

Johnson Controls – Building Efficiency
7461 Airport Freeway
Richland Hills, TX 76118
Phone: 866-589-9413
FAX: 866-621-0399



April 27, 2012

City of Fort Worth
Attention: Camillia Ryan
Senior Buyer - Purchasing Division

RE: Rolling Hills Treatment Plant
Sub: AHU-S2 Replacement Reference RFO No. 12-0070

JCI TXMAS Contract: TXMAS-6-840160

Scope:

1. Per plans and specifications for project Rolling Hills WTP S-2 Air Handling Unit Replacement Bid No. 12-0070 RFO No. 12-0070 provided to JCI dated 02/14/2012
2. Johnson Controls evaluated three AHU's for this application for the space that is available in the existing mechanical room. The existing AHU is 106" long leaving 18" between the AHU and the Wall for service access. We priced this project for the COFW using the following AHU's.

Alternates:

1. **\$214,157.00** - Temtrol Custom AHU 98" long provides 26" service space.
2. **\$152,263.00** - McQuay Standard AHU 114" Long provides 10" service space
3. **\$162,169.00** - York Solution Standard AHU 117" Long provides 7" service space

Note: AHU Drawings Attached for your review

Exclusions:

1. Overtime Labor
2. Other existing system condition other than what's specified

Thank you for this opportunity to be of service.

This proposal is hereby accepted and Johnson Controls is authorized to proceed with the work; subject, however, to credit approval by Johnson Controls, Inc., Milwaukee, WI.

Alternate Number Accepted _____

Purchaser - Company Name

Signature

Name: _____

Title: _____

Date: _____

This proposal valid 60 days past:

April 27, 2012

JOHNSON CONTROLS, INC.

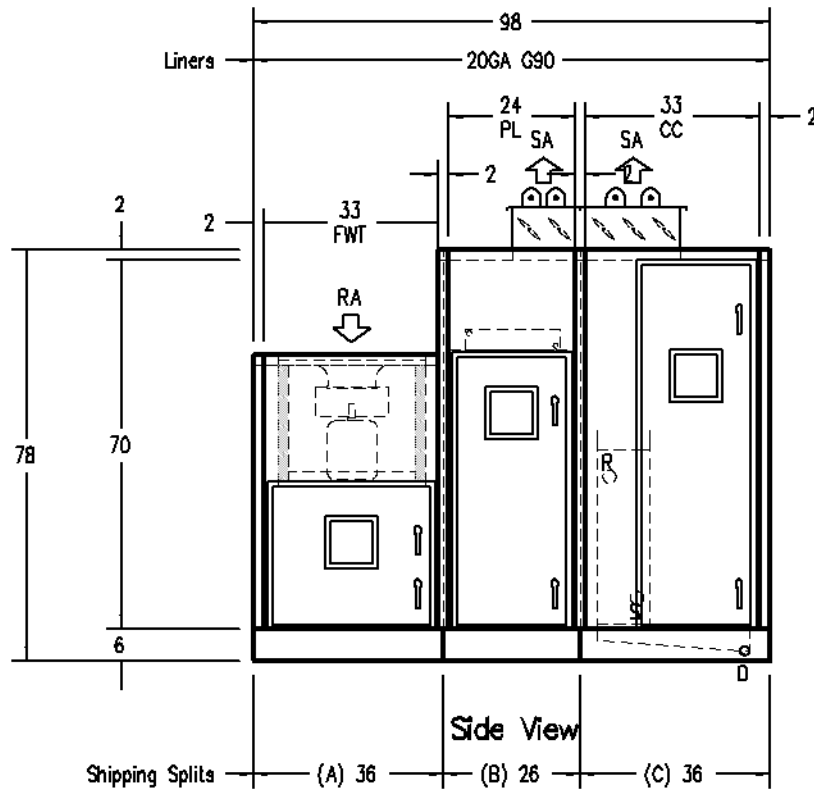
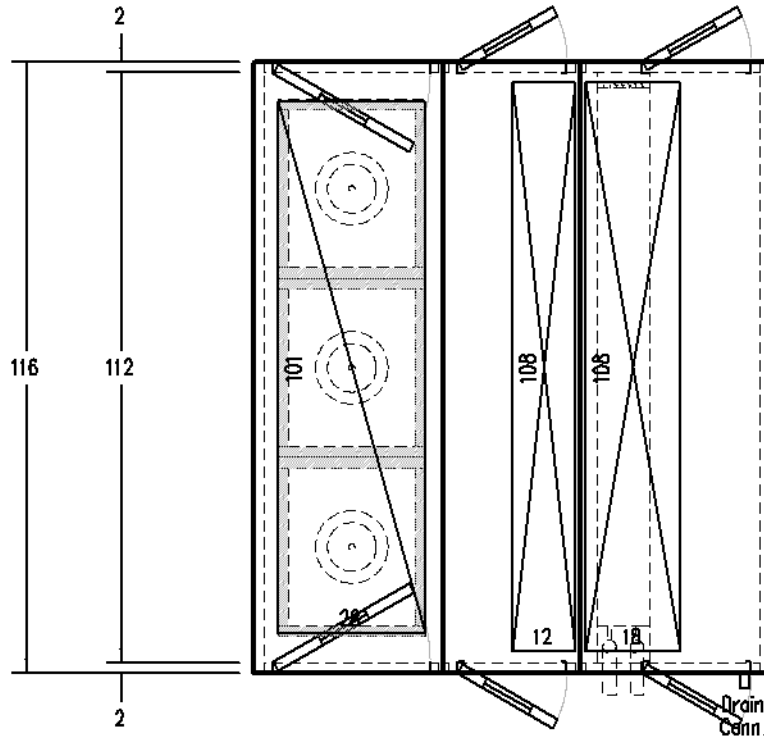
Signature

Name: Ted Godawski

Title: Senior Account Executive

(Important: This Proposal incorporates by reference the existing COFW/Johnson Controls Terms.)





Rolling Hills Multizone

Tag: AHU-1

GOVERNOR

4841 N. SEWELL OKLAHOMA CITY, OK 73118
Phone 405-525-6546 Fax 405-528-4724

Indoor Construction 11,050 CFM

FANWALL Technology Patents US 7,137,775, US 7,179,046 & US 7,527,468 issued

DRAWN BY	DATE	LAYOUT	TIME STAMP	SCALE	SHEET
	3/28/12			1:30	OF
THIS DRAWING, SPECIFICATIONS AND COMMENTS CONTAINED HEREIN ARE THE SOLE PROPERTY OF GOVERNOR, AND MAY NOT BE REPRODUCED OR USED IN ANY MANNER WITHOUT THE PRIOR WRITTEN PERMISSION OF GOVERNOR CORPORATION.			JOB NO.	DWG NO.	REV
					A

Project Name	Rolling Hills Multizone
Quote Number	
Job Number	-000

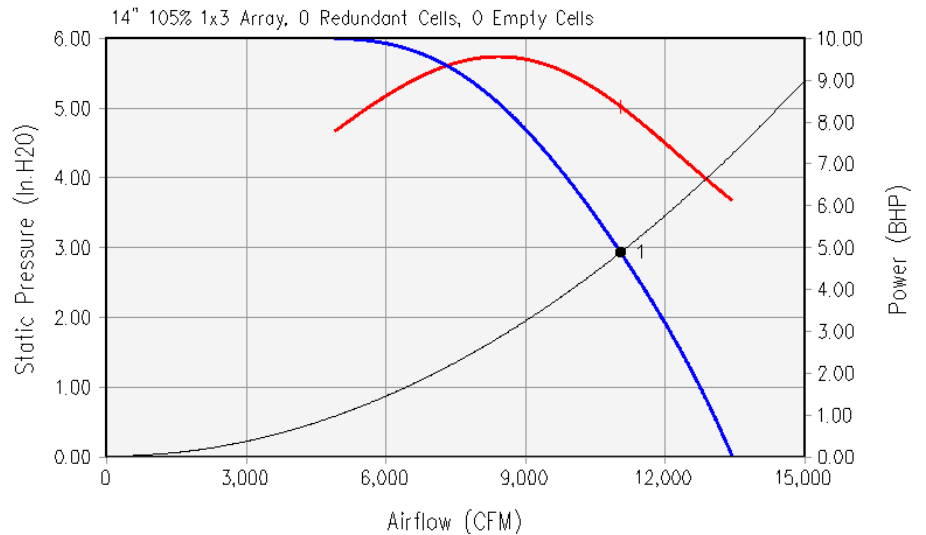
Unit Tag	AHU-1
Date	March 28, 2012

Configuration	
Function	Supply Fan
Construction	Mechanical Frame
Selection Mode	Best
Array	1 Row x 3 Cols
Cell Size	28.000 H x 34.000 W
Fan Wall Depth	22.000
Altitude / Temp	0 Feet / 70 F
Redundant / Empty Cells	0 / 0

Fan Wheel	
Diameter	14
Width	105%
Balancing	1 Plane

Motor	
Manufacturer	Baldor
HP Each / Total	3.5 / 10.5
Poles / RPM	2-Pole / 3490 RPM
Frame	182T / TEAO
Voltage / Phase	460V / 3 Phase
Total FLA	12.0

Options	
Coplanar Silencer	Fiberglass
Back Draft Dampers	NO
Inlet Airflow Straightener	NO
Fan Safety Guard	NO
Powder Coat	NO



Power rating (BHP) does not include transmission losses.
Performance ratings include the effects of the Coplanar Silencer.

Notes	
<input checked="" type="checkbox"/>	Huntair Inc. certifies that the fan model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal Applies to Air Performance only. Performance certified for installation type A – Free inlet, Free outlet.

Operating Points												
Label	Use	CFM	SP	Cell Quantities			RPM	Hz	BHP Each	BHP Total	Vel	Watts
				On	Off	Failed						
1	1	11050	2.93	3			3369	57.9	2.79	8.37	737	n/a

Bare Fan Sound Power with Coplanar Silencer (dB re: 10E-12 watts)											
Label		63	125	250	500	1k	2k	4k	8k	LwA	Lw
		1	Inlet	89	85	85	88	84	83	83	79
	Outlet	80	77	82	76	76	74	73	68	82	86

FANWALL TECHNOLOGY® Patent Numbers US 7,137,775, US 7,179,046 and US 7,527,468 issued and others pending



Coil Selection / Rating 2011.200

Job Name: Rolling Hills Multizone
Tag: AHU-1

Entered By: User Name

Date: 3/28/2012
Serial #: 0

Hot Water		5WC - 2 - 18 x 102 x 2 - 9 AL
Individual Coil Construction	Entering Conditions	Leaving Conditions
(Qty) FH x FL : (1) 18.00 x 102.00 Rows - FPI : 2 - 9 Serpentine : 1.000 Total Face Area : 12.75 sq.ft Fin Thick / Mat. : 0.010" / AL Tube O.D. / Wall : 5/8" / 0.035" Tube Material : CU Case Material : 16 GA GALV Conn Location : RH Same Sup.Conn - Qty / Size : (1) 2" Ret.Conn - Qty / Size : (1) 2"	ACFM : 11,050 SCFM : 11,379 Altd : 0 ft EDB : 54.7°F EWT : 180.0°F Fluid : Water GPM : 58.60	Total Heat : 587,992 Btu/Hr Sensible Heat : 587,992 Btu/Hr LDB : 102.3°F LWT : 159.4°F Actual FV : 866.7 ft/min APD : 0.46 in.WG Water Velocity : 5.99 ft/s Water PD : 7.58 ft
AHRI CERTIFIED 'Rated in Accordance with AHRI Standard 410'		

Project Name	Rolling Hills Multizone
Quote Number	
Job Number	-000

Unit Tag	AHU-1 (Quantity 1)
Date	03/28/12
Coil Tag	CC

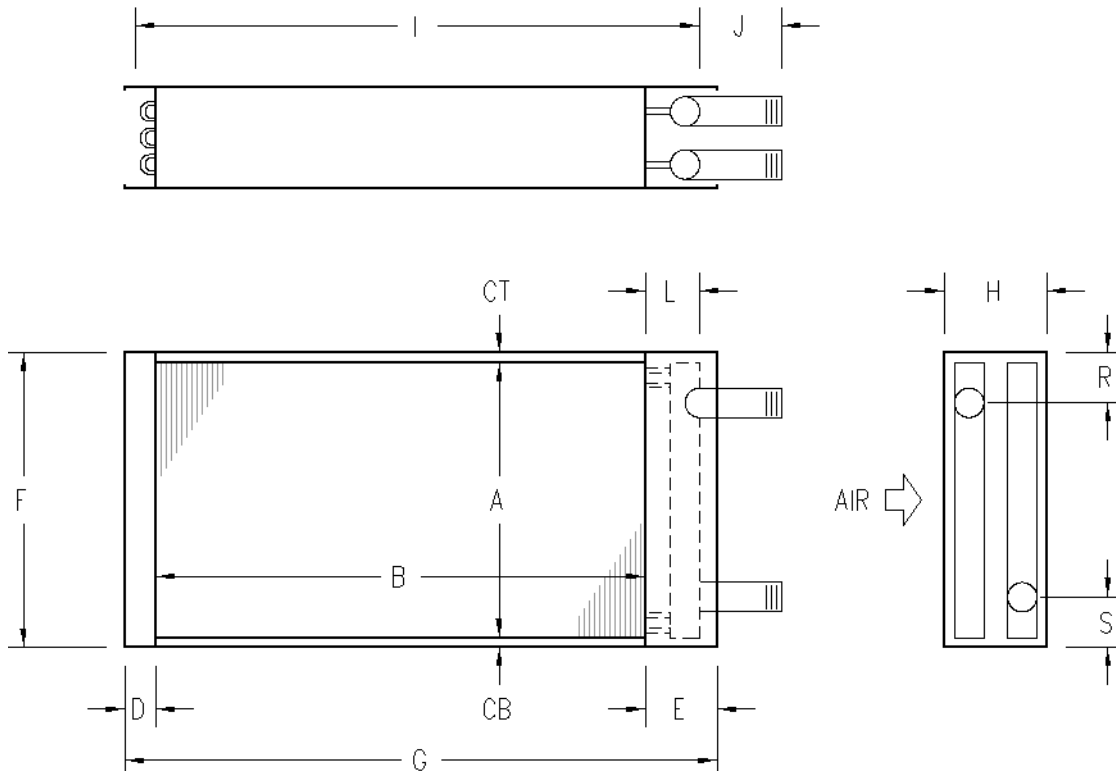
5WC - 4 - 33 x 102 x 6 - 8 AL

Individual Coil Construction	
Quantity	1
Rows - FPI	6 - 8
Serpentine	1.500
Total Face Area	23.4 SqFt
Fin Thick / Mat.	0.010" / AL
Tube OD / Wall	5/8" / 0.035"
Tube Material	CU
Casing Material	304 Stainless
Conn. Location	RH Same
Conn. Material	Red Brass MPT
Sup. Conn. Qty / Size	(1) 2.5"
Ret. Conn. Qty / Size	(1) 2.5"

Entering Conditions	
ACFM	11,050
SCFM	10,517
Altitude	0 Ft
Entering Air DB	84.3 F
Entering Air WB	68.2 F
Fluid Temp	46.0 F
Fluid Flow Rate	87.0 GPM
Fluid Type	Water

Leaving Conditions	
Total Heat	452.8 MBH
Sensible Heat	337.6 MBH
Leaving Air DB	55.3 F
Leaving Air WB	54.5 F
Face Velocity	472.7 Ft/min
APD	0.57 In.WG
Fluid Temp	56.4 F
Fluid Velocity	3.24 FPS
Fluid PD	8.06 Ft

AHRI CERTIFIED 'Rated in Accordance with AHRI Standard 410'



Dimensional Data in Inches													
A	B	CT	CB	D	E	F	G	H	I	J	L	S	R
33.00	102.00	1.00	1.00	2.75	7.00	35.00	111.75	10.00	109.75	8.00	5.25	6.00	6.00

Notes:

1. Provide coil tag indicating maximum operating pressure and temperature.
2. Extend casing on header and return bend sides as shown with 3/8" brake inwards.
3. Use 0.049 wall tubing for return bends.



Static Pressure Summary

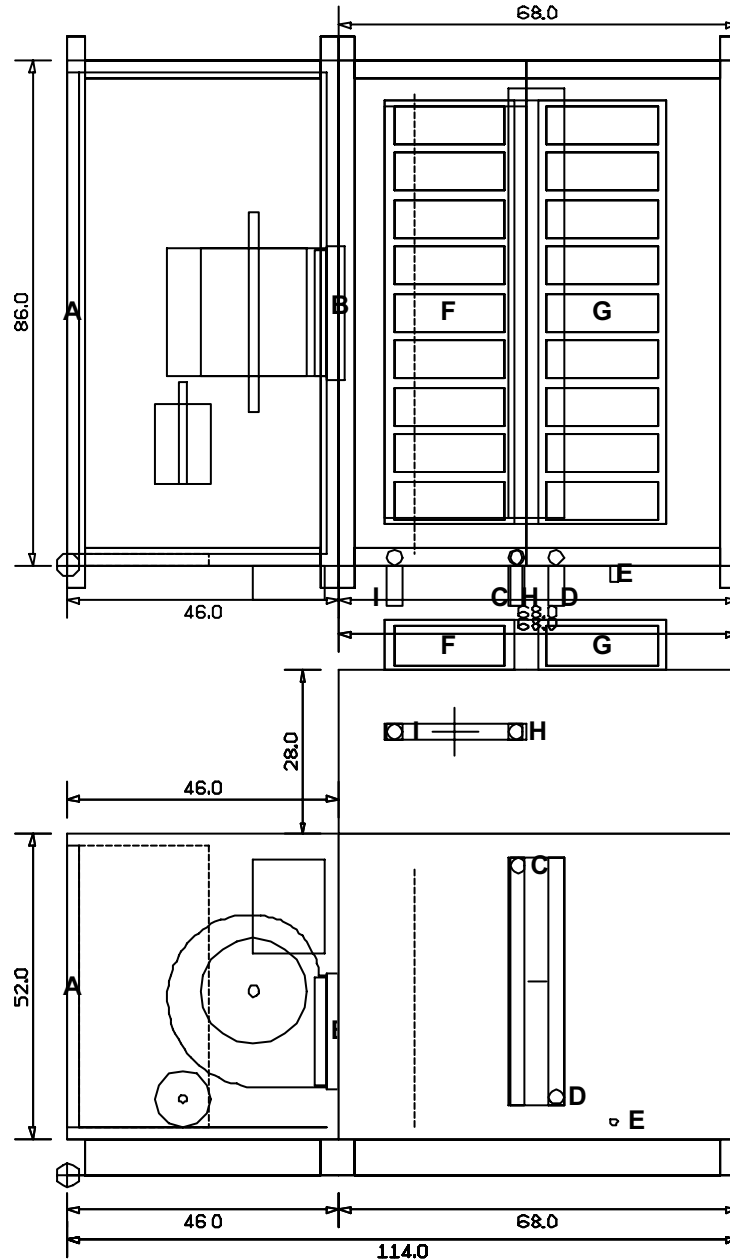
Project Name	Rolling Hills Multizone
Job Number	-000
Quote Number	
Design Name	AHU-1
Date	03/28/2012
Design Assistant Ver. #	2.3.46

External Static Pressure	1.10
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Design1	
Section	Drop Notes
RA Opening	0.12
Coil_CW1	0.49
Cabinet Loss	1.00
SA Damper	0.22
Total Static Pressure for Unit1	2.93

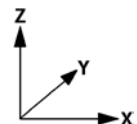
Opening	X	Y	Z	W(Width)	H(Height)
A Supply inlet	0.00	2.00	8.00	82.00	48.00
B Fan discharge	47.00	31.66	14.56	22.68	19.68
C Cold water outlet	76.66	-7.00	52.69	2.50ins. MPS	-
D Cold water inlet	83.16	-7.00	13.31	2.50ins. MPS	-
E Condensate drain conn.	93.00	-2.90	9.00	1.25ins. MPS	-
F MZ Hot deck damper	54.00	7.00	94.38	72.00	22.00
G MZ Cold Deck damper	80.00	7.00	94.38	72.00	22.00
H Hot water outlet	76.31	-7.00	75.43	2.50ins. MPS	-
I Hot water inlet	55.66	-7.00	75.43	2.50ins. MPS	-

Dimensions measured from ⊕



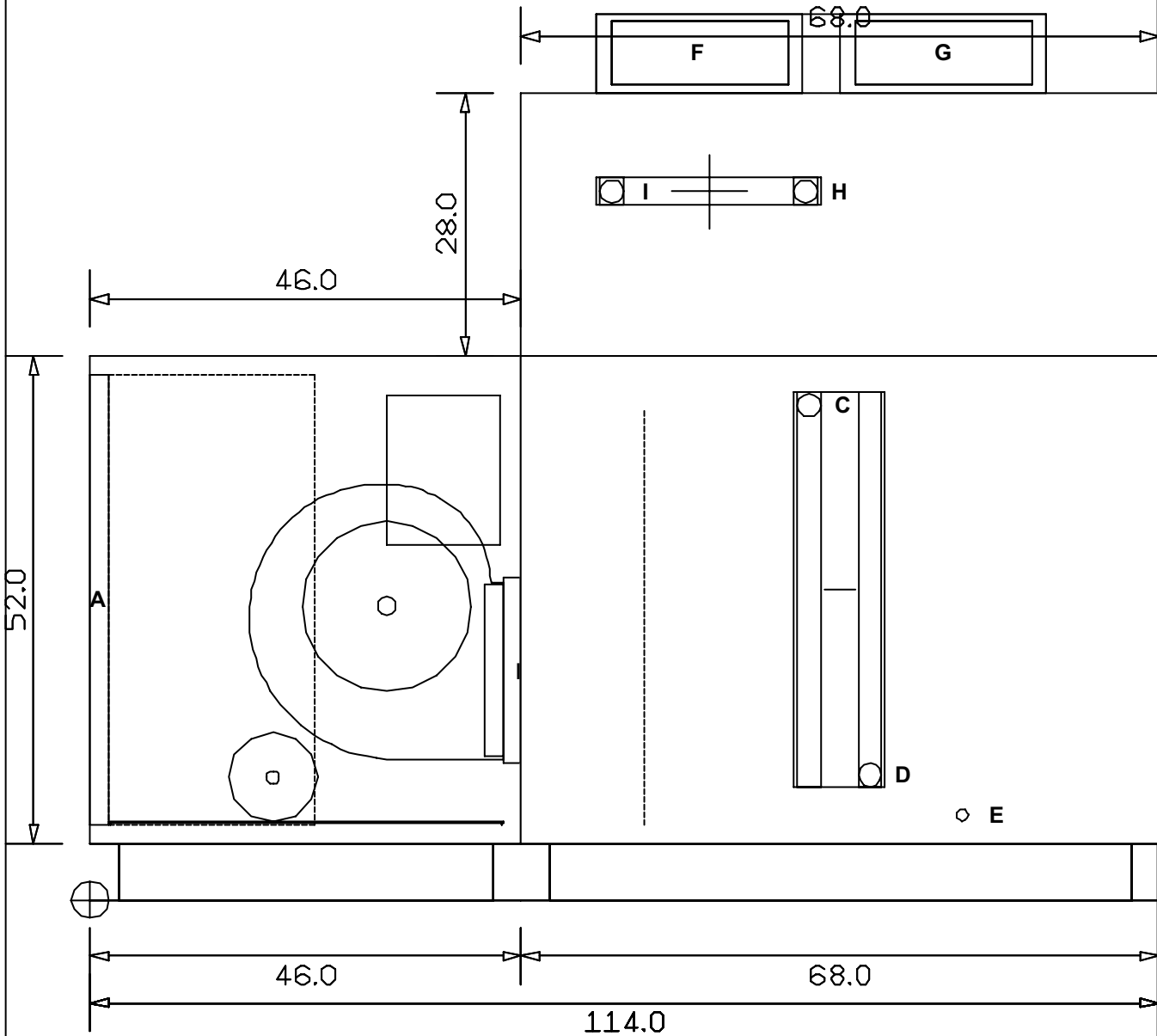
NOTE: Base 6.00ins deep, Cross members extend 4ins on each side of the unit.

VIEW: General Arrangement No Ends
 DRAWN: March-21-2012 (10:51)
 JOB NAME: Rolling Hills
 UNIT TAGGING: S-2
 MODEL: CAH022GMAM



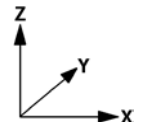
Opening	X	Y	Z	W(Width)	H(Height)
A Supply inlet	0.00	2.00	8.00	82.00	48.00
B Fan discharge	47.00	31.66	14.56	22.68	19.68
C Cold water outlet	76.66	-7.00	52.69	2.50ins. MPS	-
D Cold water inlet	83.16	-7.00	13.31	2.50ins. MPS	-
E Condensate drain conn.	93.00	-2.90	9.00	1.25ins. MPS	-
F MZ Hot deck damper	54.00	7.00	94.38	72.00	22.00
G MZ Cold Deck damper	80.00	7.00	94.38	72.00 <td 22.00	
H Hot water outlet	76.31	-7.00	75.43	2.50ins. MPS	-
I Hot water inlet	55.66	-7.00	75.43	2.50ins. MPS	-

Dimensions measured from ⊕



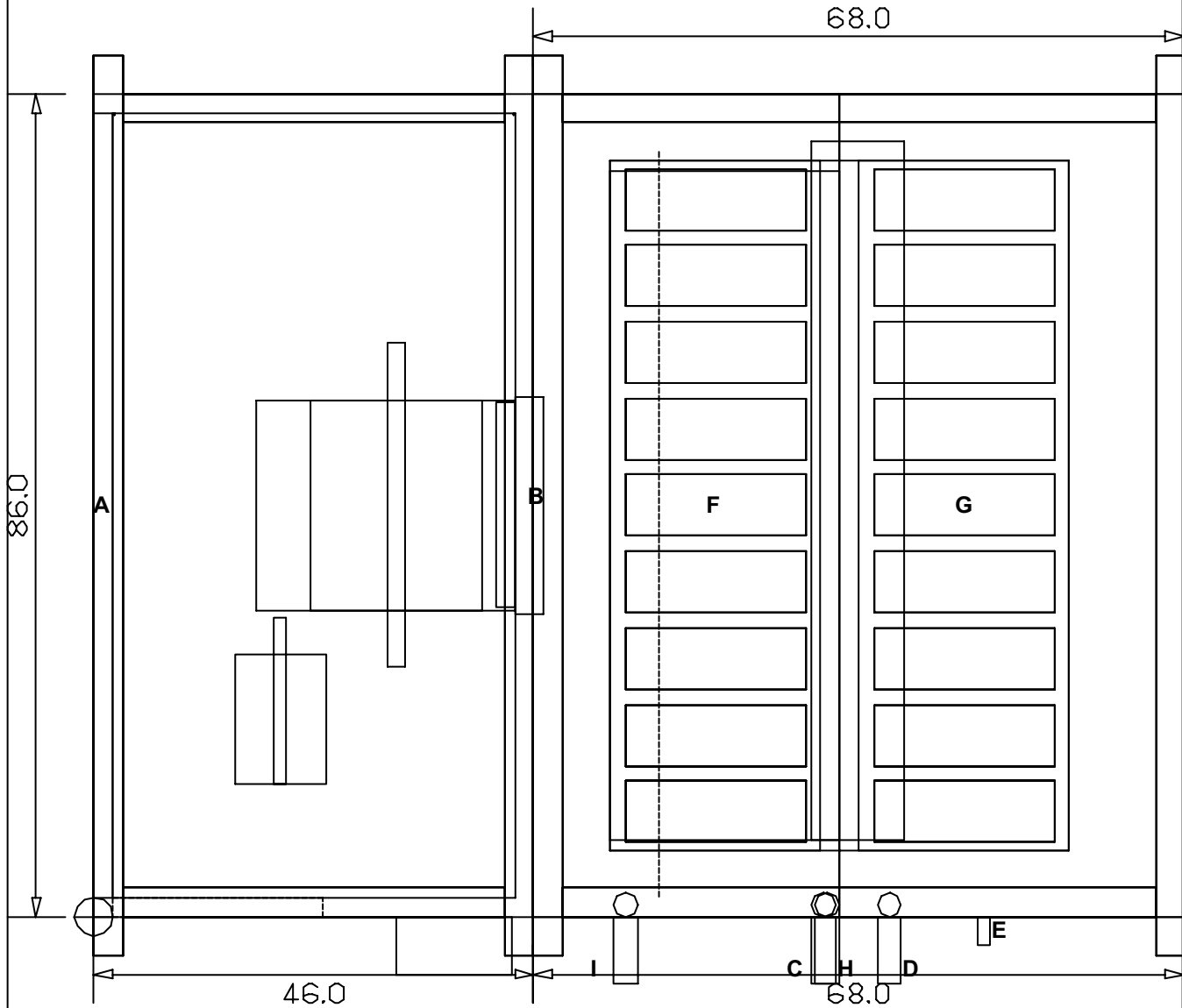
NOTE: Base 6.00ins deep, Cross members extend 4ins on each side of the unit.

VIEW: Right Side
 DRAWN: March-21-2012 (10:51)
 JOB NAME: Rolling Hills
 UNIT TAGGING: S-2
 MODEL: CAH022GMAM



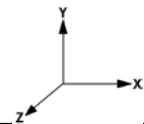
Opening	X	Y	Z	W(Width)	H(Height)
A Supply inlet	0.00	2.00	8.00	82.00	48.00
B Fan discharge	47.00	31.66	14.56	22.68	19.68
C Cold water outlet	76.66	-7.00	52.69	2.50ins. MPS	-
D Cold water inlet	83.16	-7.00	13.31	2.50ins. MPS	-
E Condensate drain conn.	93.00	-2.90	9.00	1.25ins. MPS	-
F MZ Hot deck damper	54.00	7.00	94.38	72.00	22.00
G MZ Cold Deck damper	80.00	7.00	94.38	72.00	22.00
H Hot water outlet	76.31	-7.00	75.43	2.50ins. MPS	-
I Hot water inlet	55.66	-7.00	75.43	2.50ins. MPS	-

Dimensions measured from ⊕

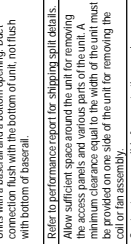


NOTE: Base 6.00ins deep, Cross members extend 4ins on each side of the unit.

VIEW: Top
 DRAWN: March-21-2012 (10:51)
 JOB NAME: Rolling Hills
 UNIT TAGGING: S-2
 MODEL: CAH022GMAM



UNIT CONSTRUCTION
 Model: Solution-XL151x90 Construction: Indoor
 Motor Location: Left
 Unit Weight: 4679 LBS.



NOTES
 Units with a base rail and a bottom opening. Duct connection flush with the bottom of unit, not flush with bottom of base rail.
 Refer to performance report for shipping split details. When the unit is shipped, the access panels and various parts of the unit must be provided on one side of the unit for removing the coil or fan assembly.
 Contractor responsible for penetrations and connections of all electrical boxes and internal coil connections.
 Overall dimensions account for: outdoor roof peak and overhead motor control and/or factory package control boxes; coil connections; rain hoods; pipe bases; MS-20 compatible AUL; louvers (if applicable); requirements for the unit.
 Certain items may extend beyond cabinet dimensions including: door handles, light switches, electrical boxes, fitting legs, gas unit system, etc.

Dimension tolerances: Unit (±.127); Piping (±.254)
 Designates Shipped Loose Items

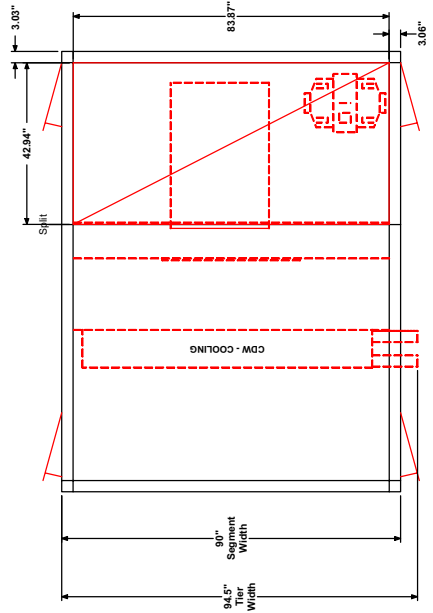
PIPING CONNECTIONS
 (In order of Airflow)

Segment	Type	Hand	Quantity	Supply	Return
MZ	MPT	Left	12 (2 S&S)	3	3
MZ	MPT	Left	1 (2 S&S)	2	2

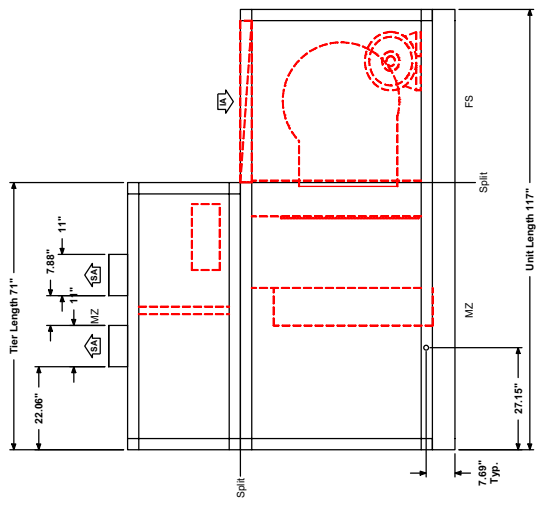
Drain pan connection size 1 1/4" MPT SCH 40
 (Connections on LEFT side of unit)

SECTION LIST
 (ENGINEERS INCLUDE END CHANNELS)

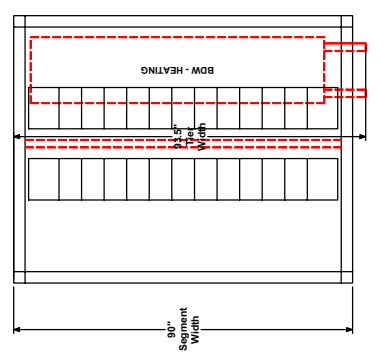
SECT	Material	Description
MZ (1)	Metal Zone	
MZ (2)	Metal Zone	
FS (6)	Supply/Fan	20-20 DWD01 - 1000 HP



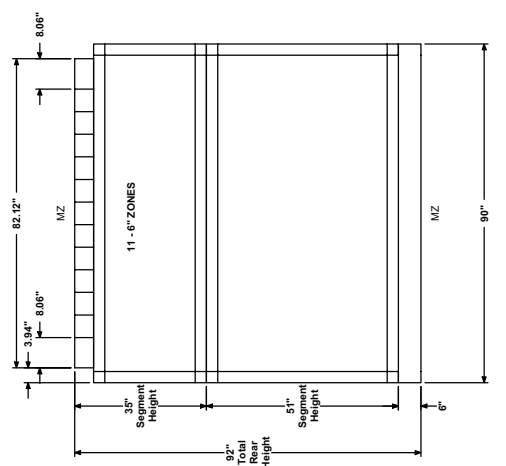
PLAN VIEW
TIER 1



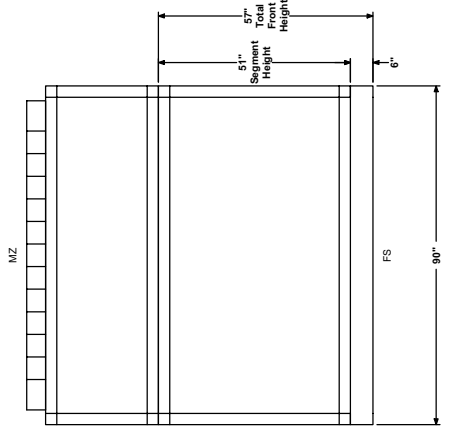
ELEVATION VIEW



PLAN VIEW
TIER 2 - OUTLET END



REAR (OUTLET) END VIEW



FRONT (INLET) END VIEW

Date: 3/16/2012 10:10:34
 Vers: 11.0.6/20
 Form No.: 100.09-EG1
 Dwg. Lev.: 5/03
 Dwg. Scale: NTS

Sold To:
 Cust Purch Order#:
 Contract#:
 UNIT TAG: AHU-1

Project Name: Rolling Hills
 Location:
 Contractor:
 For:

PRODUCT DRAWING
 SOLUTION AIR HANDLING UNIT DETAIL
 MODEL: Solution-XL151x90
 NOT FOR CONSTRUCTION