

VAV BULLETIN

Temperature Controls (VAV)

(2/09/09)

This bulletin is to advise you of the fees and responsibilities associated with the tenant's temperature controls.

Tenant Responsibility:

1. Unit power is by tenant. Tenant to provide permanent power prior to Roth Bros. commissioning.
 - a. A power whip (wires enclosed in some form of flexible protection) from the units disconnect or a dedicated circuit from the tenants breaker panel must be in place prior to installation.
2. Tenant shall provide a 2" x 4" junction box mounted vertical with conduit stubbed to ceiling space for each temperature sensor (installed by division 16). **The location of this box must be the same as the location indicated of the final approved construction drawings. If a relocation is necessary then this must be approved by the tenant engineer and a signed document must be presented before the sensor will be installed in this new location.**
3. Tenant shall have ceiling, walls, ductwork and electrical equipment powered to HVAC equipment completed and ready for installation.
4. Tenant shall provide 72 hour written notice by tenant's contractor to Roth Bros., Inc. when tenant space is ready for temperature controls installation.
5. Tenant shall provide the following information for equipment purchase:
 - a. Tenant name and space number
 - b. Number VAV units.
 - c. VAV Submittals for units to be installed
 - d. Estimated start time.
 - e. Estimated completion date.
 - f. General contractor name and phone number
 - g. Mechanical contractor name and phone number.
6. Fax copy of all completed items to Roth at 330-799-3369 or email to *JFitzgerald@rothbros.com*.
7. Submit complete payment to Roth Bros in order to initiate equipment order and schedule work. Fax 330-799-3369 or email *JFitzgerald@rothbros.com*.
8. A **check** is to be issued for the Total Price before Roth proceeds with parts order.
9. The payment must be in the form of a certified check or company check (no personal checks). Please send checks attention - *Laura Fonce*
10. All low voltage step-down transformers will be factory mounted and ordered by the tenant. A 75va transformer is required with terminations provided for EMS 24vac power.

Note: If Roth Bros. or their subcontractor responds to tenant's request for temperature control installation and the above requirements are not complete or requires partial installation of the control system or any problems are created by other contractors the applicable fees will be billed. See Appendix IV.

Roth Bros. Responsibility:

1. Provide Andover controller per unit.
2. Provide space temperature sensor per unit.
3. Provide discharge temperature sensor per unit
4. Provide control transformer.
5. Provide all control cable.
6. All programming.
7. System commissioning via telephone with job M.C.

Simon Property Group Responsibility:

1. Facilitate work between tenant contractor and Roth Bros.

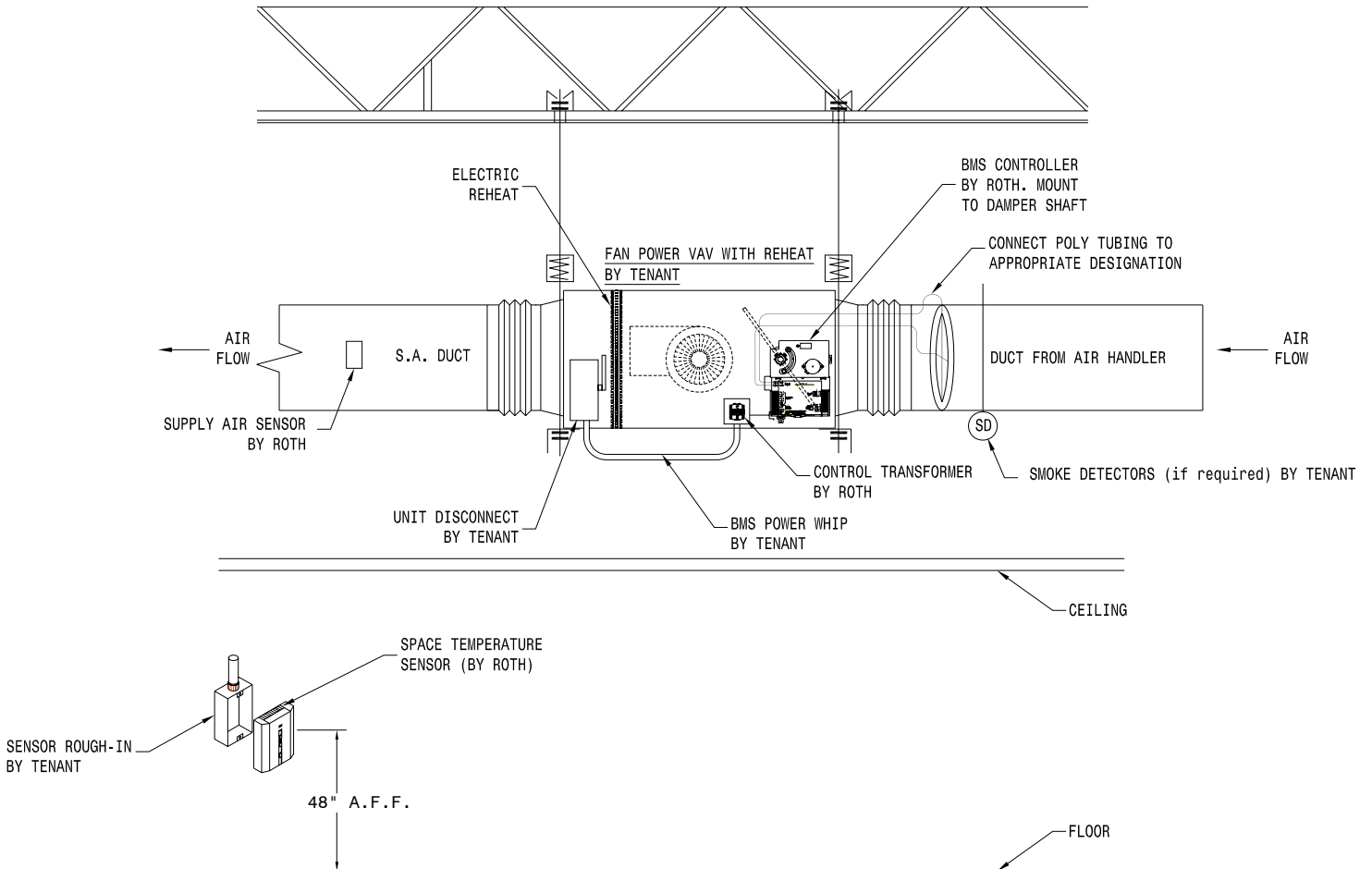
EXCLUSIONS:

The following items are not included:

1. VAV Unit supplied by owner
2. Smoke detectors or the installation and/or interlock wiring of smoke detectors
3. Fire Alarm tie-in
4. Installation of VAV box
5. Air balance (by Mechanical contractor)
6. Disconnect/Starter for unit
7. After hours labor (All after hours labor will not commence until a signed purchase order has been sent to Roth Bros., Inc.)
8. Any scope deviations from the final bid set of Tenant Drawings provided to Roth by Tenant Architect or Engineers.

Appendix I

Typical Unit Layout



See appendix III for installation and supplier responsibilities.

Appendix II

Equipment Specification and Cost Breakdown

Item	Qty	Device	First Unit Cost	Additional Cost per Unit
1	1	I2865 Andover controller	\$260	\$245
2	1	TTS-SE Andover space sensor	\$14	\$14
3	1	TTS-LED-1 Andover LED Digital Display Sensor (Optional from TTS-S)	\$45	\$45
4	2	Dis/Mixed Air Temp sensors	\$29	\$29
5	1	480,277,240,120/24VAC low voltage transformer	\$15	\$15
6	2	Fan/Heat relays	\$55	\$55
7	250'	Infinet Communication Cable Model#D-73601-OR "Great Lakes Wire & Cable"	\$50	\$50
8	100'	Control Cable: 4 conductor, 18 awg, plenum, stranded	\$28	\$28
9		Control engineering labor	\$75	\$75
10		Commissioning labor	\$250	\$125
11		Programming labor	\$170	\$100
12	12pt	Terminal strip communication	\$20	\$20
13	1	Fan Status CT	\$29	\$29
		Total (if purchased thru Roth)	\$995	\$785
		<i>(Total does not include item 3)</i>		

Appendix III

Responsibility Matrix

Task Description	Tenant Mech. Furnish	Tenant Mech. Install	Roth Furnish	Roth Phone Commissioning	Tenant Elect. Furnish	Tenant Elect. Install
Terminal Boxes VAV / FPB	x	x				
DDC Controller		x	x			
Flow Cross	x	x				
120v/240v/277v/480v to Control Panel					x	x
Conduits and workbox for T-Stat/Sensor					x	x
Air Test and Balance (Work with Roth via. telephone)	x	x		x		
Sensors		x	x	x		
Tie-in of communication from New VAV box controller to existing mall Andover communication network.		x	x			
Fire Alarm System / Smoke Detectors						
Hardware - Smoke Duct Detectors	x	x				
Addressable equipment shut down relays					x	x
Power / Shutdown Cabling					x	x
Remote Reset	x					x
VAV Box Commissioning		x		x		x

Appendix IV

Potential construction change order items

Description of problem	Cost/event
Transformer replaced due to Tenant improper Power Wiring	\$140.00
Replace Andover Microprocessors Controllers	\$350.00
Additional phone start-up after the Initial Installation Checkout *	\$500.00
Replacement of Damaged Cabling (Comm or other)	\$90.00

- Not a per unit charge



CHANGE ORDER

Request

3847 Crum Rd.
 Youngstown, Ohio 44515
 Phone: (330) 793-5571
 Fax: (330) 799-3369

No

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C.O. Request Submitted To:		Phone:	Date:
Street:		Job Name:	
City, State and Zip Code:		Job Location:	
Contact:	Date of Plans:		Job Phone:

We hereby propose the furnished material and labor necessary for the completion of:

Total \$0.00

QTY.	Unit Cost	
Tax		inc.
Shipping (Overnight)		inc.
Total		\$0.00

WE PROPOSE hereby the furnished material and labor - complete in accordance with above specifications, for the sum of:	
Payments to be made as follows:	
All material is guaranteed to be completed in a substantial workmanlike manner according to specifications submitted, per standard practices. Any alterations or deviations from above specifications involving extra cost will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents, or delays beyond our control. Owner to carry fire, tornado and other necessary insurance. Our workers are fully covered by Workman's Compensation Insurance.	Authorized Signature _____ <p style="text-align: center;">James H. Fitzgerald</p> Note: This proposal may be withdrawn by us if not accepted within <u>30</u> days.
ACCEPTANCE OF CHANGE ORDER The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payments will be made as outlined above.	
Date of Acceptance: _____	Signature _____

Appendix V

Sequence of Events

1. Elec. Rough in of temperature sensor conduits prior to sheetrock. To be stubbed above ceiling.
2. Mechanical Rough-in of ductwork.
3. Control rough-in of communication and control wiring
4. Mechanical equipment installation.
5. Mechanical Completion of ductwork and associated work.
6. Power provided to VAV box.
7. Prior to ceiling grid the controls are to be installed as well as the associated sensors should be tied back into the VAV controller.
8. Complete Mechanical Start-up – Fan Rotation (if applicable), VAV blade rotate check.
9. Controls check-out – i.e. sensors read correctly, VAV operation correct and air balancing.

I have read this bulletin and understand all of its contents

General Contractor - _____

Representative - _____

Mechanical Contractor - _____

Representative - _____

Electrical Contractor - _____

Representative - _____