#### SUBMIT BID TO: PROCUREMENT SERVICES UNIVERSITY OF FLORIDA 971 ELMORE DRIVE GAINESVILLE, FL 32611 Phone: (352) 392-1331 - FAX: (352) 392-8837 Web Address: https://procurement.ufl.edu/

# INVITATION TO BID

#### Construction

## **Acknowledgment Form**

Page 1 of 71	pages	BID WILL BE OPENED: <b>November 18</b> be withdrawn within 90 days after such of Mandatory Pre-bid: <b>October 26, 2020</b>	BID NO.: ITB21DB-120			
DATE: 10/14/	2020	PROCUREMENT AGENT: DB/jh	BID TITLE: Chilled Water Pipe Repla Science Building Floors	acement at Dental 5, 6, 7 & 8		
VENDOR NAME						
VENDOR MAILING ADDRESS			REASON FOR NOT SUBMITTING BID			
CITY - STATE - ZIP CODE			POSTING OF BID TABULATIONS			
CITY - STATE	- ZIP CODE		POSTING OF BID TA	BULATIONS		
CITY - STATE	- ZIP CODE TELEPHONE NO.		POSTING OF BID TA Bid tabulations with intended award(s) will be by interested parties at <u>https://procurement.u</u>	B U L A T I O N S posted electronically for review <u>fl.edu/</u> and will remain posted		
AREA CODE	- ZIP CODE TELEPHONE NO. FAX NO.		<b>POSTING OF BID TA</b> Bid tabulations with intended award(s) will be by interested parties at <u>https://procurement.u</u> for a period of 72 hours excluding Saturday Failure to file a protest in accordance with Regulation 18.002 or failure to post the bond	BULATIONS posted electronically for review <u>fl.edu/</u> and will remain posted s, Sundays, or state holidays. n Board of Governors (BOG) or other security as required in		
AREA CODE	- ZIP CODE TELEPHONE NO. FAX NO. WEB ADDRESS		<b>POSTING OF BID TA</b> Bid tabulations with intended award(s) will be by interested parties at <u>https://procurement.u</u> for a period of 72 hours excluding Saturday Failure to file a protest in accordance with Regulation 18.002 or failure to post the bond the BOG regulations 18.002 and 18.003(3) protest proceedings.	BULATIONS posted electronically for review <u>fl.edu/</u> and will remain posted s, Sundays, or state holidays. n Board of Governors (BOG) or other security as required in h, shall constitute a waiver of		

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a bid for the same materials, supplies, or equipment and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this bid and certify that I am authorized to sign this bid for the vendor and that the vendor is in compliance with all the requirements of the Invitation to Bid, including but not limited to, certification requirements. In submitting a bid on behalf of the Board of Trustees, hereinafter known as the University, the vendor offers and agrees that if the bid is accepted the vendor will convey, sell, assign, or transfer to the University all rights, title and interest in and to all causes of action it may now or hereafter acquire under the Anti-trust laws of the University for price fixing relating to the particular commodities or services purchased or acquired by the University. At the

University's discretion, such assignment shall be made and become effective at the time the purchasing agency tenders final payment to the vendor.

#### AUTHORIZED SIGNATURE (MANUAL)

#### NAME AND TITLE (TYPED)

#### **GENERAL CONDITIONS**

SEALED BIDS: All bid sheets and this form must be executed and submitted in a sealed envelope. (DO NOT INCLUDE MORE THAN ONE BID PER ENVELOPE.) The face of the envelope shall contain, in addition to the above address, the date, and time of the bid opening and the bid number. Bids not submitted on the attached bid form shall be rejected. All bids are subject to the conditions specified herein. Those which do not comply with these conditions are subject to rejection.

EXECUTION OF BID: Bid must contain an original manual signature of authorized representative in the space provided above. Bid must be typed or printed in ink. Use of erasable ink is not permitted. All corrections to prices made by vendor must be initialed.

2. NO BID: If not submitting a bid, respond by returning only this vendor acknowledgment form, marking it "NO BID", and explain the reason in the space provided above. Failure to respond to a procurement solicitation without giving justifiable reason for such failure, nonconformance to contract conditions, or other pertinent factors deemed reasonable and valid shall be cause for removal of the supplier's name from the bid mailing list. NOTE: To qualify as a respondent, vendor must submit a "NO BID", and it must be received no later than the stated bid opening data and hour. date and hour.

3. **BID OPENING**: Shall be public, on the date, location and the time specified on the bid form. It is the vendor's responsibility to assure that the bid is delivered at the proper time and place of the bid opening. Bids which for any reason are not so delivered will not be considered. A bid may not be altered after opening of the bids. NOTE: Bid tabulations will be posted electronically at <a href="https://procurement.ufl.edu/">https://procurement.ufl.edu/</a>. Bid tabulations will not be provided by telephone.

PRICES, TERMS AND PAYMENT: Firm prices shall be bid and will include all packing, handling, shipping charges, and delivery to the destination shown herein.
(a) TAXES: The University does not pay Federal Excise and Sales taxes on direct purchases of tangible personal property or services. The Florida Tax Exempt Number is 11-06-024056-57C. This exemption does not apply to purchases of tangible personal property or services in the performance of contracts for the improvement of University-owned real property as defined in Chapter 192, F.S.
(b) DISCOUNTS: Vendors are encouraged to reflect trade discounts in the unit prices quoted: however, vendors may offer a discount for promot payment.

quoted; however, vendors may offer a discount for prompt payment. Prompt payment discounts will not be considered in the bid award. However, every effort will be made to take the discount within the time offered

MISTAKES: Vendors are expected to examine the specifications, delivery schedule, bid prices, extensions, and all instructions pertaining to supplies and

services. Failure to do so will be at vendor's risk. In case of a mistake in extensions the

unit price will govern. (d) INVOICING AND PAYMENT: Payment will be made by the University of Florida after the items awarded to a vendor have been received, inspected, and found to comply with award specifications, free of damage or defect and properly invoiced. All invoices shall bear the purchase order number. Payment for partial shipments shall not be made unless specified. An original invoice shall be submitted. Failure to follow these instructions may result in delay in processing invoices for payment. Payment shall be made in accordance with Section 215.422 (1) (2) F.S. VENDOR OMBUDSMAN: The University's vendor ombudsman, whose duties include acting as an advocate for vendors may be experiencing problems in obtaining payment from the University, may be contacted at 352-392-1241. (e) ANNUAL APPROPRIATIONS: The University's performance and obligation to

pay under any contract awarded is contingent upon an annual appropriation by the Legislature

CONDITION AND PACKAGING: It is understood and agreed that any item offered or shipped as a result of this bid shall be a new, current standard production model available at the time of this bid. All containers shall be suitable for storage or shipment, and all prices shall include standard commercial packaging.

(g) SAFETY STANDARDS: Unless otherwise stipulated in the bid, all manufactured items and fabricated assemblies shall comply with applicable requirements of Occupational Safety and Health Act and any standards hereunder.

CONFLICT OF INTEREST: The award hereunder is subject to the provisions of 5. CONFLICTOR INTEREST: The award herefunder is subject the provisions of Chapter 112, F.S. All vendors must disclose with their bid the name of any officer, director, or agent who is also an employee of the University of Florida. Further, all vendors must disclose the name of any University employee who owns, directly or indirectly, an interest of five percent (5%) or more in the vendor's firm or any of its branches

AWARDS: As the best interest of the University may require, the right is reserved 6. to make award(s) by individual item, group of items, all or none or a combination thereof; to reject any and all bids or waive any minor irregularity or technicality in bids received. When it is determined there is no competition to the lowest responsible vendor, evaluation of other bids are not required. Vendors are cautioned to make no assumptions unless their bid has been evaluated as being responsive.

7. INTERPRETATIONS/DISPUTES: Any questions concerning conditions or specifications shall be directed in writing to Procurement Services. Inquiries must reference the date of bid opening and bid number. No interpretations shall be

considered binding unless provided in writing by the University in response to requests in full compliance with this provision.

NOTICE OF BID PROTEST BONDING REQUIREMENT; Any person or entity who files an action protesting a decision or an intended decision pertaining to a competitive solicitation shall at the time of filing the formal protest, post with the University a bond payable to the University in an amount equal to: 10% of the estimated value of the protestor's bid or proposal; 10% of the estimated expenditure during the contract term; \$10,000,00; or whichever is less. The bond shall be conditioned upon contract term; \$10,000.00; or whichever is less. The bond shall be conditioned upon the payment of all costs which may be adjudged against the person or entity filing the protest action. In lieu of a bond, the University may accept a cashier's check, bank official check or money order in the amount of the bond. FAILURE OF THE PROTESTING PERSON OR ENTITY TO FILE THE REQUIRED BOND, CASHIER'S CHECK, BANK OFFICIAL CHECK OR MONEY ORDER AT THE TIME OF THE FILING THE FORMAL PROTEST SHALL RESULT IN DENIAL OF THE PROTEST.

9. GOVERNMENTAL RESTRICTIONS: In the event any governmental restrictions may be imposed which would necessitate alteration of the material, quality, workmanship or performance of the items offered in this bid prior to their delivery, it shall be the responsibility of the successful vendor to notify the purchaser at once, indicating in writing the specific regulation which requires an alteration. The University reserves the right to accept any such alteration, including any price adjustments occasioned thereby, or to cancel the contract at no expense to the University.

LEGAL REQUIREMENTS: Applicable provision of all Federal, State, county and 10. local laws, and of all ordinances, rules and regulations shall govern development, submittal and evaluation of all bids received in response hereto and shall govern any and all claims and disputes which may arise between person(s) submitting a bid response hereto and the University, by and through its officers, employees and authorized representatives, or any other person, natural or otherwise: and lack of knowledge by any vendor shall not constitute a cognizable defense against the legal effect thereof.

**11. LOBBYING:** Vendor is prohibited from using funds provided under any contract or purchase order for the purpose of lobbying the Legislature or any official, officer, commission, board, authority, council, committee, or department of the executive branch or the judicial branch of state government.

**12. ADVERTISING**: In submitting a bid, the vendor agrees not to use the results therefrom as a part of any commercial advertising. Vendor may not use the names, logos, or trademarks of the University, its employees, or affiliates without the prior written consent of the University.

**13. ASSIGNMENT**: Any contract or purchase order issued pursuant to this Invitation to Bid and the monies which may become due hereunder are not assignable except with the prior written approval of the purchaser.

14. LIABILITY: The vendor agrees to indemnify and save the University of Florida, the State of Florida and the Florida Board of Governors, their officers, agents, and employees harmless from any and all judgments, orders, awards, costs and expenses, including loss of use thereof, or bodily injury (including death) which may be hereafter sustained by the vendor, its employees, its subcontractors, or the University of Florida, the State of Florida and the Florida Board of Governors, their officers, agents, and employees, or third persons, arising out of or in connection with any contract awarded and which are the result of the vendor's breach of contract or of the negligent acts of the vendor, its officers, agents, and employees. This clause does not apply to contracts between government agencies. between government agencies.

15. FACILITIES: The University reserves the right to inspect the vendor's facilities at any time with prior notice.

16. ADDITIONAL QUANTITIES: For a period not exceeding ninety (90) days from the date of acceptance of any offer by the University of Florida, the right is reserved to acquire additional quantities up to but not exceeding those shown on bid or the bid level at the prices bid in this invitation. If additional quantities are not acceptable, the bid sheets must be noted "BID IS FOR SPECIFIED QUANTITY ONLY".

17. SERVICE AND WARRANTY: Unless otherwise specified, the vendor shall define any warranty service and replacements that will be provided during and subsequent to this contract. Vendors must explain on an attached sheet to what extent warranty and service facilities are provided.

SAMPLES: Samples of items, when called for, must be furnished free of expense, on or before bid opening time and date, and if not destroyed, may upon request, be returned at the vendor's expense. Each individual sample must be labeled with vendor's name, manufacturer's brand name and number, bid number and item reference. Request for return of samples shall be accompanied by instructions which include shipping authorization and name of carrier and must be received with the bid. If instructions are not received within this time, the commodities shall be disposed of by the University

19. INSPECTION, ACCEPTANCE AND TITLE: Inspection and acceptance will be at destination unless otherwise provided. Title and risk of loss or damage of all items shall be the responsibility of the contract supplier until accepted by the University, unless loss or damage results from negligence by the University. The contract supplier shall be responsible for filing, processing and collecting all damage claims. However, to assist him in the expeditious handling of damage claims, the University will:

Record any evidence of visible damage on all copies of the delivering carrier's Bill of Lading. (a)

- Report damage (Visible or Concealed) to the carrier and contract supplier confirming such reports in writing within 15 days of delivery, requesting that the carrier inspect the damaged merchandise. Retain the item and its shipping container, including inner packing material until inspection is performed by the carrier, and disposition given by the contract curveler. (b)
- (c) supplier.
- (d) Provide the contract supplier with a copy of the carrier's Bill of Lading and damage inspection report.

20. PATENTS, COPYRIGHTS, TRADEMARKS, ROYALTIES and other Intellectual Property: The vendor, without exception, shall indemnify and save harmless the University and its employees from liability of any nature or kind, including cost and expenses for or on account of any copyrighted, patented, or unpatented invention, process, or article manufactured or used in the performance of the contract, including its use by the University of Florida. If the vendor uses any design, device, or materials covered by letters, patent or copyright, it is mutually agreed and understood without exception that the bid prices shall include all royalties or costs arising from the use of such design, device, or materials in any way involved in the work. such design, device, or materials in any way involved in the work.

21. CONFLICT BETWEEN DOCUMENTS: If any terms and conditions contained within the documents that are a part of this ITB or resulting contract are in conflict with any other terms and conditions contained therein, then the various documents comprising this ITB or resulting contract, as applicable, shall govern in the following order of precedence: change order, purchase order, addenda, special conditions, general conditions, specifications, departmental description of work, and bid.

22. MANUFACTURERS' NAMES AND APPROVED EQUIVALENTS: Any manufacturer's names, trade names, brand names, information and/or catalog numbers listed in a specification are for information and not intended to limit competition. If bids are based on equivalent products, indicate on the bid form the manufacturer's name are based on equivalent products, indicate on the bid form the manufacturer's name and number. Vendor shall submit with the bid, cuts, sketches, and descriptive literature, and/or complete specifications. Reference to literature submitted with a previous bid will not satisfy this provision. The vendor shall also explain in detail the reasons why the proposed equivalent will meet the specifications and not be considered an exception thereto. The University of Florida reserves the right to determine acceptance of item(s) as an approved equivalent. Bids which do not comply with these requirements are subject to rejection. Bids lacking any written indication of intent to quote an alternate brand will be received and considered in complete compliance with the specifications as listed on the bid form. as listed on the bid form

23. NONCONFORMANCE TO CONTRACT CONDITIONS: Items may be tested and/or inspected for compliance with specifications by any appropriate testing facilities. Should the items fail, the University may require the vendor to reimburse the University for costs incurred by the University in connection with the examination or testing. The data derived from any tests for compliance with specifications are public records and open to examination thereto in accordance with Chapter 119, F.S. Items delivered not conforming to specifications may be rejected and returned at vendor's expense. These items and items not delivered as per delivery data in bid and/or purchase order may result in vendor being found in default in which event any and all reprocurement costs may be charged against the defaulting vendor. Any violation of these conditions may also result in the vendor's name being removed from the University of Florida's vendor

24. PUBLIC RECORDS: Any material submitted in response to this Invitation to Bid will become a public document pursuant to Section 119.07 F.S. This includes material which the responding vendor might consider to be confidential or a trade secret. Any claim of confidentiality is waived upon submission, effective after opening pursuant to Section 119.07 F.S.

**25. DELIVERY**: Unless actual date of delivery is specified (or if specified delivery cannot be met), show number of days required to make delivery after receipt of purchase order in space provided. Delivery time may become a basis for making an award (see Special Conditions). Delivery shall be within the normal working hours of the University of Florida, Monday through Friday, unless otherwise specified.

26. PUBLIC PRINTING - PREFERENCE GIVEN PRINTING WITHIN THE STATE: The University of Florida shall give preference to vendors located within the state when awarding contracts to have materials printed, whenever such printing can be done at

awarding contracts to than, and at a level of quality comparable to, that obtainable from a vendor located outside of the state. (a) CONTRACTS NOT TO BE SUBLET: In accordance with Class B Printing Laws and Regulations "Printing shall be awarded only to printing firms. No contract shall be awarded to any broker, agent, or independent contractor offering printing manufactured by other firms or percense"

(b) DISQUALIFICATION OF VENDOR: Reasonable grounds for believing that a vendor is involved in more than one bid for the same work will be cause for rejection of all bids in which such vendors are believed to be involved. Any or all bids will be rejected if there is reason to believe that collusion exists between vendors. Bids in which the

combined is reason to believe that contastor between vendors. Bids in which the prices obviously are unbalanced will be subject to rejection.
 c) TRADE CUSTOMS: Current trade customs of the printing industry are recognized unless accepted by Special Conditions or Specifications herein.
 (d) COMMUNICATIONS: It is expected that all materials and proofs will be picked

(d) COMMUNICATIONS. It is expected that an internals and proofs will be proceed up and delivered by the printer or his representative, unless otherwise specified. Upon request, materials will be forwarded by registered mail.
 (e) RETURN OF MATERIAL: All copy, photos, artwork, and other materials supplied by the University of Florida must be handled carefully and returned in good condition upon completion of the job. Such return is a condition of the contract and neuroscill returned to effect on the sufficient of the contract and

payment will not be made until return is affected.

# **Bid Number: ITB21DB-120**

# **Title: Chilled Water Pipe Replacement at Dental Science Building Floors 5, 6, 7 & 8**

# **Project Number: MP04946**



# AUTHORIZED REPRESENTATIVES AND CONTACT INFO:

## **UF PROCUREMENT SERVICES**

Debbie Berrier Procurement Agent II 971 Elmore Drive / PO Box 115250 Gainesville, FL 32611-5250 (352) 294-1160 <u>dberrier@ufl.edu</u>

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#### III. Division 0 Non-Technical Specifications

http://facilities.ufl.edu/forms/contracts/Div0NonTechSpecs.pdf

#### IV. Division 1 Non-Technical Specifications

http://facilities.ufl.edu/forms/contracts/Div1\_NonTech\_Specs\_JULY\_2017.pdf

#### V. <u>UF Design and Construction Standards</u>

https://facilities.ufl.edu/forms/dcs.html

#### VI. Standards. Policies. Regulations. Forms. Guides. Inspection & Closeout and References

http://facilities.ufl.edu/forms.html

#### **Other Forms**

- Dig Permit: https://www.facilitiesservices.ufl.edu/departments/utilities/dig-permits/
- EH&S Inspection Request Form: <u>http://www.ehs.ufl.edu/programs/buildcode/</u>
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## 00020 - INVITATION TO BID

The Invitation to Bid shall be in accordance with the University of Florida, Procurement Services "Invitation to Bid Acknowledgement Form" with all relevant information provided therein.

#### 00100 - INSTRUCTIONS TO BIDDERS

#### 1.1 RELATED SECTIONS

A. Documents affecting the work of this Section include, but are not necessarily limited to, the General Terms & Conditions and other Sections in Divisions 0 and 1 of these Specifications.

#### **1.2 THE WORK**

#### BID NUMBER: **ITB21DB-120** PROJECT TITLE: **Chilled Water Pipe Replacement at Dental Science Building Floors 5, 6, 7 & 8**

#### **1.3 SECURING DOCUMENTS**

Copies of the proposed Contract Documents may be obtained from:

University of Florida Procurement Services website. https://procurement.ufl.edu/vendors/schedule-of-bids/

#### 1.4 BID FORM

In order to be considered responsive and responsible, make bids in strict accordance with the following:

- A. Make bids upon the forms provided, properly signed and with all items completed. Do not change the wording of the bid form and do not otherwise alter or add words to the bid form. Unauthorized conditions, limitations, or provisions attached to the bid may be cause for rejection of the bid.
- B. Include a completed and signed Invitation to Bid Construction AcknowledgmentForm.
- C. Include completed and signed Section 00310 Bid Form.
- D. Include list of subcontractors as described in Section 00430 Subcontractor Listing.
- E. Include completed Prequalification Form.
- F. Bids must be submitted no later than November 18, 2020 at 3:00PM local time. No bids received after the time fixed for receiving them will be considered. Late bids will be returned to the bidder unopened.
- G. Address bids to Debbie Berrier, Procurement Agent II, and deliver to:

University of Florida Procurement Services 971 Elmore Drive / PO Box 115250 Gainesville, FL 32611-5250

Submit bid in a sealed envelope that includes the bid number, contractor name and date and time of the bid opening on the outside of the envelope. Submit one (1) original bid and one (1) electronic copy on flash drive or CD/DVD. It is the sole responsibility of the bidder to see that bids are received on time. Faxed and/or emailed bids will not be accepted.

#### **1.5 PROOF OF COMPETENCY OF BIDDER**

A bidder may be required to furnish evidence, satisfactory to the Owner, that the bidder and the bidder's proposed subcontractors have sufficient means and experience in the types of work required to assure completion of the Contract in a satisfactory manner.

#### 1.6 WITHDRAWAL OF BIDS

- A. A bidder may withdraw their bid, either personally or by written request, at any time prior to the scheduled time for opening bids.
- B. No bidder may withdraw their bid for a period of ninety calendar days after the date set for opening thereof, and bids shall be subject to acceptance by the Owner during this period.

#### 1.7 QUALIFICATION OF BIDDERS

- A. A contract will be awarded only to a responsible bidder, qualified by experience and in a financial position to perform the work specified.
- B. Bidder will complete the Prequalification Form included below and submit with their bid.
- C. If the bidder has not been pre-qualified with UF Procurement Services within the fiscal year (July 1 through June 30), the bidder may be required to submit the following evidence of eligibility:
  - 1. Evidence that bidder is licensed by the appropriate government agency to perform the work specified.
  - 2. Experience record showing bidder's training and experience in similar work.

#### 1.8 SUBCONTRACTS

If the Bidder intends to subcontract any of the Work:

- A. A list of all proposed subcontractors shall be provided with the bid for scopes/packages in excess of \$10,000. See Section 00430 Subcontractor Listing.
- B. Each subcontractor performing work in excess of \$10,000 must present evidence of being qualified in and licensed for the applicable trade. Such proof of subcontractor licensure shall be provided by the successful bidder after award, but prior to commencement of Work.

#### **1.9 PERFORMANCE AND PAYMENTBONDS**

See General Terms & Conditions, Article 20.

#### **1.10 BID DEPOSIT**

Not required.

#### 1.11 AWARD OR REJECTION OF BIDS

The Contract, if awarded, will be awarded to the responsible and responsive bidder who has proposed the lowest Contract Sum and has met the prequalification requirements as described on the Prequalification

Form, subject to the owner's right to reject any or all bids and to waive informality and irregularity in the bids and in the bidding. Alternates may be accepted in any order or not at all. Acceptance or rejection of any bid will be at the owner's sole discretion.

#### 1.12 MANDATORY PRE-BID CONFERENCE:

A mandatory Pre-bid Conference will be held prior to the scheduled bid opening for the purpose of considering questions posed by bidders. The conference will be open to interested bidders, prospective subcontractors, and any other interested parties. This conference will be held **October 26, 2020 at 10:00 AM local time. Meeting will begin at the north elevators on the 8th floor of the Dental Science Building, 1395 Center Drive, Gainesville, FL.** 

Please note: Face coverings are required in all UF and UF Health facilities and in outside areas if two or more people are within 6 feet of each other. Please review <u>UF's Masking and Physical Distancing Policy</u> for more information.

#### **1.13 EXECUTION OF AGREEMENT**

- A. A Purchase Order (PO) will be issued for purposes of fiscal encumbrance and payment. The PO itself serves as the form of contract.
- B. Upon notice of Bid Award, the bidder to whom the Contract is awarded shall deliver to UF those Certificates of Insurance and Payment & Performance Bonds required by the Contract Documents.
- C. Bonds and Certificates of Insurance shall be approved by UF before the successful bidder may proceed with the Work.

#### 1.14 INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO BIDDING

- A. If any person contemplating submitting a bid for construction of the Work is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in or omissions from any part of the Contract Documents, they may submit a written request for interpretation thereof no later than **November 3**, 2020 at 5:00 PM local time, to Debbie Berrier, Procurement Agent II at <u>dberrier@ufl.edu</u>. The person submitting the request shall be responsible for its prompt delivery.
- B. Interpretations or corrections of proposed Contract Documents will be made only by Addendum and will be available on the Procurement Services "Schedule of Bids" webpage <a href="https://procurement.ufl.edu/vendors/schedule-of-bids/">https://procurement.ufl.edu/vendors/schedule-of-bids/</a>. The Owner will not be responsible for any other explanations or interpretations of the proposed Contract Documents.

#### **1.15 TIME OF COMPLETION:**

A. Date of beginning, rate of progress and time for completion of Work for this Project are ESSENTIAL CONDITIONS of Contract. Successful Bidder hereby agrees that Work required by this Contract shall be commenced within ten (10) calendar days after issuance date of written Notice to Proceed; that all insurance and permits will be obtained; that all documents and notices will be filed; that all requirements as specified will be met; and that Work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will insure Substantial Completion of entire Project within 120 calendar days after receipt of Notice to Proceed, and shall be finally completed within 15 days after the date of Substantial Completion.

#### 00310 - BID FORMS

#### **BID PROPOSAL**

FROM:

(Name of Bidder)

TO: UNIVERSITY OF FLORIDA PROCUREMENT SERVICES 971 Elmore Drive P.O. Box 115250 Gainesville, Florida 32611-5250

The undersigned, hereinafter called "Bidder", having reviewed the Contract Documents for the Project entitled **ITB21DB-120 Chilled Water Pipe Replacement at Dental Science Building Floors 5, 6, 7 & 8** and having visited and thoroughly inspected the site of the proposed Project and familiarized himself/herself with all conditions affecting and governing the construction of said Project, hereby proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of the Project, in strict compliance with the Contract Documents, Addenda, and all other Documents relating thereto on file in Procurement Services, and, if awarded the Contract, to complete the said Work within the time limits called for in the Documents and as stated herein, for the sums as enumerated on this and the following pages:

## BASE BID (7th & 8th FLOOR):

Figures: \$\_\_\_\_\_

### ADDITIVE ALTERNATE #1 (6<sup>th</sup> FLOOR):

Dollars

Dollars

Figures: \$

#### ADDITIVE ALTERNATE #2 (5<sup>th</sup> FLOOR):

Dollars

Figures: \$\_\_\_\_\_

#### ADDENDA:

Receipt of the following Addenda to the Construction Documents is acknowledged:

ADDENDUM #	Dated

ADDENDUM #	Dated	

ADDENDUM #	Dated	
-	-	

#### **COMPLETION DATE:**

All Work covered by the Bidding Documents and the foregoing Base Bid shall be completed and ready for Owner's occupancy as specified in the contract documents.

#### SIGNATURE:

I hereby certify that for all statements and amounts herein made on behalf of

(Name of Bidder)

a (Corporation) (Partnership) (Individual) organized and existing under the laws of the State of Florida, I have carefully prepared this Bid Proposal from Contract Documents described hereinbefore, I have examined Contract Documents and local conditions affecting execution of Work before submitting this Bid Proposal, I have full authority to make the statements and commitment herein and submit this Bid Proposal in (its) (their) behalf, and all statements are true and correct.

Signed and sealed this	day of	, 2020.	
(Signature of Bidder)			
(Print Name)		(Title)	
WITNESS:			
(Signature of Witness)			
(Print Name)			
Address:			
(City)	(State)	(Zip Code)	

#### 00430 - SUBCONTRACTOR LISTING

#### **1.1 RELATED SECTIONS**

A. Documents affecting the work of this Section include, but are not necessarily limited to, the General Terms & Conditions and other Sections in Divisions 0 and 1 of these Specifications.

#### **1.2** SUBCONTRACTOR LISTS

- A. Each bidder shall furnish with its bid a list of all subcontractors for subcontracted scopes/packages of work valued at more than \$10,000.
- B. This list shall identify for each subcontracted package in excess of \$10,000 the name and address of the proposed subcontractor and the approximate value of the subcontract.
- C. If the bidder does not intend to subcontract portions of the Work in amounts greater than \$10,000, then a statement to that affect shall be furnished with the bid.
- D. See Section 00100 Instruction to Bidders regarding subcontractor licensure requirements.

#### PREQUALIFICATION FORM

#### MANDATORY REQUIREMENT: PROVIDE TYPED RESPONSES AND COMPLETE ALL FIELDS - SUBMIT WITH BID FORM

Provide evidence of at least three (3) <u>completed</u> renovation projects by your firm within the last five (5) years with a minimum mechanical bid price of \$500,000. Each project should be representative of the proposed project scope of work with phased construction <u>and</u> have included installation of a hydronic piping systems in an occupied building. Information must be contained only on this form. No supplemental information will be evaluated.

#### **REPRESENTATIVE PROJECT #1**

Project Name:		
Name of project owner (Reference):		
Owner mailing address:		
City:	State:	Zip:
Owner phone number:	Owner email address:	
Description of Work Performed:		
Mechanical subcontractor:		
Mechanical subcontractor foreman name:		
Architect/Engineer:		
Original Contract Amount:	Change Order Amount:	_ Bond Amount:
Date Commenced:	Date Completed:	
Was time extension necessary?		
Were any penalties imposed?		
Were liens, claims, or stop notices filed?		
<b>REPRESENTATIVE PROJECT #2</b>		
Project Name:		
Name of project owner (Reference):		
Owner mailing address:		
City:	State:	Zip:
Owner phone number:	Owner email address:	
Description of Work Performed:		
Mechanical subcontractor:		
Mechanical subcontractor foreman name:		
Architect/Engineer:		
Original Contract Amount:	Change Order Amount:	_ Bond Amount:
Date Commenced:	Date Completed:	
Was time extension necessary?		
Were any penalties imposed?		
Were liens, claims, or stop notices filed?		
REPRESENTATIVE PROJECT #3		
Project Name:		
Name of project owner (Reference):		
Owner mailing address:		
City:	State:	Zip:
Owner phone number:	Owner email address:	
Description of Work Performed:		
Mechanical subcontractor:		
Mechanical subcontractor foreman name:		
Architect/Engineer:		
Original Contract Amount:	Change Order Amount:	_ Bond Amount:
Date Commenced:	Date Completed:	
Was time extension necessary?		
Were any penalties imposed?		
Were liens, claims, or stop notices filed?		

Mitchell Gulledge Engineering, Inc. 23 00 00 HVAC GENERAL

#### PART 1 - GENERAL

A. The work covered by this division consists of providing all labor, equipment, and materials and performing all operations necessary for the installation of the mechanical work as herein called for and shown on the drawings.

#### 1.2 <u>Related Documents</u>:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to work of this section.
- B. This is a Basic Mechanical Requirements Section. Provisions of this section apply to work of all Division 23 sections.
- C. Review all other contract documents to be aware of conditions affecting work herein.
- D. Definitions:
  - 1. Provide: Furnish and install, complete and ready for intended use.
  - 2. Furnish: Supply and deliver to project site, ready for subsequent requirements.
  - 3. Install: Operations at project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar requirements.
- 1.3 <u>Permits and Fees</u>: Contractor shall obtain all necessary permits, meters, and inspections required for his work and pay all fees and charges incidental thereto.
- 1.4 <u>Verification of Owner's Data</u>: Prior to commencing any work the Contractor shall satisfy himself as to the accuracy of all data as indicated in these plans and specifications and/or as provided by the Owner. Should the Contractor discover any inaccuracies, errors, or omissions in the data, he shall immediately notify the Architect/Engineer in order that proper adjustments can be anticipated and ordered. Commencement by the Contractor of any work shall be held as an acceptance of the data by him after which time the Contractor has no claim against the Owner resulting from alleged errors, omissions, or inaccuracies of the said data.
- 1.5 <u>Delivery and Storage of Materials</u>: Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. All material shall be stored to provide protection from the weather and accidental damage.
- 1.6 Extent of work is indicated by the drawings, schedules, and the requirements of the specifications. Singular references shall not be construed as requiring only one device if multiple devices are shown on the drawings or are required for proper system operation.
- 1.7 Field Measurements and Coordination:
  - A. The intent of the drawings and specifications is to obtain a complete and satisfactory installation. Separate divisional drawings and specifications shall not relieve the Contractor or subcontractors from full compliance of work of his trade indicated on any of the drawings or in any section of the specifications.
  - B. Verify all field dimensions and locations of equipment to ensure close, neat fit with other trades' work. Make use of all contract documents and approved shop drawings to verify exact dimension and locations.
  - C. Coordinate work in this division with all other trades in proper sequence to ensure that the total work is completed within contract time schedule and with a minimum cutting and patching.
  - D. Locate all apparatus symmetrical with architectural elements. Install to exact height and locations when shown on architectural drawings. When locations are shown only on mechanical drawings, be guided by architectural details and conditions existing at job and correlate this work with that of others.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **1** of **8** Bid Documents

- E. Install work as required to fit structure, avoid obstructions, and retain clearance, headroom, openings, and passageways. <u>Cut no structural members without written approval</u>.
- F. Carefully examine any existing conditions, piping, and premises. Compare drawings with existing conditions. Report any observed discrepancies. It shall be the Contractor's responsibility to properly coordinate the work and to identify problems in a timely manner. Written instructions will be issued to resolve discrepancies.
- G. Because of the small scale of the drawings, it is not possible to indicate all offsets and fittings or to locate every accessory. Drawings are essentially diagrammatic. Study carefully the sizes and locations of structural members, wall and partition locations, trusses, and room dimensions and take actual measurements on the job. Locate piping, ductwork, equipment, and accessories with sufficient space for installing and servicing. Contractor is responsible for accuracy of his measurements and for coordination with all trades. Contractor shall not order materials or perform work without such verification. No extra compensation will be allowed because field measurements vary from the dimensions on the drawings. If field measurements show that equipment or piping cannot be fitted, the Architect/Engineer shall be consulted. Remove and relocate, without additional compensation, any item that is installed and is later found to encroach on space assigned to another use.

#### 1.8 <u>Guarantee</u>:

- A. The Contractor shall guarantee labor, materials, and equipment for a period of one (1) year from Substantial Completion, or from Owner's occupancy, whichever is earlier. Contractor shall make good any defects and shall include all necessary adjustments to and replacement of defective items without expense to the Owner.
- B. Owner reserves right to make emergency repairs as required to keep equipment in operation without voiding Contractor's Guarantee Bond nor relieving Contractor of his responsibilities during guarantee period.

#### 1.9 <u>Approval Submittals</u>:

- A. When approved, the submittal control log and submittals shall be an addition to the specifications herewith, and shall be of equal force in that no deviation will be permitted except with the approval of the Architect/Engineer.
  - 1. Shop drawings, product literature, and other approval submittals will only be reviewed if they are submitted in full accordance with the General and Supplementary Conditions <u>and</u> the following.
    - a. Submittals shall be properly organized in accordance with the approved submittal control log.
    - b. Submittals shall not include items from more than one specification section in the same submittal package unless approved in the submittal control log.
    - c. Submittals shall be properly identified by a cover sheet showing the project name, Architect and Engineer names, submittal control number, specification section, a list of products or item names with model numbers in the order they appear in the package, and spaces for approval stamps. A sample cover sheet is included at the end of this section.
    - d. Submittals shall have been reviewed and approved by the Builder. Evidence of this review and approval shall be an "Approved" stamp with a signature and date on the cover sheet.
    - e. Submittals that include a series of fixtures or devices (such as plumbing fixtures or valves) shall be organized by the fixture number or valve type

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **2** of **8** Bid Documents and be marked accordingly. Each fixture must include <u>all</u> items associated with that fixture regardless of whether or not those items are used on other fixtures.

- B. If the shop drawings show variation from the requirements of contract because of standard shop practice or other reasons, the Contractor shall make specific mention of such variation in writing in his letter of transmittal and on the submittal cover sheet in order that, if acceptable, Contractor will not be relieved of the responsibility for executing the work in accordance with the contract.
- C. Review of shop drawings, product literature, catalog data, or schedules shall not relieve the Contractor from responsibility for deviations from contract drawings or specifications, unless he has in writing called to the attention of the Architect/Engineer each such deviation in writing at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings, product literature, catalog data, or schedules. Any feature or function specified but not mentioned in the submittal shall be assumed to be included per the specification.
- D. Submit shop drawings as called for in other sections after award of the contract and before any material is ordered or fabricated. Shop drawings shall consist of plans, sections, elevations, and details to scale (not smaller than 1/4" per foot), with dimensions clearly showing the installation. Direct copies of small scale project drawings issued to the Contractor are not acceptable. Drawings shall take into account equipment furnished under other sections and shall show space allotted for it. Include construction details and materials.
- 1.10 <u>Test Reports and Verification Submittals</u>: Submit test reports, certifications, and verification letters as called for in other sections. Contractor shall coordinate the required testing and documentation of system performance such that sufficient time exists to prepare the reports, submit the reports, review the reports, and take corrective action within the scheduled contract time.
- 1.11 <u>O&M Data Submittals</u>: Submit Operation and Maintenance (O&M) data as called for in other sections. When a copy of approval submittals is included in the O&M Manual, only the final "Approved" or "Approved as Noted" copy shall be used. Contractor shall organize these data in the O&M Manuals tabbed by specification number. Prepare O&M Manuals as required and as described herein. Submit manuals at the Substantial Completion inspection.

#### PART 2 - PRODUCTS

- 2.1 All materials shall be new or Owner-supplied reused as shown on the drawings, the best of their respective kinds, suitable for the conditions and duties imposed on them at the building and shall be of reputable manufacturers. The description, characteristics, and requirements of materials to be used shall be in accordance with qualifying conditions established in the following sections.
- 2.2 Equipment and Materials:
  - A. Shall be new and the most suitable grade for the purpose intended. Equipment furnished under this division shall be the product of a manufacturer regularly engaged in the manufacture of such items for a period of three years. Where practical, all of the components shall be products of a single manufacturer in order to provide proper coordination and responsibility. Where required, Contractor shall furnish proof of installation of similar units or equipment.
  - B. Each item of equipment shall bear a name plate showing the manufacturer's name, trade name, model number, serial number, ratings, and other information necessary to

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **3** of **8** Bid Documents fully identify it. This plate shall be permanently mounted in a prominent location and shall not be concealed, insulated, or painted.

- C. The label of the approving agency, such as UL, IBR, ASME, ARI, AMCA, by which a standard has been established for the particular item shall be in full view.
- D. The equipment shall be essentially the standard product of a manufacturer regularly engaged in the production of such equipment and shall be a product of the manufacturer's latest design.
- E. A service organization with personnel and spare parts shall be available within two hours for each type of equipment furnished.
- F. Install in accordance with manufacturer's recommendations. Place in service by a factory trained representative where required.
- G. Materials and equipment are specified herein by a single or by multiple manufacturers to indicate quality, material, and type of construction desired. Manufacturer's products shown on the drawings have been used as basis for design; it shall be the Contractor's responsibility to ascertain that alternate manufacturer's products, or the particular products of named manufacturers, meet the detailed specifications and that size and arrangement of equipment are suitable for installation.
- H. Model Numbers: Catalog numbers and model numbers indicated in the drawings and specifications are used as a guide in the selection of the equipment and are only listed for the contractor's convenience. The contractor shall determine the actual model numbers for ordering materials in accordance with the written description of each item and with the intent of the drawings and specifications.

#### 2.3 <u>Requests for Substitution</u>:

- A. Where a particular system, product, or material is specified by name, consider it as standard basis for bidding, and base proposal on the particular system, product, or material specified.
- B. Requests by Contractor for substitution will be considered only when reasonable, timely, fully documented, and qualifying under one or more of the following circumstances:
  - 1. Required product cannot be supplied in time for compliance with Contract time requirements.
  - 2. Required product is not acceptable to governing authority, or determined to be non-compatible, or cannot be properly coordinated, warranted, or insured, or has other recognized disability as certified by Contractor.
  - 3. Substantial cost advantage is offered Owner after deducting offsetting disadvantages including delays, additional compensation for redesign, investigation, evaluation, and other necessary services and similar considerations.
- C. All requests for substitution shall contain a "Comparison Schedule" and clearly and specifically indicate any and all differences or omissions between the product specified as the basis of design and the product proposed for substitution. Differences shall include but shall not be limited to data as follows for both the specified and substituted products:
  - 1. Principal of operation.
  - 2. Materials of construction or finishes.
  - 3. Thickness of gauge of materials.
  - 4. Weight of item.
  - 5. Deleted features or items.

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- 6. Added features or items.
- 7. Changes in other work caused by the substitution.
- 8. Performance curves.
- 9. If the approved substitution contains differences or omissions not specifically called to the attention of the Architect/Engineer, the Owner reserves the right to require equal or similar features to be added to the substituted products (or to have the substituted products replaced) at the Contractor's expense.

#### PART 3 - EXECUTION

- 3.1 <u>Workmanship</u>: All materials and equipment shall be installed and completed in a firstclass workmanlike manner and in accordance with the best modern methods and practice. Any materials installed which do not present an orderly and reasonably neat and/or workmanlike appearance, or do not allow adequate space for maintenance, shall be removed and replaced when so directed by the Architect/Engineer.
- 3.2 <u>Coordination</u>:
  - A. The Contractor shall be responsible for full coordination of the mechanical systems with shop drawings of the building construction so the proper openings and sleeves or supports are provided for piping, ductwork, or other equipment passing through slabs or walls.
  - B. Any additional steel supports required for the installation of any mechanical equipment, piping, or ductwork shall be furnished and installed under the section of the specifications requiring the additional supports.
  - C. It shall be the Contractor's responsibility to see that all equipment such as valves, dampers, filters, and such other apparatus or equipment that may require maintenance and operation are made easily accessible, regardless of the diagrammatic location shown on the drawings.
  - D. All connections to fixtures and equipment shown on the drawings shall be considered diagrammatic unless otherwise indicated by detail. The actual connections shall be made to fully suit the requirements of each case and adequately provide for expansion and servicing.
  - E. The contractor shall protect equipment, material, and fixtures at all times. He shall replace all equipment, material, and fixtures which are damaged as a result of inadequate protection.
  - F. Prior to starting and during progress of work, examine work and materials installed by others as they apply to work in this division. Report conditions which will prevent satisfactory installation.
- 3.3 Start of work will be construed as acceptance of suitability of work of others.
- 3.4 <u>Interruption of Service</u>: Before any equipment is shut down for disconnecting or tieins, arrangements shall be made with the Architect/Engineer and this work shall be done at the time best suited to the Owner. This will typically be on weekends and/or holidays and/or after normal working hours. Services shall be restored the same day unless prior arrangements are made. All overtime or premium costs associated with this work shall be included in the base bid.
- 3.5 <u>Phasing</u>: Provide all required temporary valves, piping, ductwork, equipment, and devices as required. Maintain temporary services to areas as required. Remove all temporary material and equipment on completion of work unless Engineer concurs that such material and equipment would be beneficial to the Owner on a permanent basis.
- 3.6 <u>Cutting and Patching</u>: Notify Builder to do all cutting and patching of all holes, chases, sleeves, and other openings required for installation of equipment furnished and

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates installed under this section. Utilize experienced trades for cutting and patching. Obtain permission from Architect/Engineer before cutting any structural items.

- 3.7 <u>Equipment Setting</u>: Bolt equipment directly to concrete pads or vibration isolators as required, using hot-dipped galvanized anchor bolts, nuts, and washers. Level equipment.
- 3.8 <u>Painting</u>: Touch-up factory finishes on equipment located inside and outside shall be done under Division 23. Obtain matched color coatings from the manufacturer and apply as directed. If corrosion is found during inspection on the surface of any equipment, clean, prime, and paint, as required.
- 3.9 <u>Clean-up</u>: Thoroughly clean all exposed parts of apparatus and equipment of cement, plaster, and other materials, and remove all oil and grease spots. Repaint or touch up as required to look like new. During progress of work, contractor is to carefully clean up and leave premises and all portions of building free from debris and in a clean and safe condition.
- 3.10 <u>Start-up and Operational Test</u>: Start each item of equipment in strict accordance with the manufacturer's instructions; or where noted under equipment specification, start-up shall be done by a qualified representative of the manufacturer. Alignment, lubrication, safety, and operating control shall be included in start-up check.
- 3.11 <u>Climate Control</u>: Operate heating and cooling systems as required after initial startup to maintain temperature and humidity conditions to avoid freeze damage and warping or sagging of ceilings and carpet.
- 3.12 <u>Record Drawings</u>:
  - A. During the progress of the work the Contractor shall record on their field set of drawings the exact location, as installed, of all piping, ductwork, equipment, and other systems which are not installed exactly as shown on the contract drawings.
  - B. Upon completion of the work, record drawings shall be prepared as described in the General Conditions and Supplementary Conditions.
- 3.13 <u>Acceptance</u>:
  - A. Punch List: Submit written confirmation that all punch lists have been checked and the required work completed.
  - B. Instructions: At completion of the work, provide a competent and experienced person who is thoroughly familiar with project, for one day to instruct permanent operating personnel in operation of equipment and control systems. This is in addition to any specific equipment operation and maintenance training.
  - C. Operation and Maintenance Manuals: Furnish four complete manuals bound in ring binders with Table of Contents, organized, and tabbed by specification section. Manuals shall contain:
    - 1. Detailed operating instructions and instructions for making minor adjustments.
    - 2. Routine maintenance operations.
    - 3. Manufacturer's catalog data, service instructions, and parts lists for each piece of operating equipment.
    - 4. Copies of approved submittals.
    - 5. Copies of all manufacturer's warranties.
    - 6. Copies of test reports and verification submittals.
  - D. Record Drawings: Submit record drawings.
  - E. Test and Balance Report: Submit electronic certified copies. The Report shall be submitted for review prior to the Substantial Completion Inspection.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Mitchell Gulledge Engineering, Inc. 23 00 00 HVAC GENERAL

F. Acceptance will be made on the basis of tests and inspections of job. A representative of firm that performed test and balance work shall be in attendance to assist. Contractor shall furnish necessary mechanics to operate system, make any necessary adjustments and assist with final inspection.

#### **PROJECT NAME PROJECT NUMBER**

ARCHIT	ECT: Company Name		
ENGINE	ER: Mitchell Gulledge Engineering		
CONTR	ACTOR: Contractor Name	SA	
SUBCO	NTRACTOR: Sub Name		
SUPPLI	ER: Supply Company		Any standard heading is
MANUF	ACTURER: Manufacturer		acceptable.
DATE:	mm/dd/yyyy		
<u>SECTIC</u>	N: 23 XX XX/Section Name		
1.	Product 1: Manufacturer, Model		
2.	Product 2: Manufacturer, Model		List each product individually. Include manufacturer name and model.
3.	Product 3: Manufacturer, Model		
4.	Product 4: Manufacturer, Model		

5.

Product 4: Manufacturer, Model

Product 5: Manufacturer, Model

**Include GC or CM** Approval stamp indicating review and acceptance by responsible contractor.

END OF SECTION

**Dental Building Chilled Water Pipe Replacement** Phase II - Floors 7 & 8 with Alternates

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#### PART 1 - GENERAL

- 1.1 The work covered by this division consists of providing all labor, equipment, and materials and performing all operations necessary for the installation of the mechanical work as herein called for and shown on the drawings.
- 1.2 This is a Basic Mechanical Requirements section. Provisions of this section apply to work of all Division 23 sections.

#### PART 2 - CODES

- 2.1 All work under Division 23 shall be constructed in accordance with the codes listed herein. The design has been based on the requirements of these codes; and while it is not the responsibility of the Contractor to verify that all work called for complies with these codes, he shall be responsible for calling to the Architect/Engineer's attention any drawings or specifications that are not in conformance with these or other codes prior to ordering equipment or installing work.
- 2.2 Comply with regulations and codes of utility suppliers.
- 2.3 Where no specific method or form of construction is called for in the contract documents, the Contractor shall comply with code requirements when carrying out such work.
- 2.4 Where code conflict exists, generally the most restrictive requirement applies. Comply with current code edition, unless noted.
- 2.5 Additional codes or standards applying to a specific part of the work may be included in that section.
- 2.6 The following codes and standards shall govern all work:
  - A. Florida Building Code Sixth Edition (2017)
  - B. Florida Building Code Sixth Edition (2017) Existing Building
  - C. Florida Building Code Sixth Edition (2017) Energy Conservation
  - D. Florida Building Code Sixth Edition (2017) Mechanical
  - E. Standard for Air Conditioning and Ventilating Systems (NFPA 90A 2012)
  - F. University of Florida Construction Standards
  - G. Florida Fire Prevention Code Sixth Edition
    - 1. Fire Code (NFPA 1 2017)
    - 2. Life Safety Code (NFPA 101 2017)

#### PART 3 - STANDARDS

All mechanical materials, installation, and systems shall meet the requirements of the following standards, including the latest addenda and amendments, to the extent referenced:

- 3.1 Underwriters' Laboratories (UL)
- 3.2 American National Standards Institution (ANSI)
- 3.3 American Society of Testing Materials (ASTM)
- 3.4 Air Conditioning and Refrigeration Institute (ARI)
- 3.5 American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)

#### END OF SECTION

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates

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#### PART 1 - GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 This section is a Division-23 Basic Mechanical Materials and Methods section, and is part of each Division-23 section making reference to or requiring identification devices specified herein.
- 1.3 Extent of mechanical identification work required by this section is indicated on drawings and/or specified in other Division-23 sections.
- 1.4 <u>Refer to Division-26</u> sections for identification requirements of electrical work; not work of this section. Refer to other Division-23 sections for identification requirements for controls; not work of this section.
- 1.5 <u>Codes and Standards</u>: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

#### PART 2 - PRODUCTS

- 2.1 <u>General</u>: Provide manufacturer's standard products of categories and types required for each application as referenced in other Division-23 sections. Where more than single type is specified for application, selection is Installer's option, but provide single selection for each product category.
- 2.2 <u>Painted Identification Materials</u>:
  - A. Stencils: Standard fiberboard stencils, prepared for required applications with letter sizes generally complying with recommendations of ANSI A13.1 for piping and similar applications, but not less than 1-1/4" high letters for ductwork and not less than 3/4" high letters for access door signs and similar operational instructions.
  - B. Stencil Paint: Standard exterior type stenciling enamel; black, except as otherwise indicated; either brushing grade or pressurized spray-can form and grade.
  - C. Identification Paint: Standard identification enamel.
  - D. Plastic Pipe Markers.
  - E. Lettering: Manufacturer's standard pre-printed nomenclature which best describes piping system in each instance, as selected by Architect/Engineer in cases of variance with name as shown or specified.
  - F. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as separate unit of plastic.

#### 2.3 Valve Tags:

- A. Brass Valve Tags: Provide 19-gage polished brass valve tags with stamp-engraved piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener. Provide 1-1/2" diameter tags, except as otherwise indicated.
- B. Plastic Laminate Valve Tags: Provide manufacturer's standard 3/32" thick engraved plastic laminate valve tags, with piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener. Provide 1-1/2" square black tags with white lettering, except as otherwise indicated.

#### PART 3 - EXECUTION

3.1 <u>Coordination</u>: Where identification is to be applied to surfaces which require insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion of covering and painting.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Install identification prior to installation of acoustical ceilings and similar removable concealment.

- 3.2 <u>Piping System Identification</u>:
  - A. General: Install pipe markers of one of the following types on each system indicated to receive identification, and include arrows to show normal direction of flow:
    - 1. Plastic pipe markers.
    - 2. Stenciled markers, black or white for best contrast.
  - B. Locate pipe markers as follows wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces and exterior non-concealed locations.
  - C. Near each valve and control device.
  - D. Near each branch, excluding short take-offs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
  - E. Near locations where pipes pass through walls, floors, ceilings, or enter nonaccessible enclosures.
  - F. At access doors, manholes and similar access points which permit view of concealed piping.
  - G. Near major equipment items and other points of origination and termination.
  - H. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
  - I. On piping above removable acoustical ceilings, except omit intermediately spaced markers.
- 3.3 <u>Valve Identification</u>: Provide coded valve tag on every valve, cock, and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibs, and shut-off valves at plumbing fixtures, HVAC terminal devices and similar rough-in connections of end-use fixtures and units. Coordinate code with operating instructions.
- 3.4 <u>Valve Charts</u>: Provide framed, glass covered valve charts in each mechanical room. Identify coded valve number, valve function, and valve location for each valve.

#### PART 1 - GENERAL

#### 1.1 <u>Related Documents</u>:

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

#### 1.2 <u>Description of Work</u>:

- A. Extent of meters and gauges required by this Section is indicated on drawings and/or specified in other Division 23 sections. Types of meters and gauges specified in this Section include the following:
  - 1. Calibrated Balancing Valves.
  - 2. Gauge Connector Plugs.

#### 1.3 <u>Quality Assurance</u>:

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of meters and gauges, of types and sizes required, whose products have been in satisfactory use in similar service for not less than five years.
- B. Comply with ANSI and Instrument Society of America (ISA) standards pertaining to construction and installation of meters and gauges.

#### 1.4 Submittals:

A. Product Data: Submit manufacturer's technical product data, including installation instructions for each type of meter and gauge. Include scale range, ratings, and calibrated performance curves, certified where indicated. Submit meter and gauge schedule showing manufacturer's figure number, scale range, location, and accessories for each meter and gauge.

#### PART 2 - PRODUCTS

#### 2.1 Calibrated Balancing Valves:

A. Provide as indicated, calibrated balance valves equipped with readout valves to facilitate connecting of differential pressure meter to balance valves. Each readout valve shall have an integral EPT check valve designed to minimize system fluid loss during monitoring process. Provide calibrated nameplate to indicate degree of closure of precision machined orifice. Construct balancing valve with internal EPT o-ring seal to prevent leakage around rotating element. Provide balance valves with pre-formed polyurethane insulation suitable for use on both heating and cooling systems. Acceptable manufacturers include Bell & Gossett, Taco, and Thrush products.

#### PART 3 - EXECUTION

#### 3.1 <u>Inspection</u>:

- A. Examine areas and conditions under which meters and gauges are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to the Installer.
- 3.2 Installation:
  - A. Install gauge connector plugs in piping tees where indicated, located on pipe at most readable position. Secure cap.

#### END OF SECTION

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **1** of **2** Bid Documents

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#### PART 1 - GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to the work of this section.
- 1.2 This section is a Division-23 Basic Materials and Methods section, and is part of each Division-23 section making reference to or requiring valves specified herein.
- 1.3 Extent of valves required by this section is indicated on drawings and/or specified in other Division-23 sections.
- 1.4 <u>Quality Assurance</u>:
  - A. <u>Valve Dimensions</u>: For face-to-face and end-to-end dimensions of flanged or weldingend valve bodies, comply with ANSI B16.10.
  - B. <u>Valve Types</u>: Provide valves of same type by same manufacturer.
- 1.5 <u>Approval Submittals</u>: When required by other Division-23 sections, submit product data, catalog cuts, specifications, and dimensioned drawings for each type of valve. Include pressure drop curve or chart for each type and size of valve.
  - A. Ball Valves: Type BA.
  - B. Butterfly Valves: Type BF.

#### 1.6 <u>O&M Data Submittals</u>:

A. Submit maintenance data and a copy of approval submittals.

#### PART 2 - PRODUCTS

- 2.1 <u>General</u>: Provide factory-fabricated valves recommended by manufacturer for use in service indicated. Provide valves of types and pressure ratings indicated; provide proper selection as determined by Installer to comply with specifications and installation requirements. Provide sizes as indicated, and connections which properly mate with pipe, tube, and equipment connections.
- 2.2 <u>Acceptable Manufacturers</u>: Subject to compliance with requirements, provide valves of one of the producers listed for each valve type. The model numbers are listed for contractor's convenience only. In the case of a model number discrepancy, the written description shall govern.

### 2.3 Ball Valves:

- A. General: Select with port area equal to or greater than connecting pipe area, include seat ring designed to hold sealing material.
- B. Construction: Ball valves shall be rated for 150 psi saturated steam and 600 psi non-shock cold water. Pressure containing parts shall be constructed of ASTM B-584 alloy 844, or ASTM B-124 alloy 377. Valves shall be furnished with blow-out proof bottom loaded stem constructed of ASTM B-371 alloy 694 or other approved low zinc material. Provide TFE packing, TFE thrust washer, and reinforced teflon seats. Valves 1" and smaller shall be full port design. Valves 1-1/4" and larger shall be conventional port design. Stem extensions shall be furnished for use in insulated piping where insulation exceeds 1/2" thickness.
- C. Comply with the following standards:
  - 1. MSS SP-110. Ball Valves Threaded, Solder Joint, Grooved and Flared Ends.
- D. Types of ball (BA) valves:
  - 1. <u>Threaded Ends 2" and Smaller (BA1)</u>: Bronze two-piece full port body with adjustable stem packing. Nibco T-585-70. Stockham S216-BR-R-T. Milwaukee BA125. Apollo 77-100.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **1** of **4** Bid Documents

- 2. <u>Soldered Ends 2" and Smaller (BA2)</u>: Bronze three-piece full port body with adjustable stem packing and stainless steel ball and trim. Nibco S-595-Y-66. Milwaukee BA350. Apollo 82-200.
- 2.4 <u>Butterfly Valves</u>:
  - A. General: Comply with MSS SP-67, Butterfly Valves. Provide butterfly valves designed for tight shut-off. Where used for terminal or equipment removal or repair, select lug type valves. Select wafer type valves for other applications. Provide gear operators on all butterfly valves 6" and larger.
  - B. Types of butterfly (BF) valves:
    - 1. <u>Wafer Type 2-1/2" and Larger (BF1)</u>: 200 CWP, cast-iron body, lever-operated, aluminum bronze disc, Type 410 stainless steel stem, EPT seat. Stockham LG-512. Nibco WD 2110-3. Crane 42-FXB-TL. Milwaukee MW222E-8416.
    - Lug Type 2-1/2" and Larger (BF2): 200 CWP, cast-iron body, lever-operated, aluminum bronze disc, Type 410 stainless steel stem, EPT seat. Stockham LG-712. Nibco LD 2110-3. Crane 44-FXB-TL. Milwaukee ML132B-8416.
- 2.5 <u>Valve Features</u>:
  - A. General: Provide valves with features indicated and, where not otherwise indicated, provide proper valve features as determined by Installer for installation requirements. Comply with ANSI B31.1.
  - B. Valve features specified or required shall comply with the following:
    - 1. <u>Bypass</u>: Comply with MSS SP-45, and except as otherwise indicated, provide manufacturer's standard bypass piping and valving. Provide for gate valves 8" and larger.
    - 2. <u>Drain</u>: Comply with MSS SP-45, and provide threaded pipe plugs complying with applicable Division-23 pipe or tube section. Provide for gate valves 8" and larger.
    - 3. <u>Flanged</u>: Provide valve flanges complying with ANSI B16.1 (cast iron), ANSI B16.5 (steel), or ANSI B16.24 (bronze).
    - 4. <u>Threaded</u>: Provide valve ends complying with ANSI B2.1.
    - 5. <u>Solder-Joint</u>: Provide valve ends complying with ANSI B16.18.
    - 6. <u>Trim</u>: Fabricate pressure-containing components of valve, including stems (shafts) and seats from brass or bronze materials, of standard alloy recognized in valve manufacturing industry unless otherwise specified.
    - 7. <u>Non-Metallic Disc</u>: Provide non-metallic material selected for service indicated in accordance with manufacturer's published literature.
    - 8. <u>Renewable Seat</u>: Design seat of valve with removable disc, and assemble valve so disc can be replaced when worn.
    - 9. <u>Extended Stem</u>: Increase stem length by 2" minimum, to accommodate insulation applied over valve.

#### PART 3 - EXECUTION

- 3.1 <u>Installation</u>:
  - A. General: Install valves where required for proper operation of piping and equipment, including valves in branch lines to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward below horizontal plane.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page 2 of 4 Bid Documents

- B. Insulation: Where insulation is indicated, install extended-stem valves, arranged in proper manner to receive insulation.
- C. Applications Subject to Corrosion: Do not install bronze valves and valve components in direct contact with steel, unless bronze and steel are separated by dielectric insulator.
- 3.2 <u>Selection of Valve Ends (Pipe Connections)</u>: Except as otherwise indicated, select and install valves with the following ends or types of pipe/tube connections:
  - A. Tube Size 2" and Smaller: Threaded valves or soldered-joint valves may also be used.
  - B. Pipe Size 2-1/2" and Larger: Flanged valves.
- 3.3 <u>Non-Metallic Disc</u>: Limit selection and installation of valves with non-metallic disc to locations indicated and where foreign material in piping system can be expected to prevent tight shutoff of metal seated valves.
- 3.4 <u>Renewable Seats</u>: Select and install valves with renewable seats, except where otherwise indicated.

Mitchell Gulledge Engineering, Inc. 23 05 23 HVAC VALVES

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Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates

Page **4** of **4** Bid Documents PART 1 - GENERAL

- 1.1 Drawings and general provisions of Contract, including General Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 This section is a Division-23 Basic Materials and Methods section, and is a part of each Division-23 section making reference to or requiring supports, anchors, and seals specified herein.
- 1.3 Extent of supports, anchors, and seals required by this section is indicated on drawings and/or specified in other Division-23 sections.
- 1.4 <u>Code Compliance</u>: Comply with applicable codes pertaining to product materials and installation of supports, anchors, and seals.
- 1.5 MSS Standard Compliance:
  - A. Provide pipe hangers and supports of which materials, design, and manufacture comply with ANSI/MSS SP-58.
  - B. Select and apply pipe hangers and supports, complying with MSS SP-69.
  - C. Fabricate and install pipe hangers and supports, complying with MSS SP-89.
  - D. Terminology used in this section is defined in MSS SP-90.
- 1.6 <u>UL Compliance</u>: Provide products which are Underwriters Laboratories listed.
- PART 2 PRODUCTS
- 2.1 <u>Acceptable Manufacturers</u>: Subject to compliance with requirements, provide supports and hangers by Grinnel, Michigan Hanger Company, B-Line Systems, or approved equal.
- 2.2 <u>Horizontal-Piping Hangers and Supports</u>: Except as otherwise indicated, provide factory-fabricated horizontal-piping hangers and supports complying with ANSI/MSS SP-58, of one of the following MSS types listed, selected by Installer to suit horizontal-piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Use only one type by one manufacturer for each piping service. Select size of hangers and supports to exactly fit pipe size for bare piping, and to exactly fit around piping insulation with saddle or shield for insulated piping. Provide copper-plated hangers and supports for copper-piping systems.
  - A. Adjustable Steel Clevises: MSS Type 1.
  - B. Steel Double Bolt Pipe Clamps: MSS Type 3.
  - C. Adjustable Steel Band Hangers: MSS Type 7.
  - D. Steel Pipe Clamps: MSS Type 4.
- 2.3 <u>Vertical-Piping Clamps</u>: Except as otherwise indicated, provide factory-fabricated vertical-piping clamps complying with ANSI/MSS SP-58, of one of the following MSS types listed, selected by Installer to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.
  - A. Two-Bolt Riser Clamps: MSS Type 8.
  - B. Four-Bolt Riser Clamps: MSS Type 42.
- 2.4 <u>Hanger-Rod Attachments</u>: Except as otherwise indicated, provide factory-fabricated hanger-rod attachments complying with ANSI/MSS SP-58, of one of the following MSS types listed, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-69 and manufacturer's published product information. Use only one type by one manufacturer for each piping service. Select

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **1** of **4** Bid Documents size of hanger-rod attachments to suit hanger rods. Provide copper-plated hanger-rod attachments for copper-piping systems.

- A. Steel Turnbuckles: MSS Type 13.
- B. Malleable Iron Sockets: MSS Type 16.
- 2.5 <u>Building Attachments</u>: Except as otherwise indicated, provide factory-fabricated building attachments complying with ANSI/MSS SP-58, of one of the following MSS types listed, selected by Installer to suit building substrate conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods.
  - A. Center Beam Clamps: MSS Type 21.
  - B. C-Clamps: MSS Type 23.
  - C. Malleable Beam Clamps: MSS Type 30.
  - D. Side Beam Brackets: MSS Type 34.
  - E. Concrete Inserts: MSS Type 18.
- 2.6 <u>Saddles and Shields</u>: Except as otherwise indicated, provide saddles or shields under piping hangers and supports, factory-fabricated, for all insulated piping. Size saddles and shields for exact fit to mate with pipe insulation.
  - A. Protection Shields: MSS Type 40; of length recommended by manufacturer to prevent crushing of insulation.
  - B. Protection Saddles: MSS Type 39; use with rollers, fill interior voids with segments of insulation matching adjoining insulation.

#### 2.7 <u>Miscellaneous Materials</u>:

- A. Metal Framing: Provide products complying with NEMA STD ML 1.
- B. Steel Plates, Shapes, and Bars: Provide products complying with ANSI/ASTM A 36.
- C. Cement Grout: Portland cement (ANSI/ASTM C 150, Type I or Type III) and clean uniformly graded, natural sand (ANSI/ASTM C 404, Size No. 2). Mix at a ratio of 1.0 part cement to 3.0 parts sand, by volume, with minimum amount of water required for placement and hydration.
- D. Heavy-Duty Steel Trapezes: Fabricate from steel shapes or continuous channel struts selected for loads required; weld steel in accordance with AWS standards.

#### PART 3 - EXECUTION

#### 3.1 <u>Preparation</u>:

- A. Proceed with installation of hangers, supports, and anchors only after required building structural work has been completed in areas where the work is to be installed. Correct inadequacies including (but not limited to) proper placement of inserts, anchors, and other building structural attachments.
- B. Prior to installation of hangers, supports, anchors, and associated work, Installer shall meet at project site with Contractor, installer of each component of associated work, and installers of other work requiring coordination with work of this section for purpose of reviewing material selections and procedures to be followed in performing the work in compliance with requirements specified.
- 3.2 Installation of Building Attachments:
  - A. In areas of work requiring attachments to existing concrete, use self-drilling rod inserts, Phillips Drill Co., "Red-Head", or equal.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates

#### Mitchell Gulledge Engineering, Inc. 23 05 29 HVAC SUPPORTS ANCHORS AND SEALS

#### 3.3 Installation of Hangers and Supports:

A. General: Install all new hangers, supports, clamps, and attachments to support piping properly from building structure; comply with MSS SP-69. Arrange for grouping of parallel runs of horizontal piping to be supported together on trapeze type hangers where possible. Install supports with maximum spacings complying with MSS SP-69 or as listed herein, whichever is most limiting. Where piping of various sizes is to be supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe. Do not use wire or perforated metal to support piping, and do not support piping from other piping.

Horizontal steel pipe and copper tube 1-1/2" diameter and smaller: support on 6 foot centers.

- 1. Horizontal steel pipe and copper tube over 1-1/2" diameter: support on 10 foot centers.
- 2. Vertical steel pipe and copper tube: support at each floor.
- B. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
- C. Paint all black steel hangers with black enamel. Galvanized steel and copper clad hangers do not require paint.
- D. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated, or by other recognized industry methods.
- E. Provision for Movement:
  - 1. Install hangers and supports to allow controlled movement of piping systems and to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
  - 2. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
- F. Insulated Piping: Comply with the following installation requirements.
  - 1. Shields: Where low-compressive-strength insulation or vapor barriers are indicated, install coated protective shields.
  - 2. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.

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#### Mitchell Gulledge Engineering, Inc. 23 05 93 TESTING ADJUSTING BALANCING OF HVAC SYSTEMS

PART 1 - GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 Division-23 Basic Mechanical Materials Sections apply to work of this section.
- 1.3 <u>Description of Work</u>:
  - A. Extent of testing, adjusting, and balancing work (TAB) is indicated by requirements of this section, and also by drawings and schedules, and is defined to include, but is not necessarily limited to, air distribution systems, hydronic distribution systems and associated equipment and apparatus of mechanical work. The work consists of setting speed and volume (flow) adjusting facilities provided for systems, recording data, conducting tests, preparing and submitting reports, and recommending modifications to work as required.
  - B. Pretesting: Where required by the drawings or other Division 23 sections, pretest existing HVAC systems as directed and report findings prior to start of demolition work or any other modifications to the existing systems. Results of pretesting shall be reported to the Engineer in a timely manner. Comply with standards for final TAB reports described herein. Where existing conditions do not allow for performance of specified test provide notes in pretest report but promptly notify engineer for alternate methods at no added costs.
  - C. Coordination: Coordinate with the General Contractor and Mechanical Contractor responsible for the HVAC system installation as required to complete the TAB work.
- 1.4 The intent of this specification is to balance HVAC systems within the tolerances listed, maintaining the pressure relationships indicated, with a minimum of noise.
  - A. Airflow Tolerances:
    - 1. Air Handling: The supply air, return air, and outdoor air quantities shall be balanced within +/-5% of design values.
    - 2. Terminal Units: The air quantities associated with fan coil units and other similar devices shall be balanced within +/-5% of design values.
    - 3. Ceiling Diffusers, Supply Registers, Return and Exhaust Inlets: Balance to an air quantity within +/-10% of the design values.
  - B. Temperature Tolerances:
    - 1. Air Handling Temperatures: The controlled temperatures at AHUs shall be verified to be under control within +/-1°F of design values.
    - 2. Room Temperatures: Balance systems and controls within +/-2°F of indicated settings.
  - C. Hydronic Flow: Balance hydronic flow rates to within 10% of design values.
- 1.5 <u>Quality Assurance</u>: The TAB Contractor shall be certified as follows:
  - A. Tester: A firm certified by National Environmental Balancing Bureau (NEBB) in those testing and balancing disciplines required for this project, who is not the Installer of the systems to be tested and is otherwise independent of the project. Comply with NEBB's "Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems" as applicable to this work.
  - B. Tester: A firm certified by Associated Air Balance Council (AABC) in those testing and balancing disciplines required for this project. AABC-certified firms are independent by definition. Comply with AABC's Manual MN-1 "AABC National Standards", as applicable to this work.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **1** of **4** Bid Documents Mitchell Gulledge Engineering, Inc. M 23 05 93 TESTING ADJUSTING BALANCING OF HVAC SYSTEMS

C. Industry Standards: Comply with American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) recommendations pertaining to measurements, instruments and testing, adjusting and balancing, except as otherwise indicated.

#### 1.6 <u>Job Conditions</u>:

- A. Do not proceed with testing, adjusting, and balancing work until HVAC work (including Controls) has been completed and is operable. Ensure that there is no residual work still to be completed. Where existing controls to remain are not functional; notify owner for repair and provide test after repair.
- B. Do not proceed until work scheduled for testing, adjusting, and balancing is clean and free from debris, dirt, and discarded building materials.
- C. Testing may proceed system by system, but each HVAC system must be complete as describe herein.
- D. The mechanical contractor shall make any changes in pulleys, belts, and dampers, and/or add dampers as required for correct balancing.
- 1.7 <u>Approval Submittals</u>:
  - A. Submit the name of the proposed test and balance company for the Engineer's approval within thirty (30) days after awarding of contract.

#### 1.8 <u>Test Reports and Verification Submittals</u>:

A. Submit an electronic copy of the dated test and balance report upon completion of TAB work. The report shall include a list of instruments used for the work. The report shall be signed by the supervisor who performed the TAB work.

#### PART 2 - PRODUCTS

- 2.1 <u>Patching Materials</u>: Except as otherwise indicated, use same products as used by original Installer for patching holes in insulation, ductwork, and housings which have been cut or drilled for test purposes, including access for test instruments, attaching jigs, and similar purposes.
- 2.2 <u>Test Instruments</u>: Utilize test instruments and equipment of the type, precision, and capacity as recommended in the referenced standard. All instruments shall be in good condition and shall have been calibrated within the previous six (6) months (or more recently if required by standard).

## PART 3 - EXECUTION

- 3.1 <u>General</u>:
  - A. Examine installed work and conditions under which testing is to be done to ensure that work has been completed, cleaned, and is operable. Do not proceed with TAB work until unsatisfactory conditions have been corrected in manner acceptable to Tester.
  - B. Test, adjust, and balance environmental systems and components, as indicated, in accordance with procedures outlined in applicable standards, and as modified or detailed herein.
  - C. Test, adjust, and balance systems during summer season for air conditioning systems and during winter season for heating systems, including at least a period of operation at outside conditions within 5°F wet bulb temperature of maximum summer design condition, and within 10°F dry bulb temperature of minimum winter design condition. When seasonal operation does not permit measuring final temperatures, then take final temperature readings when seasonal operation does permit. The Contractor shall

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates return for a change of seasons test at no additional cost to the Owner and submit the revised TAB report.

- D. Punch List: Prepare a deficiency (punch)list for the Contractor with a copy of the Engineer that lists all items that are incorrectly installed or are functioning improperly. Provide a retest after all items are corrected.
- E. Prepare TAB report of test results, including instrumentation calibration reports, in format recommended by applicable standards, modified as required to include all data listed herein.
- F. Mark equipment settings, including damper control positions, valve indicators, fan speed control levers, and similar controls and devices, to show final settings at completion of TAB work. Provide markings with paint or other suitable permanent identification materials.
- G. Include in the TAB report recommendations for correcting unsatisfactory mechanical performances when system cannot be successfully balanced.
- H. Include an extended warranty of ninety (90) days after completion of test and balance work, during which time the Engineer, at his discretion, may request a recheck, or resetting of any component as listed in test report. The TAB company shall provide technicians and instruments and make any tests required by the Engineer during this time period.

## 3.2 <u>Controls</u>:

- A. Check all HVAC controls for proper location, calibration, and sequence of operation.
- B. Check operation of all controllers and controlled devices to verify proper action and direction. Check the operation of all interlocks.
- C. Check all control valves for complete closure and correct action under all operating conditions.
- 3.3 <u>Air Balancing</u>:
  - A. Set dampers, volume controls, and fan speeds to obtain specified air delivery with minimum noise level. Rebalance as required to accomplish this. Simulate fully loaded filters during test.
  - B. Set grille deflections as noted on plans. Modify deflections if required to eliminate drafts or objectionable air movement.
  - C. Record air terminal velocity after completion of balance work.
  - D. Record final grille and register deflection settings if different from that specified on contract drawings.
  - E. Record all fan speeds.

# 3.4 <u>Water Balancing</u>:

- A. Verify proper operation of all hydronic system devices to ensure the proper flowrate, flow direction, and pressure are maintained.
- B. Set balancing cocks and flow control devices to obtain specified water flow rates to all terminal units and coils.
- 3.5 Provide use of ultrasonic and/or non-invasive equipment where existing or new measuring devices do not exist. Repair insulation to new specifications.
- 3.6 <u>Data Collection</u>:
  - A. In addition to the data required for any specified performance tests, measure and record the temperatures, pressures, flow rates, and nameplate data for all components listed herein.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Mitchell Gulledge Engineering, Inc.

23 05 93 TESTING ADJUSTING BALANCING OF HVAC SYSTEMS

- B. It is the intent of this section to record data on balanced systems, under normal operating or design conditions.
- C. Temperatures:
  - 1. Outside dry and wet bulb temperatures.
  - 2. Dry bulb temperature in each room and at least one wet bulb temperature in each zone.
  - 3. Inlet and outlet temperature of each heat exchange device both fluids.
- D. Pressures:
  - 1. Suction and discharge static pressure of each fan.
  - 2. Water pressure drop through each heat exchanger.
- E. Flow rates:
  - 1. Flow rate through each fan.
  - 2. Flow rate through each coil or heat exchange device.
- F. Nameplate Data:
  - 1. Complete nameplate data for all equipment.
  - 2. Motor data to include horsepower, phase, voltage, RPM, full load nameplate current, fuse rating in disconnect switch, number or manufacturer's size designation, and ampere rating of overcurrent and low voltage protection devices in starters.

PART 1 - GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 Division-23 Basic Mechanical Materials and Methods Sections apply to work of this section.
- 1.3 <u>Approval Submittals</u>:
  - A. Product Data: Submit producer's data sheets and installation instructions on each insulation system including insulation, coverings, adhesives, sealers, protective finishes, and other material recommended by the manufacturer for applications indicated. Submit for:
    - 1. Cellular glass
- 1.4 <u>O&M Data Submittals</u>: Submit a copy of all approval submittals. Include in O&M Manual.

PART 2 - PRODUCTS

- 2.1 <u>Acceptable Manufacturers</u>: Subject to compliance with requirements, provide insulation products by Armstrong, Johns Manville, Knauf, Owens Corning, Pittsburgh Corning, U.S. Rubber, or approved equal. All products shall be asbestos-free.
- 2.2 <u>Flame/Smoke Ratings</u>: Provide composite mechanical insulation (insulation, jackets, coverings, sealers, mastics, and adhesive) with a flame-spread rating of 25 or less, and a smoke-developed rating of 50 or less, as tested by ANSI/ASTM E84.
- 2.3 <u>Pipe Insulation Materials</u>:
  - A. Cellular Glass Pipe Insulation: ASTM C552, Type II, Class 1. (Uncovered.)
  - B. Staples, Bands, Wires, and Cement: As recommended by the insulation manufacturer for applications indicated.
  - C. Adhesives, Sealers, Protective Finishes: Products recommended by the insulation manufacturer for the application indicated.
  - D. Bedding Compound for CHW Systems: Provide products to completely cover the piping or equipment being insulated. Products shall be low odor type. Foster 30-45 or Foster 95-50.

#### PART 3 - EXECUTION

- 3.1 <u>General</u>:
  - A. Install thermal insulation products in accordance with manufacturer's written instructions, and in compliance with recognized industry practices to ensure that insulation serves intended purpose.
  - B. Install insulation materials with smooth and even surfaces and on clean and dry surfaces. Redo poorly fitted joints. Do not use mastic or joint sealer as filler for gapping joints and excessive voids resulting from poor workmanship.
  - C. Maintain integrity of vapor-barrier on insulation and protect it to prevent puncture and other damage. Label all insulation "ASBESTOS FREE".
  - D. Do not apply insulation to surfaces while they are hot or wet.
  - E. Do not install insulation until systems have been checked and found free of leaks. Surfaces shall be clean and dry before attempting to apply insulation. A professional insulator with adequate experience and ability shall install insulation.
- 3.2 <u>Cellular Glass Pipe Insulation</u>:
  - A. Insulate the following piping systems:

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#### Mitchell Gulledge Engineering, Inc. 23 07 17 EQUIPMENT AND PIPING INSULATION

1. Chilled water:

1-1/2" thick

B. Indoor Concealed Locations: Cut insulation in sections at fittings and carefully fit to the pipe and fittings. No stovepipe or single miter insulation is allowed. Apply cellular glass bedding compound to the pipe surface to achieve 100% coverage (chilled water piping only). Apply vapor barrier mastic to all edges of the cellular insulation and between joints in the insulation. Wire the cellular glass in place with stainless steel wire 9" on center. Provide hanger or pipe support shields of 16 gauge (minimum) galvanized steel over or embedded in the insulation which extend halfway up the pipe insulation cover and at least 4" on each side of the hanger. Insulate anchors adequately to prevent moisture condensation problems. Finish cellular glass insulation in concealed locations by applying a white fire rated jacket with self-sealing lap. Finish elbows and fittings with weather barrier sealant reinforced with white glass fabric.

#### PART 1 - GENERAL

#### 1.1 <u>Related Documents</u>:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to this Section.
- 1.2 <u>Summary</u>:
  - A. This Section includes piping systems for chilled water. Piping materials and equipment specified in this Section include pipes, fittings, specialties, and valves.
- 1.3 <u>Definitions</u>:
  - A. Pipe sizes used in this Specification are Nominal Pipe Size (NPS).
- 1.4 Submittals:
  - A. Product Data: Submit manufacturer's technical product data for:
    - 1. Valves
    - 2. Meters and Gauges
    - 3. Access Doors
- 1.5 <u>Shop Drawings</u>:
  - A. Submit scaled layout drawings of piping systems in mechanical rooms including, but not necessarily limited to pipe sizes, location, offsets, connections, elevations, and hydronic specialties. Indicate interface and spatial relationship between piping and equipment. Coordinate with all other trades work and existing conditions. Field verify final location of pipe prior to submittal of layout drawings and fabrication.
- 1.6 <u>Maintenance Data</u>: For hydronic specialties and special duty valves, for inclusion in operating and maintenance manuals.
- 1.7 <u>Quality Control Submittals</u>:
  - 1. Welders' certificates certifying that welders comply with the quality requirements specified in Quality Assurance below.
  - 2. Certification of compliance with ASTM and ANSI manufacturing requirements for pipe, fittings, and specialties.
  - 3. Submit reports specified in Part 3 of this Section.
- 1.8 <u>Quality Assurance</u>:
  - A. Qualifications for Welding Processes and Operators: ASME "Boiler and Pressure Vessel Code", Section IX, "Welding and Brazing Qualification".
  - B. ASME Compliance: Fabricate and stamp air separators and compression tanks to comply with ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.
- PART 2 PRODUCTS
- 2.1 <u>Pipe and Tubing Materials</u>:
  - A. General: Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by Installer to comply with installation requirements. Provide materials and products complying with ASME B31.9 Code for Building Services Piping where applicable, base pressure rating on hydronic piping systems maximum design pressures. Provide sizes and types matching piping and equipment connections; provide fittings of materials which match pipe materials used in

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **1** of **4** Bid Documents hydronic piping systems. Where more than one type of materials or products are indicated, selection is Installer's option.

- 2.2 <u>Basic Identification</u>: Provide identification complying with Division-23 Basic Mechanical Materials and Methods section "Mechanical Identification."
- 2.3 Mechanical Materials and Methods section "Pipes and Pipe Fittings", in accordance with the following listing:
  - A. Tube Size 3" and Smaller: Copper tube; Type L, hard-drawn temper; wrought-copper fittings with soldered joints.
- 2.4 Pipe Size 4" and Larger: Black steel pipe; Schedule 40; wrought-steel buttwelding fittings with welded joints.
- 2.5 <u>Basic Piping Specialties</u>: Provide piping specialties complying with Division-23 Basic Mechanical Materials and Methods section "Piping Specialties."
- 2.6 <u>Basic Supports and Anchors</u>: Provide supports and anchors complying with Division-23 Basic Mechanical Materials and Methods section "Supports and Anchors."
- 2.7 <u>Basic Valves</u>: Provide valves complying with Division-23 Basic Materials and Methods section "Valves" and the following list:
  - A. Standard Service Sectional Valves: Type BA1, BF2.
  - B. Standard Service Shutoff Valves: Type BA1, BF2.
  - C. Standard Service Drain Valves: Type BA1.
  - D. Standard Service Terminal Runout Valves: Type BA1.
- 2.8 <u>Basic Meters and Gauges</u>: Provide meters and gauges complying with Division-23 Basic Mechanical Materials and Methods section "Meters and Gauges", in accordance with the following listing:
  - A. Temperature gauges and fittings.
  - B. Pressure gauges and fittings.
  - C. Access Doors: Provide access doors to service all valves and other devices as required in accordance with Division-23 Basic Materials and Methods Section "Access Doors".

PART 3 - EXECUTION

- 3.1 <u>General</u>: Examine areas and conditions under which hydronic piping systems materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.
- 3.2 Installation of Hydronic Piping:
  - A. General: Install hydronic piping in accordance with Division-23 Basic Mechanical Materials and Methods section "Pipes and Pipe Fittings".
  - B. Install eccentric reducers where pipe is reduced in size in direction of flow, with tops of both pipes and reducer flush. Do not use bushings.
  - C. Install piping with 1/32" per foot (1/4%) upward slope in direction of flow, or as indicated on the drawings. The intent is to install piping sloped to drains at low points in the system for a drainable system.
  - D. Connect branch-feed piping to mains at horizontal center line of mains, connect run-out piping to branches at horizontal center line of branches.
  - E. Locate groups of pipes parallel to each other, spaced to permit applying full insulation and servicing of valves.
  - F. Install piping specialties in accordance with Division-23 Basic Mechanical Materials and Methods section "Piping Specialties".

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates

- G. Install valves in accordance with Division-23 Basic Mechanical Materials and Methods section "Valves".
- 3.3 <u>Sectional Valves</u>: Install on each branch and riser, close to main, where branch or riser serves 2 or more hydronic terminals or equipment connections, and elsewhere as indicated.
- 3.4 <u>Shutoff Valves</u>: Install on inlet and outlet of each mechanical equipment item, and on inlet and outlet of each hydronic terminal, and elsewhere as indicated.
- 3.5 <u>Drain Valves</u>: Install on each mechanical equipment item located to completely drain equipment for service or repair. Install at base of each riser, at base of each rise or drop in piping system, and elsewhere where indicated or required to completely drain hydronic piping system.
- 3.6 Equipment Connections:
  - A. General: Connect hydronic piping system to mechanical equipment as indicated on the drawings, and comply with equipment manufacturer's instructions where not otherwise indicated. Install shutoff valve and union on supply and return and a drain valve on the drain connection.
  - B. Connections between dissimilar metals shall be made with dielectric devices.
- 3.7 <u>Hydronic Terminals</u>: Install hydronic terminals with shutoff valves, unions and related devices as shown on the drawings. Install manual air vent valve on element in accordance with manufacturer's instructions. Locate valves and balancing cocks for ease of maintenance. Where indicated, install automatic temperature control valve with unions on return line between coil and shutoff valve.
  - A. Provide sufficient swing joints, expansion loops and devices necessary for a flexible piping system. Install drain valves at all low points of each system to enable complete drainage, and air vents at all high points in the piping system to enable complete air venting.
  - B. Locate and coordinate installation of access doors for all valves and devices in accordance with Division-23 Basic Mechanical Materials and Methods section "Access Doors".
- 3.8 <u>Testing, Cleaning, Flushing, and Inspecting</u>: Test, clean, flush, and inspect hydronic piping systems in accordance with requirements of Division-23 Basic Mechanical Materials and Methods section "Testing, Cleaning, and Sterilization of Piping Systems."
- 3.9 New piping shall be flushed, cleaned and pre-treated as recommended by Chemtreat the current University of Florida water treatment vendor. Contractor shall purchase the necessary chemicals from Chemtreat, and flushing, cleaning, and pre-treatment shall be witnessed by the Chemtreat representative. Submit test report.

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#### PART 1 - GENERAL

#### 1.1 <u>Related Documents</u>:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- 1.2 <u>Summary</u>:
  - A. This Section specifies piping materials and installation methods common to more than one section of Division 23 and includes joining materials, piping specialties, including drip pans, sleeves, and seals and basic piping installation instructions.
- 1.3 <u>Quality Assurance</u>:
  - A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of piping specialties of types and sizes required, whose products have been in satisfactory use in similar service for not less than five years.
- 1.4 <u>Submittals</u>:
  - A. Product Data: Submit product data on escutcheons, dielectric unions and fittings, and strainers.
  - B. Quality Control Submittals: Submit welders' certificates.
- 1.5 <u>Delivery, Storage, and Handling</u>:
  - A. Provide factory-applied plastic end-caps on each length of pipe and tube, except for concrete, corrugated metal, hub-and-spigot, clay pipe. Maintain end-caps through shipping, storage, and handling to prevent pipe-end damage and prevent entrance of dirt, debris, and moisture.

#### PART 2 - PRODUCTS

- 2.1 <u>Joining Materials</u>:
  - A. Welding Materials: Comply with Section II, Part C, ASME Boiler and Pressure Vessel Code.
  - B. Soldering Materials: Refer to individual piping system specifications for solder appropriate for each respective system.
  - C. Gaskets for Flanged Joints: Gasket material shall be full-faced for cast-iron flanges and raised-face for steel flanges. Select materials which conform to their respective ANSI Standard (A21.11, B16.20, or B16.21).
- 2.2 <u>Piping Specialties</u>:
  - A. Unions: Malleable-iron, Class 150 for low pressure service and Class 250 for high pressure service; hexagonal stock, with ball-and-socket joints, metal-to-metal bronze seating surfaces; female threaded ends.
  - B. Dielectric Waterway Fittings: Acceptable manufacturers include Epco Sales, Inc., and Victaulic Company of America.
  - C. Y-Type Strainers: Provide strainers full line size of connecting piping. Screens shall be Type 304 stainless steel, with 3/64" perforations at 233 per square inch.
    - 1. Provide strainers with 125 psi working pressure rating for low pressure applications, and 250 psi pressure rating for high pressure application.
    - 2. Threaded or Flanged Ends, 2" and Smaller: Cast-iron body, screwed screen retainer with centered blowdown fitted with pipe plug.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **1** of **4** Bid Documents

- 3. Acceptable manufacturers include Armstrong Machine Works, Hoffman Specialty ITT (Fluid handling Div.), Metraflex Corp., R-P & C Valve (Div. White Consolidated Industries Inc.), Spirax Sarco, Victaulic Co., of America, and Watts Regulator Co.
- D. Pipe Sleeves: Provide pipe sleeves of one of the following:
  - 1. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snap-lock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gauges: 3" and smaller, 20 gauge; 4" to 6", 16 gauge; over 6", 14 gauge.
  - 2. Steel Sleeves: Schedule 40 galvanized welded steel pipe, ASTM A53, Grade A.
- E. Fire Barrier Penetration Seals:
  - 1. Cracks, Voids, or Holes up to 4" Diameter: Use putty or caulking, one-piece intumescent elastomer, noncorrosive to metal, compatible with synthetic cable jackets, and capable of expanding ten times when exposed to flame or heat, UL listed.
  - Openings 4" or Greater: Use sealing system capable of passing three-hour fire test in accordance with ASTM E-814, consisting of wall wrap or liner, partitions, and end caps capable of expanding when exposed to temperatures of 250 to 350°F UL listed.
  - 3. Acceptable manufacturers include Electro Products Div./3M, and Nelson (Unit of General Signal).
- F. Drip Pans: Provide drip pans fabricated from corrosion-resistant sheet metal with watertight joints, and with edges turned up 2-1/2". Reinforce top, either by structural angles or by rolling top over 1/4" steel rod. Provide hole, gasket, and flange at low point for watertight joint and 1" drain line connection.
- G. Manual Air Vent: Bronze body and non-ferrous internal parts, 150 psig working pressure, 225°F operating temperature; manually operated with screw driver or thumb screw and having 1/8" discharge connection and a 1/2" inlet connection. Acceptable manufacturers include Armstrong, Bell & Gossett, Hoffman Specialty, and Spirax Sarco.

#### PART 3 - EXECUTION

- 3.1 <u>Preparation</u>:
  - A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe. Remove scale, slag, dirt, and debris both inside and outside of piping and fittings before assembly.
- 3.2 Installations:
  - A. So far as practical, install piping as indicated. Install piping free of sags or bends, tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Provide space to permit insulation applications, with one-inch clearance outside the insulation. Allow sufficient space above removable ceiling panels to allow for panel removal. Locate groups of pipes parallel to each other, spaced to permit applying full insulation and servicing valves.
  - B. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, 3/4" ball valve, and short 3/4" threaded nipple and cap. Hose bibbs will not be used. If low points are created and are not on plans or shop drawings, a drain shall be installed and noted on as-built drawings.

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **2** of **4** Bid Documents

- C. Seal pipe penetrations through exterior walls using sleeves and mechanical sleeve seals. Pipe sleeves smaller than 6" shall be steel; pipe sleeves 6" and larger shall be sheet metal.
- D. Where pipes pass through fire rated walls, partitions, ceilings, or floors, the fire rated integrity shall be maintained.
- E. Fire Barrier Penetration Seals: Provide seals for any opening through fire rated walls, floors, or ceilings used as a passage for mechanical components such as piping or ductwork. Fill entire opening with sealing compound. Adhere to manufacturer's installation instructions.
- F. Install manual air vents at all high points of the piping systems and as indicated on the drawings.

#### 3.3 <u>Fittings and Specialties</u>:

- A. Remake leaking joints using new materials.
- B. Install unions adjacent to each valve, and at the final connection to each piece of equipment and plumbing fixture having 2" and smaller connections, and elsewhere as indicated.
- C. Install flanges in piping 2-1/2" and larger, where indicated, adjacent to each valve, and at the final connection to each piece of equipment.
- D. Install dielectric unions to connect piping materials of dissimilar metals in all piping systems.
- E. Pipe Sleeves: Install steel-pipe sleeves except as otherwise indicated where piping passes through walls, floors, ceilings, and roofs. Do not install sleeves through structural members of work, except as detailed on drawings, or as reviewed by Architect/Engineer. Install sleeves accurately centered on pipe runs. Size sleeves so that piping and insulation (if any) will have free movement in sleeve, including allowance for thermal expansion; but not less than two pipe sizes larger than piping run. Where insulation includes vapor-barrier jacket, provide sleeve with sufficient clearance for installation. Install length of sleeve equal to thickness of construction penetrated, and finish flush to surface; except floor sleeves. Extend floor sleeves 1/4" above level floor finish, and 3/4" above concrete and other work around sleeves, and provide temporary closure to prevent concrete and other materials from entering sleeves.
- F. Drip Pans: Locate drip pans under piping passing over or within three feet horizontally of electrical equipment, and elsewhere as indicated. Hang from structure with rods and building attachments, weld rods to sides of drip pan. Brace to prevent sagging or swaying. Connect 1" drain line to drain connection, and run to nearest plumbing drain or elsewhere as indicated.

#### 3.4 <u>Joints</u>:

- A. Nonferrous Pipe Joints:
  - Brazed and Soldered Joints: For copper tube and fitting joints, braze joints in accordance with ANSI B31.1.0 - Standard Code for Pressure Piping, Power Piping and ANSI B9.1 - Standard Safety Code for Mechanical Refrigeration. Thoroughly clean tube surface and inside surface of the cup of the fittings, using very fine emery cloth, prior to making soldered or brazed joints. Wipe tube and fittings clean and apply flux. Flux shall not be used as the sole means for cleaning tube and fitting surfaces.
- 3.5 <u>Testing</u>:

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **3** of **4** Bid Documents

#### Mitchell Gulledge Engineering, Inc. 23 21 16 HYDRONIC PIPING SPECIALTIES

A. See individual specification sections in which piping specialties are installed for testing procedures for piping systems.

## END OF SECTION

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Mitchell Gulledge Engineering, Inc. MG Project Number: 20009 23 24 00 TESTING, CLEANING, AND STERILIZATION OF PIPING SYSTEMS

PART 1 - GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 This section is a Division-23 Basic Mechanical Materials and Methods section and is part of each Division-23 section making reference to or requiring the testing and other procedures specified herein.
- 1.3 Notify the Architect/Engineer when system tests are ready to be witnessed at least 24 hours prior to the test.
- 1.4 All materials, test equipment, and devices required for cleaning, testing, sterilizing or purging shall be provided by the Contractor.
- PART 2 PRODUCTS
- 2.1 None.
- PART 3 EXECUTION
- 3.1 <u>Pressure Tests</u>:
  - A. General: Provide temporary equipment for testing, including pump and gauges. Test piping systems before insulation is installed wherever feasible and remove control devices before testing. Test each natural section of each piping system independently but do not use piping system valves to isolate sections where test pressure exceeds valve pressure rating. Fill each section with indicated medium and pressurize for indicated pressure and time.
  - B. Required test period is 2 hours.
  - C. No piping, fixtures, or equipment shall be concealed or covered until they have been tested. The contractor shall apply each test and ensure that it is satisfactory for the period specified before calling the Architect/Engineer to observe the test. Test shall be repeated upon request to the satisfaction of those making the inspection.
  - D. Observe each test section for leakage at the end of the test period. Test fails if leakage is observed or if pressure drop exceeds 5% of the test pressure.
  - E. Check of systems during application of test pressures should include visual check for water leakage and soap bubble or similar check for air and nitrogen leakage.
  - F. During heating and cooling cycles, linear expansion shall be checked at all elbows and expansion joints for proper clearance.
  - G. Repair piping systems sections which fail required piping test. Disassemble and reinstall using new materials to extent required to overcome leakage. Do not use chemicals, stop-leak compounds, mastics, or other temporary repair methods.
- 3.2 <u>Pressure Test Requirements</u>:
  - A. Chilled Water: Perform hydrostatic test at 150% of the normal operating pressure, but not less than 150 psig.
- 3.3 <u>Cleaning and Sterilization</u>:
  - A. General: Clean exterior surfaces of installed piping systems of superfluous materials, and prepare for application of specified coatings (if any). Flush out piping systems with clean water or blowdown with air before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items.
  - B. Flush and drain all water systems at least three times. Reverse flush systems from smallest piping to largest piping. Replace startup strainers with operating strainers.
  - C. Cleaning: After completion of all work and operational check out of the HVAC installations and prior to acceptance of the project by the Owner, the following shall be

Dental Building Chilled Water Pipe Replacement Phase II - Floors 7 & 8 with Alternates Page **1** of **2** Bid Documents accomplished. The completed piping systems shall be thoroughly flushed (reversed flushing) and chemically cleaned as needed to remove all dirt, debris, and any foreign matter that may have been trapped in the piping systems during construction. After flushing of systems is complete, the Contractor shall clean all main strainers and all strainers at air handlers, fan coil units, VAV boxes, reheat coils.

- D. A second cleaning of all strainers will be required if requested by the Engineer. Contractor shall furnish and install all valves and piping stub outs in the piping systems as needed to accommodate this flushing operation. Install the valves and stub outs at a location and in a manner that will allow them to remain in place for future flushing operations. The flushing and strainer cleaning operations shall be witnessed and approved by the Engineer and Owner's representative. Refer to sequencing on plans.
- E. Flushing requirements must be coordinated with phasing requirements. Make accommodations to flush all new piping and existing piping as required by the phasing of the work and as outlined on the plans. Refer to sequencing on plans.

# DENTAL SCIENCE CHW PIPE REPLACEMENT PHASE II - FLOOR 7 & 8 WITH ALTERNATES J HILLIS MILLER HEALTH SCIENCE CENTER

# SITE LOCATION MAP



- PROJECT LOCATION

# MP-04946 1395 CENTER DRIVE GAINESVILLE FL 32610



	Sheet List
Sheet Number	Sheet Name
M0.1	MECHANICAL LEGEND, NOTES AND DETAILS
M1.0	MECHANICAL CHW SYSTEM AXONOMETRIC VIEW
M5N.0	MECHANICAL PIPING PLAN - FIFTH FLOOR NORTH
M5N.1	AXONOMETRIC - FIFTH FLOOR NORTH
M5S.0	MECHANICAL PIPING PLAN - FIFTH FLOOR SOUTH
M5S.1	AXONOMETRIC - FIFTH FLOOR SOUTH
M6N.0	MECHANICAL PIPING PLAN - SIXTH FLOOR NORTH
M6N.1	AXONOMETRIC - SIXTH FLOOR NORTH
M6S.0	MECHANICAL PIPING PLAN - SIXTH FLOOR SOUTH
M6S.1	AXONOMETRIC - SIXTH FLOOR SOUTH
M7N.0	MECHANICAL PIPING PLAN - SEVENTH FLOOR NORTH
M7N.1	AXONOMETRIC - SEVENTH FLOOR NORTH
M7S.0	MECHANICAL PIPING PLAN - SEVENTH FLOOR SOUTH
M7S.1	AXONOMETRIC - SEVENTH FLOOR SOUTH
M8N.0	MECHANICAL PIPING PLAN - EIGHT FLOOR NORTH
M8N.1	AXONOMETRIC - EIGHT FLOOR NORTH
M8S.0	MECHANICAL PIPING PLAN - EIGHT FLOOR SOUTH
M8S.1	AXONOMETRIC - EIGHT FLOOR SOUTH

GENERAL PROJECT DESCRIPTION:

REPLACE EXISTING CHILLED WATER PIPING SERVING DENTAL SCIENCE FAN COIL UNITS ON FLOORS 7 & 8 WITH ALTERNATES.

# BID DOCUMENTS AUGUST 25, 2020

Mitchell Gulledge Engineering, Inc. 210 SW 4th Avenue Gainesville, FL 32601 FL License EB-31501 p.352.745.3991 www.mitchellgulledge.com 20009

# MECHANICAL ABBREVIATIONS MECHANICAL LEGEND

AIR CONDITIONING

ABOVE FINISHED FLOOR

BALANCING DAMPER

BELOW FINISHED CEILING

BRAKE HORSE POWER

BRITISH THERMAL UNIT

CUBIC FEET PER MINUTE

DRY BULB OR DECIBELS

DIRECT DIGITAL CONTROL

BOTTOM THROAT

ABSOLUTE

ALUMINUM

AMPERES

ATMOSPHERE

AUTOMATIC

CHILLER

CAST IRON

CLEAN OUT

A/C

ABS

AFF

ALUM

AMPS

AUTO

ΒD

BFC

BHP

BTU

CFM CH

CI

CO

DB

DDC

DIA

DN

EA

EAT

EDB

EWB

EWT

FA

FC

FLA

FO

FPM

FPS

GAL

GALV

GEN GPH GPM HB HP HVAC

> ΗZ IN IN H2O

IN WG

KW

I AT

LDB

LRA

LWB

LWT

NC

NO

OA OOA

PH

PRV

OBD

PSI

ΟZ

ΡE

RA

S/S SA SD

PSIG

RPM

SEC

SQ FT STD

TEMP

ΤG

TSP

TYP UNO

TT

W

W/

W/O WB

WMS

WET BULB

WIRE MESH SCREEN

NTS

MER

FCU

EP

ΒT

ATM

CALIBRATED BALANCING VALVE (CIRCUIT SETTER)

 $\overline{\mathbb{M}}$ TWO WAY CONTROL VALVE

- HH GAUGE CONNECTOR PLUG
- DIELECTRIC WATERWAY
- ECCENTRIC REDUCER
- CONCENTRIC REDUCER

DIAMETER
DOWN
EACH
ENTERING AIR TEMPERATURE
ENTERING DRY BULB TEMPERATURE
ELECTRIC PNEUMATIC
ENTERING WET BUI B TEMPERATURE
ENTERING WATER TEMPERATURE
FAIL COULDNIT
FEET PER SECOND
GALLON
GALVANIZED
GENERATOR
GALLON PER HOUR
GALLON PER MINUTE
HOSE BIB
HORSE POWER
HEATING VENTILATING AND AIR-CONDITIONING
HERTZ
INCHES
INCHES OF WATER
INCHES OF WATER GAUGE
KILOWATTS
LEAVING AIR TEMPERATURE
LEAVING DRY BULB TEMPERATURE
LOCK ROTOR AMPS
LEAVING WET BULB TEMPERATURE
LEAVING WATER TEMPERATURE
MECHANICAL EQUIPMENT ROOM
NORMALLY CLOSED
NORMALLY OPEN
NOT TO SCALE
OUTSIDE AIR
OPERABLE AIR OPENING
PHASE
PRESSURE REDUCING VALVE
OPPOSED BLADE DAMPER
POUNDS PER SQUARE INCH
OUNCE
PNEUMATIC ELECTRIC
POUNDS PER SQUARE INCH GAUGE
RETURN AIR
REVOLUTIONS PER MINUTE
STAINI ESS STEEL
SUPPLY AIR
SPLITTER DAMPER
SECOND
STATIC PRESSURE
SQUARE FOOT
STANDARD
THROAT
TEMPERATURE
TRANSFER GRILLE
TOTAL STATIC PRESSURE
TOP THROAT
TYPICAL
UNLESS NOTED OTHERWISE
VOLTAGE
WIDTH, WEST, WATER
WITH
WITHOUT

# CONNECT TO EXISTING r BALL VALVE

# EXISTING FCU CHW FLOW SCHEDULE

FIFTH FLOOR NORTH					FIFTH FLC	DOR S	OUTH									
TAG	D5-38	D5-36	D5-34	D5-32	D5-31	D5-25	TAG	D5-21	D5-19	D5-17	D5-15	D5-11	D5-9	D5-7	D5-6B	D5-6A
FLOW (GPM)	3	10	10	3	10	10	FLOW (GPM)	3.7	10	10	10	3.7	10	5.7	16	16
NOTE	(1)	(1)	(1)	(1)	(1)	(1)	NOTE	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
SIXTH FLOOR NORTH					SIXTH FL	DOR S	OUTH									
TAG	D6-38	D6-36	D6-34	D6-32	D6-31	D6-25	TAG	D6-21	D6-19	D6-17	D6-15	D6-11	D6-9	D6-7	D6-6B	D6-6A
FLOW (GPM)	3	10	10	3	10	10	FLOW (GPM)	3.7	10	10	10	3.7	10	5.7	16	16
NOTE	(1)	(1)	(1)	(1)	(1)	(1)	NOTE	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
SEVENTH FLOOR NORTH				SEVENTH	FLOC	R SO	JTH									
TAG	D7-49	D7-43	D7-26				TAG	D7-22	D7-21	D7-20	D7-16	D7-10B	D7-10A	D7-9	D7-7	
FLOW (GPM)	3	10	10				FLOW (GPM)	3.7	3	10	13.3	3.7	3	10	16	
NOTE	(1)	(1)	(1)				NOTE	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	
EIGHT FLOOR NORTH EIGHT FLOOR SOUTH																
TAG	D8-33	D8-36	D8-43	D8-46	D8-46A	D8-53	TAG	D8-7A	D8-9	D8-10	D8-12	D8-13	D8-17			
TAG FLOW (GPM)	D8-33	D8-36 3.7	D8-43 10	D8-46 10	D8-46A 3.7	D8-53 3.7	TAG FLOW (GPM)	D8-7A 13.3	D8-9 3.7	D8-10 3	D8-12 3.7	D8-13 3.7	D8-17 3.7			

		1	1						
TAG	D8-33	D8-36	D8-43	D8-46	D8-46A	D			
FLOW (GPM)	10	3.7	10	10	3.7				
NOTE	(1)	(1)	(1)	(1)	(1)				
(1) SIZE AND BALANCE NEW BALANCING VALVE BASED ON SC									

# MECHANICAL GENERAL NOTES

- IN GENERAL, PLANS AND DIAGRAMS ARE SCHEMATIC ONLY AND SHOULD NOT BE 1. SCALED.
- THE INTENT OF THE SPECIFICATIONS AND DRAWINGS IS TO CLARIFY THE SCOPE OF 2. WORK AND ALERT CONTRACTOR OF EXISTING CONDITIONS. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY ALL CLEARANCES BEFORE FABRICATION OF PIPING AND PROVIDE ADDITIONAL OFFSET AND/OR CHANGES IN PIPING SIZES TO MEET FIELD CONDITIONS AND COORDINATE WITH EXISTING CONDITIONS BEFORE START OF CONSTRUCTION WORK.
- SHOULD ANY CONFLICTS ARISE, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF 3. THE CONFLICT BEFORE ANY CHANGES ARE MADE. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL BEFORE PROCEEDING WITH ANY CHANGES.
- ALL WORK COVERED IN THIS SECTION SHALL BE CONSTRUCTED IN ACCORDANCE 4. WITH THE LATEST PUBLISHED STANDARDS OF ASHRAE, NFPA AND UF DESIGN AND CONSTRUCTION STANDARDS.
- PENETRATIONS THROUGH SMOKE OR FIRE-RATED ASSEMBLIES: 5. PENETRATIONS FOR PIPES THROUGH ASSEMBLIES (WALLS, PARTITIONS, ETC.) WITH A REQUIRED FIRE RESISTANCE RATING SHALL BE SEALED TO THE PENETRATING MEMBER IN AN APPROVED MANNER WHICH MAINTAINS THE REQUIRED FIRE RESISTANCE RATING OF THE ASSEMBLY.
- SUBMIT MATERIAL SUBMITTALS FOR PIPING AND PIPING ACCESSORIES. 6.
- 7 CONTRACTOR SHALL ARRANGE TO PAY FOR ALL NECESSARY PERMITS, LICENSES AND INSPECTIONS AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.

(1) CHEDULED FLOWS



# **TEST AND BALANCE PRE-TEST NOTES**

THE TAB CONTRACTOR SHALL SUBMIT A PRETEST REPORT FOR REVIEW AND APPROVAL PRIOR TO COMMENCING ANY NEW WORK WITH DATA OBTAINED IN THE FOLLOWING MANNER:

- OVERRIDE ALL FCU COOLING COIL PNEUMATIC CONTROLS VALVES TO MAXIMUM COOLING SETPOINT. MEASURE CHW FLOW AT EACH FAN COIL UNIT WITH AN ULTRASONIC METER.
- MEASURE AIR INLET AND OUTLET TEMPERATURE.
- MEASURE ROOM SUPPLY AND RETURM AIRFLOW RATE FROM EACH FAN COIL UNIT. PROVIDE FULL SPEC OF EACH FCU AND NOTE ANY SPECIFIC FUNCTIONAL DEFICIENCIES.

FOLLOWING THE NEW CHW PIPING INSTALLATION AND CONNECTION TO THE EXISTING FAN COIL UNITS, THE TAB CONTRACTOR SHALL BALANCE THE EXISTING FCUS TO MATCH THE PRETEST VALUES OR OTHE VALUES PROVIDED BY THE ENGINEER OR OWNER.

# CODES AND STANDARDS

ALL PROJECT WORK SHALL BE GOVERNED BY AND ADHERE TO THE FOLLOWING CODES AND STANDARDS.

- 1. FLORIDA BUILDING CODE SIXTH EDITION (2017)
- FLORIDA BUILDING CODE SIXTH EDITION (2017) MECHANICAL FLORIDA BUILDING CODE - SIXTH EDITION (2017) - EXISTING BUILDING
- FLORIDA BUILDING CODE SIXTH EDITION (2017) ENERGY CONSERVATION
- FLORIDA FIRE PREVENTION CODE SIXTH EDITION (2017) 2. A. FIRE CODE (NFPA 1 - 2015 FLORIDA EDITION)
- B. LIFE SAFETY CODE (NFPA 101 2015 FLORIDA EDITION) UNDERWRITERS' LABORATORIES (UL)
- AMERICAN NATIONAL STANDARDS INSTITUTION (ANSI)
- AMERICAN SOCIETY OF TESTING MATERIALS (ASTM) AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS
- (ASHRAE)
- AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL (AMCA) NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB)
- ASSOCIATED AIR BALANCE COUNCIL (AABC)

# **DESCRIPTION OF THE WORK**

THE WORK CONSISTS GENERALLY OF REPLACEMENT OF THE EXISTING CHILLED WATER PIPING SUPPLY AND RETURN ON EACH FLOOR AS SHOWN ON THE FLOORPLANS WITH NEW PIPING, DEVICES, SUPPORTS, AND INSULATION PER CURRENT UNIVERSITY STANDARDS AND AS DETAILED ON THE DRAWNGS AND SPECIFIED IN THE BOUND PROJECT MANUAL. THE WORK IS INTENDED TO BE PHASED BY THE CONTRACTOR IN A MANNER THAT LIMITS OUTAGES FOR EACH CHILLED WATER FAN COIL UNIT SERVING EACH SPACE TO ONLY PREMIUM TIME HOURS. ALL WORK SHALL BE PERFORMED OUTSIDE OF NORMAL WORKING HOURS TO PREVENT INTERUPTION OF ONGOING OCCUPANT ACTIVITIES. ALL WORK SHALL BE COORDINATED WITH THE DENTAL SCIENCE BUILDING FACILITY MANAGER AND JOBSITE CLEANUP SHALL BEGIN AND END EACH NIGHT ON A ROOM BY ROOM BASIS AS DESIGNATED BY THE DENTAL SCIENCE BUILDING FACILITY MANAGER. DEMOLISH ALL PIPING REMOVED FROM SERVICE. COORDINATE WITH ANY REQUIRED ABATEMENT WORK.

# BASE BID

PROVIDE PHASED WORK AS SHOWN AND DETAILED FOR THE 7TH & 8TH FLOOR.

# ADDITIVE ALTERNATE #1

PROVIDE ADDITIVE ALTERNATE TO INCLUDE PHASED WORK AS SHOWN FOR THE 6TH FLOOR.





R. Craig Gulledge II PE - 69158

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ISSUE: BID DOCUMENTS

ISSUE DATE: AUGUST 25, 2020

> CHECKED BY: RCG

SHEET TITLE: MECHANICAL LEGEND, NOTES AND DÉTAILS SHEET NUMBER:

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M1.0 55















M6N.1 61

1. THIS AXONOMETRIC VIEW SHOWS THE SPACIAL RELATIONSHIP BETWEEN NEW AND EXISTING PIPING.









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M7N.0 64



ITB21DB-120 Chilled Water Pipe Replacement at Dental Science Building Floors 5, 6, 7 & 8



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J HILLIS MILLER HEALTH SCIENCE CENTER 1395 CENTER DRIVE GAINESVILLE FL 32610

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ISSUE DATE: AUGUST 25, 2020

CHECKED BY:

SHEET TITLE: AXONOMETRIC -SEVENTH FLOOR NORTH SHEET NUMBER:

M7N.1 65

RCG

ISSUE:

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1. THIS AXONOMETRIC VIEW SHOWS THE SPACIAL RELATIONSHIP BETWEEN NEW AND EXISTING PIPING.



![](_page_66_Picture_0.jpeg)

![](_page_67_Figure_0.jpeg)

M8N.0 "

![](_page_68_Picture_0.jpeg)

![](_page_68_Picture_2.jpeg)

![](_page_69_Figure_0.jpeg)

ITB21DB-120 Chilled Water Pipe Replacement at Dental Science Building Floors 5, 6, 7 & 8

![](_page_70_Picture_1.jpeg)