

ADDENDUM NO. 1

TO THE
CONSTRUCTION DOCUMENTS
FOR THE CONSTRUCTION OF

**GYMNASIUM MECHANICAL IMPROVEMENTS @ ELIJAH BRIMMER
SCHOOL**

NOLA-PS PROJECT NO. ITB 26-FAC-0110

5624 FRERET ST, NEW ORLEANS, LA 70115

PREPARED BY:

INFINITY ENGINEERING CONSULTANTS, L.L.C.

4001 DIVISION ST.

METAIRIE, LA 70002

INFINITY PROJECT NO. 25-081

8/12/2026



504-304-0548 | www.infinityec.com

Civil | Structural | Mechanical | Electrical | Marine | Transportation

4001 Division St., Metairie, LA 70002-3205

GENERAL

1. The following addendum to the plans and specifications shall be considered a part of the Contract Documents as if originally written and included in same. Where changes in materials or workmanship are made, same shall take precedence over original specifications, however, changes which may affect the proper installation or construction of materials or fixtures not mentioned must be brought to the attention of the Engineer before submitting a bid, otherwise conditions found later to exist must be resolved properly without additional cost.
2. All addenda must be acknowledged on the bid form. Failure to acknowledge any addenda will cause the bid response to be rejected.
3. Please note that all questions must be submitted to Stephen Gholston at sgholston@infinityec.com no later than 2pm on Thursday, August 13, 2026

ATTACHMENTS

1. Sign in sheet and agenda from Pre bid meeting 8-6-2026
2. Post Bid Documents
3. Specification 01 25 00 – Substitution Procedures – section 1.7 has been updated
4. Specification 230593 - Testing, Adjusting, and Balancing for HVAC – has been added

BIDDER QUESTIONS AND ENGINEER RESPONSE

1. Will the new HVAC equipment need to be integrated into the school's BAS?

Yes, BAS integration is part of BASE SCOPE. The new equipment shall be BACnet compatible and will need to be programmed by Synergy. Please include in your bid Synergy's services to run new thermostat wiring between the new units in the Gym and the IT room in the main building. See sheet M1 for details.

2. Are the new ladders part of the BASE SCOPE?

Yes. See Sheet S1 for details.

3. Are the RTUs sitting on existing curbs and we will use adapter curbs?

The new units selected for basis of design are in-kind Trane replacements and should fit on the existing curbs without adapters. It is the responsibility of the contractor to make sure the submitted units fit the existing roof curbs and the contractor shall provide curb adapters if necessary.



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4. The following RTU options are listed in the written specifications: Double wall cabinets, Hot Gas Reheat Coils, 410a refrigerant, Concentric diffusers, and service lights in the units. These items seem questionable, are they required?

Double wall cabinets, Hot Gas Reheat Coils, Concentric diffusers, and service lights in the units are NOT required. R-410a should NOT be used for refrigerant. A modern, code approved refrigerant such as R-454B should be used.

5. TempMaster has been requested for prior approval as a Manufacturer.

TempMaster is an acceptable manufacturer. Please note this prior approval does not replace the submittal for review phase during construction. The contractor is responsible for submitting a unit that meets the dimensions and clearances at the job site and is in full compliance with the construction documents.

6. Will the RTU's and (alternate) exhaust fans be replaced all at one time or some other sequence?

The contractor will be responsible for a schedule and sequence of construction at the beginning of the construction phase and will need to coordinate with the school. The project duration is 120 days.

7. Has anyone investigated if the existing circuits will work on the new packaged RTU equipment? What happens after we identify the existing panel and breakers and discover the existing wire or breaker is sized too small for the new equipment? Sheet 25-081-M2 says to identify the panel and breakers for the RTU's and exhaust fans and make a new panel schedule.

The new RTUs and exhaust fans shall be replaced in kind with new units that have matching power requirements to the existing units. The new RTUs shall be supplied with a factory optioned, unit mounted, fused disconnect switch. Install accessible junction box above ceiling, below RTU. Provide new flexible power cable between new J box and unit mounted disconnect switch. It is the responsibility of the contractor to locate all breaker panels feeding all RTUs, and label circuits and RTUs with matching phenolic tags. It is also the responsibility of the contractor to identify if there are any undersized breakers, panels or circuits. If undersized circuits or panels are discovered, a change order will be issued to have them replaced.

8. Specification 230900-1.07-C under HVAC instrumentation and Controls mentions other related scope of work that falls under electrical. Is any of the scope of work under 230900-1.07-C actually included in

this project? I don't see any plans showing power or controls to control panels, VAV's, VFD's, actuator valves, etc.

The only controls scope is to route and connect communication cable to an already existing controller panel operated by Synergy in the IT room of the main building. There are no VAV's, VFD's or actuator valves being installed on this project.

9. Is there a specific brand of ladder for this project?

There is no specific brand of ladder.

10. Who does the school have a fire alarm contract with?

Convergint

11. There will be an opportunity for one final site visit Friday 8/14 at 9am. Please contact Kendrick Miller – Kendrick_miller@willowschoolnola.org to coordinate.



PREBID MEETING SIGN-IN SHEET

OWNER: NOLA-PS

PROJECT: Gymnasium Mechanical Improvements at @ Elijah Brimmer School

DATE: 8/6/2026

TIME: 10am

LOCATION: 5624 Freret St, New Orleans, LA 70115

Name	Company	Email	Signature
Stephen Gholston	Infinity	sgholston@infinityec.com	
Jimmy Jacobi	ARC Mech	estimating@arcmechanical.net	
Joe Mason	Loums Air	Joe@Joe.Mason@loumsair.com	
Will Berkowitz	Loums Air	Will.Berkowitz@loumsair.com	
Mitchell Lulich	IMC	mitchell@imcnola.com	
Leslie Brooks	MECHANICAL RESOURCES CONT.	leslie@enfrasolutions.com	
Austin Wehrlin	mechanical Resources Cont. Blanchard	austin.wehrlin@enfrasolutions.com	
Benjamin Dees	mechanical	estimating@bmc team.net	
Sara Landuy	ENFRA	sara.landuy@enfrasolutions.com	82
Christina McMahon	ENFRA	Christina.McMahon@ENFRA Solutions.com	
Derek Stewart	Dore Group	dereks@doregroupmep.com	
Dill Stuart	Dore Group	Dill@DORE GROUP MEP.COM	
GREG NARLOCK	ORSB	GNAELOCK@NOLA PUBLIC SCHOOLS.COM	
DEREK M. JAMES	ORSB		
Angela Zaiders	ORSB	azaiders@ndapublicschools.com	
Damian Dupree	AI Electric	dledupree@dalelectco.com	
Kendrick Miller	Willow	kendrick_miller@willowschoolnola.com	



Greater New Orleans Office:
4001 Division St., Metairie, LA 70002

Capital Region Office:
2900 Westfork Dr., Suite 401
Baton Rouge, LA 70827

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Pre Bid Meeting Agenda

Project: Gymnasium Mechanical Improvements at @ Elijah Brimmer School
Owner Project Number ITB 26-FAC-0110
Infinity Project Number 25-081

Location: Elijah Brimmer School, 5624 Freret Street, New Orleans, LA 70115

Date: August 6, 2026

Agenda:

- Introduction – Basic project scope
- Angela Zarders with NOLA PS – Post Bid Documents
- Site Walk
- Questions

NOLA Public Schools

Post-Bid Document Checklist

Project Information

Project: ITB No. 26-FAC-0110 – Gymnasium Mechanical Improvements at Elijah Brimmer School

Bid Opening Date: Thursday, August 20, 2026 @ 2:00 PM CDT

Pre-Bid Conference Date: Thursday, August 6, 2026, 10:00 AM CDT, at Elijah Brimmer School,
5624 Freret Street, New Orleans, LA 70115

All documents are due within 10 calendar days after Notice of Intent to Award.

Submission Rules

- Post-Bid Documents cannot be emailed.
- Hand delivery, U.S. Mail, or Express Mail only.
- NOLA-PS is not responsible for delivery delays or lost mail; late submissions will be deemed non-responsive.

Required Post-Bid Documents

- ☐ Non-Collusion Affidavit
- ☐ Attestation Clause
- ☐ DBE Responsiveness Form 1
- ☐ DBE Responsiveness Form 2
- ☐ DBE Certification Checklist (Notarized)
- ☐ Verification of DBE Certification
(Provide a completed Verification of DBE Certification Form for any DBE firms being claimed.)
- ☐ EDGAR Form

Delivery Address (Hand Delivery or Mail)

Mr. Jonathan Temple
Office of Business Partnerships
NOLA Public Schools
2401 Westbend Parkway, Suite 5055
New Orleans, LA 70114

STATE OF LOUISIANA
PARISH OF _____

PROJECT NO. _____
NAME: _____
LOCATION: _____

AFFIDAVIT

Before me, the undersigned authority, duly commissioned and qualified within and for the State and Parish aforesaid, personally came and appeared _____ (hereinafter "Affiant"), the _____ duly authorized and lawful representative of _____, who, being by me first duly sworn deposed, testified under oath that he has read this Affidavit and does hereby agree to comply with all provisions herein, and affirms under oath as follows:

PART I

Louisiana Revised Statutes, Title 38, Section 2224:

(1) That Affiant employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public Contract between _____ and the Orleans Parish School Board, under which Affiant has or will receive payment, other than persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public Contract were in the regular course of their duties for Affiant; and

(2) That no part of the Contract price received by Affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the Contract, other than the payment of their normal compensation to persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for affiant.

PART II

Louisiana Revised Statutes, Title 38, Section 2190:

That Affiant, if an architect or engineer, or representative thereof, does not own a substantial financial interest, either directly or indirectly, in any corporation, firm, partnership, or other organization which supplies materials for the construction of a public work when the architect or engineer has performed architectural or engineering services, either directly or indirectly, in connection with the public work for which the materials are being supplied.

For the purposes of this section, a "substantial financial interest" shall exclude any interest in stock being traded on the American Stock Exchange or the New York Stock Exchange.

That Affiant, if subject to the provisions of this section, does hereby agree to be subject to the penalties involved for the violation of this section.

SWORN TO AND SUBSCRIBED BEFORE ME
THIS _____ DAY OF _____, 20____.

AFFIANT

NOTARY

Name of Project

Project No.

ATTESTATIONS

Appearer, as a Bidder on the above-entitled Public Works Project, does hereby attest that:

LA. R.S. 38:2227 PAST CRIMINAL CONVICTIONS OF BIDDERS

- A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:

(a) Public bribery (R.S. 14:118)

(c) Extortion (R.S. 14:66)

(b) Corrupt influencing (R.S. 14:120)

(d) Money laundering (R.S. 14:230)

- B. Within the past five years from the project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:

(a) Theft (R.S. 14:67)

(f) Bank fraud (R.S. 14:71.1)

(b) Identity Theft (R.S. 14:67.16)

(g) Forgery (R.S. 14:72)

(c) Theft of a business record
(R.S.14:67.20)

(h) Contractors; misapplication of
payments (R.S. 14:202)

(d) False accounting (R.S. 14:70)

(i) Malfeasance in office (R.S. 14:134)

(e) Issuing worthless checks
(R.S. 14:71)

LA. R.S. 38:2212.10 Verification of Employees

- A. At the time of bidding, Appearer is registered and participates in a status verification system to verify that all new hires in the state of Louisiana are legal citizens of the United States or are legal aliens.
- B. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.
- C. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

NAME OF BIDDER

NAME OF AUTHORIZED SIGNATORY OF BIDDER

DATE

TITLE OF AUTHORIZED SIGNATORY OF BIDDER

**SIGNATURE OF AUTHORIZED
SIGNATORY OF BIDDER**



Orleans Parish School Board Disadvantaged Business Enterprise Program (DBE)

DBE RESPONSIVENESS FORM 1

RFP/RFQ/Bid/Solicitation/Other # _____ Bidder/Proposer: _____

Project Name & Description: _____

FOR BIDS: THIS COMPLETED FORM SHOULD BE FURNISHED TO THE OFFICE OF PROCUREMENT BY THE LOWEST PROPOSER WITHIN TEN (10) DAYS OF THE BID OPENING. FAILURE TO COMPLETE THIS FORM PROPERLY MAY CONSTITUTE THE BID/OFFER AS BEING NON-RESPONSIVE AND SUFFICIENT CAUSE FOR REJECTION.

FOR RFPS/RFQS: THIS COMPLETED FORM SHOULD BE FURNISHED TO THE OPSB-DBE OFFICE THROUGH THE OFFICE OF PROCUREMENT WITH YOUR PROPOSAL. FAILURE TO COMPLETE THIS FORM PROPERLY MAY CONSTITUTE THE PROPOSAL/OFFER AS BEING NON-RESPONSIVE AND SUFFICIENT CAUSE FOR REJECTION.

The undersigned Bidder/Proposer has satisfied the requirements of the bid/proposal specifications for the above-referenced Orleans Parish School Board project in the following manner.

Please check the appropriate space:

☐ The Bidder/Proposer is **committed to achieving and/or exceeding** the DBE target goal of **35** % DBE utilization on this contract, and will require all Subcontractors to assist the Prime Contractor to maintain 35% DBE participation before this project is substantially complete.

☐ The Bidder/Proposer is **unable to meet** the DBE target goal, but is committing to a minimum of _____ % DBE utilization by pre-construction phase or notice-to-proceed, and will require all Subcontractors to assist in achieving 35% DBE participation, before this project is substantially complete.

Name of Bidder's/Proposer's Firm: _____

Telephone: _____ Fax: _____ E-Mail: _____

By: _____, _____ / _____ / _____
(Authorized Signature) (Title) (Date)

THE BIDDER/PROPOSER IS COMMITTED TO UTILIZING DBE PARTICIPATION ON THE PROJECT IN THE FOLLOWING MANNER:

COMPLETED BY PROPOSER:

The Bidder/Proposer is committed to utilizing the **DBE FIRM NAMED BELOW** for the *Scope(s) of Work* as described below. The estimated dollar value of the scope of work is \$ _____ and _____ % of the total dollar value of the contract.

Copy this form, if you are utilizing more than one (1) DBE firm to achieve the DBE participation percentage on the project.

Name of DBE Firm: _____

DBE Firm Owner or Contact: _____

Telephone: _____ Fax: _____ E-Mail: _____

DBE TYPE: ☐ SLD BE CERTIFIED ☐ LAUCP DBE CERTIFIED

☐ Copy of Verification of DBE Certification form is attached

COMPLETED BY DBE FIRM (below):

DBE AFFIRMATION. The above-named DBE firm affirms that it will perform the scope(s) of work on this contract for the estimated dollar value and contract percentage as stated above.

By: _____, _____ / _____ / _____
(Authorized Signature) (Title) (Date)

Note: If the Bidder/Proposer does not receive award of the prime contract, then any and all representations in this form shall be null and void.



DBE RESPONSIVENESS FORM 2

SUBCONTRACTING STRATEGY FOR DBE PARTICIPATION

Business Name: _____ Project Name/Number: _____

Business Contact Information: _____
(Phone, Fax, E-Mail and Address:) _____

Provide a strategy to identify specific subcontracts that will be awarded to DBEs and anticipated DBE participation for project. This Plan shall incorporate actions to be taken by the Bidder's/Proposer's proposed DBE Subcontractors/Consultants/Suppliers.

Bidders: Must submit form within 10 days after Bid-Date. Provide attachments if necessary.

DBE Vendor	Scope of Work Construction Division(s) Materials	Contract Value	Percent of Prime Contract

NOTE: If the Bidder/Proposer does not receive award of the prime contract, then all representations in this form shall be null and void.

Representative's Name: _____ Title: _____ Date: _____

Signature: _____

(Authorized Signature)



ORLEANS PARISH SCHOOL BOARD

Month of: _____
Year: 20_____
Correlates with Bid # _____

DBE POST-BID | PRE-CONSTRUCTION COMPLIANCE CERTIFICATION CHECKLIST

(Note: Form must be submitted with one or more of the supporting documents identified and initialed below. Failure to submit completed certification constitutes non-responsiveness and cause for ejection.)

Business Name: _____

Bidder's Name & No.: _____

If Subcontractor, Name of Business Performing Work Under: _____

Business Principal Contact Information: _____

(Print Name, Phone, E-Mail, and Physical Address)

I _____ hereby certify that,
(Print Name & Title of Company Representative)

_____ has complied with all Disadvantaged Business
(Print Business Name)

Enterprise, Equal Employment Opportunity, and Affirmative Action Front End Provisions set forth in the OSPB DBE Policy and with all of the provisions of Federal Executive Order 11246, as amended, including implementing and related rules, regulations and relevant orders of the U.S. Secretary of Labor. I also certify that all information contained in *Supporting Documents is true and correct.

Signature: _____
(Authorized Signature)

Date: _____

*Supporting Documents Attached:

- ☐ DBE Responsiveness Form 1 _____ (Initial)
- ☐ DBE Responsiveness Form 2 _____ (Initial)
- ☐ DBE Pre-Construction Report 1 _____ (Initial)
- ☐ DBE Pre-Construction Report 2 _____ (Initial)
- ☐ DBE Pre-Construction Report 3 _____ (initial)
- ☐ Verification of DBE Certification _____ (initial)

STATE OF LOUISIANA, ORLEANS PARISH IN WITNESS
WHEREOF, I have hereunto set my hand and official seal
this _____ Day of _____, 20 ____.

Notary Public, State of Louisiana

My Commission Expires _____



Orleans Parish School Board Disadvantaged Business Enterprise Program (DBE)

VERIFICATION OF DBE CERTIFICATION

Solicitation #: _____

Title of Solicitation: _____

Bidder/Proposer: _____

DBE Firm: _____

INSTRUCTIONS: The Office of Business Partnerships request verification of DBE Certification status related to this specific solicitation. The Bidder/Proposer is responsible for obtaining this information, from the identified DBE firm(s), and shall submit according to the instructions of the solicitation. If the status of the DBE firm submitted cannot be verified by a DBE Certification Agency, the bid shall be rejected for just cause. Also, failure to complete this form properly shall result in the bid/proposal being deemed non-responsive, and cause of rejection.

Name of DBE Firm: _____

DBE Firm Owner or Contact: _____

Telephone: _____

E-Mail: _____

Scope of service(s): _____

NAICS Code(s): _____

Name of DBE Certification Agency: _____

COMPLETED BY DBE FIRM (below):

AFFIRMATION. By signing below, the named DBE firm authorizes OPSB – Office of Business Partnerships to contact the certifying agency identified above to verify current DBE certification status, related eligibility information (including active/inactive status, approved NAICS Codes and work categories). The DBE attests that the information provided on this form is true and accurate. The DBE firm acknowledges and is in agreement that if OPSB cannot verify DBE Certification status by contacting the certifying agency, the bid/proposal shall be rejected for just cause.

By: _____, _____ / ____ / ____
(Authorized Signature) (Title) (Date)

Email Address: _____

Contact Number: _____

OPSB VERIFICATION (INTERNAL):

- ☐ DBE Certification Status verified as ACTIVE for this procurement
- ☐ DBE Certification Status could not be confirmed; bid/proposal is rejected for just cause.

OPSB Officer: _____

Title: _____

Signature: _____

Date: _____

Orleans Parish School Board

Federal Compliance Provisions

In accordance with §200.0 – 200.521 of the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (sometimes referred to as the new “EDGAR”), this Addendum ("Addendum") is proof of the vendor’s willingness and ability to comply with certain requirements which may be applicable to specific OPSB purchases using federal grant funds. It amends and is hereby incorporated into an existing agreement between the parties. Vendor agrees to comply with all federal, state, and local laws, rules, regulations and ordinances, as applicable. It is further acknowledged that vendor certifies compliance with all provisions, laws, acts, regulations, etc. as specifically noted above.

Name and Title of Authorized Representative: _____

Signature of Authorized Representative: _____

Email Address: Date: _____

Company Name: _____

Address, City, State, and Zip Code: _____

Phone Number: _____ Fax Number: _____

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including the General Conditions and other Division 01 Specification Sections, apply to this Section.
- B. This Section shall complement and expand the requirements of the General Conditions and other Division 00 Sections. If anything in this Section conflicts with the requirements of the General Conditions, such requirements shall take precedence over the requirements of this Section. If anything in this Section conflicts with the requirements of other Division 01 sections, the most stringent requirements shall take precedence.

1.2 SUMMARY

- A. Section Includes: Administrative and procedural requirements for substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- B. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms. Substitutions for Cause are not allowed after the bid opening without approval for the Owner. The Owner will have authority in all instances.
- C. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit each request for consideration in PDF format by email to the Architect. Identify product, fabrication, or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
- B. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - 1. Statement indicating why specified product, fabrication or installation cannot be provided, if applicable.
 - 2. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be

necessary to accommodate proposed substitution.

3. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the product or Work specified.
 4. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 5. Samples, where applicable or requested.
 6. Certificates and qualification data, where applicable or requested.
 7. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 8. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 9. Research reports evidencing compliance with building code in effect for Project, from ICCES if applicable.
 10. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 11. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 12. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- C. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven (7) calendar days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen (15) calendar days of receipt of request, or within seven (7) days of receipt of additional information or documentation, whichever is later.
1. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
 2. If Architect does not issue a decision on use of a proposed substitution within time allocated, use specified product, fabrication, or installation.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 COORDINATION

- A. Request approval of Architect to revise or adjust affected work necessary to integrate work of the approved substitutions at no additional cost to the Owner.

1.7 SUBSTITUTIONS

- A. Substitutions for Cause: Substitutions for Cause are not allowed after the bid opening without approval by the Owner. The Owner will have authority in all instances. Submit requests for substitution immediately on discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution only when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution provides sustainable design characteristics that specified product provided for achieving LEED prerequisites and credits.
 - c. Substitution request is fully documented and properly submitted.
 - d. Requested substitution will not adversely affect Contractor's construction schedule.
 - e. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - f. Requested substitution is compatible with other portions of the Work.
 - g. Requested substitution has been coordinated with other portions of the Work.
 - h. Requested substitution provides specified warranty.
 - i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Request for Prior Approval before the Bid Opening does not replace the submittal for review phase during construction. The contractor is responsible for submitting a unit that meets the dimensions and clearances at the job site and is in full compliance with the construction documents.

- C. Substitutions for Convenience: Not allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

Gymnasium Mechanical Improvements at Elijah
Brimmer School
IEC Project No. 25-081
OPSB Project No. ITB26-FAC-0110

Orleans Parish School Board
New Orleans, LA 70115

END OF SECTION 01 25 00

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Testing, Adjusting, and Balancing of Air Systems:
 - a. Constant-volume air systems.
 - 2. Testing, adjusting, and balancing of equipment.
 - 3. Duct leakage tests verification.
 - 4. HVAC-control system verification.

1.2 DEFINITIONS

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

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: Within 30 days of Contractor's Notice to Proceed, submit documentation that the TAB specialist and this Project's TAB team members meet the qualifications specified in "Quality Assurance" Article.
- B. Contract Documents Examination Report: Within 30 days of Contractor's Notice to Proceed, submit the Contract Documents review report, as specified in Part 3.
- C. Strategies and Procedures Plan: Within 30 days of Contractor's Notice to Proceed, submit TAB strategies and step-by-step procedures, as specified in "Preparation" Article.

- D. System Readiness Checklists: Within 30 days of Contractor's Notice to Proceed, submit system readiness checklists, as specified in "Preparation" Article.
- E. Examination Report: Submit a summary report of the examination review required in "Examination" Article.
- F. Certified TAB reports.
- G. Sample report forms.
- H. Instrument calibration reports, to include the following:
 - 1. Instrument type and make.
 - 2. Serial number.
 - 3. Application.
 - 4. Dates of use.
 - 5. Dates of calibration.

1.4 QUALITY ASSURANCE

- A. TAB Specialists Qualifications, Certified by AABC:
 - 1. TAB Field Supervisor: Employee of the TAB specialist and certified by AABC.
 - 2. TAB Technician: Employee of the TAB specialist and certified by AABC.
- B. TAB Specialists Qualifications, Certified by NEBB or TABB:
 - 1. TAB Field Supervisor: Employee of the TAB specialist and certified by NEBB or TABB.
 - 2. TAB Technician: Employee of the TAB specialist and certified by NEBB or TABB.
- C. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."
- D. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6.7.2.3 - "System Balancing."
- E. Code and AHJ Compliance: TAB is required to comply with governing codes and requirements of authorities having jurisdiction.

1.5 FIELD CONDITIONS

- A. Partial Owner Occupancy: Owner may occupy completed areas of building before Substantial Completion. Cooperate with Owner during TAB operations to minimize conflicts with Owner's operations.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.
- B. Examine installed systems for balancing devices, such as test ports, gauge cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.
- C. Examine the approved submittals for HVAC systems and equipment.
- D. Examine design data, including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.
- E. Examine ceiling plenums and underfloor air plenums used for HVAC to verify that they are properly separated from adjacent areas and sealed.
- F. Examine equipment performance data, including fan and pump curves.
 - 1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
 - 2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.
- G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.
- H. Examine test reports specified in individual system and equipment Sections.

- I. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.
- J. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
- K. Examine operating safety interlocks and controls on HVAC equipment.
- L. Examine control dampers for proper installation for their intended function of isolating, throttling, diverting, or mixing air flows.
- M. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

- A. Prepare a TAB plan that includes the following:
 - 1. Equipment and systems to be tested.
 - 2. Strategies and step-by-step procedures for balancing the systems.
 - 3. Instrumentation to be used.
 - 4. Sample forms with specific identification for all equipment.
- B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:
 - 1. Airside:
 - a. Verify that leakage and pressure tests on air distribution systems have been satisfactorily completed.
 - b. Duct systems are complete with terminals installed.
 - c. Volume, smoke, and fire dampers are open and functional.
 - d. Clean filters are installed.
 - e. Fans are operating, free of vibration, and rotating in correct direction.
 - f. Automatic temperature-control systems are operational.
 - g. Ceilings are installed.
 - h. Windows and doors are installed.

- i. Suitable access to balancing devices and equipment is provided.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

- A. Perform testing and balancing procedures on each system in accordance with the procedures contained in AABC's "National Standards for Total System Balance" or NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and in this Section.
- B. Cut insulation, ducts, pipes, and equipment casings for installation of test probes to the minimum extent necessary for TAB procedures.
 1. After testing and balancing, patch probe holes in ducts with same material and thickness as used to construct ducts.
 2. After testing and balancing, install test ports and duct access doors that comply with requirements in Section 233300 "Air Duct Accessories."
 3. Where holes for probes are required in piping or hydronic equipment, install pressure and temperature test plugs to seal systems.
 4. Install and join new insulation that matches removed materials. Restore insulation, coverings, and vapor barrier.
- C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.
- D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 TESTING, ADJUSTING, AND BALANCING OF HVAC EQUIPMENT

- A. Test, adjust, and balance HVAC equipment indicated on Drawings, including, but not limited to, the following:
 1. Fans and ventilators.
 2. Condensers.
 3. Air-handling units.
 4. Heating and ventilating units.
 5. Split-system air conditioners.
 6. Heat pumps.
 7. Fan coil units.

3.5 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

- A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Crosscheck the summation of required outlet volumes with required fan volumes.
- B. Prepare schematic diagrams of systems' Record drawings duct layouts.
- C. For variable-air-volume systems, develop a plan to simulate diversity.
- D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.
- E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.
- F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
- G. Verify that motor starters are equipped with properly sized thermal protection.
- H. Check dampers for proper position to achieve desired airflow path.
- I. Check for airflow blockages.
- J. Check condensate drains for proper connections and functioning.
- K. Check for proper sealing of air-handling-unit components.

3.6 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

- A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.
 - 1. Measure total airflow.
 - a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
 - b. Where duct conditions allow, measure airflow by main Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses close to the fan and prior to any outlets, to obtain total airflow.
 - c. Where duct conditions are unsuitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
 - 2. Measure fan static pressures as follows:

- a. Measure static pressure directly at the fan outlet or through the flexible connection.
 - b. Measure static pressure directly at the fan inlet or through the flexible connection.
 - c. Measure static pressure across each component that makes up the air-handling system.
 - d. Report artificial loading of filters at the time static pressures are measured.
 3. Review Contractor-prepared shop drawings and Record drawings to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
 4. Obtain approval from Engineer for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
 5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.
- B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.
1. Measure airflow of submain and branch ducts.
 2. Adjust submain and branch duct volume dampers for specified airflow.
 3. Re-measure each submain and branch duct after all have been adjusted.
- C. Adjust air inlets and outlets for each space to indicated airflows.
1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
 2. Measure inlets and outlets airflow.
 3. Adjust each inlet and outlet for specified airflow.
 4. Re-measure each inlet and outlet after they have been adjusted.
- D. Verify final system conditions.

1. Re-measure and confirm that minimum outdoor, return, and relief airflows are within design. Readjust to design if necessary.
2. Re-measure and confirm that total airflow is within design.
3. Re-measure all final fan operating data, speed, volts, amps, and static profile.
4. Mark all final settings.
5. Test system in economizer mode. Verify proper operation and adjust if necessary.
6. Measure and record all operating data.
7. Record final fan-performance data.

3.7 PROCEDURES FOR AIR-COOLED CONDENSING UNITS

- A. Verify proper rotation of fan(s).
- B. Measure and record entering- and leaving-air temperatures.
- C. Measure and record entering and leaving refrigerant pressures.
- D. Measure and record operating data of compressor(s), fan(s), and motors.

3.8 PROCEDURES FOR AIR-COOLED CONDENSERS

- A. Verify proper rotation of fan(s).
- B. Measure and record entering- and leaving-air temperatures.
- C. Measure and record entering and leaving refrigerant pressures.
- D. Measure and record operating data of fan(s) and motor(s).

3.9 PROCEDURES FOR HEAT-TRANSFER COILS

- A. Measure, adjust, and record the following data for each electric heating coil:
 1. Nameplate data.
 2. Airflow.
 3. Entering- and leaving-air temperature at full load.
 4. Air pressure drop.
 5. Voltage and amperage input of each phase at full load.

6. Calculated kilowatt at full load.
7. Fuse or circuit-breaker rating for overload protection.

B. Measure, adjust, and record the following data for each refrigerant coil:

1. Dry-bulb temperature of entering and leaving air.
2. Wet-bulb temperature of entering and leaving air.
3. Airflow.
4. Air pressure drop.
5. Entering and leaving refrigerant pressure and temperatures.

3.10 DUCT LEAKAGE TESTS

- A. Witness the duct leakage testing performed by Installer.
- B. Verify that proper test methods are used and that leakage rates are within specified limits.
- C. Report deficiencies observed.

3.11 PIPE LEAKAGE TESTS

- A. Witness the pipe pressure testing performed by Installer.
- B. Verify that proper test methods are used and that leakage rates are within specified limits.
- C. Report deficiencies observed.

3.12 HVAC CONTROLS VERIFICATION

- A. In conjunction with system balancing, perform the following:
 1. Verify HVAC control system is operating within the design limitations.
 2. Confirm that the sequences of operation are in compliance with Contract Documents.
 3. Verify that controllers are calibrated and function as intended.
 4. Verify that controller set points are as indicated.
 5. Verify the operation of lockout or interlock systems.
 6. Verify the operation of valve and damper actuators.

7. Verify that controlled devices are properly installed and connected to correct controller.
 8. Verify that controlled devices travel freely and are in position indicated by controller: open, closed, or modulating.
 9. Verify location and installation of sensors to ensure that they sense only intended temperature, humidity, or pressure.
- B. Reporting: Include a summary of verifications performed, remaining deficiencies, and variations from indicated conditions.

3.13 TOLERANCES

- A. Set HVAC system's airflow rates and water flow rates within the following tolerances:
1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent. If design value is less than 100 cfm, within 10 cfm.
 2. Air Outlets and Inlets: Plus or minus 10 percent. If design value is less than 100 cfm, within 10 cfm.
- B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

3.14 PROGRESS REPORTING

- A. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article, prepare a report on the adequacy of design for system-balancing devices. Recommend changes and additions to system-balancing devices, to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance-measuring and -balancing devices.
- B. Status Reports: Prepare weekly progress reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced. Prepare a separate report for each system and each building floor for systems serving multiple floors.

3.15 FINAL REPORT

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

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
 2. Include a list of instruments used for procedures, along with proof of calibration.
 3. Certify validity and accuracy of field data.
- B. Final Report Contents: In addition to certified field-report data, include the following:
1. Fan curves.
 2. Manufacturers' test data.
 3. Field test reports prepared by system and equipment installers.
 4. Other information relative to equipment performance; do not include Shop Drawings and Product Data.
- C. General Report Data: In addition to form titles and entries, include the following data:
1. Title page.
 2. Name and address of the TAB specialist.
 3. Project name.
 4. Project location.
 5. Architect's name and address.
 6. Engineer's name and address.
 7. Contractor's name and address.
 8. Report date.
 9. Signature of TAB supervisor who certifies the report.
 10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
 11. Summary of contents, including the following:
 - a. Indicated versus final performance.
 - b. Notable characteristics of systems.

- c. Description of system operation sequence if it varies from the Contract Documents.
- 12. Nomenclature sheets for each item of equipment.
- 13. Data for terminal units, including manufacturer's name, type, size, and fittings.
- 14. Notes to explain why certain final data in the body of reports vary from indicated values.
- 15. Test conditions for fans performance forms, including the following:
 - a. Settings for outdoor-, return-, and exhaust-air dampers.
 - b. Conditions of filters.
 - c. Cooling coil, wet- and dry-bulb conditions.
 - d. Heating coil, dry-bulb conditions.
 - e. Face and bypass damper settings at coils.
 - f. Fan drive settings, including settings and percentage of maximum pitch diameter.
 - g. Settings for pressure controller(s).
 - h. Other system operating conditions that affect performance.
- 16. Test conditions for pump performance forms, including the following:
 - a. Variable-frequency controller settings for variable-flow hydronic systems.
 - b. Settings for pressure controller(s).
 - c. Other system operating conditions that affect performance.
- D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:
 - 1. Quantities of outdoor, supply, return, and exhaust airflows.
 - 2. Condensate flow rates.
 - 3. Duct, outlet, and inlet sizes.
 - 4. Pipe and valve sizes and locations.
 - 5. Terminal units.

- E. Air-Handling-Unit Test Reports: For air-handling units, include the following:
1. Unit Data:
 - a. Unit identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and unit size.
 - e. Manufacturer's serial number.
 - f. Unit arrangement and class.
 - g. Discharge arrangement.
 - h. Sheave make, size in inches, and bore.
 - i. Center-to-center dimensions of sheave and amount of adjustments in inches.
 - j. Number, make, and size of belts.
 - k. Number, type, and size of filters.
 2. Motor Data:
 - a. Motor make, and frame type and size.
 - b. Horsepower and speed.
 - c. Volts, phase, and hertz.
 - d. Full-load amperage and service factor.
 - e. Sheave make, size in inches, and bore.
 - f. Center-to-center dimensions of sheave and amount of adjustments in inches.
 3. Test Data (Indicated and Actual Values):
 - a. Total airflow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan speed.

- d. Inlet and discharge static pressure in inches wg.
- e. For each filter bank, filter static-pressure differential in inches wg.
- f. Preheat-coil static-pressure differential in inches wg.
- g. Cooling-coil static-pressure differential in inches wg.
- h. Heating-coil static-pressure differential in inches wg.
- i. List for each internal component with pressure-drop, static-pressure differential in inches wg.
- j. Outdoor airflow in cfm.
- k. Return airflow in cfm.
- l. Outdoor-air damper position.
- m. Return-air damper position.

F. Apparatus-Coil Test Reports:

- 1. Coil Data:
 - a. System identification.
 - b. Location.
 - c. Coil type.
 - d. Number of rows.
 - e. Fin spacing in fins per inch o.c.
 - f. Make and model number.
 - g. Face area in sq. ft..
 - h. Tube size in NPS.
 - i. Tube and fin materials.
 - j. Circuiting arrangement.
- 2. Test Data (Indicated and Actual Values):

- a. Airflow rate in cfm.
- b. Average face velocity in fpm.
- c. Air pressure drop in inches wg.
- d. Outdoor-air, wet- and dry-bulb temperatures in deg F.
- e. Return-air, wet- and dry-bulb temperatures in deg F.
- f. Entering-air, wet- and dry-bulb temperatures in deg F.
- g. Leaving-air, wet- and dry-bulb temperatures in deg F.
- h. Water flow rate in gpm.
- i. Water pressure differential in feet of head or psig.
- j. Entering-water temperature in deg F.
- k. Leaving-water temperature in deg F.
- l. Refrigerant expansion valve and refrigerant types.
- m. Refrigerant suction pressure in psig.
- n. Refrigerant suction temperature in deg F.
- o. Inlet steam pressure in psig.

G. Fan Test Reports: For supply, return, and exhaust fans, include the following:

- 1. Fan Data:
 - a. System identification.
 - b. Location.
 - c. Make and type.
 - d. Model number and size.
 - e. Manufacturer's serial number.
 - f. Arrangement and class.
 - g. Sheave make, size in inches, and bore.

- h. Center-to-center dimensions of sheave and amount of adjustments in inches.
 - 2. Test Data (Indicated and Actual Values):
 - a. Total airflow rate in cfm.
 - b. Total system static pressure in inches wg.
 - c. Fan speed.
 - d. Discharge static pressure in inches wg.
 - e. Suction static pressure in inches wg.
- H. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:
 - 1. Report Data:
 - a. System fan and air-handling-unit number.
 - b. Location and zone.
 - c. Traverse air temperature in deg F.
 - d. Duct static pressure in inches wg.
 - e. Duct size in inches.
 - f. Duct area in sq. ft..
 - g. Indicated airflow rate in cfm.
 - h. Indicated velocity in fpm.
 - i. Actual airflow rate in cfm.
 - j. Actual average velocity in fpm.
 - k. Barometric pressure in psig.
- I. Instrument Calibration Reports:
 - 1. Report Data:
 - a. Instrument type and make.
 - b. Serial number.

- c. Application.
- d. Dates of use.
- e. Dates of calibration.

3.16 VERIFICATION OF TAB REPORT

- A. The TAB specialist's test and balance engineer shall conduct the inspection in the presence of Owner.
- B. Engineer shall randomly select measurements, documented in the final report, to be re-checked. Rechecking shall be limited to the lesser of either 10 percent of the total measurements recorded or the extent of measurements that can be accomplished in a normal 8-hour business day.
- C. If rechecks yield measurements that differ from the measurements documented in the final report by more than the tolerances allowed, the measurements shall be noted as "FAILED."
- D. If the number of "FAILED" measurements is greater than 10 percent of the total measurements checked during the final inspection, the TAB shall be considered incomplete and shall be rejected.
- E. If recheck measurements find the number of failed measurements noncompliant with requirements indicated, proceed as follows:
 - 1. TAB specialists shall recheck all measurements and make adjustments. Revise the final report and balancing device settings to include all changes; resubmit the final report and request a second final inspection. All changes shall be tracked to show changes made to previous report.
 - 2. If the second final inspection also fails, Owner may pursue others Contract options to complete TAB work.
- F. Prepare test and inspection reports.

3.17 ADDITIONAL TESTS

- A. Within 90 days of completing TAB, perform additional TAB to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
- B. Seasonal Periods: If initial TAB procedures were not performed during near-peak summer and winter conditions, perform additional TAB during near-peak summer and winter conditions.

END OF SECTION 230593