING
- 14 A. Control:
- 15 1. For Bidding Purposes: Two-pair, twisted, shielded, one (1) #18 AWG pair and one (1) #22 AWG pair. Provide
- 16 with plenum-rated jacket where used in a plenum space without conduit.
- 17 2. Size conductors as required for distance and voltage drop.
- 18 3. Coordinate exact requirements with selected manufacturer and system prior to submitting bid.
- 19 B. Other Control Circuits:
- 20 1. #20 AWG, stranded, shielded cable, number of conductors as required for the applications. Provide with
- 21 plenum-rated jacket where used in a plenum space without conduit. Provide PVC jacket where installed in
- 22 conduit or non-plenum areas.
- 23 2. Coordinate exact requirements with selected manufacturers prior to submitting bid.
- 24 2.7 HORIZONTAL COPPER DATA AND FIBER CABLING AND CONNECTORS
- 25 A. Refer to Section 271500 - Horizontal Cabling Requirements, for telecommunications cabling and connector
- 26 requirements including fiber optics being utilized for A/V systems.
- 27 B. Refer to Section 271710 - Testing, for telecommunications cabling testing requirements including fiber optics being
- 28 utilized for A/V systems.
- 29 C. All category-rated copper data cabling and fiber optic cabling shall be installed, terminated, tested and certified by
- 30 the Division 27 Telecommunications contractor certified by the selected manufacturers for the copper and fiber
- 31 optic cabling plant. The Contractor shall submit all cabling and certifications to the Architect/Engineer for approval
- 32 in the shop drawings.
- 33 D. The A/V contractor shall coordinate purchase, installation, testing and certification with the telecommunications
- 34 contractor for all required category-rated copper data cabling and fiber optic cabling required for A/V system
- 35 operation prior to bid.
- 36 PART 3 - EXECUTION
- 37 3.1 EXAMINATION
- 38 A. Verify that surfaces are ready to receive work.

1 B. Verify field dimensions and coordinate physical size of all equipment with the architectural requirements of the
2 spaces into which they are to be installed. Allow space for adequate ventilation and circulation of air.

3 C. Verify that required utilities are available, in proper location, and ready for use.

4 D. Beginning of installation means installer accepts existing conditions.

5 3.2 PRE-INSTALLATION

6 A. A pre-installation meeting shall be held after the project has been awarded but before any submittals or work has
7 been conducted. The purpose of this meeting is to review the drawings and specifications to assist with the
8 construction and installation process that will occur during construction. The meeting will include the Engineer,
9 Architect, Owner, and all relevant installing contractors for this system. The meeting will be chaired by the project
10 manager for the AV contract and will include the following topics:

11 B. The Contractor shall be responsible for submitting all requested submittals and holding the pre-installation meeting
12 prior to any purchasing, installation, programming, and construction coordination. Any delays or changes to the
13 project as a result of meeting this requirement will be at the Contractor's expense.

14 3.3 INSTALLATION

15 A. Comply with the manufacturer's instructions and recommendations for installation of all products.

16 B. Provide all system wiring between all components as directed by the manufacturer or required for proper system
17 operation.

18 C. Mount all touch screen and keypad devices where shown on plans in accordance with Americans with Disabilities
19 Act (ADA) requirements for both side reach and front reach.

20 D. Cabling Requirements:

21 1. Non-plenum rated cabling may be used instead of plenum when installed with-in conduit in plenum rated
22 areas.

23 2. All cabling shall be routed according to function. Cabling shall be grouped and bundled by groups, such as:
24 microphone and line level audio, control, video and speaker. In no case shall cabling from different
25 functional groups be intermixed. No cabling shall be routed parallel to 120 VAC or higher power circuits
26 unless separated by a minimum of 6" and the 120 VAC or higher power is installed in conduit.

27 3. When cabling is installed in conduit, a separate conduit shall be provided for each cabling functional type.

28 4. Cable bundles shall be loosely bundled to allow the visual following of individual cables within the bundle
29 and to permit the easy removal and addition of cables as necessary.

30 5. Horizontal cabling installed as open cable or in cable tray shall be bundled at not less than 10' intervals with
31 hook-and-loop tie wraps. The use of plastic cable zip ties is strictly prohibited in any situation.

32 6. Cabling shall not be spliced under any circumstances.

33 7. Each cable shall be appropriately identified (as defined on the record documents) at each end's termination
34 point using pressure sensitive label strips.

35 8. Audio Cabling:

36 a. All amplified audio cabling shall not be in the same enclosed pathway as any other type of cabling as
37 required by the NEC. Refer to the NEC for definitions and additional requirements.

38 b. The polarity of all cabling shall remain consistent throughout the project, on all equipment. Red
39 conductors shall be used for the positive "+" side, and black used for the negative "-" side.

40 c. Cable shield length shall be equal to the cable's conductor length.

41 d. All shielded cables drain wire SHALL be grounded and continuous throughout the entire length of
42 the system, including splices where speakers are installed.

43 e. Balanced audio connections shall be used whenever the mating equipment allows.

44 f. Do not run unbalanced cables longer than 3m. For interconnecting of unbalanced equipment in
45 lengths longer than 3m, the Contractor shall provide a line driver located at the source.

- 1 9. Video Cabling:
- 2 a. All video cabling, unless otherwise noted, shall be provided with BNC connectors of the two-piece
3 compression type. Twist-on BNC connectors are not permitted.
- 4 b. Provide BNC 75-ohm terminators where required for all open BNC connectors.
- 5 c. All coaxial video cables used for S-video, component/RGB and RGBHV shall be the same length to
6 minimize skew.
- 7 10. Twisted Pair Cabling for All Applications:
- 8 a. The Contractor shall ensure that the twists in each cable pair are preserved to within 0.5 inch of the
9 termination. The cable jacket shall be removed only to the extent required to make the termination.
- 10 b. The Contractor shall ensure that the cable shields are continuous throughout, terminated, and
11 grounded according to the manufacturer's recommendations.
- 12 E. Grounding Requirements:
- 13 1. Provide a minimum of #6 AWG conductor from the nearest electrical service ground bus or nearest
14 telecommunications room ground bus bar to the A/V equipment racks and cabinets regardless of location.
15 Size cable as required by the NEC.
- 16 2. Cables containing shields shall not have the shields grounded at conduits, boxes, racks, etc. Ground the
17 shield only at the equipment end.
- 18 3. Audio cable shields for line-level signals shall be connected to the metal equipment chassis at both ends of
19 the cable.
- 20 4. Audio cables connected to transformers shall have the cable shield connected to the transformer shield and
21 transformer case ground.
- 22 5. The Contractor shall not connect cable shields together from differing cables.
- 23 6. XLR cable shields shall be connected to chassis ground.
- 24 7. Signal-grounded balanced shields are not acceptable and shall not be installed. All balanced shields shall be
25 chassis grounded.
- 26 F. Rack and Cabinet Requirements:
- 27 1. Ground equipment racks/cabinets as noted within this specification section and Section 270526 -
28 Communications Grounding.
- 29 2. Provide one (1) RU of space between adjacent pieces of equipment with top and/or bottom vents, above
30 the topmost piece of equipment, and below the bottommost piece of equipment. Provide a vented cover
31 panel covering each rack space.
- 32 3. Terminate all speaker cabling on individual barrier strips for positive "+", negative "-", and shield. The shield
33 barrier strip shall be grounded.
- 34 4. Provide a power conditioning surge arrester in the rack for distribution of AC power from the wall
35 receptacles indicated on the plans. The quantity of plugs shall be adequate so that no equipment in the rack
36 shall require plugging into an AC source outside the rack.
- 37 5. Power sequencing shall be provided in the racks where shown on the drawings. All amplifiers located in the
38 racks shall be sequenced "last on – first off". Power sequencers shall provide power conditioning and surge
39 protection.
- 40 G. Video System Installation Requirements:
- 41 1. Video display image shall fill screen area with native aspect ratio
- 42 H. Audio System Installation Requirements:
- 43 1. The Contractor shall perform calculations for the optimal speaker tap settings to reach the desired SPL level
44 and coverage without overloading the amplifier(s).

- 1 a. At a minimum, the following calculations shall be used:
- 2 1) Add together all speaker taps that will be on a single channel of the amplifier. Multiply that
3 total by 1.2, which will allow for a 20% future expansion. Multiply that number by 1.25 to
4 ensure the amplifier never exceeds 75% of its total output. Utilize the final number to
5 determine the minimum amplifier power requirements.
- 6 2) For direct coupled systems (low impedance), allow a minimum of 10 dB headroom before
7 any distortion occurs at the amplifier input indicator when beginning gain stage tests are set
8 up. Increase headroom as appropriate for high impact and clarity needs, typically exceeding
9 12 to 15 dB during continuous operation.
- 10 2. Connections of balanced to unbalanced equipment shall only be done through an active converter at the
11 unbalanced side.
- 12 3. Connections of unbalanced to balanced equipment shall only be done through an active converter at the
13 unbalanced side.
- 14 4. Connections from stereo balanced or unbalanced equipment to mono equipment of the same signal type
15 shall only be done through a passive combiner.
- 16 5. Connections from mono balanced or unbalanced equipment to stereo equipment of the same signal type
17 shall only be done through a passive divider.
- 18 6. The Contractor shall provide an isolation transformer for any balanced or unbalanced audio line that
19 exhibits a hum, noise from EMI or RFI, power line noise, or ground loops.
- 20 7. The Contractor shall provide an active audio line driver for all balanced and unbalanced signals that exceed
21 the distance limitations of the cabling.
- 22 I. Control System Installation Requirements:
- 23 1. The Contractor shall perform calculations for the required wire AWG size based on distance for system
24 power for touch panels, keypads and other devices being powered. A minimum of a 15% overhead is
25 required.
- 26 3.4 VIDEO SYSTEM TESTING AND CALIBRATION
- 27 A. All video equipment shall receive proper testing and configuration.
- 28 B. Color Space Optimization:
- 29 1. The Contractor shall set the color space of each source and display device to a uniform color space to
30 optimize the switching speed and compatibility of a digital video system. Each device shall be set to an RGB
31 or YCbCr color space depending on the systems primary function and compatibility of the devices.
- 32 2. If the primary function of the space is video and other digital media, the color space of each device shall be
33 set to a YCbCr color space. If the primary function of the space is computer-based graphics and
34 presentations, the color space of each device shall be set to an RGB color space.
- 35 3. Chroma subsampling shall be set to a consistent 4:4:4 or 4:2:2 across all devices. Set to 4:4:4 when all
36 equipment is capable.
- 37 4. If all devices are not capable of displaying a certain color space, all devices shall be set to a common shared
38 color space.
- 39 C. Extended Display Identification Data (EDID) Management:
- 40 1. The Contractor shall set the EDID management tables in capable equipment so all sources output the
41 highest common EDID table of the displays (sinks).
- 42 2. For systems with capable matrix switches, the matrix shall dynamically adjust its EDID tables so any source
43 will output the highest common EDID table of the displays (sinks) being outputted to.
- 44 3. If any source or Owner-furnished equipment (OFE) is not outputting properly, the Contractor shall provide
45 and install an EDID Emulator and set it to the highest common EDID table of the displays (sinks) being
46 outputted to.

- 1 D. Projectors, monitors and receivers shall be tested and adjusted for proper signal sync, convergence, brightness,
2 contrast, and color level. The Contractor shall adjust all other parameters necessary to achieve a proper video
3 image.
- 4 E. All video source selections shall be tested and verified.
- 5 F. All projectors and displays shall have a minimum burn-in time of 96 hours prior to any adjustments are made and
6 the completion of the project
- 7 G. All projectors and displays shall have their hue/tint and color/saturation calibrated with a video signal test
8 generator and blue lens filter after a minimum warmup time of 20 minutes. Provide all calibrated settings results
9 for each projector and display in the final documentation.
- 10 H. All projectors and displays shall have their brightness, contrast and sharpness calibrated with a video signal test
11 generator after a minimum warmup time of 20 minutes. Provide all calibrated settings results for each projector
12 and display in the final documentation.
- 13 I. All dynamic contrast functions shall be turned off.
- 14 J. Full video calibration for all projectors and displays shall be provided with the following minimum requirements:
- 15 1. The Contractor shall utilize non-contact professional video calibration tools such as Sencore OTC1000-CM
16 ColorPro Optical Tri-stimulus Colorimeter or Klein K-10 Tri-stimulus CIE Colorimeter, Sencore or Extron
17 Video Generator and the latest version of ColorPro by CalMan software or pre-approved equal.
- 18 2. The projector or display shall have a minimum burn-in time of 96 hours prior to calibration.
- 19 3. The projector or display shall have a minimum warmup time of 20 minutes before calibration begins. All
20 efforts shall be taken to allow the display to warm up for a minimum of 60 minutes to allow the luminance
21 to fully stabilize.
- 22 4. The space shall be as dark as possible. The colorimeter's ambient light sensor filter shall be recalibrated
23 every 30 minutes when outside ambient light is present to account for the changes in daylight levels.
- 24 5. All inputs utilized on the projector or display shall be calibrated using the appropriate video signal, aspect
25 ratio and resolution. Submit results for each input as a separate report.
- 26 6. The projector or display shall be calibrated to the Rec. 709 HDTV color standard. White balance shall be
27 calibrated as close as possible to the D65 point for both high IRE and low IRE levels.
- 28 7. The projector or display shall have its 3D Color Management calibrated.
- 29 8. The projector or display shall have its brightness and contrast adjusted both before and after the gamma is
30 calibrated.
- 31 9. Gamma shall be calibrated to an average of 2.2. Gamma shall be verified after the calibration is completed
32 and readjusted as necessary.
- 33 10. The projector or display shall have its hue/tint and color/saturation calibrated with a blue lens filter.
- 34 11. For calibrating 3D projectors and displays, the matching 3D glasses shall be secured to the front of the
35 Colorimeter "looking" through the glasses for the 3D mode calibration only.
- 36 12. Record the full on/full off contrast ratio both before and after calibration. Provide these results in the final
37 documentation.
- 38 13. The Contractor shall submit the final calibration results to the Architect/Engineer for approval and include
39 the approved results in final documentation submitted to the Owner.
- 40 14. Calibration by eye is not acceptable.
- 41 15. Any setting that cannot be calibrated because the projector or display lacks the functions shall be noted in
42 the final documentation.
- 43 16. For video wall applications, or where multiple projectors or displays that will share content are being used
44 within a single space, all displays after calibration shall be adjusted to match the lowest performing
45 projector or display so all projectors or displays are uniform. If a projector or display differs greatly from the
46 other displays, that projector or display shall be replaced at no cost to the Owner and recalibrated.

1 3.5 AUDIO SYSTEM TESTING AND CALIBRATION:

- 2 A. This Contractor shall field adjust any surface-mounted or flown loudspeaker orientation to achieve the necessary
3 coverage pattern to the intended listening plane. Loudspeakers always face listeners and minimize coverage on
4 walls. The contractor shall be familiar with the named and specified nominal coverage angle of all speakers above
5 its crossover point or for speech range, (500-4,000 Hz).
- 6 B. All speakers shall be tested for polarity prior to high work and a table of test results shall be included for A/E
7 inspection. All loudspeakers shall be connected with uniform polarity, where a positive pressure pulse at the input
8 corresponds to a positive driver excursion, and all drivers are uniform always moving in the same direction. Main
9 speakers shall not be lifted or hoisted into high access areas without polarity testing.
- 10 C. The Contractor shall make incremental adjustments on the equipment output and input tolerances to achieve
11 matching signal levels while preserving +10 dB minimum headroom and also unity gain. Insert all broadband or
12 high pass filters first for system protection after review of manufacturers specifications for power and bandpass.
- 13 D. Provide high quality media with full bandpass program material for critical listening. MP3 or streaming audio is not
14 acceptable. Testing shall illustrate WAV file quality playback for impact and clarity.
- 15 E. The Contractor shall provide graphic plots of the reference ambient noise for each space at the time of the
16 calibration and submit with the calibration results. Test signal shall be 10dB minimum above ambient noise levels
17 during testing.
- 18 F. The Contractor shall use a listener sitting height of four (4) feet \pm 1" for rooms where the primary function will be
19 sitting. The Contractor shall use a listener standing height of five feet three inches (5.25') \pm 1" for rooms where the
20 primary function will be standing

21 3.6 ASSISTED LISTENING SYSTEM (ALS) PERFORMANCE REQUIREMENTS

- 22 A. The Contractor shall verify that the ALS system(s) meets the following minimum performance requirements at the
23 earphone or headset:
- 24 1. Reach a minimum total SPL of 75 dBA and no greater than 95 dBA, with a minimum of a 50dB dynamic
25 range volume control.
 - 26 2. Achieve a minimum signal-to-noise (S/N) ratio of 18dB. It is recommended to achieve a minimum signal-to-
27 noise (S/N) ratio of 25dB to accommodate children.
 - 28 3. Ensure the peak clipping levels do not exceed 18dB down from the peak input signal level.
- 29 B. FM-based systems shall operate within the FCC-reserved assisted listening frequencies of 72 to 76 MHz or the 216
30 to 217 MHz (preferred) range and comply with the FCC transmitter power requirements.

31 3.7 DSP-BASED AUDIO PROCESSOR PROGRAMMING

- 32 A. Full system programming shall be provided for the system. Programming shall be performed by a factory trained
33 and certified programmer or an employee of the equipment manufacturer.
- 34 B. DSP pathfile with initial settings shall be provided by the Contractor for review by the Architect/Engineer before
35 installation.
- 36 C. The IP-based audio (IEEE AVB, Dante, etc.) and components shall be on a dedicated Virtual LAN (VLAN) for the A/V
37 systems. These components shall be on a dedicated subnetwork of the VLAN. The Contractor shall coordinate these
38 requirements with the Owner prior to installation.
- 39 D. A parametric EQ shall be provided after each crossover point or as approved in the DSP pathfile during shop
40 submittal review. These shall be utilized to set the speaker output as defined in the Audio System Calibration
41 section within this specification. These equalizers should not be made available to the user to adjust.

- 1 E. Levelers, compressor/limiters, duckers, gates and delays shall be preset during testing and commissioning and are
2 not available for user adjustment following commissioning.
- 3 1. Adjust delays for time of flight plus 8 to 10 ms, typical.
- 4 F. Provide each microphone input with high-pass filter, 5-band parametric EQ, auto-leveler and volume module.
5 Provide line level inputs with high-pass filter, 3-band parametric EQ, compressor/limiter, and volume module.
- 6 G. Acoustic Echo Cancelation (AEC) shall be provided for each conference microphone input.
- 7 H. A broadband pink noise generator shall be provided with a selectable on/off control button within the DSP pathfile.
8 The noise shall be routable through all processing EQs and speaker outputs during testing.
- 9 I. Provide volume meters with labeling for each input and each output.
- 10 J. The Contractor shall utilize the latest version of the programming software.
- 11 K. The Contractor shall ensure that all components are updated to the latest firmware at the completion of the
12 project.
- 13 3.8 DSP-BASED AUDIO PROCESSOR CONTROL SOFTWARE PROGRAMMING
- 14 A. Full system software programming shall be provided for the system. Programming shall be performed by a factory-
15 trained and certified programmer or an employee of the equipment manufacturer.
- 16 B. The Contractor shall schedule a series of meetings with the Owner and Architect/Engineer to define and determine
17 the exact page layout requirements prior to the final configuration of the audio system. An Owner sign-off of the
18 final layouts shall be required.
- 19 C. The Contractor shall use the latest version of the software.
- 20 D. At a minimum, there shall be password-protected pages for zone combining, input/output volume control with
21 meters, speaker output volume control with meters, signal routing, signal processing (EQ's, feedback suppression,
22 etc.), and supervision/maintenance for all spaces and combined zones.
- 23 3.9 MULTIMEDIA CONTROL SYSTEM INTEGRATION AND PROGRAMMING
- 24 A. Programming and Integration for Control Systems:
- 25 1. Full system programming shall be provided for the system. Programming shall be performed by a factory
26 trained and certified programmer or an employee of the equipment manufacturer.
- 27 2. The Contractor shall schedule a series of meetings with the Owner and Architect/Engineer to define and
28 determine the exact integration requirements of the control system prior to the installation of the control
29 system and components. An Owner sign-off of the final configuration shall be required.
- 30 3. This section only defines the minimum requirements. The programmer shall provide complete programming
31 for a fully functional system.
- 32 4. The Contractor shall utilize the latest version of the programming software.
- 33 5. The Contractor shall ensure that all components are updated to the latest firmware at the completion of the
34 project.
- 35 6. The IP-based control system and controlled components shall be on a dedicated Virtual LAN (VLAN) for the
36 A/V systems. These components shall be on a dedicated subnetwork of the VLAN. The Contractor shall
37 coordinate these requirements with the Owner prior to installation.
- 38 7. Integration and programming of the following pieces of equipment shall be provided, with the following
39 minimum features and functions:
- 40 a. All equipment shall include on/off control, except for equipment that must remain active for system
41 functionality.

- 1 b. Integration of HDCP (High-bandwidth Digital Content Protection) and DPCP (Display Port Content
2 Protection) protected content and sources:
- 3 1) No protected sources or content shall be allowed to be selected to route through non-
4 protected devices and displays. A warning shall be displayed stating this information to the
5 user.
- 6 c. Audio Conference Integration:
- 7 1) Refer to DSP Audio Processor Integration for requirements.
- 8 d. Display Integration:
- 9 1) The displays shall be integrated into the A/V control system via bi-directional RS-232 or
10 Ethernet control. Provide with the following minimum functions:
- 11 a) On/off control.
12 b) Display status feedback.
13 c) Source switching control.
14 d) Audio volume control with mute.
15 e) Video mute.
- 16 e. Pan/Tilt/Zoom (PTZ) Camera Integration:
- 17 1) The Contractor shall provide Ethernet control system connections and programming with
18 the following minimum functions:
- 19 a) Provide full pan, tilt and zoom control from Owner's production suite.
20 b) Provide presets for fixed camera positions, contractor shall coordinate with the
21 Owner for desired preset positions.
- 22 B. Programming and Configuration for Touch Panels:
- 23 1. This section only defines the minimum requirements. The programmer shall provide complete touch panel
24 layouts and programming for a fully functional system.
- 25 2. The Contractor shall schedule a series of meetings with the Owner and Architect/Engineer to define and
26 determine the exact touch panel layout requirements prior to the purchase and installation of the touch
27 panels. An Owner sign-off of the final layouts shall be required.
- 28 a. Vendor shall work with City of Madison IT Media Team to ensure that user interfaces on touch
29 panels are similar in function and appearance to those of other City of Madison facilities.
- 30 3. Contractor logos are not allowed on the touch panels. The Contractor shall coordinate with the Owner on
31 desired logos to be displayed.
- 32 4. All programming for interface and control of all devices shown on the drawings shall be provided.
33 Programming shall be provided for the following minimum functionality:
- 34 a. The main screen shall include graphical buttons for the primary room functions.
- 35 1) Upon selection of the graphical button, all the required functions shall be displayed on the
36 screen. All required equipment shall turn on.
- 37 b. Master System On/Off Control:
- 38 1) When the master system off button is selected, all capable components within the system
39 shall be turned off or placed on standby, except for equipment that is required to remain on
40 for the system to function like the control system processor.

- 1 c. The main screen shall include graphical buttons for the selection of individual source selections.
- 2 1) Upon selection of the graphical button for a source selection, all functional controls for the
- 3 pieces of equipment, as well as all status indicators, shall be provided in graphical format on
- 4 the screen.
- 5 2) Rooms with multiple independent outputs and displays shall have a source routing matrix to
- 6 allow any input to be routed to any output.
- 7 d. At all times, on all screens, a button shall be provided to return to the main screen, except for modal
- 8 pop-ups.
- 9 e. A master volume control and mute shall be provided at all times on all screens, except for modal
- 10 pop-ups.
- 11 f. A master video mute shall be provided at all times on all screens, except for modal pop-ups and
- 12 audio-only functions.
- 13 g. A modal countdown timer shall be displayed showing the warmup and cooldown time of the
- 14 projector. All functions shall be locked out while the projector is in cooldown mode.
- 15 h. All unused hard buttons shall not be labeled. A blank touch panel bezel shall be provided if no hard
- 16 buttons are used.

17 C. Touch Panel Layout Principles, Considerations and Guidelines:

18 1. Icons and Buttons:

- 19 a. Icons shall not be used solely as a button but can be embedded in a button.
- 20 b. Icons shall appear to be flat and unpressable.
- 21 c. Status bars or text windows for time, date, room number, and similar information shall appear to be
- 22 slightly depressed into the screen and appear to be unpressable.
- 23 d. Buttons shall appear to be pressable by appearing to come off the screen with beveled edges,
- 24 lighting gradients, and shadows. When pressed, the button shall appear to be depressed into the
- 25 screen.
- 26 1) Buttons that are momentary shall change color when pressed, appear to depress, then pop
- 27 back up and revert to the original button color and state.
- 28 2) Buttons that are not momentary shall change color when pressed, appear to depress,
- 29 remain depressed, then pop back up, and revert to the original button color and state when
- 30 pressed again.
- 31 e. Buttons and icons shall appear to be lit from the top left corner of the screen.
- 32 f. Buttons shall be grouped together according to general function.
- 33 g. Button size shall be based on the ratio of Phi (1:1.618) and be sized appropriately based on the
- 34 screen area and dpi (pixel pitch).
- 35 h. Maintain a minimum of 5 to 10 pixels between buttons on small to medium touch panels, and a
- 36 minimum of 10 to 15 pixels between buttons on medium to large touch panels.
- 37 i. Telephone dialer keypads shall be based on the ITU-T E.161/ANSI TI-703 standard telephone layout
- 38 and include the a-z letters below each appropriate number.
- 39 j. TV and radio tuner keypads shall be based on the ITU-T E.161/ANSI TI-703 standard telephone
- 40 layout, except for the asterisk (*) being replaced by a dot (.) and the pound (#) being replaced with
- 41 Enter.
- 42 k. IP-address keypads shall be based on the standard computer keyboard 10-key numeric keypad
- 43 typically found on the right side of the keyboard.
- 44 l. Buttons such as Power, Play, Stop, Record, Rewind, Previous, Forward, Eject, Return, Next, Up,
- 45 Down, Left, Right, Plus, Minus, etc. shall use standard industry symbols. Record shall always be a
- 46 solid red circle.

47 2. Text and Fonts:

- 48 a. The Contractor shall use a standard sans-serif bold Arial or Calibri font style unless the Owner
- 49 dictates otherwise.

- 1 b. Words shall have the first letter capitalized and the rest of the word lower case. No words shall be all
2 capitals or all lower case. Follow standard grammatically correct sentence structure where the first
3 word is capitalized and the rest of the sentence is lower case, followed by the appropriate
4 punctuation mark with accurate syntax and correct verbs.
5 c. All font size in a single group or cluster shall maintain the same font size. Headers to a group or
6 cluster shall have a slightly enlarged font size. and footers shall have a slightly smaller font size in
7 comparison to the group font size to maintain a visual hierarchy.
- 8 3. Color Considerations:
- 9 a. Colors shall be selected so that, when converted to monochrome, all text, buttons, icons, groups,
10 clusters, borders, etc. are clearly visible to accommodate all color blind or color-impaired individuals
11 and ADA requirements.
12 b. Background colors shall be cool low saturation colors such as grey, blue, or green and their
13 analogous colors, and be a gradient from top down or top left to bottom right.
14 c. Base colors shall be analogous to the background color but be of a higher saturation to stand out
15 more clearly.
16 d. Button colors shall be analogous to the background color, stand out clearly from the base colors, and
17 be of a higher saturation cool color, gray, or a low saturation black.
18 e. Icon, symbols, and text color shall be a neutral white or black, or a low saturation grey, and shall
19 clearly stand out from the background or button it is placed on.
20 f. Buttons for modal acknowledgement, exit or return, or other modal action shall be a warm color
21 such as red or yellow and their analogous colors.
22 g. Buttons, icons, symbols or text for emergency or urgent notifications shall be bright red.
- 23 4. Pages and Background:
- 24 a. Groups and clusters shall have clearly defined borders, with spacing between adjacent groups.
25 b. Modal pop-up windows or pages shall be required when a command requires user input before it is
26 executed or when a button has multiple nested elements to control, such as microphone volumes,
27 zone control, lighting and environment control, advanced system controls, etc.
- 28 1) The modal pop-up pages shall dim and grey out the background and buttons, overlay the
29 main page, and have a clear back or exit button to bring the user back into the active page
30 the user was on before the modal pop-up.
31 2) A model pop-up timer page shall appear when a projector is being turned on or off for the
32 appropriate warmup or cooldown time. No additional commands shall be allowed during
33 this time.
34 3) Model pop-ups shall not replace or completely overlay the background.
- 35 c. Images or pictures shall never be used as backgrounds to any page other than a master start page, if
36 appropriate.
- 37 5. Touch Panel Layout Guideline Template:
- 38 a. IMAGEClient Logo - Static Window
39 b. A/V Source Selection - Static Window
40 c. Display Power, Screen Controls, Light Controls, Shade Controls, and other Environmental Controls -
41 Static Window
42 d. Controls for Selected Source and Status or Home Page - Dynamic Window
43 e. Master Volume and Mute, Video Mute, and Microphone Volume - Static Window
44 f. Home Button - Static Window
45 g. Date, Time, and Room Number - Static Window
46 h. Master System Off - Static Window

- 1 3.10 FIELD QUALITY CONTROL
- 2 A. Where these specifications require a product or assembly without the use of a brand or trade name, provide a
3 product that meets the requirements of the specifications, as supplied and warranted by the system vendor. If the
4 product or assembly is not available from the system vendor, provide product or assembly as recommended by the
5 system vendor.
- 6 B. Periodic observations will be performed during construction to verify compliance with the requirements of the
7 specifications. These services do not relieve the Contractor of responsibility for compliance with the Contract
8 Documents.
- 9 3.11 FIELD SERVICES
- 10 A. The installer shall conduct a planning meeting with the Owner. The purpose of this meeting shall be to determine
11 all equipment settings that are considered preferences (where proper system operation does not depend on the
12 setting).
- 13 B. The installer shall include labor for all planning and all programming activities required to implement the Owner's
14 preferences for equipment settings.
- 15 C. It shall be the responsibility of the Contractor/installer to provide a complete, functional system as described by the
16 design documents. These responsibilities include:
- 17 1. Complete hardware setup, installation and wiring and software configuration.
18 2. Complete programming of software in accordance with the Owner's desires determined by the planning
19 meeting.
20 3. Complete system diagnostic verification.
21 4. Complete system commissioning.
- 22 3.12 SYSTEM ACCEPTANCE
- 23 A. The Contractor shall submit for review a formal acceptance and system checkout procedure. The system checkout
24 procedures shall include all system components and software. The Contractor shall perform the tests and settings
25 and document all results.
- 26 3.13 SYSTEM DOCUMENTATION
- 27 A. Complete documentation shall be provided for the system. The documentation shall describe:
- 28 1. All operational parameters of the system.
29 2. Complete documentation of programming and features.
30 3. Complete operating instructions for all hardware and software.
- 31 B. The following sections shall be provided in the system documentation:
- 32 1. User Manual: A step-by-step guide and instructions detailing all system user functions.
33 2. Technical Manual: A comprehensive document providing all system operations, troubleshooting flowcharts,
34 functional system layout, wiring diagrams, block diagrams and schematic diagrams.
35 3. Maintenance Manual: A comprehensive document on all aspects of physical maintenance of the systems,
36 including cleaning of the displays, bulb changes, filter cleaning, filter changing and UPS maintenance.
- 37 3.14 SYSTEM TRAINING
- 38 A. All labor and materials required for on-site system training shall be provided. Training shall be conducted at the
39 project site using the project equipment.
- 40 1. Provide two week's advanced notice of training to the Owner and Architect/Engineer.

- 1 2. The Architect/Engineer shall be presented with the option to attend the training.
- 2 3. Provide a training outline agenda describing the subject matter and the recommended audience for each
- 3 topic.

4 B. At a minimum, the following training shall be conducted:

- 5 1. User Manual: A course detailing the system functions and operations that a daily user will encounter.
- 6 2. Technical User: Provide configuration training on all aspects of the system(s), including equipment and
- 7 software.
- 8 3. Maintenance User: Provide training on all aspects of physical maintenance of the systems, including
- 9 cleaning of the displays, bulb changes, filter cleaning and filter changing.

10 C. Minimum on-site training times shall be:

- 11 1. User Manual: One (1) day.
- 12 2. Technical user: One (1) day.
- 13 3. Maintenance user: Four (4) hours.
- 14 4. The Contractor shall include in his/her bid one (1) additional day of training each quarter for the 12-month
- 15 period of the project warranty. The Contractor shall return to the site for additional follow-up training
- 16 during this period.

17 END OF SECTION 274100



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engineering@cityofmadison.com
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Assistant City Engineer
Bryan Cooper, AIA
Gregory T. Fries, P.E.
Chris Petykowski, P.E.
Deputy Division Manager
Kathleen M. Cryan
Principal Engineer 2
John S. Fahrney, P.E.
Janet Schmidt, P.E.
Principal Engineer 1
Mark D. Moder, P.E.
Andy Zwieg, P.E.
Financial Manager
Steven B. Danner-Rivers

March 27, 2023

**NOTICE OF ADDENDUM
ADDENDUM NO. 3**

**CONTRACT NO. 9226, PROJECT NO. 12393
Phase 2 CCB City Office Remodels, First and Fifth Floors**

This addendum is issued to modify, explain or correct the original Drawings, Specifications, or Contract Documents marked as *Phase 2 CCB City Office Remodels, First and Fifth Floors, City of Madison Project 12393, Contract #9226, as issued on January 9, 2023; Addendum #1 as issued on February 20, 2023; and Addendum #2 as issued on March 24, 2023.* This addendum is hereby made a part of the contract documents, represents clarifications of the previously released documents, and consists of two (2) pages.

This addendum does not include a change to the bid due date.

Please acknowledge this addendum on page E1 of the contract documents and/or in Section E: Bidder's Acknowledgement on Bid Express.

An electronic version of these documents can be found on the Bid Express web site at:
<http://www.bidexpress.com>

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

For questions regarding this bid, contact:

Randy Wiesner
City of Madison Engineering
Phone: 608-267-8679
Fax: 608-264-9275
Email: RWiesner@cityofmadison.com

Mike Schuchardt
City of Madison Engineering
Phone: 608-261-9249
Fax: 608-264-9275
Email: MSchuchardt@cityofmadison.com

Sincerely,

Bryan Cooper for:
James M. Wolfe, P.E., City Engineer

Cc: Greg Fries
Bryan Cooper



1. **GENERAL CONTRACT CONDITIONS**

Please change item B.4.i in Addendum 1 to read as follows: "It is anticipated that the Start Work Letter will be issued on or about May 12, 2023".

2. **GENERAL QUESTIONS/ANSWERS and CLARIFICATIONS**

There have been no general questions or document clarifications requested.

3. **ACCEPTABLE EQUIVALENTS**

There are no changes to Acceptable Equivalents.

4. **SPECIFICATIONS**

There are no changes to Specifications.

5. **DRAWINGS**

There are no changes to Drawings.

6. **PROPOSAL**

There are no changes to the proposal page.

End of Contract 9226 Addendum 3.



Department of Public Works
Engineering Division

James M. Wolfe, P.E., City Engineer
City-County Building, Room 115
210 Martin Luther King, Jr. Boulevard
Madison, Wisconsin 53703
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Fax: (608) 264-9275
engineering@cityofmadison.com
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Kathleen M. Cryan

Principal Engineer 2
John S. Fahrney, P.E.
Janet Schmidt, P.E.

Principal Engineer 1
Mark D. Moder, P.E.

Financial Manager
Steven B. Danner-Rivers

March 30, 2023

**NOTICE OF ADDENDUM
ADDENDUM NO. 4**

**CONTRACT NO. 9226, PROJECT NO. 12393
Phase 2 CCB City Office Remodels, First and Fifth Floors**

This addendum is issued to modify, explain or correct the original Drawings, Specifications, or Contract Documents marked as *Phase 2 CCB City Office Remodels, First and Fifth Floors, City of Madison Project 12393, Contract #9226, as issued on January 9, 2023; Addendum #1 as issued on February 20, 2023; Addendum #2 as issued on March 24, 2023; and Addendum #3 as issued on March 27, 2023.* This addendum is hereby made a part of the contract documents, represents clarifications of the previously released documents, and consists of two (2) pages and the referenced exhibit.

This addendum does not include a change to the bid due date.

Please acknowledge this addendum on page E1 of the contract documents and/or in Section E: Bidder's Acknowledgement on Bid Express.

An electronic version of these documents can be found on the Bid Express web site at:
<http://www.bidexpress.com>

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

For questions regarding this bid, contact:

Randy Wiesner
City of Madison Engineering
Phone: 608-267-8679
Fax: 608-264-9275
Email: RWiesner@cityofmadison.com

Mike Schuchardt
City of Madison Engineering
Phone: 608-261-9249
Fax: 608-264-9275
Email: MSchuchardt@cityofmadison.com

Sincerely,

Bryan Cooper For:
James M. Wolfe, P.E., City Engineer

Cc: Greg Fries
Bryan Cooper



1. **GENERAL CONTRACT CONDITIONS**

There have been no general questions or document clarifications requested.

2. **GENERAL QUESTIONS/ANSWERS and CLARIFICATIONS**

There have been no general questions or document clarifications requested.

3. **ACCEPTABLE EQUIVALENTS**

There are no changes to Acceptable Equivalents.

4. **SPECIFICATIONS**

There are no changes to Specifications.

5. **DRAWINGS**

A. The following sheets have been modified, and are provided with "**Exhibit H Revised Plan Sheets.pdf**" on Bid Express. Red clouds and notes identify the changes on each sheet.

1. Sheet E000N – Electrical Symbols and Annotations – Clarification that the "Occupancy Controlled Receptacle" symbol should be an "Occupancy Controlled Duplex Receptacle".
2. Sheet E000N – Electrical Symbols and Annotations – Clarification that the "Occupancy Controlled Duplex Receptacle" and "Occupancy Controlled Double Duplex Receptacle" symbols are also shown on the plans with a horizontal line indicating a countertop receptacle and a diagonal line indicating raised receptacle at 46" unless otherwise indicated.
3. Sheet E801N – Lighting & Receptacle Controls Schedule – Revise schedule to include the additional symbols associated with the occupancy controlled receptacles.

6. **PROPOSAL**

There are no changes to the proposal page.

End of Contract 9226 Addendum 4.

LUMINAIRE SCHEDULE

ENCY	TYPE	VOLTAGE	COLOR	TEMP (°F)	C.R.L. (MM)	MANUFACTURER	MODEL #	NOTES
JW	LED	120 V		4,000	80	FINELITE	HP4-R-D-2-S-840-F-96LG-120-SC-FC10%-FE-SW-VRF	
JW	LED	120 V		4,000	80	FINELITE	HP4-R-D-2-S-840-F-96LG-120-SC-FC10%-FE-SW-VRF-LUT-SHUNT-EM	1
JW	LED	120 V		4,000	80	FINELITE	HP4-R-D-4-S-840-F-96LG-120-SC-FC10%-FE-SW-VRF	
JW	LED	120 V		4,000	80	FINELITE	HP4-R-D-4-S-840-F-96LG-120-SC-FC10%-FE-SW-VRF-LUT-SHUNT-EM	1
JW	LED	120 V		4,000	80	GE CURRENT	LVT-22-B-0-40MM-T40LL-L1-1-WHITE	6
JW	LED	120 V		4,000	90	GE CURRENT	LVT-22-B-0-40MM-T40LL-L1-1-WHITE	1,6
JW	LED	120 V		4,000	80	FINELITE	HP4-P-D-3-S-840-WSOTG-F-96LG-120-SC-FC-10%-FA50-C1-FE-SW	
JW	LED	120 V		4,000	80	FINELITE	HP4-P-D-3-S-840-WSOTG-F-96LG-120-SC-FC-10%-FA50-C1-FE-SW-LUT-SHUNT-EM	1
JW	LED	120 V		4,000	80	FINELITE	HP4-P-D-4-S-840-WSOTG-F-96LG-120-SC-FC-10%-FA50-C1-FE-SW	
JW	LED	120 V		4,000	80	FINELITE	HP4-P-D-4-S-840-WSOTG-F-96LG-120-SC-FC-10%-FA50-C1-FE-SW-LUT-SHUNT-EM	1
JW	LED	120 V		4,000	80	FINELITE	HP4-P-D-6-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF	
JW	LED	120 V		4,000	80	FINELITE	HP4-P-D-6-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF-LUT-SHUNT-EM	1
JW	LED	120 V		4,000	80	FINELITE	HP4-P-D-8-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF	
JW	LED	120 V		4,000	80	FINELITE	HP4-P-D-8-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF-LUT-SHUNT-EM	1
JW	LED	120 V		4,000	80	FORUM	ARCUD-44-46LED1046LED40-CFA/WOL-C48-CIR-#-UNV-YH-DALU-LVR	
JW	LED	120 V		4,000	80	FORUM	ARCUD-44-46LED1046LED40-CFA/WOL-C48-CIR-#-UNV-YH-DALU-LVR	1
JW	LED	120 V		4,000	80	FORUM	ARCUD-44-46LED1046LED40-CFA/WOL-C48-CIR-#-UNV-YH-DALU-LVR	
JW	LED	120 V		4,000	80	INTENSE LIGHTING	SS864DR-L3-40S-IC804-6-SE-LUT-DFCS-JOEM-RF	6
JW	LED	120 V		4,000	80	INTENSE LIGHTING	SS864DR-L3-40S-IC804-6-SE-LUT-DFCS-JOEM-RF	1,5
JW	LED	120 V		0	0	CHLORIDE	44RLU1RM SERIES	1,2
JW	LED	120 V		0	0	COLORKINETICS	523-000027-98	3,4
JW	LED	120 V		4,000	80	FINELITE	HP-2 R-D-XX-S-840-96LG-120-SC-LUT-DALL-FE-DFCS-JOEM-RF	3
JW	LED	120 V		4,000	97	COLORKINETICS	523-000027-97	4

RY FIXTURES.
 ADDED TO EXISTING EMERGENCY LIGHTING CIRCUIT(S) ON THE FLOOR, FED FROM PANEL EMRG-3 ON THE GROUND FLOOR AND EM4-3 ON THE 4TH FLOOR.

ROLLER.
 XTURE BY FIXTURE MANUFACTURER.
 BY FIXTURE MANUFACTURER.

ELECTRICAL CONNECTION SCHEDULE

WE	LOAD					CIRCUITING INFORMATION			NOTES	FOOT NOTES
	KVA	F.L.A.	M.C.A.	VOLT	PH	CCP (Amps)	PANEL	CIRCUIT #		
JNICAL	0	0	0	120	1	20			PROVIDE 120VWP CONNECTION FROM LOCAL PANEL TO CONTROL DAMPER, COORDINATE ALL REQUIREMENTS WITH HLG.	
JNICAL	0	1	1	120	1	20			PROVIDE 120VWP CONNECTION FROM LOCAL PANEL TO CONTROL DAMPER, COORDINATE ALL REQUIREMENTS WITH HLG.	
LANS	0	2	3	120	1	20			COORDINATE ALL REQUIREMENTS WITH ARCHITECT AND OWNER.	
XSET	0	0	0	120	1	20	LPI-1L	38	PROVIDE SURFACE MOUNTED RACEWAY MOUNTED TO LADDER RACK, COORDINATE ALL REQUIREMENTS WITH LOW VOLTAGE CONTRACTOR AND OWNER.	
XSET	2	8	11	208	1	15	LPI-1L	40,42	COORDINATE WITH HVAC CONTRACTOR FOR EXACT LOCATION.	
XSET	0	0	0	208	1	20	LPI-1L	40,42	POWERED FROM CONDENSING UNIT, E.G. TO WIRE BETWEEN UNITS.	
ROOM	1	11	14	120	1	20			PROVIDE GFCI PROTECTED RECEPTACLE AT UNIT.	
XSET	0	0	0	120	1	20	LPI-1R	51	COORDINATE ALL REQUIREMENTS WITH LOW VOLTAGE CONTRACTOR.	
XSET	0	0	0	120	1	20	LPI-1R	43	COORDINATE WITH HVAC CONTRACTOR FOR EXACT LOCATION.	

MINIMUM CONDUCTORS
 TO WIRE SIZE.
 (1)

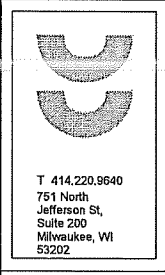
MOTOR CONNECTION SCHEDULE

E	LOAD					CIRCUITING INFORMATION			NOTES	FOOT NOTES
	HP	KVA	F.L.A.	M.C.A.	VOLT	PH	CCP (Amps)	PANEL		
OCM	0	0	1	1	120	1	15	LPI-1R	45	PROVIDE MOTOR RATED DISCONNECT AT UNIT.
OCM	1	2	15	20	120	1	35	LPI-1R	49	PROVIDE GFCI PROTECTED RECEPTACLE AT UNIT.
OCM	1	2	15	20	120	1	35	LPS-1	27	PROVIDE GFCI PROTECTED RECEPTACLE AT UNIT.
DY	0	0	1	1	120	1	15	LPI-1L	35	PROVIDE MOTOR RATED DISCONNECT AT UNIT.

MINIMUM CONDUCTORS
 TO WIRE SIZE.
 (1)

LIGHTING & RECEPTACLE CONTROLS SCHEDULE

MODEL #	NOTES
/E HUS-2-FM	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
/2B-GWH-LDI	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
/2-DCRB-WH	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
P PRO 725M	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
/2BRL-GWH-LDI	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
/E HUS-2-FM	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
/S-20-DTR-WH	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
/DCRB-P-WH	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
/S-8SD010-WH	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.



T 414.220.9640
 751 North
 Jefferson St,
 Suite 200
 Milwaukee, WI
 53202

CONSULTANTS:



ENGINEERING, INC.
 5525 NOBEL DRIVE
 SUITE 100
 MADISON, WI 53711
 P: 608.277.1728
 FAX: 608.271.7046
 JDR PROJECT NO: 210191

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REVISION

PHASE 2, COB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS
 210 Martin Luther King Jr. Blvd.
 Madison, WI 53703
 SHEET TITLE: SCHEDULES - LIGHTING, DEVICES, AND CONNECTIONS
 BWP CONTRACT # 829

REVISIONS:
 2 03/22/23 Addendum 2
 3 03/29/23 Addendum 3

SCALE
 PROJECT NUMBER 210101
 SET TYPE PLAN REVIEW
 DATE ISSUED 12/22/22
 SHEET NUMBER E801N

LUMINAIRE SCHEDULE

INCY FROM WATTS	LAMP TYPE	VOLTAGE	COLOR TEMP (K)	C.R.L. (Min)	MANUFACTURER	MODEL #	NOTES
1W	LED	120 V	4,000	80	FINELITE	HP4-R-D-2-S-840-F-96LG-120-SC-FC10%-FE-SW-VRF	
1W	LED	120 V	4,000	80	FINELITE	HP4-R-D-2-S-840-F-96LG-120-SC-FC10%-FE-SW-VRF	1
1W	LED	120 V	4,000	80	FINELITE	HP4-R-D-4-S-840-F-96LG-120-SC-FC10%-FE-SW-VRF	
1W	LED	120 V	4,000	80	FINELITE	HP4-R-D-4-S-840-F-96LG-120-SC-FC10%-FE-SW-VRF	1
1W	LED	120 V	4,000	80	GE CURRENT	LVT-22-B-0-4D-MV-T40-LLLT-WHITE	
1W	LED	120 V	4,000	80	GE CURRENT	LVT-22-B-0-4D-MV-T40-LLLT-WHITE	1
1W	LED	120 V	4,000	80	FINELITE	HP4-P-ID-4-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF	1
1W	LED	120 V	4,000	80	FINELITE	HP4-P-ID-6-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF	
1W	LED	120 V	4,000	80	FINELITE	HP4-P-ID-6-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF	1
1W	LED	120 V	4,000	80	FINELITE	HP4-P-ID-8-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF	
1W	LED	120 V	4,000	80	FINELITE	HP4-P-ID-8-S-840-WSOTG-F-96LG-120-DC-FC-10%-FA50-FE-SW-VRF	1
1W	LED	120 V	4,000	80	FORUM	ARCUD-44-4B-ED40-46LED40-CFAWOL-C48-CIR-8-UNV-WH-D10V-LVR	
1W	LED	120 V	4,000	80	FORUM	ARCUD-44-4B-ED40-46LED40-CFAWOL-C48-CIR-8-UNV-WH-D10V-LVR	1
1W	LED	120 V	4,000	80	FORUM	ARCUD-44-4B-ED40-46LED40-CFAWOL-C48-CIR-8-UNV-WH-D10V-LVR	
1W	LED	120 V	4,000	80	INTENSE LIGHTING	S56G4DR-L3-40A-C630-HZ-SF-LUT-DPCSJ-OEM-RF	
1W	LED	120 V	4,000	80	INTENSE LIGHTING	S56G4DR-L3-40A-C630-HZ-SF-LUT-DPCSJ-OEM-RF	1
1W	LED	120 V	0	0	CHLORIDE	44RLURM SERIES	1, 2
1W	LED	120 V	0	0	COLORKINETICS	523-000027-98	3, 4
1W	LED	120 V	4,000	80	FINELITE	HP-2-R-D-XX-S-840-96LG-120-SC-LUT-ES1-FE-DPCSJ-OEM-RF	3
1W	LED	120 V	4,000	80	COLORKINETICS	523-000027-97	4

NOT FIXTURES.
 ADED) TO EXISTING EMERGENCY LIGHTING CIRCUIT(S) ON THE FLOOR, FED FROM PANEL EMRG-3 ON THE GROUND FLOOR AND EM-4-3 ON THE 4TH FLOOR.

ROLLER.

ELECTRICAL CONNECTION SCHEDULE

ME	LOAD					CIRCUITING INFORMATION		NOTES	FOOT NOTES
	KVA	F.L.A.	M.C.A.	VOLT	PH	OCP (Amps)	CIRCUIT #		
NICAL	0	0	0	120	1	20		PROVIDE 120V/1P CONNECTION FROM LOCAL PANEL TO CONTROL DAMPER. COORDINATE ALL REQUIREMENTS WITH H.C.	
NICAL	0	1	1	120	1	20		PROVIDE 120V/1P CONNECTION FROM LOCAL PANEL TO CONTROL DAMPER. COORDINATE ALL REQUIREMENTS WITH H.C.	
JANS	0	2	3	120	1	20		COORDINATE ALL REQUIREMENTS WITH ARCHITECT AND OWNER.	
ZSET	0	0	0	120	1	20	LPI-1L 38	PROVIDE SURFACE MOUNTED REWAYWAY MOUNTED TO LADDER RACK. COORDINATE ALL REQUIREMENTS WITH LOW VOLTAGE CONTRACTOR AND OWNER.	
ZSET	2	0	11	208	1	15	LPI-1L 40,42	COORDINATE WITH HVAC CONTRACTOR FOR EXACT LOCATION.	
ZSET	0	0	0	208	1	20	LPI-1L 40,42	POWERED FROM CONDENSING UNIT. E.C. TO WIRE BETWEEN UNITS.	
SCOM	1	11	14	120	1	20		PROVIDE GFCI PROTECTED RECEPTACLE AT UNIT.	
ZSET	0	0	0	120	1	20	LPI-1R 51	COORDINATE ALL REQUIREMENTS WITH LOW VOLTAGE CONTRACTOR.	
ZSET	0	0	0	120	1	20	LPI-1R 43	COORDINATE WITH HVAC CONTRACTOR FOR EXACT LOCATION.	

FOOT NOTES:
 (1) MINIMUM CONDUCTORS TO WIRE SIZE.

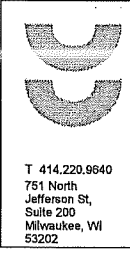
MOTOR CONNECTION SCHEDULE

ME	LOAD					CIRCUITING INFORMATION		NOTES	FOOT NOTES
	HP	KVA	F.L.A.	VOLT	PH	OCP (Amps)	CIRCUIT #		
COM	0	0	1	120	1	15	LPI-1R 45	PROVIDE MOTOR RATED DISCONNECT AT UNIT.	
COM	1	2	16	20	120	1	35	LPI-1R 49	PROVIDE GFCI PROTECTED RECEPTACLE AT UNIT.
COM	1	2	16	20	120	1	35	LPI-1R 27	PROVIDE GFCI PROTECTED RECEPTACLE AT UNIT.
ZY	0	0	0	120	1	15	LPI-1L 36	PROVIDE MOTOR RATED DISCONNECT AT UNIT.	

FOOT NOTES:
 (1) MINIMUM CONDUCTORS TO WIRE SIZE.

LIGHTING & RECEPTACLE CONTROLS SCHEDULE

MODEL #	NOTES
1E-HJ9-2-FM	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
2B-GVWH-L01	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
2-DCRB-WH	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
F PRO 725M	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
ZBRL-GVWH-L01	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
1E-HJ9-2-FM	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
1S-20-DTR-WH	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
2-CR2B-P-WH	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.
1S-80D10-WH	CONNECT DEVICE TO NEW LUTRON VIVE SYSTEM AND PROGRAM TO MEET OWNER AND LEED REQUIREMENTS.



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CONSULTANTS:



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 5525 NOBEL DRIVE
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 P1: 608.277.1728
 FAX: 608.271.7046

JDR PROJECT NO: 210191

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ORIGINAL

PHASE 2 CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS

210 Martin Luther King Jr. Blvd.
 Madison, WI 53703

SHEET TITLE:
 SCHEDULES - LIGHTING, DEVICES, AND CONNECTIONS

BPM CONTRACT # 828

SCALE	
PROJECT NUMBER	210101
SET TYPE	PLAN REVIEW
DATE ISSUED	1/22/22
SHEET NUMBER	E801N

SECTION E: BIDDERS ACKNOWLEDGEMENT

CONTRACT TITLE

Phase 2 CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS

CONTRACT NO.

9226

Bidder must state a Unit Price and Total Bid for each item. The Total Bid for each item must be the product of quantity, by Unit Price. The Grand Total must be the sum of the Total Bids for the various items. In case of multiplication errors or addition errors, the Grand Total with corrected multiplication and/or addition shall determine the Grand Total bid for each contract. The Unit Price and Total Bid must be entered numerically in the spaces provided. All words and numbers shall be written in ink.

- 1. The undersigned having familiarized himself/herself with the Contract documents, including Advertisement for Bids, Instructions to Bidders, Form of Proposal, City of Madison Standard Specifications for Public Works Construction - 2022 Edition thereto, Form of Agreement, Form of Bond, and Addenda issued and attached to the plans and specifications on file in the office of the City Engineer, hereby proposes to provide and furnish all the labor, materials, tools, and expendable equipment necessary to perform and complete in a workmanlike manner the specified construction on this project for the City of Madison; all in accordance with the plans and specifications as prepared by the City Engineer, including Addenda to the Contract Nos. 1 through 4 issued thereto, at the prices for said work as contained in this proposal. (Electronic bids submittals shall acknowledge addendum under Section E and shall not acknowledge here)
2. If awarded the Contract, we will initiate action within seven (7) days after notification or in accordance with the date specified in the contract to begin work and will proceed with diligence to bring the project to full completion within the number of work days allowed in the Contract or by the calendar date stated in the Contract.
3. The undersigned Bidder or Contractor certifies that he/she is not a party to any contract, combination in form of trust or otherwise, or conspiracy in restraint of trade or commerce or any other violation of the anti-trust laws of the State of Wisconsin or of the United States, with respect to this bid or contract or otherwise.
4. I hereby certify that I have met the Bid Bond Requirements as specified in Section 102.5. (IF BID BOND IS USED, IT SHALL BE SUBMITTED ON THE FORMS PROVIDED BY THE CITY. FAILURE TO DO SO MAY RESULT IN REJECTION OF THE BID).
5. I hereby certify that all statements herein are made on behalf of TRI-NORTH BUILDERS (name of corporation, partnership, or person submitting bid) a corporation organized and existing under the laws of the State of WISCONSIN a partnership consisting of ; an individual trading as ; of the City of FITCHBURG State of WISCONSIN ; that I have examined and carefully prepared this Proposal, from the plans and specifications and have checked the same in detail before submitting this Proposal; that I have fully authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.

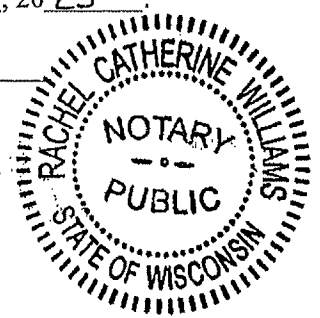
Andrew Piro
SIGNATURE

ESTIMATOR
TITLE, IF ANY

Sworn and subscribed to before me this 6th day of APRIL, 2023

Rachel Catherine Williams
(Notary Public or other officer authorized to administer oaths)
My Commission Expires 4.10.2026

Bidders shall not add any conditions or qualifying statements to this Proposal.



Contract 9226 – Tri-North Builders, Inc.

Section F: Best Value Contracting (BVC)

This section is a required document for the bid to be considered complete. There are two methods for completing the Best Value Contracting (BVC) form. Method one: The form can be filled out online and submitted to this site to be included with your electronic bid. Method two: The form can be downloaded from the site and submitted by hand to the City of Madison.

Please select the method of submission below. The form can be found below for filling out online or download and submit by hand.

Method of Submittal for BVC (click in box below to choose) *
I will submit Bid Express fillable online form (BVC).

Best Value Contracting

1. The Contractor shall indicate the non-apprenticeable trades used on this contract.

2. Madison General Ordinance (M.G.O.), 33.07(7), does provide for some exemptions from the active apprentice requirement. Apprenticeable trades are those trades considered apprenticeable by the State of Wisconsin. Please check applicable box if you are seeking an exemption.

- Contractor has a total skilled workforce of four or less individuals in all apprenticeable trades combined.
- No available trade training program; The Contractor has been rejected by the only available trade training program, or there is no trade training program within 90 miles.
- Contractor is not using an apprentice due to having a journey worker on layoff status, provided the journey worker was employed by the contractor in the past six months.
- First time contractor on City of Madison Public Works contract requests a onetime exemption but intends to comply on all future contracts and is taking steps typical of a "good faith" effort.
- Contractor has been in business less than one year.
- Contractor doesn't have enough journeyman trade workers to qualify for a trade training program in that respective trade.
- An exemption is granted in accordance with a time period of a "Documented Depression" as defined by the State of Wisconsin.

3. The Contractor shall indicate on the following section which apprenticeable trades are to be used on this contract. Compliance with active apprenticeship, to the extent required by M.G.O.

33.07(7), shall be satisfied by documentation from an applicable trade training body; an apprenticeship contract with the Wisconsin Department of Workforce Development or a similar agency in another state; or the U.S Department of Labor. This documentation is required prior to the Contractor beginning work on the project site.

The Contractor has reviewed the list and shall not use any apprenticeable trades on this project.

LIST APPRENTICABLE TRADES (check all that apply to your work to be performed on this contract)

- BRICKLAYER
- CARPENTER
- CEMENT MASON / CONCRETE FINISHER
- CEMENT MASON (HEAVY HIGHWAY)
- CONSTRUCTION CRAFT LABORER
- DATA COMMUNICATION INSTALLER
- ELECTRICIAN
- ENVIRONMENTAL SYSTEMS TECHNICIAN / HVAC SERVICE TECH/HVAC INSTALL / SERVICE
- GLAZIER
- HEAVY EQUIPMENT OPERATOR / OPERATING ENGINEER
- INSULATION WORKER (HEAT and FROST)
- IRON WORKER
- IRON WORKER (ASSEMBLER, METAL BLDGS)
- PAINTER and DECORATOR
- PLASTERER
- PLUMBER
- RESIDENTIAL ELECTRICIAN
- ROOFER and WATER PROOFER
- SHEET METAL WORKER
- SPRINKLER FITTER
- STEAMFITTER
- STEAMFITTER (REFRIGERATION)
- STEAMFITTER (SERVICE)
- TAPER and FINISHER
- TELECOMMUNICATIONS (VOICE, DATA and VIDEO) INSTALLER-TECHNICIAN
- TILE SETTER

CONTRACT NO. 9226

Small Business Enterprise Compliance Report

This information may be submitted electronically through Bid Express or submitted with bid in sealed envelope.

Cover Sheet

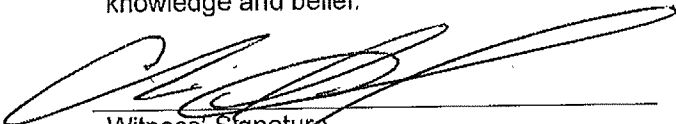
Prime Bidder Information

Company:	Tri-North Builders
Address:	2625 Research Park Dr. Fitchburg, WI 53711
Telephone Number:	608-271-8717
Fax Number:	608-271-3354
Contact Person/Title:	Andy Rice / Estimator


Prime Bidder Certification

Name:	Andy Rice
Title:	Estimator
Company:	Tri-North Builders

I certify that the information contained in this SBE Compliance Report is true and correct to the best of my knowledge and belief.



Witness Signature



Bidder's Signature

4-6-23

Date

PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS

CONTRACT NO. 9226

DATE: 4/6/23

Tri-North Builders, Inc.

Item	Quantity	Price	Extension
Section B: Proposal Page			
10701 - Traffic Control - Lump Sum	1.00	\$24,000.00	\$24,000.00
90000 - Base Bid - Lump Sum	1.00	\$4,571,000.00	\$4,571,000.00
2 Items	Totals		\$4,595,000.00

SECTION G: BID BOND

LET ALL KNOW BY THESE DOCUMENTS PRESENTED, THAT Principal and Surety, as identified below, are held and firmly bound unto the City of Madison, (hereinafter referred to as the "Obligee"), in the sum of five per cent (5%) of the amount of the total bid or bids of the Principal herein accepted by the Obligee, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that, whereas the Principal has submitted, to the City of Madison a certain bid, including the related alternate, and substitute bids attached hereto and hereby made a part hereof, to enter into a contract in writing for the construction of:

PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS CONTRACT NO. 9226

1. If said bid is rejected by the Obligee, then this obligation shall be void.
2. If said bid is accepted by the Obligee and the Principal shall execute and deliver a contract in the form specified by the Obligee (properly completed in accordance with said bid) and shall furnish a bond for his/her faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

If said bid is accepted by the Obligee and the Principal shall fail to execute and deliver the contract and the performance and payment bond noted in 2. above executed by this Surety, or other Surety approved by the City of Madison, all within the time specified or any extension thereof, the Principal and Surety agree jointly and severally to forfeit to the Obligee as liquidated damages the sum mentioned above, it being understood that the liability of the Surety for any and all claims hereunder shall in no event exceed the sum of this obligation as stated, and it is further understood that the Principal and Surety reserve the right to recover from the Obligee that portion of the forfeited sum which exceed the actual liquidated damages incurred by the Obligee.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which the Obligee may accept such bid, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year set forth below.

Seal PRINCIPAL

Tri-North Builders, Inc.
Name of Principal

By THOMAS THAYER
PRESIDENT / CEO.
Name and Title

04/06/2023
Date

Seal SURETY

Atlantic Specialty Insurance Company
Name of Surety

By [Signature]
Bradley S. Babcock, Attorney-in-Fact
Name and Title

04/06/2023
Date

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under National Provider No. 9070604 for the year 2023, and appointed as attorney in fact with authority to execute this bid bond and the payment and performance bond referred to above, which power of attorney has not been revoked.

04/06/2023
Date

[Signature]
Agent Signature

1533 Wisconsin Avenue
Address

Grafton, WI 53024
City, State and Zip Code

262-204-8448
Telephone Number

NOTE TO SURETY & PRINCIPAL

The bid submitted which this bond guarantees shall be rejected if the following instrument is not attached to this bond:

Power of Attorney showing that the agent of Surety is currently authorized to execute bonds on behalf of the Surety, and in the amounts referenced above.



Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Bradley S. Babcock, Kimberly L. Babcock**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **unlimited** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the signature of an Authorized Officer, the signature of the Secretary or the Assistant Secretary, and the Company seal may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing an Attorney-in-Fact for purposes only of executing and sealing any bond, undertaking, recognizance or other written obligation in the nature thereof, and any such signature and seal where so used, being hereby adopted by the Company as the original signature of such officer and the original seal of the Company, to be valid and binding upon the Company with the same force and effect as though manually affixed.

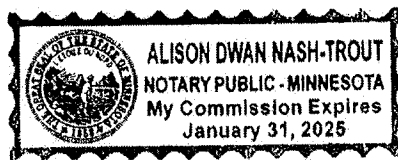
IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this twenty-seventh day of April, 2020.

STATE OF MINNESOTA
HENNEPIN COUNTY



By *Paul J. Brehm*
Paul J. Brehm, Senior Vice President

On this twenty-seventh day of April, 2020, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.



Alison Nash-Trout
Notary Public

I, the undersigned, Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 6th day of April, 2023.

This Power of Attorney expires
January 31, 2025



Kara Barrow
Kara Barrow, Secretary

SECTION H: AGREEMENT

THIS AGREEMENT made this 3rd day of May in the year Two Thousand and Twenty-Three between TRI-NORTH BUILDERS, INC. hereinafter called the Contractor, and the City of Madison, Wisconsin, hereinafter called the City.

WHEREAS, the Common Council of the said City of Madison under the provisions of a resolution adopted MAY 2, 2023, and by virtue of authority vested in the said Council, has awarded to the Contractor the work of performing certain construction.

NOW, THEREFORE, the Contractor and the City, for the consideration hereinafter named, agree as follows:

1. **Scope of Work.** The Contractor shall, perform the construction, execution and completion of the following listed complete work or improvement in full compliance with the Plans, Specifications, Standard Specifications, Supplemental Specifications, Special Provisions and contract; perform all items of work covered or stipulated in the proposal; perform all altered or extra work; and shall furnish, unless otherwise provided in the contract, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work or improvements:

PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS CONTRACT NO. 9226

2. **Completion Date/Contract Time.** Construction work must begin within seven (7) calendar days after the date appearing on mailed written notice to do so shall have been sent to the Contractor and shall be carried on at a rate so as to secure full completion SEE SPECIAL PROVISIONS, the rate of progress and the time of completion being essential conditions of this Agreement.
3. **Contract Price.** The City shall pay to the Contractor at the times, in the manner and on the conditions set forth in said specifications, the sum of FOUR MILLION FIVE HUNDRED NINETY-FIVE THOUSAND AND NO/100 (\$4,595,000.00) Dollars being the amount bid by such Contractor and which was awarded to him/her as provided by law.
4. **Affirmative Action.** In the performance of the services under this Agreement the Contractor agrees not to discriminate against any employee or applicant because of race, religion, marital status, age, color, sex, disability, national origin or ancestry, income level or source of income, arrest record or conviction record, less than honorable discharge, physical appearance, sexual orientation, gender identity, political beliefs, or student status. The Contractor further agrees not to discriminate against any subcontractor or person who offers to subcontract on this contract because of race, religion, color, age, disability, sex, sexual orientation, gender identity or national origin.

The Contractor agrees that within thirty (30) days after the effective date of this agreement, the Contractor will provide to the City Affirmative Action Division certain workforce utilization statistics, using a form to be furnished by the City.

If the contract is still in effect, or if the City enters into a new agreement with the Contractor, within one year after the date on which the form was required to be provided, the Contractor will provide updated workforce information using a second form, also to be furnished by the City. The second form will be submitted to the City Affirmative Action Division no later than one year after the date on which the first form was required to be provided.

The Contractor further agrees that, for at least twelve (12) months after the effective date of this contract, it will notify the City Affirmative Action Division of each of its job openings at facilities in Dane County for which applicants not already employees of the Contractor are to be considered. The notice will include a job description, classification, qualifications and application procedures

and deadlines. The Contractor agrees to interview and consider candidates referred by the Affirmative Action Division if the candidate meets the minimum qualification standards established by the Contractor, and if the referral is timely. A referral is timely if it is received by the Contractor on or before the date started in the notice.

Articles of Agreement

Article I

The Contractor shall take affirmative action in accordance with the provisions of this contract to insure that applicants are employed, and that employees are treated during employment without regard to race, religion, color, age, marital status, disability, sex, sexual orientation, gender identity or national origin and that the employer shall provide harassment free work environment for the realization of the potential of each employee. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training including apprenticeship insofar as it is within the control of the Contractor. The Contractor agrees to post in conspicuous places available to employees and applicants notices to be provided by the City setting out the provisions of the nondiscrimination clauses in this contract.

Article II

The Contractor shall in all solicitations or advertisements for employees placed by or on behalf of the Contractors state that all qualified or qualifiable applicants will be employed without regard to race, religion, color, age, marital status, disability, sex, sexual orientation, gender identity or national origin.

Article III

The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice to be provided by the City advising the labor union or worker's representative of the Contractor's equal employment opportunity and affirmative action commitments. Such notices shall be posted in conspicuous places available to employees and applicants for employment.

Article V

The Contractor agrees that it will comply with all provisions of the Affirmative Action Ordinance of the City of Madison, including the contract compliance requirements. The Contractor agrees to submit the model affirmative action plan for public works contractors in a form approved by the Affirmative Action Division Manager.

Article VI

The Contractor will maintain records as required by Section 39.02(9)(f) of the Madison General Ordinances and will provide the City Affirmative Action Division with access to such records and to persons who have relevant and necessary information, as provided in Section 39.02(9)(f). The City agrees to keep all such records confidential, except to the extent that public inspection is required by law.

Article VII

In the event of the Contractor's or subcontractor's failure to comply with the Equal Employment Opportunity and Affirmative Action Provisions of this contract or Section 39.03 and 39.02 of the Madison General Ordinances, it is agreed that the City at its option may do any or all of the following:

1. Cancel, terminate or suspend this Contract in whole or in part.

2. Declare the Contractor ineligible for further City contracts until the Affirmative Action requirements are met.
3. Recover on behalf of the City from the prime Contractor 0.5 percent of the contract award price for each week that such party fails or refuses to comply, in the nature of liquidated damages, but not to exceed a total of five percent (5%) of the contract price, or ten thousand dollars (\$10,000), whichever is less. Under public works contracts, if a subcontractor is in noncompliance, the City may recover liquidated damages from the prime Contractor in the manner described above. The preceding sentence shall not be construed to prohibit a prime Contractor from recovering the amount of such damage from the non-complying subcontractor.

Article VIII

The Contractor shall include the above provisions of this contract in every subcontract so that such provisions will be binding upon each subcontractor. The Contractor shall take such action with respect to any subcontractor as necessary to enforce such provisions, including sanctions provided for noncompliance.

Article IX

The Contractor shall allow the maximum feasible opportunity to small business enterprises to compete for any subcontracts entered into pursuant to this contract. (In federally funded contracts the terms "DBE, MBE and WBE" shall be substituted for the term "small business" in this Article.)

5. Substance Abuse Prevention Program Required. Prior to commencing work on the Contract, the Contractor, and any Subcontractor, shall have in place a written program for the prevention of substance abuse among its employees as required under Wis. Stat. Sec. 103.503.
6. **Contractor Hiring Practices.**

Ban the Box - Arrest and Criminal Background Checks. (Sec. 39.08, MGO)

This provision applies to all prime contractors on contracts entered into on or after January 1, 2016, and all subcontractors who are required to meet prequalification requirements under MGO 33.07(7)(l), MGO as of the first time they seek or renew pre-qualification status on or after January 1, 2016. The City will monitor compliance of subcontractors through the pre-qualification process.

- a. **Definitions.** For purposes of this section, "Arrest and Conviction Record" includes, but is not limited to, information indicating that a person has been questioned, apprehended, taken into custody or detention, held for investigation, arrested, charged with, indicted or tried for any felony, misdemeanor or other offense pursuant to any law enforcement or military authority.

"Conviction record" includes, but is not limited to, information indicating that a person has been convicted of a felony, misdemeanor or other offense, placed on probation, fined, imprisoned or paroled pursuant to any law enforcement or military authority.

"Background Check" means the process of checking an applicant's arrest and conviction record, through any means.

- b. **Requirements.** For the duration of this Contract, the Contractor shall:

1. Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant's arrest and conviction record, as defined herein.

2. Refrain from asking an applicant in any manner about their arrest or conviction record until after conditional offer of employment is made to the applicant in question.
3. Refrain from conducting a formal or informal background check or making any other inquiry using any privately or publicly available means of obtaining the arrest or conviction record of an applicant until after a conditional offer of employment is made to the applicant in question.
4. Make information about this ordinance available to applicants and existing employees, and post notices in prominent locations at the workplace with information about the ordinance and complaint procedure using language provided by the City.
5. Comply with all other provisions of Sec. 39.08, MGO.

c. Exemptions: This section shall not apply when:

1. Hiring for a position where certain convictions or violations are a bar to employment in that position under applicable law, or
2. Hiring a position for which information about criminal or arrest record, or a background check is required by law to be performed at a time or in a manner that would otherwise be prohibited by this ordinance, including a licensed trade or profession where the licensing authority explicitly authorizes or requires the inquiry in question.

To be exempt, Contractor has the burden of demonstrating that there is an applicable law or regulation that requires the hiring practice in question, if so, the contractor is exempt from all of the requirements of this ordinance for the position(s) in question.

**PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS
CONTRACT NO. 9226**

IN WITNESS WHEREOF, the Contractor has hereunto set his/her hand and seal and the City has caused this contract to be sealed with its corporate seal and to be executed by its Mayor and City Clerk on the dates written below.

Countersigned:

TRI-NORTH BUILDERS, INC.

Company Name

Alicia Gilbert 4/24/23
Witness Date

Rachel Williams 4/24/23
Witness Date

[Signature] 4/24/23
President Date

[Signature] 4/24/23
Secretary Date

CITY OF MADISON, WISCONSIN

Provisions have been made to pay the liability that will accrue under this contract.

Approved as to form:

[Signature] 5/9/23
Finance Director Date

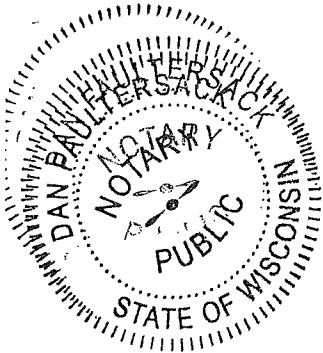
[Signature] 5/10/23
Witness Date

Thomas Lind 6/9/23
Witness Date

[Signature] 5/10/23
City Attorney Date

[Signature] 5/10/23
Mayor Date

Maibeth Witzel-Behl 5-9-23
City Clerk Date



SECTION I: PAYMENT AND PERFORMANCE BOND

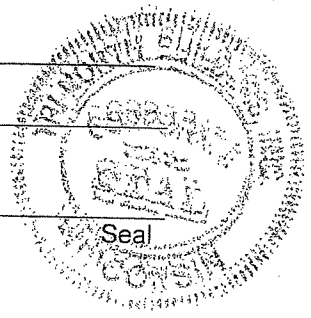
LET ALL KNOW BY THESE DOCUMENTS PRESENTED, that we **TRI-NORTH BUILDERS, INC.** as principal, and Atlantic Specialty Insurance Company Company of Plymouth, MN as surety, are held and firmly bound unto the City of Madison, Wisconsin, in the sum of **FOUR MILLION FIVE HUNDRED NINETY-FIVE THOUSAND AND NO/100 (\$4,595,000.00)** Dollars, lawful money of the United States, for the payment of which sum to the City of Madison, we hereby bind ourselves and our respective executors and administrators firmly by these presents.

The condition of this Bond is such that if the above bounden shall on his/her part fully and faithfully perform all of the terms of the Contract entered into between him/herself and the City of Madison for the construction of:

**PHASE 2 OF CCB CITY OFFICE REMODELS, FIRST AND FIFTH FLOORS
CONTRACT NO. 9226**

in Madison, Wisconsin, and shall pay all claims for labor performed and material furnished in the prosecution of said work, and save the City harmless from all claims for damages because of negligence in the prosecution of said work, and shall save harmless the said City from all claims for compensation (under Chapter 102, Wisconsin Statutes) of employees and employees of subcontractor, then this Bond is to be void, otherwise of full force, virtue and effect.

Signed and sealed this 3rd day of May, 2023



Countersigned:

TRI-NORTH BUILDERS, INC.
Company Name (Principal)

Handwritten signature of witness

Witness

President

Secretary

Approved as to form:

Atlantic Specialty Insurance Company

Surety

Seal

Salary Employee

Commission

Handwritten signature of Michael Haas

City Attorney

By

Handwritten signature of Bradley S. Babcock

Attorney-in-Fact Bradley S. Babcock

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under National Producer Number 9070604 for the year 2023, and appointed as attorney-in-fact with authority to execute this payment and performance bond which power of attorney has not been revoked.

May 3, 2023

Date

Handwritten signature of Bradley S. Babcock

Agent Signature Bradley S. Babcock



Power of Attorney

KNOW ALL MEN BY THESE PRESENTS, that ATLANTIC SPECIALTY INSURANCE COMPANY, a New York corporation with its principal office in Plymouth, Minnesota, does hereby constitute and appoint: **Bradley S. Babcock, Kimberly L. Babcock**, each individually if there be more than one named, its true and lawful Attorney-in-Fact, to make, execute, seal and deliver, for and on its behalf as surety, any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof; provided that no bond or undertaking executed under this authority shall exceed in amount the sum of: **unlimited** and the execution of such bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof in pursuance of these presents, shall be as binding upon said Company as if they had been fully signed by an authorized officer of the Company and sealed with the Company seal. This Power of Attorney is made and executed by authority of the following resolutions adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

Resolved: That the President, any Senior Vice President or Vice-President (each an "Authorized Officer") may execute for and in behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and affix the seal of the Company thereto; and that the Authorized Officer may appoint and authorize an Attorney-in-Fact to execute on behalf of the Company any and all such instruments and to affix the Company seal thereto; and that the Authorized Officer may at any time remove any such Attorney-in-Fact and revoke all power and authority given to any such Attorney-in-Fact.

Resolved: That the Attorney-in-Fact may be given full power and authority to execute for and in the name and on behalf of the Company any and all bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof, and any such instrument executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed and sealed by an Authorized Officer and, further, the Attorney-in-Fact is hereby authorized to verify any affidavit required to be attached to bonds, recognizances, contracts of indemnity, and all other writings obligatory in the nature thereof.

This power of attorney is signed and sealed by facsimile under the authority of the following Resolution adopted by the Board of Directors of ATLANTIC SPECIALTY INSURANCE COMPANY on the twenty-fifth day of September, 2012:

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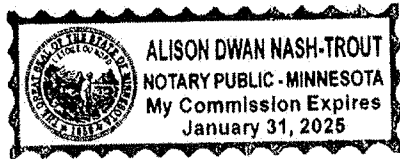
IN WITNESS WHEREOF, ATLANTIC SPECIALTY INSURANCE COMPANY has caused these presents to be signed by an Authorized Officer and the seal of the Company to be affixed this twenty-seventh day of April, 2020.

STATE OF MINNESOTA
HENNEPIN COUNTY



By *Paul J. Brehm*
Paul J. Brehm, Senior Vice President

On this twenty-seventh day of April, 2020, before me personally came Paul J. Brehm, Senior Vice President of ATLANTIC SPECIALTY INSURANCE COMPANY, to me personally known to be the individual and officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, that he is the said officer of the Company aforesaid, and that the seal affixed to the preceding instrument is the seal of said Company and that the said seal and the signature as such officer was duly affixed and subscribed to the said instrument by the authority and at the direction of the Company.



Alison Nash-Trout
Notary Public

I, the undersigned, Secretary of ATLANTIC SPECIALTY INSURANCE COMPANY, a New York Corporation, do hereby certify that the foregoing power of attorney is in full force and has not been revoked, and the resolutions set forth above are now in force.

Signed and sealed. Dated 3rd day of May, 2023.

This Power of Attorney expires
January 31, 2025



Kara Barrow
Kara Barrow, Secretary