NOTICE TO DESIGN-BUILD FIRMS

ADDENDUM #1

The **Sebring Aviation Authority** hereby notifies proposers, pursuant to the Consultants Competitive Negotiation Act, Florida Statutes 287.055, for Statements of Qualification from design-build firms desiring to render design-build services of this addendum for the following project:

HVAC Controls Upgrade
AT SEBRING REGIONAL AIRPORT
RFQ # 16-01

The following items hereby become a part of this Notice:

Technical Addendum:

Specification Section 230500 Paragraph 1.6 B Delete subparagraph 5 in its entirety.
Specification Section 230500 Paragraph 1.6 B Change subparagraph 11 to read as follows: It is this Contractor's responsibility to maintain the existing temperature conditions within the building during the project.
Specification Section 230500 Paragraph 1.6 B Change subparagraph 12 to read as follows: The successful Contractor shall test, adjust and balance the existing systems prior to the start of the renovation work. In addition, the existing systems shall be tested and balanced once the renovation work is completed. Testing and balance work shall be performed in accordance with Section 230593 Testing Adjusting and Balancing for HVAC.
Specification Section 230500 Paragraph 1.6 B Add subparagraph 13 to read as follows: The successful Contractor shall assist in commissioning the controls work in accordance with specification Section 230800 Commissioning of HVAC.
Add: Specification Sections 230593 Testing Adjusting and Balancing for HVAC and 230800 Commissioning of HVAC

Existing Drawings. See attached three bidding drawings of the building's HVAC system numbered **650, 651, and 652** originally prepared by The Haskell Company.

Meeting Notes See attached pre-proposal Meeting Notes dated 8/25/2016.

End of Addendum

Proposers must acknowledge receipt of this addendum in their proposal. Failure to acknowledge receipt of this Addendum may result in the disqualification of Proposer's response.

The statements for qualification must be received at or before 2:00 p.m. local time, Thursday, September 1, 2016 delivered to the Airport Administration Building, located 128 Authority Drive Sebring, Florida 33870.

SEBRING AVIATION AUTHORITY
By: s/s Mike Willingham, Executive Director

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

**ADDENDUM #1
HVAC Controls Upgrade
AT SEBRING REGIONAL
AIRPORT
RFQ # 16-01**

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Balancing Air Systems:

   a. VVT systems with by-pass.

2. Testing, Adjusting, and Balancing Equipment:

   a. Motors.
   b. Condensing units.
   c. Heat-transfer coils.

3. Testing, adjusting, and balancing existing systems and equipment.

4. Control system verification.

1.2 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. BAS: Building automation systems.

C. NEBB: National Environmental Balancing Bureau.

D. TAB: Testing, adjusting, and balancing.

E. TABB: Testing, Adjusting, and Balancing Bureau.

F. TAB Specialist: An independent entity meeting qualifications to perform TAB work.

G. TDH: Total dynamic head.

1.3 PREINSTALLATION MEETINGS

A. TAB Conference: If requested by the Owner, conduct a TAB conference at Project site after approval of the TAB strategies and procedures plan to develop a mutual understanding of the details. Provide a minimum of 14 days' advance notice of scheduled meeting time and location.

1. Minimum Agenda Items:

   a. The Contract Documents examination report.

b. The TAB plan.
c. Needs for coordination and cooperation of trades and subcontractors.
d. Proposed procedures for documentation and communication flow.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: Within 14 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 14 days of Contractor's Notice to Proceed, submit the Contract Documents review report as specified in Part 3.

C. Strategies and Procedures Plan: Within 14 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 14 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.

1.5 QUALITY ASSURANCE

A. TAB Specialists Qualifications: Certified by AABC, NEBB or TABB.

1. TAB Field Supervisor: Employee of the TAB specialist and certified by AABC, NEBB or TABB.
2. TAB Technician: Employee of the TAB specialist and certified by AABC NEBB, or TABB as a TAB technician.

B. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."

C. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 7.2.2 - "Air Balancing."

D. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1, Section 6.7.2.3 - "System Balancing."

1.6 FIELD CONDITIONS

A. Full Owner Occupancy: Owner will occupy the site and existing building during entire TAB period. 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, gage 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 supply, return, or relief air to verify that they are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.

F. Examine equipment performance data including fan 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 terminal units, such as VVT boxes, and verify that they are accessible and their controls are connected and functioning.

K. Examine heat-transfer coils for correct piping connections and for clean and straight fins.

L. Examine operating safety interlocks and controls on HVAC equipment.

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. Duct systems are complete with terminals installed.
b. Volume, smoke, and fire dampers are open and functional.
c. Clean filters are installed.
d. Fans are operating, free of vibration, and rotating in correct direction.
e. Automatic temperature-control systems are operational.
f. Ceilings are installed.
g. Windows and doors are installed.
h. 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 according to the procedures contained in ASHRAE 111 and in this Section.

B. Cut insulation, ducts, pipes, and equipment cabinets 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. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish.

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 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross-check the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.

D. 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.

E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

F. Verify that motor starters are equipped with properly sized thermal protection.

G. Check dampers for proper position to achieve desired airflow path.

H. Check for airflow blockages.

I. Check condensate drains for proper connections and functioning.

J. Check for proper sealing of air-handling-unit components.

K. Verify that air duct system is sealed.

3.5 PROCEDURES FOR HEAT-TRANSFER COILS

A. 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.

3.6 CONTROLS VERIFICATION

A. In conjunction with system balancing, perform the following:

1. Verify temperature 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.

3.7 PROCEDURES FOR TESTING, ADJUSTING, AND BALANCING EXISTING SYSTEMS

A. Perform a preconstruction inspection of existing equipment that is to remain and be reused.

1. Measure and record the operating speed, airflow, and static pressure of each fan.
2. Measure motor voltage and amperage. Compare the values to motor nameplate information.
3. Check the refrigerant charge.
4. Check the condition of filters.
5. Check the condition of coils.
6. Check the operation of the drain pan and condensate-drain trap.
7. Check bearings and other lubricated parts for proper lubrication.
8. Report on the operating condition of the equipment and the results of the measurements taken. Report deficiencies.

B. Before performing testing and balancing of existing systems, inspect existing equipment that is to remain and be reused to verify that existing equipment has been cleaned and refurbished. Verify the following:

1. New filters are installed.
2. Coils are clean and fins combed.
3. Drain pans are clean.
4. Fans are clean.
5. Bearings and other parts are properly lubricated.
6. Deficiencies noted in the preconstruction report are corrected.

C. Perform testing and balancing of existing systems to the extent that existing systems are affected by the renovation work.

1. Compare the indicated airflow of the renovated work to the measured fan airflows, and determine the new fan speed and the face velocity of filters and coils.
2. Verify that the indicated airflows of the renovated work result in filter and coil face velocities and fan speeds that are within the acceptable limits defined by equipment manufacturer.
3. If calculations increase or decrease the airflow rates and water flow rates by more than 5 percent, make equipment adjustments to achieve the calculated rates. If increase or decrease is 5 percent or less, equipment adjustments are not required.
4. Balance each air outlet.

3.8 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 if available.
2. Field test reports prepared by system and equipment installers.
3. 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. Preconstruction 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 fan 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. Face and bypass damper settings at coils.
    e. Fan drive settings including settings and percentage of maximum pitch diameter.
    f. Inlet vane settings for variable-air-volume systems.
    g. Settings for supply-air, static-pressure controller.
    h. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of air distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor, supply, return, and exhaust airflows.
2. Duct, outlet, and inlet sizes.
3. Terminal units.
4. Balancing stations.
5. Position of balancing devices.

E. Air-Handling-Unit Test Reports: For air-handling units with coils, 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 rpm.
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 Actual Values:

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. 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. Outdoor airflow in cfm.
j. Return airflow in cfm.
k. Outdoor-air damper position.
l. Return-air damper position.
m. Vortex 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. Refrigerant expansion valve and refrigerant types.
    i. Refrigerant suction pressure in psig.
    j. Refrigerant suction temperature in deg F.
    k. Inlet steam pressure in psig.

G. 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 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. Preconstruction airflow rate in cfm.
    h. Preconstruction velocity in fpm.
    i. Final airflow rate in cfm.
    j. Final average velocity in fpm.
    k. Barometric pressure in psig.

H. Air-Terminal-Device Reports:

1. Unit Data:

    a. System and air-handling unit identification.
    b. Location and zone.
    c. Apparatus used for test.

d. Area served.
e. Make.
f. Number from system diagram.
g. Type and model number.
h. Size.
i. Effective area in sq. ft..

2. Test Data (Preconstruction and Final Values):

a. Preconstruction airflow rate in cfm.
b. Preconstruction air velocity in fpm.
c. Final airflow rate in cfm.
d. Final velocity in fpm.
e. Space temperature in deg F.

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.

3.9 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

ADDENDUM #1
HVAC Controls Upgrade
AT SEBRING REGIONAL AIRPORT
RFQ # 16-01

SECTION 230800 - COMMISSIONING OF HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes commissioning process requirements for the following HVAC&R systems, assemblies, and equipment:

1. Distribution systems, including air distribution (heating and cooling) systems.
2. Terminal units, including VVT units.
3. Controls and instrumentation, including BAS systems.
4. Systems testing and balancing verification, including supply-air systems and return-air systems.

1.2 DEFINITIONS

A. BAS: Building automation system.

B. DDC: Direct digital controls.

C. HVAC&R: Heating, Ventilating, Air Conditioning, and Refrigeration.

D. "Systems," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

E. TAB: Testing, adjusting, and balancing.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For BAS and HVAC&R Testing Technician.

B. Construction Checklists: See related Sections for technical requirements for the following construction checklists:

1. Instrumentation and control for HVAC&R.
2. Air-handling units.
3. Computer-room air conditioners.

1.4 QUALITY ASSURANCE

A. BAS Testing Technician Qualifications: Technicians to perform BAS construction checklist verification tests, construction checklist verification test demonstrations, commissioning tests, and commissioning test demonstrations shall have the following minimum qualifications:

1. Journey-level or equivalent skill level with knowledge of BAS, HVAC&R, electrical concepts, and building operations.
2. Minimum three years' experience installing, servicing, and operating systems manufactured by approved manufacturer.
3. International Society of Automation (ISA) Certified Control Systems Technician (CCST) Level I.

B. HVAC&R Testing Technician Qualifications: Technicians to perform HVAC&R construction checklist verification tests, construction checklist verification test demonstrations, commissioning tests, and commissioning test demonstrations shall have the following minimum qualifications:

1. Journey-level or equivalent skill level. Vocational School four-year program graduate or an Associates degree in mechanical systems, air conditioning, or similar field. Degree may be offset by three years' experience in servicing mechanical systems in the HVAC industry. Generally, required knowledge includes HVAC&R systems, electrical concepts, building operations, and application and use of tools and instrumentation to measure performance of HVAC&R equipment, assemblies, and systems.
2. Minimum three years' experience installing, servicing, and operating systems manufactured by approved manufacturer.
3. One of the following:

    a. National Environmental Balancing Bureau (NEBB) Certified Testing, Adjusting, and Balancing Technician.
    b. Associated Air Balance Council (AABC) Certified Test and Balance Technician.
    c. Owner retains the right to waive NEBB or AABC Certification.

C. Testing Equipment and Instrumentation Quality and Calibration: For test equipment and instrumentation required to perform HVAC&R commissioning work, perform the following:

1. Submit test equipment and instrumentation list. For each equipment or instrument, identify the following:

    a. Equipment/instrument identification number.
    b. Planned commissioning application or use.
    c. Manufacturer, make, model, and serial number.
    d. Calibration history, including certificates from agencies that calibrate the equipment and instrumentation.

2. Test equipment and instrumentation shall meet the following criteria:

    a. Capable of testing and measuring performance within the specified acceptance criteria.
    b. Be calibrated at the manufacturer's recommended intervals with current calibration tags permanently affixed to the instrument being used.
    c. Be maintained in good repair and operating condition throughout the duration of use on this Project.
    d. Be recalibrated/repaired if dropped or damaged in any way since last calibrated.

D. Proprietary Test Instrumentation and Tools:

1. Equipment Manufacturer's Proprietary Instrumentation and Tools: For installed equipment included in the commissioning process, test instrumentation and tools manufactured or prescribed by equipment manufacturer to service, calibrate, adjust, repair, or otherwise work on its equipment or required as a condition of equipment warranty, perform the following:

    a. Submit proprietary instrumentation and tools list. For each instrument or tool, identify the following:

        1) Instrument or tool identification number.
        2) Equipment schedule designation of equipment for which the instrument or tool is required.
        3) Manufacturer, make, model, and serial number.
        4) Calibration history, including certificates from agencies that calibrate the instrument or tool, where appropriate.

    b. Include a separate list of proprietary test instrumentation and tools in the operation and maintenance manuals.
    c. HVAC&R proprietary test instrumentation and tools become the property of Owner at the time of Substantial Completion.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 GENERAL TESTING REQUIREMENTS

A. Certify that HVAC&R systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents and approved Shop Drawings and submittals.

B. Certify that HVAC&R instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents and approved Shop Drawings and submittals, and that pretest set points have been recorded.

C. Certify that TAB procedures have been completed and that TAB reports have been submitted, discrepancies corrected, and corrective work approved.

D. Set systems, subsystems, and equipment into operating mode to be tested according to approved test procedures (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

E. Measure capacities and effectiveness of systems, assemblies, subsystems, equipment, and components, including operational and control functions to verify compliance with acceptance criteria.

F. Test systems, assemblies, subsystems, equipment, and components operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and response according to acceptance criteria.

G. Construction Checklists: Prepare and submit detailed construction checklists for HVAC&R systems, subsystems, equipment, and components.

1. Contributors to the development of construction checklists shall include, but are not limited to, the following:

a. HVAC&R systems and equipment installers.
b. TAB technicians.
c. HVAC&R instrumentation and controls installers.

H. Perform tests using design conditions, whenever possible.

1. Simulated conditions may, with approval of Engineer, be imposed using an artificial load when it is impractical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by Commissioning Coordinator and document simulated conditions and methods of simulation. After tests, return configurations and settings to normal operating conditions.
2. Commissioning test procedures may direct that set points be altered when simulating conditions is impractical.
3. Commissioning test procedures may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are impractical.

I. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to Owner. After deficiencies are resolved, reschedule tests.

J. If seasonal testing is specified, complete appropriate initial performance tests and documentation and schedule seasonal tests.

K. Coordinate schedule with, and perform the following activities at the direction of, Commissioning Coordinator.

L. Comply with construction checklist requirements, including material verification, installation checks, start-up, and performance tests requirements specified in Sections specifying HVAC systems and equipment.

M. Provide technicians, instrumentation, tools, and equipment to complete and document the following:

1. Performance tests.
2. Demonstration of a sample of performance tests.
3. Commissioning tests.
4. Commissioning test demonstrations.

3.2 TAB COMMISSIONING TESTS

A. TAB Verification:

1. Prerequisites: Completion of "Examination" Article requirements and correction of deficiencies, as specified in Section 230593 "Testing, Adjusting, and Balancing for HVAC."
2. Completion of "Preparation" Article requirements for preparation of a TAB plan that includes strategies and step-by-step procedures, and system-readiness checks and reports, as specified in Section 230593 "Testing, Adjusting, and Balancing for HVAC."
3. Scope: HVAC&R air systems and hydronic piping systems.
4. Purpose: Differential flow relationships intended to maintain air pressurization differentials between the various areas of Project.
5. Conditions of the Test:

    a. Systems operating in full heating mode with minimum outside-air volume.
    b. Systems operating in full cooling mode with minimum outside-air volume.

6. Acceptance Criteria:

    a. Additionally, no rechecked measurement shall differ from measurements documented in the final report by more than two times the tolerances allowed.
    b. Under all conditions, where the Contract Documents indicate a differential in airflow between supply and exhaust and/or return in a space, the differential relationship shall be maintained.

3.3 TERMINAL UNIT EQUIPMENT COMMISSIONING TESTS

A. VVT Terminal Units:

1. Prerequisites: Installation verification of the following:

    a. Occupancy Input Device: Occupancy sensor.
    b. Occupancy Output Device: DDC system binary output.
    c. Room Temperature Input Device: Room thermostat or Electronic temperature sensor.
    d. Room Temperature Output Device: Electronic damper actuators.
    e. Display the following at the operator's workstation:

        1) Air temperature leaving air handling unit
        2) Supply air temperature to space
        3) Space air temperature
        4) Zone damper position desired
        5) Zone damper position actual
        6) System pressure (to hundredths of an inch WC)
        7) By-pass damper position desired
        8) By-pass damper position actual

2. Purpose:

a. Occupancy-dependent room temperature set-point reset.
b. Room temperature control.

3. Conditions of the Test:

a. Commissioning Test Demonstration Sampling Rate: 10 percent of each model/size unit. Minimum 2 unless only 1 installed then 1.
b. Temperature Control - Occupied: Start with the room unoccupied. Occupy the room and observe the change to occupied status. Observe temperature control until room temperature is stable at occupied set point plus or minus 1.0 deg F.
c. Temperature Control - Unoccupied: Start with the room occupied. Vacate the room and observe the change to unoccupied status. Observe temperature control until room temperature is stable at unoccupied set point plus or minus 1.0 deg F.

4. Acceptance Criteria:

a. Temperature Control - Occupied:

1) Control system status changes from "occupied" to "unoccupied" after the specified time.
2) Room temperature is stable at occupied set point plus or minus 1.0 deg F within 10 minutes of occupancy. Room temperature does not overshoot or undershoot set point by more than 2.0 deg F during transition.

b. Temperature Control - Unoccupied:

1) Room temperature is stable at unoccupied set point plus or minus 1.0 deg F within 30 minutes of occupancy.

END OF SECTION 230800

ABBREVIATIONS

ABS	=	ABSOLUTE	FPS	=	FEET PER SECOND	P.O.C.	=	POINT OF CONNECTION
AHU	=	AIR HANDLING UNIT	GA.	=	GAGE OR GAUGE	PRESS	=	PRESSURE
AFF	=	ABOVE FINISHED FLOOR	GAL.	=	GALLON	PRI	=	PRIMARY
ALT	=	ALTITUDE	GPM	=	GALLONS PER MINUTE	PSIG	=	PSI GAGE
AMB	=	AMBIENT	GPH	=	GALLONS PER HOUR	R.A.	=	RETURN AIR
ANSI	=	AMERICAN NATIONAL STANDARDS INSTITUTE	GPD	=	GALLONS PER DAY	RI	=	ROOF INTAKE
APPROX.	=	APPROXIMATE	GALV.	=	GALVANIZED	RPM	=	REVOLUTIONS PER MINUTE
ATM	=	ATMOSPHERE	HOA	=	HANDS-OFF-AUTOMATIC SWITCH	RTU	=	ROOF TOP UNIT
ATC	=	AUTOMATIC TEMPERATURE CONTROL	HP	=	HORSEPOWER	STL	=	STEEL
AVG	=	AVERAGE	HR	=	HOUR	S.S.	=	STAINLESS STEEL
BHP	=	BRAKE HORSEPOWER	RH	=	HUMIDITY, RELATIVE	S.P.	=	STATIC PRESSURE
BOD	=	BOTTOM OF DUCT	INV.	=	INVERT	SUCT	=	SUCTION
BOT.	=	BOTTOM	KW	=	KILOWATT	S.A.	=	SUPPLY AIR
BTU	=	BRITISH THERMAL UNIT	LAT	=	LEAVING AIR TEMPERATURE	SF	=	SUPPLY FAN
℄	=	CENTER LINE	LG	=	LENGTH	TEMP	=	TEMPERATURE
CU FT	=	CUBIC FEET	LF	=	LINEAR FEET	T-STAT	=	THERMOSTAT
CU IN	=	CUBIC INCH	LIQ	=	LIQUID	THK	=	THICK(-NESS)
CFM	=	CUBIC FEET PER MINUTE	LWT	=	LEAVING WATER TEMPERATURE	T.O.T.	=	TOP OF TRAPEZE
ø DIA.	=	DIAMETER	MAU	=	MAKE-UP AIR UNIT	TRANS.	=	TRANSITION
ID	=	DIAMETER, INSIDE	MAX.	=	MAXIMUM	TYP.	=	TYPICAL
OD	=	DIAMETER, OUTSIDE	MBH	=	BTU PER HOUR (THOUSAND)	U.F.	=	UNDERFLOOR
DN	=	DOWN	MEZZ.	=	MEZZANINE	UG	=	UNDERGROUND
DWG.	=	DRAWING	MIN.	=	MINIMUM	VAC	=	VACUUM
dB	=	DRY BULB	N.C.	=	NORMALLY CLOSED	VAR	=	VARIABLE
E.C.	=	ELECTRICAL CONTRACTOR	N.O.	=	NORMALLY OPEN	VAV	=	VARIABLE AIR VOLUME
EF	=	EXHAUST FAN	NTS	=	NOT TO SCALE	VEL	=	VELOCITY
ENT	=	ENTERING	NO	=	NUMBER	VERT	=	VERTICAL
EWT	=	ENTERING WATER TEMPERATURE	O.C.	=	ON CENTER	VISC	=	VISCOSITY
EAT	=	ENTERING AIR TEMPERATURE	OZ	=	OUNCE	V	=	VOLT
F	=	FAHRENHEIT	O.A.	=	OUTSIDE AIR	VOL	=	VOLUME
FT	=	FEET	OAT	=	OUTSIDE AIR TEMPERATURE	W	=	WATT
FPM	=	FEET PER MINUTE	OAI	=	OUTSIDE AIR INTAKE	W/	=	WITH
			PSI	=	POUNDS PER SQUARE INCH	WB	=	WET BULB

SYMBOLS

SYMBOL	DESCRIPTION
A NECK SIZE / CFM	AIR DEVICE
⊠	CEILING DIFFUSER
	DROP IN PIPE
	FIRE DAMPER
	FLEX DUCT
8"x8" / 6"ø	RECTANGULAR TO ROUND TRANSITION
	REDUCER (DUCTWORK)

SYMBOL	DESCRIPTION
	RETURN DUCT: UP, DOWN
	SIDEWALL SUPPLY REGISTER
SD	SMOKE DETECTOR
	SUPPLY DUCT; UP, DOWN
T	THERMOSTAT
	TURNING VANES
	VOLUME DAMPER
S	WALL SWITCH

MECHANICAL EQUIPMENT CALLOUTS

- AHU / # = AIR HANDLING UNIT
- CU / # = CONDENSING UNIT
- EF / # = EXHAUST FAN
- L / # = LOUVER
- SF / # = SUPPLY FAN
- VVT / # = VARIABLE VOLUME TEMPERATURE DAMPER
- KEH / # = KITCHEN EXHAUST HOOD

CALLOUTS

- SECTION NUMBER / DRAWING NUMBER
- SEE DETAIL — DETAIL NUMBER / DRAWING NUMBER WHERE DETAIL IS SHOWN
- SEE PLAN — ENLARGED PLAN NUMBER / DRAWING NUMBER WHERE ENLARGED PLAN IS SHOWN

HVAC DRAWING LIST

DRAWING NUMBER		DRAWING TITLE
620	=	TERMINAL BLDG. FIRE PROTECTION PLAN
650	=	HVAC LEGENDS, SYMBOLS & ABBREVIATIONS
651	=	TERMINAL BUILDING HVAC SCHEDULES
652	=	TERMINAL BLDG. HVAC FLOOR PLAN
H651	=	COMMERCIAL HANGAR HVAC PLANS & SCHEDULES

GENERAL NOTES

HVAC

1. ALL WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTS, AND TRANSITIONS AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST.
2. REMOVE ALL MAGIC MARKER TRACES AND OTHER TAG MARKERS ON THE EXTERIOR OF EXPOSED DUCTWORK.
3. ALL EF'S SHALL BE INSTALLED ON ROOF CURBS APPROPRIATE FOR CONCRETE TILE ROOF.
4. ALL ROOF CURBS SHALL BE FABRICATED SO THAT THE TOP OF CURB IS LEVEL WITH THE HORIZON REGARDLESS OF ROOF PITCH.
5. PROVIDE CONICAL TAKE-OFFS FOR ALL ROUND TAPS INTO RECTANGULAR DUCTWORK.
6. INSTALL SHEETMETAL LINER INSIDE ALL EF & SF CURBS THAT SHIELD THE INSULATED INTERIOR OF THE ROOF CURB FROM THE AIR STREAM.
7. ALL SUPPLY, RETURN AND EXHAUST DUCTWORK SHALL BE GALVANIZED SHEETMETAL FABRICATED PER SMACNA STANDARDS.
8. ALL EQUIPMENT SCHEDULED ON THE DRAWINGS SHALL BE AS SPECIFIED OR APPROVED EQUAL.
9. HORSEPOWER RATINGS ON MOTORS ARE BASED ON SCHEDULED EQUIPMENT AND DESIGN CONDITIONS. ACTUAL FIELD CONDITIONS OR SUBSTITUTIONS FROM SCHEDULED EQUIPMENT MAY REQUIRE DIFFERENT HORSEPOWER. IF LARGER MOTOR SIZES ARE REQUIRED OR CHANGES OCCUR IN VOLTAGES, COORDINATE ELECTRICAL SERVICE TO ENSURE PROPER WIRE SIZES AND DEVICES AT NO ADDITIONAL COMPENSATION (DUE TO THESE CHANGES) ASKED FOR OR REQUESTED BY ANOTHER CONTRACTOR OR TRADE. ADDITIONAL COMPENSATION RESULTING FROM EQUIPMENT SUBMITTED FOR REASONS OF CONTRACTOR PREFERENCE OR AVAILABILITY SHALL BE PAID BY THIS CONTRACTOR WITH NO ADDITIONAL EXPENSE TO THE OWNER.
10. CONTRACT DRAWINGS ARE BASED ON THE EQUIPMENT SPECIFIED. MAKE ADJUSTMENTS, MODIFICATIONS OR CHANGES REQUIRED, DUE TO USE OF OTHER EQUIPMENT, WITH NO ADDITIONAL COMPENSATION EXPECTED FOR OR DEMANDED BY THIS CONTRACTOR OR ANY OTHER CONTRACTOR OR TRADE. ANY ADDITIONAL COMPENSATION AS A RESULT OF CHANGES IN EQUIPMENT, STRUCTURAL FRAMING, CONCRETE FOUNDATION, OR OTHER PHYSICAL CHANGES SHALL BE BORNE BY THIS CONTRACTOR WITH NO ADDITIONAL EXPENSE TO THE OWNER.
11. CAULK (MOISTURE & AIR TIGHT) ALL AROUND LOUVERS, REFRIGERANT PIPING AND OTHER AIR DEVICES THRU EXTERIOR WALLS.
12. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 8 HOURS TRAINING TO OWNER/OWNER'S REPRESENTATIVE PRIOR TO JOB CLOSE-OUT. THIS TRAINING SHALL COVER SUCH AREAS AS (BUT NOT LIMITED TO) HVAC CONTROLS, EQUIPMENT OPERATIONAL PROCEDURES AND GENERAL MAINTENANCE RECOMMENDATIONS. UPON COMPLETION OF THE TRAINING SESSION, A SIGNED AFFIDAVIT SHALL BE SUBMITTED TO THE ENGINEER THAT THIS TRAINING SESSION WAS SATISFACTORILY ACCOMPLISHED.
13. PROVIDE DAMPER MOTOR AND SWITCHES FOR ALL MOTOR OPERATED ACTUATORS.
14. PROVIDE 2" FG INSULATION ON ALL SUPPLY AND RETURN DUCTWORK.
15. PROVIDE CONDENSATE DRAINS FOR ALL AHU's.
16. PROVIDE TESTING AND BALANCING REPORT FOR AIR DISTRIBUTION SYSTEM.
17. ALL ROUND DUCTWORK SHALL BE PER SMACNA STANDARD.
18. PROVIDE COVER AND KEY FOR ALL THERMOSTATS.

△1

ADDENDUM #1
HVAC Controls Upgrade
AT SEBRING REGIONAL AIRPORT
RFQ # 16-01

MARK A. WHITNELL, P.E.
MECHANICAL ENGINEER

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TERMINAL BUILDING
SEBRING REGIONAL AIRPORT
SEBRING, FLORIDA

DATE	ISSUE/REVISION
11/1/99	ADDENDUM #1
8/20/99	CONSTR. ISSUE
8/9/99	95% OWNER
8/10/00	RECORD DWG
3/18/99	BID ISSUE

DRAWN BY: JPB | CHECKED BY: MAW

AE JOB NUMBER 32068201

HVAC LEGENDS, SYMBOLS & ABBREVIATIONS

650
SHEET NUMBER

Plotted Date: 11/22/99
Plotted Time: 09:12:39
User Name: J1BURDON
Drawing Name: U:\36068\H\36068T650.dwg

SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE

MARK	AREA SERVED	FAN				COOLING				ELECTRIC		EER	AIR UNIT			CONDENSER			MANUFACTURER	NOTES
		TOTAL AIR (CFM)	OUTSIDE AIR (CFM)	EXT. S.P. (IN. W.G)	(HP)	ENT. AIR dB/wB (°F)	LVG AIR dB/wB (°F)	COIL SENS. (MBH)	COIL TOTAL (MBH)	HEAT KW	STAGES		VOLT/PH	MCA	MODEL NUMBER	VOLT/PH	MCA	MODEL NUMBER		
AHU-1	OPEN OFFICES	8300	660	1.0	5.00	76.3/62.6	53.4/52.4	205.11	243.37	--	--	9.0	460/3/60	9.0	40RM024	460/3/60	55.9	38AH028	CARRIER	
AHU-2	FBO OFFICES	7100	1450	1.0	5.00	78.4/65.4	53.9/53.8	188.23	247.72	--	--	9.0	460/3/60	9.0	40RM024	460/3/60	55.9	38AH028	CARRIER	
AHU-3	KITCHEN/DINING	5500	600	1.0	3.70	76.9/63.1	53.1/52.4	141.39	170.29	--	--	9.1	460/3/60	6.0	40RM016	460/3/60	40.7	38AKS016	CARRIER	

REMARKS
- A EXTERNAL STATIC PRESSURE CONSISTS OF DUCTWORK, AIR DEVICES AND FILTERS.
- B DISCONNECT FURNISHED BY DIV 16. COMBINATION STARTERS AND CONTACTORS WITH HOA SWITCH, CONTROL POWER TRANSFORMER BY DIV 15.
- C UNIT CAPACITY SHALL BE MET REGARDLESS OF MODEL NUMBER REFERENCED; CONDENSING OUTSIDE TEMP=115F.
- D PROVIDE AUXILARY DRAIN PAN UNDER UNIT SIZED PER STANDARD BUILDING CODE.
- E PROVIDE CARRIER VVT CONTROL SYSTEM FOR AHU's 1, 2 & 3 AND ASSOCIATED VVT BOXES.

NOTES
1.

VVT TERMINAL UNIT SCHEDULE

MARK	SERVICE	CFM RANGE	DESIGN COOLING CFM	DESIGN HEATING CFM	INLET (INCHES)	OUTLET (INCHES)	LENGTH (INCHES)	HEATING KW	HEATING VOLTS/PH	MANUFACTURER	MODEL NUMBER	NOTES
VVT-1	342 DIRECTOR PLANNING	400-600	420	168	8 x 10	8 x 10	13.5"	2	277/1/60	CARRIER	RD0810	
VVT-2	341 CONFERENCE	500-800	510	204	8 x14	8 x14	13.5"	3	277/1/60	CARRIER	RD0814	
VVT-3	339 OFFICE	500-800	660	264	8 x14	8 x14	13.5"	3	277/1/60	CARRIER	RD0814	
VVT-4	338 ADMIN ASSIST	200-400	205	0	8	8	18	0	--	CARRIER	ZD-08	
VVT-5	335 EXEC DIR	500-800	620	248	8 x14	8 x14	13.5"	3	277/1/60	CARRIER	RD0814	
VVT-6	334 MULTI PURPOSE	700-1000	840	336	8 x18	8 x18	13.5"	4	460/3/60	CARRIER	RD0818	
VVT-7	347 OPEN AREA	900-1300	1260	504	8 x24	8 x24	13.5"	6	460/3/60	CARRIER	RD0824	
VVT-8	348 OPEN AREA	700-1000	830	0	12	12	24	0	--	CARRIER	ZD-12	
VVT-9	354 WORK AREA	900-1300	1200	0	16	16	24	0	--	CARRIER	ZD-16	
VVT-10	354 WORK AREA	900-1300	955	382	8 x24	8 x24	13.5"	4	460/3/60	CARRIER	RD0824	
VVT-11	359 STAFF LOUNGE	700-1000	750	300	8 x18	8 x18	13.5"	3	277/1/60	CARRIER	RD0818	
VVT-12	320 FBO MGR OFFICE	400-600	300	120	8 x 10	8 x 10	13.5"	2	277/1/60	CARRIER	RD0810	
VVT-13	328 SPECIAL EVENT	400-600	450	180	8 x 10	8 x 10	13.5"	2	277/1/60	CARRIER	RD0810	
VVT-14	326 AIRPORT MGR	400-600	375	150	8 x 10	8 x 10	13.5"	2	277/1/60	CARRIER	RD0810	
VVT-15	324 PILOTS PLANNING	200-400	340	0	8	8	18	0	--	CARRIER	ZD-08	
VVT-16	300 GALLARY	2500-3000	2460	984	16	24.5 x 12.5	12	10	460/3/60	CARRIER	35DV016	
VVT-17	300 GALLARY	2500-3000	2460	984	16	24.5 x 12.5	12	10	460/3/60	CARRIER	35DV016	
VVT-18	KITCHEN	3000-4000	3600	0	16 x 14	21.5 x 17.5	12	0	--	CARRIER	35DV018	
VVT-19	CAFé	1300-1900	1895	758	12	18.5 x 12.5	12	8	460/3/60	CARRIER	35DV012	
VVT-B1	AHU-1	2500-3000	3000	0	16	24.5 x 12.5	12	0	--	CARRIER	35DV016	
VVT-B2	AHU-1	2500-3000	3000	0	16	24.5 x 12.5	12	0	--	CARRIER	35DV016	
VVT-B3	AHU-2	2500-3000	3000	0	16	24.5 x 12.5	12	0	--	CARRIER	35DV016	
VVT-B4	AHU-2	2500-3000	3000	0	16	24.5 x 12.5	12	0	--	CARRIER	35DV016	
VVT-B5	AHU-3	1300-1900	1900	0	12	18.5 x 12.5	12	0	--	CARRIER	35DV012	
VVT-B6	AHU-3	1300-1900	1900	0	12	18.5 x 12.5	12	0	--	CARRIER	35DV012	

REMARKS
- A 0.5" MAXIMUM DOWNSTREAM STATIC PRESSURE.
- B CFM RANGE REFERS TO THE RANGE OF MAXIMUM CFM ALLOWED FOR THIS BOX TYPE. IT IS NOT A MINIMUM/ MAXIMUM SETTING.
- C MINIMUM HEATING CFM SHALL BE 100 CFM/KW OR 30F TEMP RISE.
- D DISCONNECT FURNISHED BY DIV 16
- E
- F

NOTES
1.
2.

KITCHEN EXHAUST/SUPPLY MAKE-UP AND HOOD UNIT

MARK	SERVICE	TYPE	SIZE	MANUFACTURER	MODEL
KEH-1	KITCHEN	FULL COMPENSATING	4'0" x 18'0"	GREENHECK	CWA

REMARKS
A

NOTES
1. SEE FAN SCHEDULE FOR SUPPLY AND EXHAUST FANS.

AIR DISTRIBUTION DEVICE SCHEDULE

MARK	DESCRIPTION	APPLICATION	MOUNTING	FACE SIZE	MATERIAL	FINISH	MANUFACTURER	MODEL	NOTES
A	CEILING DIFFUSER	OFFICE CEILING	LAY-IN	24 X 24	STEEL	OFF-WHITE BAKED ENAMEL	METAL-AIRE	5700	1
R	CEILING RETURN	OFFICE CEILING	LAY-IN	24 X 24	ALUMINUM	OFF-WHITE BAKED ENAMEL	METAL-AIRE	CC5	
S	CEILING DIFFUSER	TOILET ROOM	SURFACE	12 X 12	ALUMINUM	ANODIZED ALLUMINUM	METAL-AIRE	5800A	1
E	TOILET EXHAUST	TOILET ROOM	SURFACE	AS SCHEDULED	ALUMINUM	ANODIZED ALLUMINUM	METAL-AIRE	H4002RD	1
SL	SLOT DIFFUSER	LOBBY	SURFACE	2S x 96"	ALUMINUM	ANODIZED ALLUMINUM	METAL-AIRE	6000	1
W	SIDEWALL REGISTER	CAFE - VALTED CEILING	SURFACE	12 X 6	ALUMINUM	ANODIZED ALLUMINUM	METAL-AIRE	VH	1
K	CEILING GRILL	KITCHEN HOOD SF	SURFACE	36 X 32	ALUMINUM	OFF-WHITE BAKED ENAMEL	METAL-AIRE	CC5 FB	2
DG	DOOR GRILL	TOILET 357 & 358	SURFACE	14 X 8	ALUMINUM	ALUMINUM PAINT	METAL-AIRE	DG DF	

REMARKS
1.

NOTES
1. OPPOSED BLADE DAMPER, CONTROLLED FROM DIFFUSER FRONT.
2. PROVIDE TWO THROW-AWAY AIR FILTERS PER GRILLE.

FAN SCHEDULE

MARK	SERVICE	TOTAL AIR CFM	E.S.P. (IN. W.G.)	UNIT TYPE	DRIVE	ROOF/WALL OPENING	FAN (RPM)	FAN (HP)	VOLTS/PH	MANUFACTURE	MODEL NUMBER	NOTES
EF-1	TOILETS & SHOWER	540	0.375	ROOF CENT.	BELT	12.5	1094	1/4	120/1/60	GREENHECK	GB-90-4	1
EF-2	RESTROOMS & JAN.	950	0.375	ROOF CENT.	BELT	14.5	1037	1/4	120/1/60	GREENHECK	GB-120-4	1
EF-3	KITCHEN HOOD	5400	0.625	ROOF CENT.	BELT	20.5 X 20.5	1,130	2	460/3/60	GREENHECK	CUBE-200-20	2
SF-1	KITCHEN HOOD	4800	0.750	INLINE	BELT	---	1,347	2	460/3/60	GREENHECK	BSQ-180-20	2

REMARKS
1. PROVIDE FACTORY DISCONNECT.
2. PROVIDE BACKDRAFT DAMPER
3.

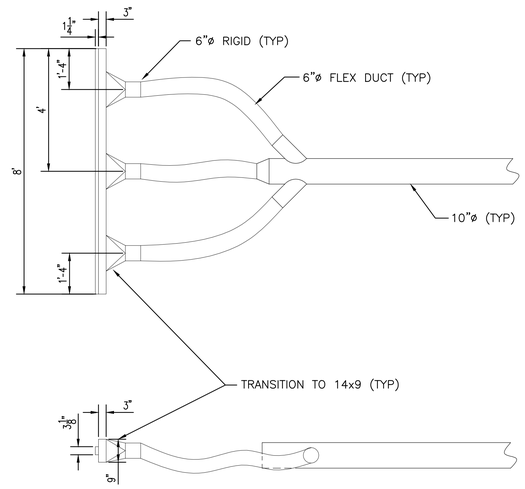
NOTES
1. INTERLOCK WITH LIGHT SWITCH IN BOTH MEN'S & WOMEN'S TOILETS.
2. PROVIDE COMBINATION STARTER WITH ON-OFF SWITCH AND CONTROL POWER TRANSFORMER

LOUVER SCHEDULE

MARK	LOCATION	CFM	HEIGHT	WIDTH	DEPTH	MATERIAL	APPROX. FREE AREA	MANUFACTURER	MODEL	NOTES
LV-1	361 MECHANICAL ROOM	2160	18"	48"	4"	ALUMINUM	45%	RUSKIN	ELC6375DAF	1
LV-2	309 MECHANICAL ROOM	1200	24"	24"	4"	ALUMINUM	45%	RUSKIN	ELC6375DAF	2

REMARKS:
- A PROVIDE 1/2" BIRDSCREEN ON INTERIOR.
- B PROVIDE MOTOR OPERATED DAMPER.
- C PROVIDE KYNAR PAINTED FINISH AS SELECTED BY ARCHITECT.

NOTES:
1. INTERLOCK WITH AHU-1 & AHU-2
2. INTERLOCK WITH AHU-3



NOTE: REFER TO METALAIRE CATALOGE FOR FURTHER DETAILS

LINEAR DIFFUSER PLENUM DETAIL

SCALE: 1/2" = 1'-0"

ADDENDUM #1
HVAC Controls Upgrade
AT SEBRING REGIONAL AIRPORT
RFQ # 16-01

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TERMINAL BUILDING
SEBRING REGIONAL AIRPORT
SEBRING, FLORIDA

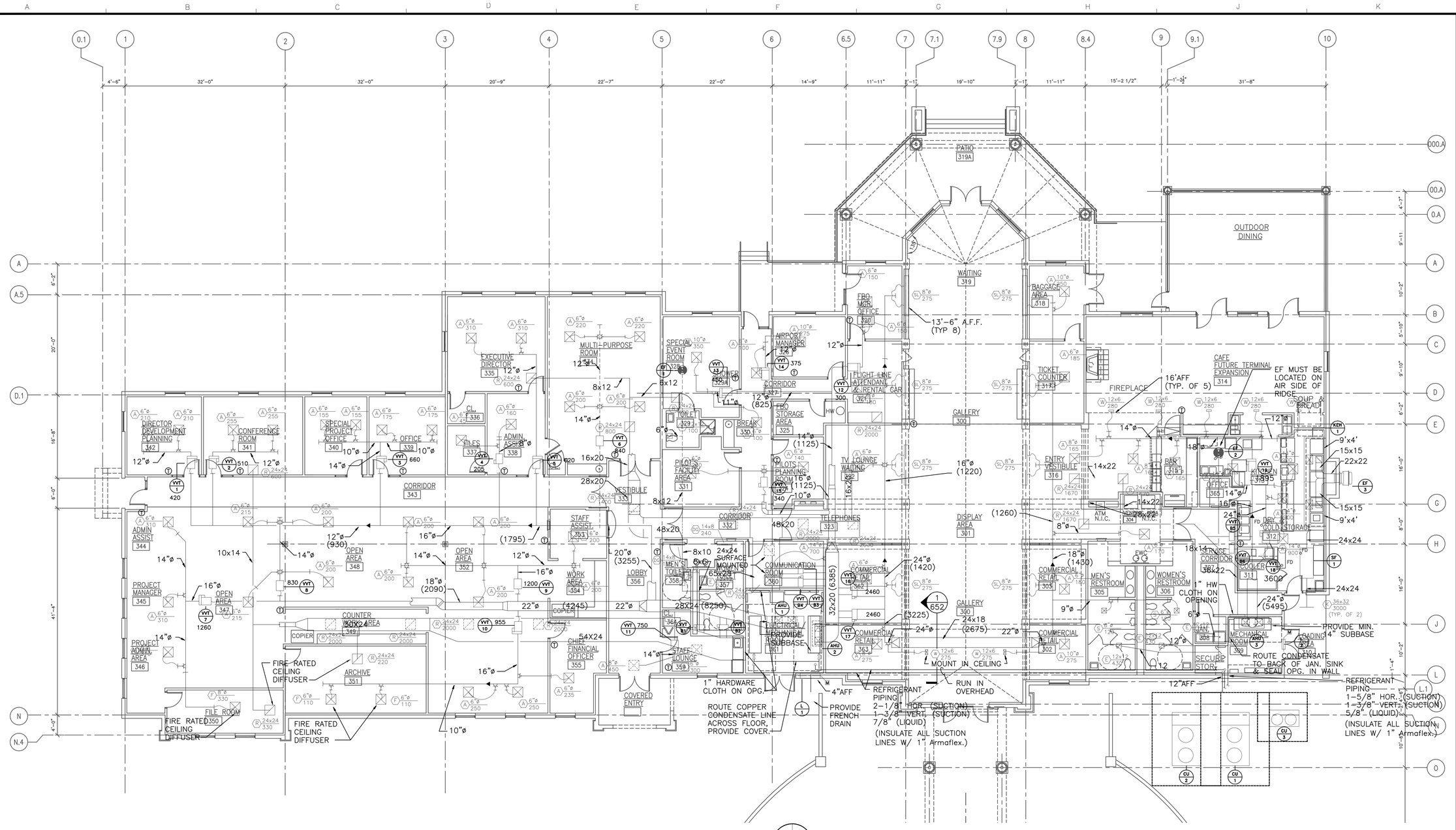
DATE	ISSUE/REVISION
11/1/99	ADDENDUM #1
8/20/99	CONSTR. ISSUE
8/9/99	95% OWNER
8/10/00	RECORD DWG
3/29/99	REV. BID ISSUE
3/18/99	BID ISSUE

DRAWN BY: JPB
CHECKED BY: MAW

AE JOB NUMBER
32068201

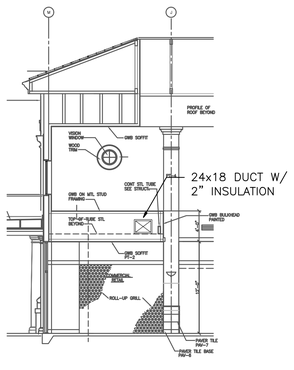
TERMINAL BUILDING HVAC SCHEDULES

651
SHEET NUMBER



HVAC FLOOR PLAN

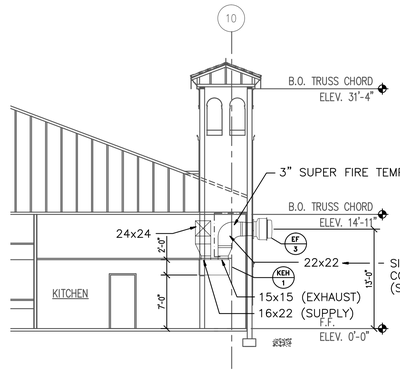
SCALE: 1/8" = 1'-0"



HVAC SECTION

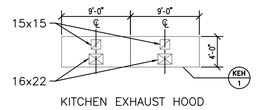
SCALE: 1/8" = 1'-0"

1
652



KITCHEN EXHAUST HOOD DETAIL

SCALE: 1/8" = 1'-0"



KITCHEN EXHAUST HOOD TOP VIEW

NOTES: EXHAUST DUCTWORK SHALL BE ALL WELDED STAINLESS STEEL CONSTRUCTION.

USE RADIUS ELBOWS ONLY.

INSTALL ACCORDING TO NFPA 96 W/ ANSUL FIRE PROTECTION SYSTEM

PROVIDE 3" PABCO SUPER FIRE TEMP M

ADDENDUM #1
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RFQ # 16-01

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TERMINAL BUILDING
SEBRING REGIONAL AIRPORT
SEBRING, FLORIDA

DATE	ISSUE/REVISION
1/17/00	ADDENDUM #2
11/1/99	ADDENDUM #1
8/20/99	CONSTR. ISSUE
8/9/99	95% OWNER
8/10/00	RECORD DWG
3/29/99	REV. BID ISSUE
3/18/99	BID ISSUE

DRAWN BY: JPB
CHECKED BY: MAW

AE JOB NUMBER: 32068201

TERMINAL BUILDING HVAC PLAN

652
SHEET NUMBER

User Name: JTBURDON
Drawing Name: U:\3b068\H\3b068t652.dwg Plotted Date: 01/21/00 Plotted Time: 15:15:51

Meeting Notes

ADDENDUM #1
HVAC Controls Upgrade
AT SEBRING REGIONAL AIRPORT
RFQ # 16-01

ATKINS

Project:	HVAC Controls Upgrade AT SEBRING REGIONAL AIRPORT RFQ # 16-01		
Subject:	Pre-Proposal Conference		
Date and time:	8/23/2016 1:00 PM	**Meeting no:**	1
Meeting place:	Sebring Regional Airport Board Room	**Minutes by:**	Donald A. Koppy issued 8/25/2016

1. INTRODUCTIONS

The meeting started on time and Mr. Koppy introduced himself to those present, and introduced Beverly Glarner, who is the current Owner's Project Coordinator.

A Meeting Sign-in Sheet (attached) was distributed and completed by all proposers present.

2. PROJECT OVERVIEW

It was noted this is a non-mandatory pre-proposal meeting for selection of a Design-Build Contractor for replacement of the HVAC Control System for the airport's terminal building. The proposer's submittal is only for review of their qualifications.

Mr. Koppy handed out reduced-scale Owner-provided existing conditions drawings of the existing mechanical system, dated 1/17/00. He noted the drawings are missing two split system cooling units added by the Owner. One unit is for the room identified as the Server Room in the Specifications, but is the Communications Room on the provided drawings, and a unit in the restaurant dining / cafe.

3. SAFETY / SECURITY

Badging is not required unless after-hours work is performed.

Contractor must provide ample notification of closures to airport's current HVAC controls and minimize durations during normal business hours.

Contractor responsible for placement and maintenance of barricades around work inside and outside the building.

Work in the Server/Communications room must be observed at all times by a member of the airport staff, so minimize the timeframes accordingly.

Doors that are currently locked must be locked or guarded at all times if left open.

4. SCHEDULE / PHASING

Verify the Milestones on Page 12 of the RFQ are attainable.

Occupants currently in the far north end of the terminal's open office space will be relocated prior to start of any design or construction.

5. RFQ PROCEDURES

PDF Documents of the existing conditions will be available from Airport.
All Questions shall be in writing and addressed to Beverly Glarner.
RFQ responses will be opened on the day they are submitted.

6. DISCUSSION OF ADDENDA

Submit all questions in writing, any discussion made today need to be documented in writing.
Answers provided via addendum. Thursday August 25th at 2:00 p.m. is deadline for questions
Addendum 1 is anticipated to be issued by August 26, which will include the drawings.

7. QUESTIONS

A. The specifications say replace the VVT boxes that don't function properly, how are they to be accounted for? Answer: Pre-testing and balancing will be performed to determine items to be replaced. Include a unit price for each.
B. How do we know if the kitchen exhaust system needs to be replaced? Answer: The Owner has recently replaced the exhaust system. No work is required at this time.
C. Are signed and sealed engineered documents required for approval by an Authority Having Jurisdiction? Answer: Yes.
D. What specific criteria is the Owner looking for selecting as listed on Page 11? Answer: Refer to Page 9 for detail. If the proposer has letters of recommendation/reference from prior clients of post-occupancy installations, they would be highly considered, as the airport has to keep its own client's happy.
E. Should there be a Pre and Post Testing and Balancing of the HVAC system? Answer: See additional specifications requirements in Addendum #1.

Additional comments from the Owner:

A. There are several areas in the building with temperature control issues.
B. Submittals should include a CD or USB stick with electronic files of everything submitted as paper.
C. Record documents shall also be submitted electronically.

8. JOB SITE TOUR

Mr. Koppy led the attendees through the Server/Communications Room, Restaurant Dining/Café, Electrical/Mechanical Room, and Mechanical Room, overserving the split systems, and main mechanical systems. The group reconvened in the conference room.

There being no further questions the meeting was concluded at 1:40 PM.

END OF MEETING NOTES

Meeting Sign-In Sheet

ADDENDUM #1
HVAC Controls Upgrade
AT SEBRING REGIONAL AIRPORT
RFQ # 16-01

ATKINS

Project:	HVAC Controls Upgrade AT SEBRING REGIONAL AIRPORT RFQ # 16-01		
Subject:	Pre-Proposal Conference		
Date and time:	8/23/2016 1:00 PM	**Meeting no:**	1
Meeting place:	Sebring Regional Airport Board Room		

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