

**University of South Carolina Beaufort**

**Hilton Head Gateway Campus**

**Bluffton, SC**

**USC BEAUFORT HVAC TERMINAL UNIT REPLACEMENT AND HVAC  
SYSTEM MODIFICATIONS**

**PROJECT NUMBER: CP00375556**

**January 15, 2015**

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Project Number: CP00375556

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# SE-311 Invitation for Minor Construction Quotes

## SCBO NOTES 2, 4 and 5 APPLY TO THIS INVITATION FOR QUOTES

PROJECT NAME: USC Beaufort, Bluffton Campus, HVAC Terminal Unit Replacement and Modifications

PROJECT NUMBER: CP00375556 PROJECT LOCATION: USC Beaufort, Bluffton, SC Campus

BID SECURITY REQUIRED? Yes  No

PERFORMANCE BOND REQUIRED? Yes  No

PAYMENT BOND REQUIRED? Yes  No  CONSTRUCTION COST RANGE: \$15,000 - \$25,000

**DESCRIPTION OF PROJECT:**

Remove and replace one existing above the ceiling HVAC terminal unit and remove and replace re-designed ductwork at a second terminal unit on the first floor of the Hargray Building on the Hilton Head Gateway Campus in Bluffton, South Carolina. Small and Minority Business Enterprise participation is strongly encouraged.

A/E NAME: Essex Corporation A/E CONTACT: Dwight Jones  
ADDRESS: 4661 Hard Scrabble Road, Suite 109-364 PHONE: 803-873-9910 Fax: 404-365-8163  
CITY: Columbia STATE: SC ZIP: 29229 E-MAIL: djones@essexco.com

PLANS ON FILE AT: AGC: \_\_\_\_\_  
DODGE: Facilities Center  
OTHER: \_\_\_\_\_

PLANS MAY BE OBTAINED FROM: http://purchasing.sc.edu (See Facilities Construction Solicitations & Awards)

PLAN DEPOSIT AMOUNT: \$0.00 IS DEPOSIT REFUNDABLE? Yes  No

PRE-QUOTE CONFERENCE?  Yes  No MANDATORY ATTENDANCE?  Yes  No

DATE: 2/10/2015 TIME: 10 am PLACE: One University Boulevard, Bluffton, SC

AGENCY: University of South Carolina

NAME AND TITLE OF AGENCY COORDINATOR: Aimee Rish, Procurement Specialist

ADDRESS: 743 Greene Street PHONE: 803.777.2261 Fax: 803.777.7334

CITY: Columbia STATE: SC ZIP: 29208 E-MAIL: arish@fmc.sc.edu

IFQ CLOSING DATE: 2/17/15 TIME: 1pm LOCATION: 743 Greene St. Cola 29208 Rm 053

IFQ DELIVERY ADDRESSES:

HAND-DELIVERY:

See Mail

MAIL SERVICE:

ATTN: Aimee Rish  
University of South Carolina/Bid Enclosed  
743 Greene Street, Columbia SC 29208

IS PROJECT WITHIN AGENCY CONSTRUCTION CERTIFICATION? (Agency MUST check one)  YES  NO

APPROVED BY: \_\_\_\_\_ (State Engineer) \_\_\_\_\_ (Date)

**SE-331**  
**Quote Form**

2011 Edition

*Quotes shall be submitted only on SE-331*

QUOTE SUBMITTED BY: \_\_\_\_\_  
(Offeror's Name)

QUOTE SUBMITTED TO: University of South Carolina  
(Agency Name)

FOR PROJECT: CP00375556 USCB, Bluffton Campus, HVAC Modifications  
(Number) (Name)

**OFFER**

1. In response to the Form SE-311, *Request for Minor Construction Quotes*, and in compliance with the *Instructions to Bidders* for the above-named Project, the undersigned **OFFEROR** proposes and agrees, if this Quote is accepted, to enter into a Contract with the **AGENCY** in the form included in the Solicitation Documents, and to perform all Work as specified or indicated in the Solicitation Documents, for the prices and within the time frames indicated in the Solicitation and in accordance with the other terms and conditions stated.

2. Pursuant to Section 11-32-3030(1) of the SC Code of Laws, as amended, **OFFEROR** has submitted Bid Security as follows in the amount and form required by the Solicitation Documents:

Bid Bond with Power of Attorney     Electronic Bid Bond     Cashier's Check  
(OFFEROR check one, if Bid Security is required)

3. **OFFEROR** acknowledges the receipt of the following Addenda to the Solicitation documents and has incorporated the effects of said Addenda into its Quote:

ADDENDUM No: \_\_\_\_\_

4. **OFFEROR** agrees that this Quote, including all bid alternates, if any, may not be revoked or withdrawn after the opening of bids, and shall remain open for acceptance for a period of 30 Days following the Quote Date, or for such longer period of time that **OFFEROR** may agree to in writing upon request of the **AGENCY**.

5. **OFFEROR** agrees that from the compensation to be paid, the **AGENCY** shall retain as Liquidated Damages the amount of for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted Contract Time for Substantial Completion, as provided in the Contract Documents.

6. **OFFEROR** herewith submits its offer to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fee, permits, licenses and applicable taxes necessary to complete the following items of construction work:

6.1 **BASE BID** \_\_\_\_\_  
(enter BASE BID in figures only)

6.2 **ALTERNATE NO. 1** \_\_\_\_\_ to be **ADDED/DEDUCTED** from BASE BID.  
(circle one)

6.3 **ALTERNATE NO. 2** \_\_\_\_\_ to be **ADDED/DEDUCTED** from BASE BID.  
(circle one)

FEIN/SSN: \_\_\_\_\_  
SC Contractor's License Number: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Telephone/Fax \_\_\_\_\_  
E-mail \_\_\_\_\_

This Quote is hereby submitted on behalf of the Offeror named above.

BY: \_\_\_\_\_  
(Signature of Offeror's Representative)

\_\_\_\_\_  
(Print or Type Name of Offeror's Representative)

ITS: \_\_\_\_\_

USC SUPPLEMENTAL CONDITIONS FOR WORK AT THE UNIVERSITY OF SOUTH CAROLINA BEAUFORT, HILTON HEAD GATEWAY CAMPUS IN BLUFFTON, SC

1. Contractor's employees shall take all reasonable means not to interrupt the flow of student traffic in building corridors, lobbies and stairs. All necessary and reasonable safety precautions shall be taken to prevent injury to building occupants while transporting materials and equipment through the building to the work area. Providing safe, accessible, plywood pedestrian ways around construction may be required if a suitable alternative route is not available.
2. Fraternalization between Contractor's employees and USC students, faculty or staff is strictly prohibited - zero tolerance!
3. USC will not tolerate rude, abusive or degrading behavior on the job site. Heckling and cat-calling directed toward students, faculty or staff or any other person on USC property is strictly prohibited. Any contractor whose employees violate this requirement will be assessed a fine of up to \$500 per violation.
4. Contractor's employees must adhere to the University's policy of maintaining a drug-free and smoke-free/tobacco free workplace.
5. Contractor must sign a Contractor Key Receipt/Return form before any keys are issued. Keys must be returned immediately upon the completion of the work. The Contractor will bear the cost of any re-keying necessary due to the loss of or failure to return keys.
6. A welding permit must be issued by the Resident Safety Officer before any welding can begin inside a building. Project Manager will coordinate.
7. Contractor must notify the University immediately upon the discovery of suspect material such as those potentially containing asbestos or other such hazardous materials. These materials **must not** be disturbed until approved by the USC Project Manager.
8. At the beginning of the project, the USC Project Manager will establish the Contractor's lay-down area. This area will also be used for the Contractors work vehicles. No personal vehicles will be allowed in this area, or in any areas surrounding the construction site that are not regular or authorized parking lots. Personal vehicles must be parked in the perimeter parking lots. The lay down area will be clearly identified to the contractor by the PM, with a sketch or drawing provided to Parking. In turn, the contractor will mark off this area with a sign containing the project name, PM name, Contractor name and contact number, and end date. Where this area is subject to foot traffic, protective barriers will be provided as specified by the PM. The area will be maintained in a neat and orderly fashion. Note that access to the freight lift, wheelchair lift, handicap parking spaces, and the driveway to the well house and fire hydrant at the south end of the building must be kept free at all times.

9. Contractor will be responsible for providing its own temporary toilet facilities.
10. Use of USC communications facilities (telephones, computers, etc.) by the Contractor is prohibited, unless prior arrangements are made with the USC Project Manager.
11. For all projects over \$100,000, including IDC's, an SE-395, Contractor Performance Evaluation, will be completed by the USC Project Manager and reviewed with the GC at the beginning of the project and a copy given to the GC. At the end of the project the form will be completed and a Construction Performance rating will be established.
12. Contractor is responsible for removal of all debris from the site, and is required to provide the necessary dumpsters which will be emptied at least one (1) times per week. Construction waste must not be placed in University dumpsters. The construction site must be thoroughly cleaned with all trash picked up and properly disposed of on a daily basis and the site must be left in a safe and sanitary condition each day. The University will inspect job sites regularly and will fine any contractor found to be in violation of this requirement an amount up to \$1,000.00 daily per violation.
13. Contractor must provide all O&M manuals, as-built drawings, and training of USC personnel on new equipment, controls, etc. prior to Substantial Completion. Final payment will not be made until this is completed.
14. Tree protection fencing is required to protect existing trees and other landscape features to be preserved within a construction area. The limits of this fence will be evaluated for each situation with the consultant, USC Arborist and USC Project Manager. The tree protection fence shall be 6' high chain link fence unless otherwise approved by USC Project Manager. No entry or materials storage will be allowed inside the tree protection zone. A 3" layer of mulch shall be placed over the tree protection area to maintain moisture in the root zone if USC Arborist determines that construction may decrease amount of moisture needed to sustain health of tree(s).
15. All large vehicle traffic to include cranes and material deliveries need to be coordinated with the USC Project Manager or designated official on site. Preferred access of such vehicles will be identified to the contractor as required before access will be granted. A path of minimum size must always be used and marked to reduce the damage to the lawn and landscaping. Items on the property damaged due to unnecessary vehicle traffic will be repaired or replaced at the contractor's expense.
16. Contractor shall water trees and other landscape material as directed by USC Arborist until site is returned to Owner.
17. Where it is necessary to cross walks, tree root zones (i.e., under canopy) or lawns the following measures shall be taken: For single loads up to 9,000 lbs., a 3/4" minimum plywood base shall be placed over areas impacted. For single loads over 9,000 lbs., two layers of 3/4" plywood is required.

18. For projects requiring heavy loads to cross walks, tree root zones or lawns on a regular basis (as determined by USC Project Manager), a construction entry road consisting of 10' X 16' oak logging mats placed on 12" coarse, chipped, hardwood base. Mulch and logging mats shall be supplemented throughout the project to keep matting structurally functional.
19. Any damage to existing landscaping (including lawn areas) will be remediated at Contractor's expense before final payment is made.
20. Any damage to existing conditions, including but not limited to, of the attic space framing and ductwork, will be remediated at the Contractor's expense at the time of such occurrence and before final payment.
21. All power outages or shut-downs for the transferring of electrical feeds to associated equipment from the existing panels to the new panels are to be coordinated with the USC Project Manager and USC's on site staff. The Contractor is to provide a minimum of 72 hours notice and such work may be required to be done outside of regular working hours (after 4pm) or during the weekend in accordance with USC's requirements with ongoing research and functions occurring within the building during the duration of the project scope. The Contractor is to prepare and provide a phasing plan associated with the anticipated electrical shut downs.
22. The interior spaces of the building are to be protected against storm water intrusion during the project duration. The Contractor is to prepare and provide a phasing plan associated with the sequencing of exposed areas of the roof or provide means of an effective secondary roofing system during the replacement of the existing roof assembly.

### **Contractor Vehicle Requirements on Campus**

1. This project is located on the private property of the University of South Carolina Beaufort, Bluffton Campus. All who access the site are subject to the rules and regulations of the USCB. All contractors and subcontractors will need to sign for cards allowing access to the site. All motorized vehicles on the University campus are expected to travel and park on roadways and/or in parking stalls.
2. All motorized vehicles that leak or drip liquids are prohibited from entering the area. No fuel or other potentially hazardous material will be stored on site. All precautions and effort must be taken to ensure that such substances are not spilled when in use. All materials and containers must be removed from the site immediately and all areas must be cleaned at the end of each working day.
3. Contractors, vendors, and delivery personnel are required to obtain prior parking authorization before parking in a designated space. Parking and storage space will be designated by USC Project Manager and or on site officials.
4. Drivers of equipment or motor vehicles that damage university hardscape or landscape will be held personally responsible for damages and restoration expense. Special

provisions will be communicated to the contractor when traversing the single lane access road.

5. Vehicle drivers who park on landscape or drives must be able to produce written evidence of need or emergency requiring parking on same.
6. All vehicles parked on landscape, hardscape, or in the process of service delivery, must display adequate safety devices, i.e. flashing lights, cones, signage, etc.
7. All drivers of equipment and vehicles will be respectful of University landscape, equipment, structures, fixtures and signage.
8. All incidents of property damage will be reported to USCB Director of Facilities.



January 15, 2015

## SCOPE OF WORK

### **USC Beaufort, Hilton Head Gateway Campus, Bluffton, SC, Hargray Building, HVAC Terminal Unit Replacement And HVAC System Modifications**

#### ***For TH-22 (Section 1) and TH-29 (Section 2)***

The USC Beaufort Finance and Operations Department is requesting pricing to replace one HVAC terminal unit and make other HVAC system modifications above the ceiling of the first floor of the Hargray Building.

These projects shall be accomplished during the week of spring break from March 7, 2015 to March 15, 2015.

#### ***Section 1***

The USC Beaufort Finance and Operations Department is undertaking the replacement of air terminal unit TH-22 located in the tiered class room (Room 156) in the Hargray building on the Hilton Head Gateway Campus located in Bluffton, South Carolina. See partial floor plan at the end of this document (*Figure 1*).

The terminal unit TH-22 is one of three fan-powered terminal units that serves the tiered classroom. It was installed with the controls side up against conduit and a fireproofed, steel beam near the top of the class room. Because the controls side is against the conduit and beam, the access door cannot be opened.

The relocation of this unit to provide room for maintenance and control would require costly ductwork and support steel modifications. Existing controls cannot be relocated to the opposite side of the unit.



*Picture 1. Air terminal unit TH-22 in Room 156 of the Hargray Building.*

The Finance and Operations Department completed a retro-commissioning of the Hargray building, during which it was discovered that repairs to the pneumatic tubes from the airflow sensor to the controls required repairs as well as confirmation that the air damper was not performing as required. Because of the installation location, this work could not be accomplished. The Department has determined to replace the air terminal unit with an equivalent unit, but with the operators and controls located on the opposite side. The terminal unit is a Kreuger KQFP that was installed during construction of the building in 2004. The replacement unit should have the following properties:

- Min. 430 cfm to Max. 1,440 cfm
- Fan supplies 720 cfm
- 4.0 kW, two-stage, electric heat
- 480V/3 phase/4 wire (currently served by #12 wiring).
- Connected to 30x14 duct
- Communicate with existing Automated Logic Controls system.

### **Planned Scope of Work**

The planned scope of work includes the following tasks:

*See Figure 1 for Partial Drawing Showing Location and Proposed Work for TH-22.*

- A. Fan-Powered, Air Terminal Unit TH-22
  1. Remove class room furniture (by Owner).
  2. Lock-out, Tag-out TH-22 (jointly with Owner).
  3. Install scaffolding over the permanent tables.
  4. Provide cover and protection for permanent table tops and floor covering.
  5. Remove ceiling tile and grid, as required.
  6. Disconnect existing TH-22.
  7. Remove existing TH-22.
  8. Deliver existing TH-22 to Owner's maintenance department.
  9. Install new fan-powered, air terminal unit with operators and controls facing away from the steel beam and connect to existing duct with minimum changes.
  10. Connect new TH-22.
  11. Provide and wrap ductwork with 1" fiberglass, aluminum reinforced foil insulation.
  12. Wrap all joints and connections with metallic aluminum pressure sensitive tape.
  13. Unlock unit (jointly with Owner)
  14. Conduct pre-functional checks/start-up checklist provided by manufacturer.
  15. Restore ceiling tiles and grid.
  16. Remove scaffolding.
  17. Clean and Restore finishes.
  18. Test, Adjust, and Balance according to the Terminal Unit Schedule on Figure 3.

All duct work materials, fabrication, and hanging supports must be in compliance with the most recent SMACNA HVAC Duct Construction Standards.

Coordinate this work with the Director of Facilities in order to minimize disruption to the class room and the building's schedule. Exercise caution with existing finishes and restore them to their pre-project condition.

## Section 2

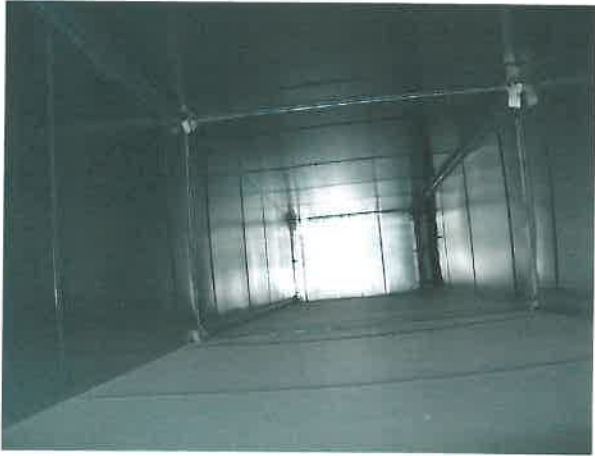
The USC Beaufort Finance and Operations Department is undertaking the modification of the duct work surrounding the air terminal unit TH-29 located in the Computer Lab (Room 162) in the Hargray building on the Hilton Head Gateway Campus located in Bluffton, South Carolina. See partial floor plan Figure 2 at the end of this document.





The terminal unit TH-29 serves the Computer Lab (Room 162) and the Faculty Research Lab (Room 162A). The schedule of the air terminal unit TH-29 is the following:

- Min. 600 cfm to Max 1,990 cfm
- Fan supplies 995 cfm
- 5.0 kW, two-stage, electric heating coil capacity and steps.
- 480V/3 phase/4 wire (currently served by #12 wiring).
- Connected to 18"x12" duct
- Distribution to 36"x12" duct
- Communicates with existing Automated Logic Controls system.

The Finance and Operations Department completed a retro-commissioning of the Hargray building , during which it was discovered that the airflow through unit TH-29 did not meet the design requirements. Further investigations, testing and analysis revealed that the reduction in duct size caused higher static pressure loss than anticipated; there were no turning veins on the right angle turn in duct work from the supply duct to TH-29. Based on the findings, the duct work needs to be re-designed and re-routed to improve air flow through TH-29. See Figure 2.

Below are the photos from inside the duct at TH-29 during the investigations.

Description	Pictures
Looking from the hole in the duct to the end of the run and the take-off for Room 162 on the right at the far end.	

<p>Looking back up the duct toward TH-28 with the takeoff on the left just beyond the transition in duct size.</p>			
<p>Transition from TH-29 into the wall of Room 162.</p>			
<p>Transition from TH-29 into the wall of Room 162 (other side from picture above).</p>			
<p>Looking from TH-29 back up the turn from supply duct into TH-29.</p>			

## Planned Scope of Work

The planned scope of work includes the following tasks:

*See Figure 2 for Partial Drawing Showing Location and Proposed Work for TH-29.*

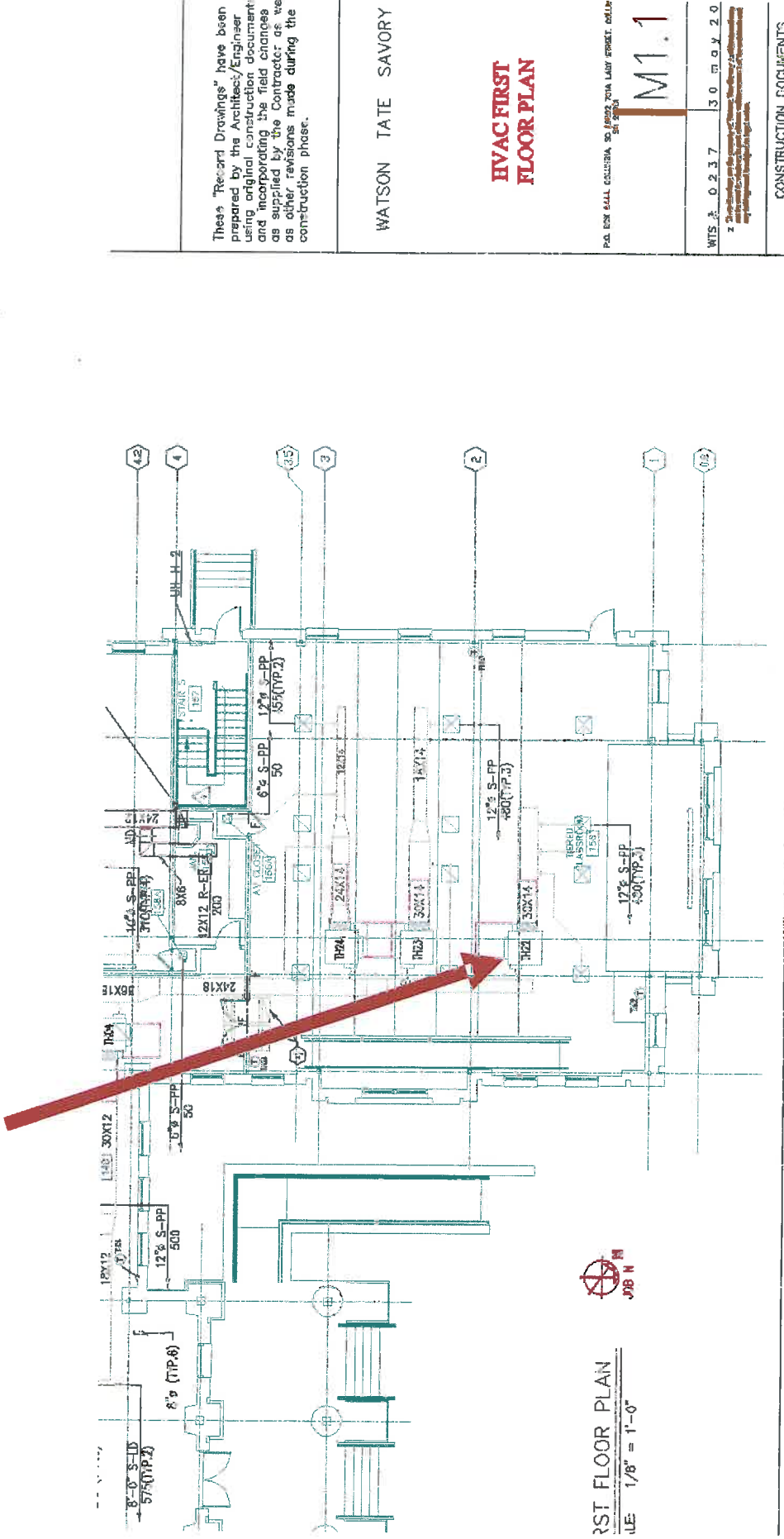
### B. Fan-Powered, Air Terminal Unit TH-29

1. Lock-out, Tag-out TH-29 (jointly with Owner).
2. Install scaffolding. Protect floor and other finishes surrounding area of work.
3. Remove ceiling tile and grid, as required.
4. Remove approximately 20 LF of Existing 18 x 12 Supply Air Duct back to the existing 24 x 18 Duct.
5. Connect and Extend New 24 x 18 Supply Air Duct approximately 16 LF and then transition to an 18" Round Duct.
6. Extend 18" Round Duct and Turn with a long radius elbow and connect to Inlet Duct Connection of TH-29 with a Flex Connection.
7. Provide a Volume Control Damper in the Round Duct.
8. Provide and wrap ductwork with 1" fiberglass, aluminum reinforced foil insulation.
9. Wrap all joints and connections with metallic aluminum pressure sensitive tape.
10. Install four return air grilles in room 162 (As shown in *Figure 2*). Match existing.
11. Relocate existing thermostat to interior wall as shown in *Figure 2*. Patch wall to match existing finishes.
12. Unlock unit (jointly with Owner)
13. Conduct pre-functional checks/start-up checklist provided by manufacturer.
14. Test, Adjust, and Balance:
  - a. Test, Adjust, and Balance terminal unit according to the Terminal Unit Schedule on Figure 3.
  - b. Rebalance Six (6) Supply Air Diffusers to 280 cfm each (As shown in *Figure 2*)
  - c. Rebalance Two (2) Supply Air Diffusers to 155 cfm each (as shown in *Figure 2*)
15. Restore ceiling tiles and grid.
16. Remove scaffolding.
17. Clean and Restore finishes.

All duct work materials, fabrication, and hanging supports must be in compliance with the most recent SMACNA HVAC Duct Construction Standards.

Coordinate this work with the Director of Facilities in order to minimize disruption to the class room and the building's schedule. Exercise caution with existing finishes and restore them to their pre-project condition.

Figure 1. Partial Drawing Showing Location and Scope of Work for TH-22.



**Figure 2. Partial Drawing Showing Location and Scope of Work for TH-29.**

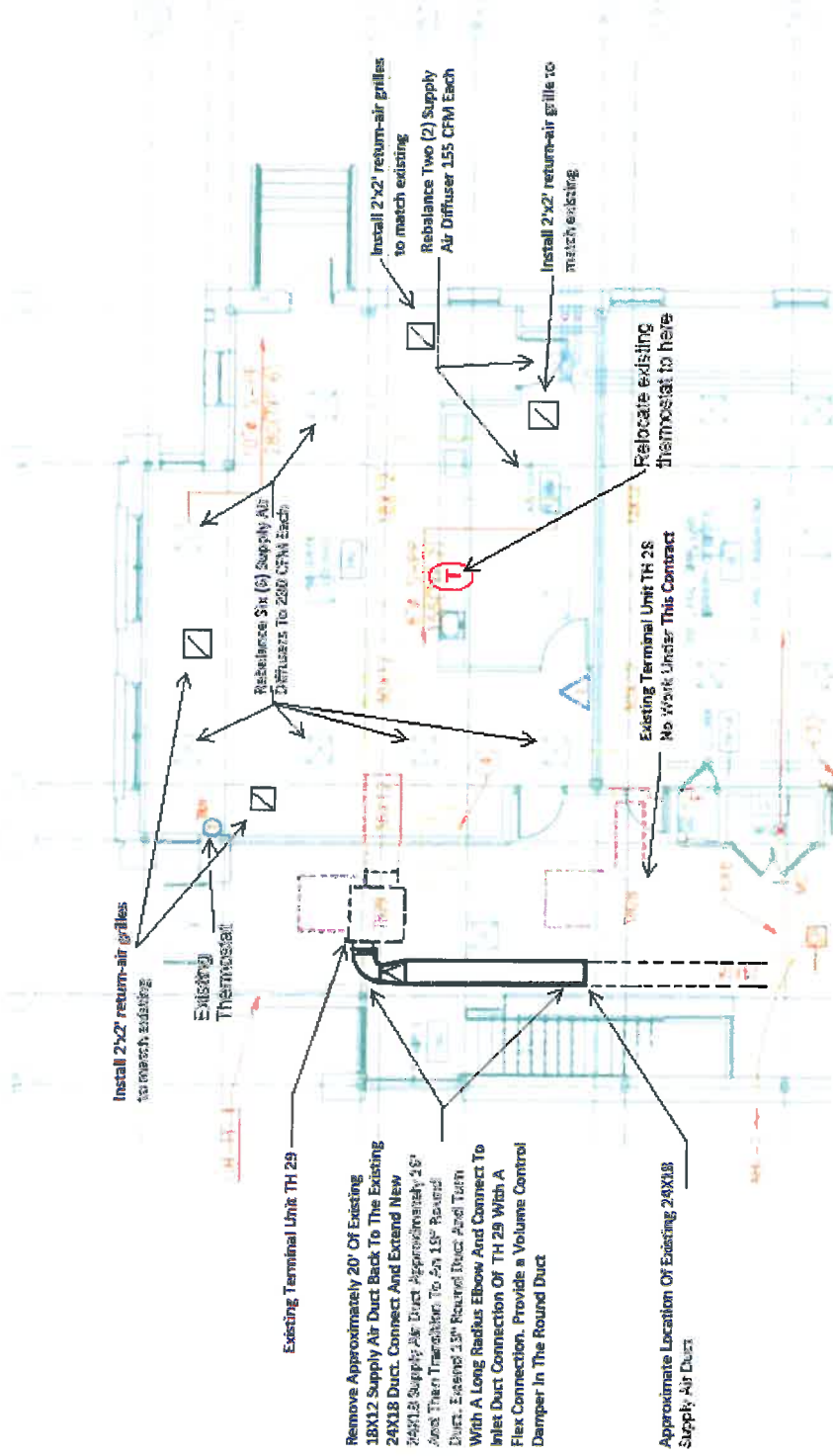


Figure 3. Terminal Unit Schedule

TERMINAL UNIT SCHEDULE									
NO.	TYPE (NOTE 1)	PRIMARY CFM		FAN CFM	ELECTRIC CAPACITY KW (NOTE 2)	ELECTRIC HEATING COIL			
		MAXIMUM	MINIMUM			NO.	OF STEPS		
TH-01	FPP	1,660	500	830	4.0	2			
TH-02	FPP	1,750	525	875	4.5	2			
TH-03	FPP	1,750	525	875	4.5	2			
TH-04	FPP	1,740	525	870	4.5	2			
TH-05	FPP	540	165	270	1.5	2			
TH-06	W	310	0	--	--	--			
TH-07	FPP	1,150	345	575	3.0	2			
TH-08	W	580	0	--	--	--			
TH-09	FPP	910	275	455	2.5	2			
TH-10	W	130	0	--	--	--			
TH-11	FPP	390	120	195	1.0	2			
TH-12	W	90	0	--	--	--			
TH-13	W	340	0	--	--	--			
TH-14	FPP	530	160	265	1.5	2			
TH-15	W	690	0	--	--	--			
TH-16	FPP	480	145	240	2.0	2			
TH-17	W	940	0	--	--	--			
TH-18	FPP	880	265	440	2.5	2			
TH-19	FPP	460	140	230	1.5	2			
TH-20	FPP	1,100	330	550	3.0	2			
TH-21	FPP	1,100	330	550	3.0	2			
TH-22	FPP	1,440	430	720	4.0	2			
TH-23	FPP	1,100	330	550	3.0	2			
TH-24	FPP	960	290	480	2.5	2			
TH-25	FPP	1,575	475	790	3.5	2			
TH-26	FPP	1,190	360	595	2.5	2			
TH-27	FPP	1,595	480	800	3.5	2			
TH-28	FPP	1,595	480	800	3.5	2			
TH-29	FPP	1,990	600	995	5.0	2			