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Florida Energy Efficiency Code For Building Construction

EnergyGauge Summit® Fla/Com-2010, Effective Date: March 15, 2012 -- Form 506-2010
Total Building Performance Method for Commercial Buildings

PROJECT SUMMARY

Short Desc: 12057 Owner: Address1: 5037 SR 240 Address2: Type: School/University Jurisdiction: LAKE CITY, COLUMBIA COUNTY, FL (221200) Conditioned Area: 18333 SF No of Stories: 1 Permit No: 0	Description: Belmont Academy Lake City City: Lake City State: FL Zip: 32024 Class: New Finished building Conditioned & UnConditioned Area: 18333 SF Area entered from Plans 18333 SF Max Tonnage 99.3 If different, write in: _____
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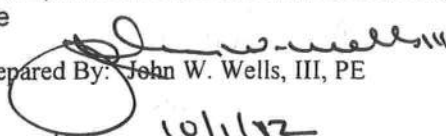


Compliance Summary

Component	Design	Criteria	Result
Gross Energy Cost (in \$)	13,811.0	14,060.0	PASSED
LIGHTING CONTROLS			PASSES
EXTERNAL LIGHTING			PASSES
HVAC SYSTEM			PASSES
PLANT			PASSES
WATER HEATING SYSTEMS			PASSES
PIPING SYSTEMS			PASSES
Met all required compliance from Check List?			<u>Yes</u>/No/NA
IMPORTANT MESSAGE Info 5009 -- -- -- An input report of this design building must be submitted along with this Compliance Report			

CERTIFICATIONS

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code

Prepared By:  John W. Wells, III, PE

Building Official: _____

Date: 10/1/12

Date: _____

I certify that this building is in compliance with the FLorida Energy Efficiency Code

Owner Agent: _____

Date: _____

If Required by Florida law, I hereby certify (*) that the system design is in compliance with the Florida Energy Efficiency Code

Architect: Nicholas Paul Geisler Architect

Reg No: AR0007005

Electrical Designer: Consulting Engineering Group

Reg No: PE52909

Lighting Designer: Consulting Engineering Group

Reg No: PE52909

Mechanical Designer: Consulting Engineering Assoc

Reg No: PE49347

Plumbing Designer: Consulting Engineering Assoc

Reg No: PE49347

(*) Signature is required where Florida Law requires design to be performed by registered design professionals.

Registered Professionals:		
	Name	Registration/License No.
Owner/Agent:		
Prepared By:		
Licensee:	John W. Wells, III, P.E.	PE49347
Engineering Business:	Consulting Engineering Associates, Inc.	EB0003962
Architect:		
Licensee:	Nicholas Paul Geisler	AR0007005
Engineering Business:	Nicholas Paul Geisler Architect	
Electrical Designer:		
Licensee:	David D. Patton, Jr., P.E.	PE52909
Engineering Business:	Consulting Engineering Group	EB0007712
Lighting Designer:		
Licensee:	David D. Patton, Jr., P.E.	PE52909
Engineering Business:	Consulting Engineering Group	EB0007712
Mechanical Designer:		
Licensee:	John W. Wells, III, P.E.	PE49347
Engineering Business:	Consulting Engineering Associates, Inc.	EB0003962
Plumbing Designer:		
Licensee:	John W. Wells, III, P.E.	PE49347
Engineering Business:	Consulting Engineering Associates, Inc.	EB0003962

Project: 12057
 Title: Belmont Academy Lake City
 Type: School/University
 (WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)

Building End Uses

	1) Proposed	2) Baseline
Total	868.10	1,114.90
	\$13,811	\$17,575
ELECTRICITY(MBtu/kWh/\$)	868.10	1,114.90
	254342	326677
	\$13,811	\$17,575
AREA LIGHTS	214.50	230.20
	62853	67462
	\$3,413	\$3,629
MISC EQUIPMT	127.40	127.40
	37327	37327
	\$2,027	\$2,008
PUMPS & MISC	32.20	0.20
	9441	46
	\$513	\$2
SPACE COOL	419.00	465.10
	122754	136284
	\$6,666	\$7,332
SPACE HEAT	19.10	169.20
	5602	49584
	\$304	\$2,668
VENT FANS	55.90	122.80
	16365	35974
	\$889	\$1,935

Credits Applied: None

Passing Criteria = 14060

Design (including any credits) = 13811

Passing requires Proposed Building cost to be at most 80% of
 Baseline cost. This Proposed Building is at 78.6%

PASSES

Project: 12057
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(WEA File: FL JACKSONVILLE INTL ARPT.tm3)

External Lighting Compliance

Description	Category	Tradable?	Allowance (W/Unit)	Area or Length or No. of Units (Sqft or ft)	ELPA (W)	CLP (W)
Ext Light 1	Building facades (by linear foot)	No	5.00	502.0	2,510	1,260
Ext Light 2	Entry Canopies	Yes	1.25	123.0	154	126

Tradable Surfaces: 126 (W) Allowance for Tradable: 799.2 (W)

PASSES

All External Lighting: 1386 (W)

Compliance check includes a excess/Base allowance of 750.00(W)

Project: 12057
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(WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)

Lighting Controls Compliance

Acronym	Ashrae ID	Description	Area (sq.ft)	Design CP	Min CP	Compliance
classroom	14	Classroom/Lecture Hall	646	1	1	PASSES
storage	3	Storage & Warehouse - Bulky Active Storage	40	1	1	PASSES
classroom	14	Classroom/Lecture Hall	604	1	1	PASSES
classroom	14	Classroom/Lecture Hall	685	1	1	PASSES
classroom	14	Classroom/Lecture Hall	643	1	1	PASSES
corridors	5	Corridor	3,869	2	2	PASSES
classroom	14	Classroom/Lecture Hall	764	2	2	PASSES
classroom	14	Classroom/Lecture Hall	791	1	1	PASSES
classroom	14	Classroom/Lecture Hall	742	1	1	PASSES
classroom	14	Classroom/Lecture Hall	733	1	1	PASSES
janitor	3	Storage & Warehouse - Bulky Active Storage	42	2	2	PASSES
classroom	14	Classroom/Lecture Hall	735	1	1	PASSES
classroom	14	Classroom/Lecture Hall	772	1	1	PASSES
classroom	14	Classroom/Lecture Hall	723	1	1	PASSES
classroom bathroom	6	Toilet and Washroom	43	2	2	PASSES
classroom	14	Classroom/Lecture Hall	682	1	1	PASSES
classroom bath	6	Toilet and Washroom	50	1	1	PASSES
conference rm	15	Conference/meeting (Multiple Functions)	293	1	1	PASSES
book keeper	17	Office - Enclosed	109	1	1	PASSES
recept	12	Lobby (General) - Reception and Waiting	132	1	1	PASSES
principal	17	Office - Enclosed	128	1	1	PASSES
bathroom	6	Toilet and Washroom	33	2	2	PASSES
vestibule	12	Lobby (General) - Reception and Waiting	371	1	1	PASSES
teachers rm	9	Food Service - Bar/Lounge	221	1	1	PASSES
asst principal	17	Office - Enclosed	103	1	1	PASSES
bathrooms	6	Toilet and Washroom	35	2	2	PASSES
classroom	14	Classroom/Lecture Hall	618	1	1	PASSES
fire protec	1	Electrical Mechanical Equipment Room - General	433	1	1	PASSES
mech equip	1	Electrical Mechanical Equipment Room - General	1,580	1	1	PASSES
security/it equip	1	Electrical Mechanical Equipment Room - General	796	1	1	PASSES

PASSES

Project: 12057
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(WEA File: FL JACKSONVILLE INTL ARPT.tm3)

System Report Compliance	
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AHU-1	System 1	Variable Air Volume Built-up System	No. of Units 1
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Component	Category	Capacity	Design Eff	Eff Criteria	Design IPLV	IPLV Criteria	Compliance
Cooling System	Compliance Not Applicable						PASSES
Heating System	Compliance Not Applicable		1.00				PASSES
Air Handling System -Supply	Air Handler (Supply) - Variable Volume		0.78	0.97			PASSES

PASSES

Plant Compliance	
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Description	Installed No	Size	Design Eff	Min Eff	Design IPLV	Min IPLV	Category	Comp liance
Hermetic screw or scroll chiller	1	99	3.0	2.8	4.5	3.7	Water Chilling Packages (Elec), Air Cooled, (Pos Displ) < 150 Tons	PASSES

PASSES

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Water Heater Compliance

Description	Type	Category	Design Eff	Min Eff	Design Loss	Max Loss	Compliance
Water Heater 1	Electric water heater	<= 12 [kW]	0.91	0.90			PASSES

PASSES

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Piping System Compliance

Category	Pipe Dia [inches]	Is Runout?	Operating Temp [F]	Ins Cond [Btu-in/hr .SF.F]	Ins Thick [in]	Req Ins Thick [in]	Compliance
Domestic and Service Hot Water Systems	1.00	False	120.00	0.28	1.00	0.50	PASSES
Cooling Systems (Chilled Water, Brine and Refrigerant)	8.00	False	44.00	0.28	2.00	1.00	PASSES

PASSES

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Other Required Compliance

Category	Section	Requirement (write N/A in box if not applicable)	Check
Report	506.4.2	Input Report Print-Out from EnergyGauge FlaCom attached	☒
Operations Manual	303.3.1, 503.2.9.3, 505.7.4.2	Operations manual provided to owner	☒
Windows & Doors	502.3.2	Glazed swinging entrance & revolving doors: max. 1.0 cfm/ft ² ; all other products: 0.3 cfm/ft ²	☒
Joints/Cracks	502.3.3	To be caulked, gasketed, weather-stripped or otherwise sealed	☒
Dropped Ceiling Cavity	502.3	Vented: seal & insulated ceiling. Unvented seal & insulate roof & side walls	☒
HVAC Efficiency	503.2.3	Minimum efficiencies: Tables 503.2.3(1)-(8)	☒
HVAC Controls	503.2.4	Zone controls prevent reheat (exceptions); separate thermostatic control per zone;	☒
Ventilation	503.2.5	Outdoor air supply & exhaust ducts shall have dampers that automatically shut when systems or spaces served are not in use. Exhaust air energy recovery required for cooling systems (Exceptions).	☒
ADS	503.2.7.5	Duct sizing and Design have been performed	☒
HVAC Ducts	503.2.7	Air ducts, fittings, mechanical equipment & plenum chambers shall be mechanically attached, sealed, insulated & installed per Table 503.2.7.2. Fan power limitations.	☒
Balancing	503.2.9.1	HVAC distribution system(s) tested & balanced. Report in construction documents.	☒
Piping Insulation	503.2.8	HAC and service hot water. In accordance with Table 503.2.8.	☒
Water Heaters	504	Performance requirements in accordance with Table 504.2. Heat trap required.	☒
Swimming Pools	504.7	Vapor-retardant or liquid cover or other means proven to reduce heat loss on heated pools; Time switch (exceptions); readily accessible on/off switch.	☐
Motors	505.7.5	Motor efficiency criteria have been met	☒
Lighting Controls	505.2, 502.3	Automatic control required for interior lighting in buildings >5,000 s.f.; Space control; Exterior photo sensor; Tandem wiring with 1 or 3 linear fluorescent lamps>30W	☒

EnergyGauge Summit® v4.10
INPUT DATA REPORT

Project Information

Project Name: 12057	Orientation: North
Project Title: Belmont Academy Lake City	Building Type: School/University
Address: 5037 SR 240	Building Classification: New Finished building
State: FL	No.of Stories: 1
Zip: 32024	GrossArea: 18333 SF
Owner:	

Zones

No	Acronym	Description	Type	Area [sf]	Multiplier	Total Area [sf]
1	AHU-1	Zone 1	CONDITIONED	18333.0	1	18333.0

Spaces

No	Acronym	Description	Type	Depth [ft]	Width [ft]	Height [ft]	Multi plier	Total Area [sf]	Total Volume [cf]
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26	bathrooms	Zo0Sp26	Toilet and Washroom	1.00	35.00	10.00	2	70.0	700.0	☐
27	classroom	Zo0Sp27	Classroom/Lecture Hall	1.00	618.00	10.00	1	618.0	6180.0	☐
28	fire protec	Zo0Sp28	Electrical Mechanical	1.00	433.00	10.00	1	433.0	4330.0	☐
29	mech equip	Zo0Sp29	Equipment Room - General	1.00	1580.00	10.00	1	1580.0	15800.0	☐
30	security/it equi	Zo0Sp30	Electrical Mechanical	1.00	796.00	10.00	1	796.0	7960.0	☐
			Equipment Room - General							☐

Lighting

No	Type	Category	No. of Luminaires	Watts per Luminaire	Power [W]	Control Type	No. of Ctrl pts
In Zone: AHU-1							
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: storage							
1	Compact Fluorescent	General Lighting	2	64	128	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: corridors							
1	Compact Fluorescent	General Lighting	36	64	2304	Occupancy sensor without Daylighting	1 ☐
2	Compact Fluorescent	General Lighting	14	26	364	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							

1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1	☐
In Space: janitor								
1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	14	64	896	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	14	64	896	Occupancy sensor without Daylighting	1	☐
In Space: classroom bathroom								
1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	13	64	832	Occupancy sensor without Daylighting	1	☐
In Space: classroom bath								
1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: conference rm								
1	Compact Fluorescent	General Lighting	6	64	384	Occupancy sensor without Daylighting	1	☐
In Space: book keeper								
1	Compact Fluorescent	General Lighting	2	64	128	Occupancy sensor without Daylighting	1	☐
In Space: receipt								
1	Compact Fluorescent	General Lighting	4	64	256	Occupancy sensor without Daylighting	1	☐
In Space: principal								
1	Compact Fluorescent	General Lighting	2	64	128	Occupancy sensor without Daylighting	1	☐
In Space: bathroom								

1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: vestibule								
1	Compact Fluorescent	General Lighting	8	64	512	Occupancy sensor without Daylighting	1	☐
In Space: teachers rm								
1	Compact Fluorescent	General Lighting	6	64	384	Occupancy sensor without Daylighting	1	☐
In Space: asst principal								
1	Compact Fluorescent	General Lighting	2	64	128	Occupancy sensor without Daylighting	1	☐
In Space: bathrooms								
1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	14	64	896	Occupancy sensor without Daylighting	1	☐
In Space: fire protec								
1	Compact Fluorescent	General Lighting	8	64	512	Occupancy sensor without Daylighting	1	☐
In Space: mech equip								
1	Compact Fluorescent	General Lighting	13	64	832	Manual On/Off	1	☐
In Space: security/it equip								
1	Compact Fluorescent	General Lighting	12	64	768	Manual On/Off	1	☐

Walls

No	Description	Type	Width H (Effec)	Multi	Area	Direction	Conductance	Heat Capacity	Dens.	R-Value
			[ft]	[ft]	[sf]		[Btu/hr. sf. F]	[Btu/sf.F]	[lb/cf]	[h.s.f.F/Btu]
In Zone: AHU-1										
1	Pr0Zo1Wal	Mtl Bldg, R-13 Ins., Gyp Brd	146.00	24.00	1	3504.0	North	0.0691	0.674	13.83
										14.5
2	Pr0Zo1Wa2	Mtl Bldg, R-13 Ins., Gyp Brd	146.00	24.00	1	3504.0	South	0.0691	0.674	13.83
										14.5
3	Pr0Zo1Wa3	Mtl Bldg, R-13 Ins., Gyp Brd	118.00	24.00	1	2832.0	West	0.0691	0.674	13.83
										14.5
4	Pr0Zo1Wa4	Mtl Bldg, R-13 Ins., Gyp Brd	118.00	24.00	1	2832.0	East	0.0691	0.674	13.83
										14.5

Windows

No	Description	Type	Shaded	U [Btu/hr sf F]	SHGC	Vis.Tra	W [ft]	H (Effec) [ft]	Multi plier	Total Area [sf]
In Zone: AHU-1										
In Wall: east										
1	Pr0Zo1Wa4Wi1	User Defined	No	0.5000	0.44	0.76	57.60	5.00	1	288.0
In Wall: north										
1	Pr0Zo1Wa1Wi1	User Defined	No	0.5000	0.44	0.76	105.60	5.00	1	528.0
In Wall: south										
1	Pr0Zo1Wa2Wi1	User Defined	No	0.5000	0.44	0.76	52.80	5.00	1	264.0
2	Pr0Zo1Wa2Wi2	User Defined	Yes	0.5000	0.44	0.76	24.00	10.00	1	240.0
In Wall: west										
1	Pr0Zo1Wa3Wi1	User Defined	No	0.5000	0.44	0.76	67.20	5.00	1	336.0

Doors

No	Description	Type	Shaded?	Width [ft]	H (Effec) [ft]	Multi plier	Area [sf]	Cond. [Btu/hr. sf. F]	Dens. [lb/cf]	Heat Cap. [Btu/sf. F]	R-Value [h.s.f.F/Btu]
In Zone:											
In Wall:											

Roofs

No	Description	Type	Width [ft]	H (Effec) [ft]	Multi plier	Area [sf]	Tilt [deg]	Cond. [Btu/hr. Sf. F]	Heat Cap [Btu/sf. F]	Dens. [lb/cf]	R-Value [h.s.f.F/Btu]
In Zone: AHU-1											
1	Pr0Zo1Rf1	Shingles, R-25 Ins, Mtl Deck	183.33	100.00	1	18333.0	0.00	0.0378	0.27	4.66	26.5

Skylights

No	Description	Type	U [Btu/hr sf F]	SHGC	Vis.Trans	W [ft]	H (Effec) [ft]	Multiplier	Area [Sf]	Total Area [Sf]
In Zone: In Roof: ☐										

Floors

No	Description	Type	Width [ft]	H (Effec) [ft]	Multi plier	Area [sf]	Cond. [Btu/hr. sf. F]	Heat Cap. Dens. [Btu/sf. F]	R-Value [h.s.f.F/Btu]
In Zone: AHU-1									
1	Pr0Zo1F11	1 ft. soil, concrete floor, carpet and rubber pad	183.33	100.00	1	18333.0	0.2681	34.00	113.33
									3.73
									☐

Systems

AHU-1		System 1	Variable Air Volume Built-up System			No. Of Units
Component	Category	Capacity	Efficiency	IPLV		
1	Cooling System	961500.00			☐	
2	Heating System	455926.00	1.00		☐	
3	Air Handling System -Supply	17500.00	0.78		☐	

Plant

Equipment	Category	Size	Inst.No	Eff.	IPLV
1	Hermetic screw or scroll chiller	Cooling Equipment	99.3 [Tons]	1	2.99 [COP]
					☐ 4.51

Water Heaters

W-Heater Description	CapacityCap. Unit	I/P Rt.	Efficiency	Loss
1 Electric water heater	50 [Gal]	6 [kW]	0.9050 [Ef]	[Btu/h] ☐

Ext-Lighting

Description	Category	No. of Luminaires	Watts per Luminaire	Area/Len/No. of units [sf/ft/No]	Control Type	Wattage [W]
1 Ext Light 1	Building facades (by linear foot)	30	42	502.00	Photo Sensor control	1260.00 ☐
2 Ext Light 2	Entry Canopies	3	42	123.00	Photo Sensor control	126.00 ☐

Piping

No	Type	Operating Temperature [F]	Insulation Conductivity [Btu-in/h.sf.F]	Nomonal pipe Diameter [in]	Insulation Thickness [in]	Is Runout?
1	Domestic and Service Hot Water Systems	120.00	0.28	1.00	1.00	No ☐
2	Cooling Systems (Chilled Water, Brine and Refrigerant)	44.00	0.28	8.00	2.00	No ☐

Fenestration Used

Name	Glass Type	No. of Panels	Glass Conductance [Btu/h.sf.F]	SHGC	VLT
ApLbWnd13	User Defined	1	0.5000	0.4350	0.7600 ☐

Materials Used

Mat No	Acronym	Description	Only R-Value Used	RValue [h.s.f.F/Btu]	Thickness [ft]	Conductivity [Btu/h.ft.F]	Density [lb/cf]	SpecificHeat [Btu/lb.F]
187	Mat1187	GYP OR PLAS BOARD, 1/2IN	No	0.4533	0.0417	0.0920	50.00	0.2000
178	Mat1178	CARPET W/RUBBER PAD	Yes	1.2300				
265	Mat1265	Soil, 1 ft	No	2.0000	1.0000	0.5000	100.00	0.2000
48	Mat148	6 in. Heavyweight concrete	No	0.5000	0.5000	1.0000	140.00	0.2000
4	Mat14	Steel siding	No	0.0002	0.0050	26.0000	480.00	0.1000
1001	ApLbMat1001	Outside surface resistance	Yes	0.3300				
1002	ApLbMat1002	Inside surface resistance	Yes	0.6900				
1003	ApLbMat1003	ASPHALT-SHINGLE AND SIDING	Yes	0.4400				
1005	ApLbMat1005	R-25 Generic Insulation	No	25.0000	0.5450	0.0218	0.30	0.2000
1006	ApLbMat1006	R-13 Generic Insulation	No	13.0000	0.2837	0.0218	0.30	0.2000

Constructs Used

No	Name	Simple Construct	Massless Construct	Conductance [Btu/h.s.f.F]	Heat Capacity [Btu/sf.F]	Density [lb/cf]	RValue [h.s.f.F/Btu]
1057	1 ft. soil, concrete floor, carpet and rubber pad	No	No	0.27	34.00	113.33	3.7

Layer	Material No.	Material	Thickness [ft]	Framing Factor
1	265	Soil, 1 ft	1.0000	0.000
2	48	6 in. Heavyweight concrete	0.5000	0.000
3	178	CARPET W/RUBBER PAD		0.000

No	Name	Simple Construct	Massless Construct	Conductance [Btu/h.s.f.F]	Heat Capacity [Btu/sf.F]	Density [lb/cf]	RValue [h.s.f.F/Btu]
1060	Shingles, R-25 Ins, Mtl Deck	No	No	0.04	0.27	4.66	26.5
Layer	Material No.	Material	Thickness [ft]	Framing Factor			
1	1001	Outside surface resistance		0.000			
2	1003	ASPHALT-SHINGLE AND SIDING		0.000			
3	4	Steel siding	0.0050	0.000			
4	1005	R-25 Generic Insulation	0.5450	0.000			
5	1002	Inside surface resistance		0.000			
No	Name	Simple Construct	Massless Construct	Conductance [Btu/h.s.f.F]	Heat Capacity [Btu/sf.F]	Density [lb/cf]	RValue [h.s.f.F/Btu]
1061	Mtl Bldg, R-13 Ins., Gyp Brd	No	No	0.07	0.67	13.83	14.5
Layer	Material No.	Material	Thickness [ft]	Framing Factor			
1	1001	Outside surface resistance		0.000			
2	4	Steel siding	0.0050	0.000			
3	1006	R-13 Generic Insulation	0.2837	0.000			
4	187	GYP OR PLAS BOARD, 1/2IN	0.0417	0.000			
5	1002	Inside surface resistance		0.000			



Air Handler #1 - AHU-1 - Total Load Summary

Air Handler Description: AHU-1 Variable Air Volume
Supply Air Fan: Draw-Thru with program estimated horsepower of 5.87 HP
Fan Input: 90% motor and fan efficiency with 2 in. water across the fan
Sensible Heat Ratio: 0.82 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.
Outdoor Conditions: 95° DB, 78° WB, 117.45 grains

Summer: Ventilation controls outside air, ---- Winter: Ventilation controls outside air.

Zone Space sensible loss:	103,773 Btuh	
Infiltration sensible loss:	0 Btuh	0 CFM
Outside Air sensible loss:	261,007 Btuh	5,900 CFM
Supply Duct sensible loss:	0 Btuh	
Return Duct sensible loss:	0 Btuh	
Return Plenum sensible loss:	0 Btuh	
Total System sensible loss:		364,779 Btuh

Heating Supply Air: $103,773 / (.999 \times 1.08 \times 16) =$	5,900 CFM
Winter Vent Outside Air (100.0% of supply) =	5,900 CFM

Zone space sensible gain:	354,465 Btuh	
Infiltration sensible gain:	0 Btuh	
Draw-thru fan sensible gain:	14,898 Btuh	
Supply duct sensible gain:	0 Btuh	
Reserve sensible gain:	0 Btuh	
Total sensible gain on supply side of coil:		369,362 Btuh

Cooling Supply Air: $369,362 / (.999 \times 1.1 \times 20) =$	16,805 CFM
Summer Vent Outside Air (35.1% of supply) =	5,900 CFM

Return duct sensible gain:	0 Btuh	
Return plenum sensible gain:	0 Btuh	
Outside air sensible gain:	129,678 Btuh	5,900 CFM
Blow-thru fan sensible gain:	0 Btuh	
Total sensible gain on return side of coil:		129,678 Btuh
Total sensible gain on air handling system:		499,040 Btuh

Zone space latent gain:	80,500 Btuh	
Infiltration latent gain:	0 Btuh	
Outside air latent gain:	212,089 Btuh	
Total latent gain on air handling system:		292,589 Btuh
Total system sensible and latent gain:		791,630 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	16,805 CFM
Total Air Handler Vent. Air (35.11% of Supply):	5,900 CFM
Total Conditioned Air Space:	16,484 Sq.ft
Supply Air Per Unit Area:	1.0195 CFM/Sq.ft
Area Per Cooling Capacity:	249.8745 Sq.ft/Ton
Cooling Capacity Per Area:	0.0040 Tons/Sq.ft
Total Heating Required With Outside Air:	364,779 Btuh
Total Cooling Required With Outside Air:	65.97 Tons

20

Florida Energy Efficiency Code For Building Construction

EnergyGauge Summit® Fla/Com-2010, Effective Date: March 15, 2012 -- Form 506-2010
Total Building Performance Method for Commercial Buildings

PROJECT SUMMARY

Short Desc: 12057

Owner:

Address1: 5037 SR 240

Address2:

Type: School/University

Jurisdiction: LAKE CITY, COLUMBIA COUNTY, FL (221200)

Conditioned Area: 18333 SF

No of Stories: 1

Permit No: 0

Description: Belmont Academy Lake City

City: Lake City

State: FL

Zip: 32024

Class: New Finished building

Conditioned & UnConditioned Area: 18333 SF

Area entered from Plans 18333 SF

Max Tonnage 99.3

If different, write in: _____



Compliance Summary

Component	Design	Criteria	Result
Gross Energy Cost (in \$)	13,811.0	14,060.0	PASSED
LIGHTING CONTROLS			PASSES
EXTERNAL LIGHTING			PASSES
HVAC SYSTEM			PASSES
PLANT			PASSES
WATER HEATING SYSTEMS			PASSES
PIPING SYSTEMS			PASSES
Met all required compliance from Check List?			Yes/No/NA
IMPORTANT MESSAGE Info 5009 -- -- -- An input report of this design building must be submitted along with this Compliance Report			

CERTIFICATIONS

I hereby certify that the plans and specifications covered by this calculation are in compliance with the Florida Energy Code

Prepared By: John W. Wells, III, PE

Building Official: _____

Date: 10/1/12

Date: _____

I certify that this building is in compliance with the Florida Energy Efficiency Code

Owner Agent: _____

Date: _____

If Required by Florida law, I hereby certify (*) that the system design is in compliance with the Florida Energy Efficiency Code

Architect: Nicholas Paul Geisler Architect

Reg No: AR0007005

Electrical Designer: Consulting Engineering Group

Reg No: PE52909

Lighting Designer: Consulting Engineering Group

Reg No: PE52909

Mechanical Designer: Consulting Engineering Assoc

Reg No: PE49347

Plumbing Designer: Consulting Engineering Assoc

Reg No: PE49347

(*) Signature is required where Florida Law requires design to be performed by registered design professionals.

Registered Professionals:		
	Name	Registration/License No.
Owner/Agent:		
Prepared By:		
Licensee:	John W. Wells, III, P.E.	PE49347
Engineering Business:	Consulting Engineering Associates, Inc.	EB0003962
Architect:		
Licensee:	Nicholas Paul Geisler	AR0007005
Engineering Business:	Nicholas Paul Geisler Architect	
Electrical Designer:		
Licensee:	David D. Patton, Jr., P.E.	PE52909
Engineering Business:	Consulting Engineering Group	EB0007712
Lighting Designer:		
Licensee:	David D. Patton, Jr., P.E.	PE52909
Engineering Business:	Consulting Engineering Group	EB0007712
Mechanical Designer:		
Licensee:	John W. Wells, III, P.E.	PE49347
Engineering Business:	Consulting Engineering Associates, Inc.	EB0003962
Plumbing Designer:		
Licensee:	John W. Wells, III, P.E.	PE49347
Engineering Business:	Consulting Engineering Associates, Inc.	EB0003962

Project: 12057
 Title: Belmont Academy Lake City
 Type: School/University
 (WEA File: FL JACKSONVILLE INTL ARPT.tm3)

Building End Uses

	1) Proposed	2) Baseline
Total	868.10	1,114.90
	\$13,811	\$17,575
ELECTRICITY(MBtu/kWh/\$)	868.10	1,114.90
	254342	326677
	\$13,811	\$17,575
AREA LIGHTS	214.50	230.20
	62853	67462
	\$3,413	\$3,629
MISC EQUIPMT	127.40	127.40
	37327	37327
	\$2,027	\$2,008
PUMPS & MISC	32.20	0.20
	9441	46
	\$513	\$2
SPACE COOL	419.00	465.10
	122754	136284
	\$6,666	\$7,332
SPACE HEAT	19.10	169.20
	5602	49584
	\$304	\$2,668
VENT FANS	55.90	122.80
	16365	35974
	\$889	\$1,935

Credits Applied: None

Passing Criteria = 14060

Design (including any credits) = 13811

Passing requires Proposed Building cost to be at most 80% of
 Baseline cost. This Proposed Building is at 78.6%

PASSES

Project: 12057
Title: Belmont Academy Lake City
Type: School/University
(WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)

External Lighting Compliance

Description	Category	Tradable?	Allowance (W/Unit)	Area or Length or No. of Units (Sqft or ft)	ELPA (W)	CLP (W)
Ext Light 1	Building facades (by linear foot)	No	5.00	502.0	2,510	1,260
Ext Light 2	Entry Canopies	Yes	1.25	123.0	154	126

Tradable Surfaces: 126 (W) Allowance for Tradable: 799.2 (W)

PASSES

All External Lighting: 1386 (W)

Compliance check includes a excess/Base allowance of 750.00(W)

Project: 12057
Title: Belmont Academy Lake City
Type: School/University
(WEA File: FL JACKSONVILLE INTL ARPT.tm3)

Lighting Controls Compliance

Acronym	Ashrae ID	Description	Area (sq.ft)	Design CP	Min CP	Compliance
classroom	14	Classroom/Lecture Hall	646	1	1	PASSES
storage	3	Storage & Warehouse - Bulky Active Storage	40	1	1	PASSES
classroom	14	Classroom/Lecture Hall	604	1	1	PASSES
classroom	14	Classroom/Lecture Hall	685	1	1	PASSES
classroom	14	Classroom/Lecture Hall	643	1	1	PASSES
corridors	5	Corridor	3,869	2	2	PASSES
classroom	14	Classroom/Lecture Hall	764	2	2	PASSES
classroom	14	Classroom/Lecture Hall	791	1	1	PASSES
classroom	14	Classroom/Lecture Hall	742	1	1	PASSES
classroom	14	Classroom/Lecture Hall	733	1	1	PASSES
janitor	3	Storage & Warehouse - Bulky Active Storage	42	2	2	PASSES
classroom	14	Classroom/Lecture Hall	735	1	1	PASSES
classroom	14	Classroom/Lecture Hall	772	1	1	PASSES
classroom	14	Classroom/Lecture Hall	723	1	1	PASSES
classroom bathroom	6	Toilet and Washroom	43	2	2	PASSES
classroom	14	Classroom/Lecture Hall	682	1	1	PASSES
classroom bath	6	Toilet and Washroom	50	1	1	PASSES
conference rm	15	Conference/meeting (Multiple Functions)	293	1	1	PASSES
book keeper	17	Office - Enclosed	109	1	1	PASSES
recept	12	Lobby (General) - Reception and Waiting	132	1	1	PASSES
principal	17	Office - Enclosed	128	1	1	PASSES
bathroom	6	Toilet and Washroom	33	2	2	PASSES
vestibule	12	Lobby (General) - Reception and Waiting	371	1	1	PASSES
teachers rm	9	Food Service - Bar/Lounge	221	1	1	PASSES
asst principal	17	Office - Enclosed	103	1	1	PASSES
bathrooms	6	Toilet and Washroom	35	2	2	PASSES
classroom	14	Classroom/Lecture Hall	618	1	1	PASSES
fire protec	1	Electrical Mechanical Equipment Room - General	433	1	1	PASSES
mech equip	1	Electrical Mechanical Equipment Room - General	1,580	1	1	PASSES
security/it equip	1	Electrical Mechanical Equipment Room - General	796	1	1	PASSES

PASSES

Project: 12057
Title: Belmont Academy Lake City
Type: School/University
(WEA File: FL JACKSONVILLE INTL ARPT.tm3)

System Report Compliance

AHU-1	System 1	Variable Air Volume Built-up System					No. of Units 1
Component	Category	Capacity	Design Eff	Eff Criteria	Design IPLV	IPLV Criteria	Compliance
Cooling System	Compliance Not Applicable						PASSES
Heating System	Compliance Not Applicable		1.00				PASSES
Air Handling System -Supply	Air Handler (Supply) - Variable Volume		0.78	0.97			PASSES
PASSES							

Plant Compliance

Description	Installed No	Size	Design Eff	Min Eff	Design IPLV	Min IPLV	Category	Compliance
Hermetic screw or scroll chiller	1	99	3.0	2.8	4.5	3.7	Water Chilling Packages (Elec), Air Cooled, (Pos Displ) < 150 Tons	PASSES
							PASSES	

Project: 12057 Title: Belmont Academy Lake City Type: School/University (WEA File: FL JACKSONVILLE INTL ARPT.tm3)
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Water Heater Compliance

Description	Type	Category	Design Eff	Min Eff	Design Loss	Max Loss	Compliance
Water Heater 1	Electric water heater	<= 12 [kW]	0.91	0.90			PASSES
							PASSES

Project: 12057

Title: Belmont Academy Lake City

Type: School/University

(WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)

Piping System Compliance

Category	Pipe Dia [inches]	Is Runout?	Operating Temp [F]	Ins Cond [Btu-in/hr .SF.F]	Ins Thick [in]	Req Ins Thick [in]	Compliance
Domestic and Service Hot Water Systems	1.00	False	120.00	0.28	1.00	0.50	PASSES
Cooling Systems (Chilled Water, Brine and Refrigerant)	8.00	False	44.00	0.28	2.00	1.00	PASSES

PASSES

Project: 12057
 Title: Belmont Academy Lake City
 Type: School/University
 (WEA File: FL_JACKSONVILLE_INTL_ARPT.tm3)

Other Required Compliance

Category	Section	Requirement (write N/A in box if not applicable)	Check
Report	506.4.2	Input Report Print-Out from EnergyGauge FlaCom attached	☒
Operations Manual	303.3.1, 503.2.9.3, 505.7.4.2	Operations manual provided to owner	☒
Windows & Doors	502.3.2	Glazed swinging entrance & revolving doors: max. 1.0 cfm/ft ² ; all other products: 0.3 cfm/ft ²	☒
Joints/Cracks	502.3.3	To be caulked, gasketed, weather-stripped or otherwise sealed	☒
Dropped Ceiling Cavity	502.3	Vented: seal & insulated ceiling. Unvented seal & insulate roof & side walls	☒
HVAC Efficiency	503.2.3	Minimum efficiencies: Tables 503.2.3(1)-(8)	☒
HVAC Controls	503.2.4	Zone controls prevent reheat (exceptions); separate thermostatic control per zone;	☒
Ventilation	503.2.5	Outdoor air supply & exhaust ducts shall have dampers that automatically shut when systems or spaces served are not in use. Exhaust air energy recovery required for cooling systems (Exceptions).	☒
ADS	503.2.7.5	Duct sizing and Design have been performed	☒
HVAC Ducts	503.2.7	Air ducts, fittings, mechanical equipment & plenum chambers shall be mechanically attached, sealed, insulated & installed per Table 503.2.7.2. Fan power limitations.	☒
Balancing	503.2.9.1	HVAC distribution system(s) tested & balanced. Report in construction documents.	☒
Piping Insulation	503.2.8	HAC and service hot water. In accordance with Table 503.2.8.	☒
Water Heaters	504	Performance requirements in accordance with Table 504.2. Heat trap required.	☒
Swimming Pools	504.7	Vapor-retardant or liquid cover or other means proven to reduce heat loss on heated pools; Time switch (exceptions); readily accessible on/off switch.	☒
Motors	505.7.5	Motor efficiency criteria have been met	☒
Lighting Controls	505.2, 502.3	Automatic control required for interior lighting in buildings >5,000 s.f.; Space control; Exterior photo sensor; Tandom wiring with 1 or 3 linear fluorescent lamps>30W	☒

EnergyGauge Summit® v4.10
INPUT DATA REPORT

Project Information

Project Name: 12057	Orientation: North
Project Title: Belmont Academy Lake City	Building Type: School/University
Address: 5037 SR 240	Building Classification: New Finished building
State: FL	No.of Stories: 1
Zip: 32024	GrossArea: 18333 SF
Owner:	

Zones

No	Acronym	Description	Type	Area [sf]	Multiplier	Total Area [sf]
1	AHU-1	Zone 1	CONDITIONED	18333.0	1	18333.0

Spaces

No	Acronym	Description	Type	Depth [ft]	Width [ft]	Height [ft]	Multi plier	Total Area [sf]	Total Volume [cf]
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26	bathrooms	Zo0Sp26	Toilet and Washroom	1.00	35.00	10.00	2	70.0	700.0	☐
27	classroom	Zo0Sp27	Classroom/Lecture Hall	1.00	618.00	10.00	1	618.0	6180.0	☐
28	fire protec	Zo0Sp28	Electrical Mechanical Equipment Room - General	1.00	433.00	10.00	1	433.0	4330.0	☐
29	mech equip	Zo0Sp29	Electrical Mechanical Equipment Room - General	1.00	1580.00	10.00	1	1580.0	15800.0	☐
30	security/it equi	Zo0Sp30	Electrical Mechanical Equipment Room - General	1.00	796.00	10.00	1	796.0	7960.0	☐

Lighting

No	Type	Category	No. of Luminaires	Watts per Luminaire	Power [W]	Control Type	No. of Ctrl pts
In Zone: AHU-1							
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: storage							
1	Compact Fluorescent	General Lighting	2	64	128	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: corridors							
1	Compact Fluorescent	General Lighting	36	64	2304	Occupancy sensor without Daylighting	1 ☐
2	Compact Fluorescent	General Lighting	14	26	364	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1 ☐
In Space: classroom							

1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1	☐
In Space: janitor								
1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	14	64	896	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	15	64	960	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	14	64	896	Occupancy sensor without Daylighting	1	☐
In Space: classroom bathroom								
1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	13	64	832	Occupancy sensor without Daylighting	1	☐
In Space: classroom bath								
1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: conference rm								
1	Compact Fluorescent	General Lighting	6	64	384	Occupancy sensor without Daylighting	1	☐
In Space: book keeper								
1	Compact Fluorescent	General Lighting	2	64	128	Occupancy sensor without Daylighting	1	☐
In Space: receipt								
1	Compact Fluorescent	General Lighting	4	64	256	Occupancy sensor without Daylighting	1	☐
In Space: principal								
1	Compact Fluorescent	General Lighting	2	64	128	Occupancy sensor without Daylighting	1	☐
In Space: bathroom								

1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: vestibule								
1	Compact Fluorescent	General Lighting	8	64	512	Occupancy sensor without Daylighting	1	☐
In Space: teachers rm								
1	Compact Fluorescent	General Lighting	6	64	384	Occupancy sensor without Daylighting	1	☐
In Space: asst principal								
1	Compact Fluorescent	General Lighting	2	64	128	Occupancy sensor without Daylighting	1	☐
In Space: bathrooms								
1	Compact Fluorescent	General Lighting	1	64	64	Occupancy sensor without Daylighting	1	☐
In Space: classroom								
1	Compact Fluorescent	General Lighting	14	64	896	Occupancy sensor without Daylighting	1	☐
In Space: fire protec								
1	Compact Fluorescent	General Lighting	8	64	512	Occupancy sensor without Daylighting	1	☐
In Space: mech equip								
1	Compact Fluorescent	General Lighting	13	64	832	Manual On/Off	1	☐
In Space: security/it equip								
1	Compact Fluorescent	General Lighting	12	64	768	Manual On/Off	1	☐

Walls

No	Description	Type	Width [ft]	H (Effec) [ft]	Multi plier	Area [sf]	Direction	Conductance [Btu/hr. sf. F]	Heat Capacity [Btu/sf.F]	Dens. [lb/cf]	R-Value [h.s.f./Btu]
In Zone: AHU-1											
1	Pr0Zo1Wa1	Mtl Bldg, R-13 Ins., Gyp Brd	146.00	24.00	1	3504.0	North	0.0691	0.674	13.83	14.5 ☐
2	Pr0Zo1Wa2	Mtl Bldg, R-13 Ins., Gyp Brd	146.00	24.00	1	3504.0	South	0.0691	0.674	13.83	14.5 ☐
3	Pr0Zo1Wa3	Mtl Bldg, R-13 Ins., Gyp Brd	118.00	24.00	1	2832.0	West	0.0691	0.674	13.83	14.5 ☐
4	Pr0Zo1Wa4	Mtl Bldg, R-13 Ins., Gyp Brd	118.00	24.00	1	2832.0	East	0.0691	0.674	13.83	14.5 ☐

Windows

No	Description	Type	Shaded	U [Btu/hr sf F]	SHGC	Vis.Tra	W [ft]	H (Effec) [ft]	Multi plier	Total Area [sf]
In Zone: AHU-1										
In Wall: east										
1	Pr0Zo1Wa4Wi1	User Defined	No	0.5000	0.44	0.76	57.60	5.00	1	288.0
In Wall: north										
1	Pr0Zo1Wa1Wi1	User Defined	No	0.5000	0.44	0.76	105.60	5.00	1	528.0
In Wall: south										
1	Pr0Zo1Wa2Wi1	User Defined	No	0.5000	0.44	0.76	52.80	5.00	1	264.0
2	Pr0Zo1Wa2Wi2	User Defined	Yes	0.5000	0.44	0.76	24.00	10.00	1	240.0
In Wall: west										
1	Pr0Zo1Wa3Wi1	User Defined	No	0.5000	0.44	0.76	67.20	5.00	1	336.0

Doors

No	Description	Type	Shaded?	Width [ft]	H (Effec) [ft]	Multi plier	Area [sf]	Cond. [Btu/hr. sf. F]	Dens. [lb/cf]	Heat Cap. [Btu/sf. F]	R-Value [h.s.f.F/Btu]
In Zone:											
In Wall:											

Roofs

No	Description	Type	Width [ft]	H (Effec) [ft]	Multi plier	Area [sf]	Tilt [deg]	Cond. [Btu/hr. Sf. F]	Heat Cap [Btu/sf. F]	Dens. [lb/cf]	R-Value [h.s.f.F/Btu]
In Zone: AHU-1											
1	Pr0Zo1Rf1	Shingles, R-25 Ins, Mtl Deck	183.33	100.00	1	18333.0	0.00	0.0378	0.27	4.66	26.5

Skylights

No	Description	Type	U [Btu/hr sf F]	SHGC	Vis.Trans	W [ft]	H (Effec) [ft]	Multiplier	Area [Sf]	Total Area [Sf]
In Zone: In Roof: ☐										

Floors

No	Description	Type	Width [ft]	H (Effec) [ft]	Multi plier	Area [sf]	Cond. [Btu/hr. sf. F]	Heat Cap. Dens. [Btu/sf. F]	Dens. [lb/cf]	R-Value [h.s.f.F/Btu]
In Zone: AHU-1										
1	Pr0Zo1F11	1 ft. soil, concrete floor, carpet and rubber pad	183.33	100.00	1	18333.0	0.2681	34.00	113.33	3.73
☐										

Systems

AHU-1		System 1	Variable Air Volume Built-up System			No. Of Units	1
Component	Category	Capacity	Efficiency	IPLV			
1	Cooling System	961500.00					☐
2	Heating System	455926.00	1.00				☐
3	Air Handling System -Supply	17500.00	0.78				☐

Plant

Equipment	Category	Size	Inst.No	Eff.	IPLV	
1	Hermetic screw or scroll chiller	Cooling Equipment	99.3 [Tons]	1	2.99 [COP]	4.51
☐						

Water Heaters					
W-Heater Description	CapacityCap. Unit	I/P Rt.	Efficiency	Loss	
1 Electric water heater	50 [Gal]	6 [kW]	0.9050 [Ef]	[Btu/h]	☐

Ext-Lighting					
Description	Category	No. of Luminaires	Watts per Luminaire	Area/Len/No. of units [sf/ft/No]	Control Type Wattage [W]
1 Ext Light 1	Building facades (by linear foot)	30	42	502.00	Photo Sensor control 1260.00 ☐
2 Ext Light 2	Entry Canopies	3	42	123.00	Photo Sensor control 126.00 ☐

Piping					
No	Type	Operating Temperature [F]	Insulation Conductivity [Btu-in/h.sf.F]	Nomonal pipe Diameter [in]	Insulation Thickness [in] Is Runout?
1	Domestic and Service Hot Water Systems	120.00	0.28	1.00	1.00 No ☐
2	Cooling Systems (Chilled Water, Brine and Refrigerant)	44.00	0.28	8.00	2.00 No ☐

Fenestration Used				
Name	Glass Type	No. of Panels	Glass Conductance [Btu/h.sf.F]	SHGC VLT
ApLbWndl3	User Defined	1	0.5000	0.4350 0.7600 ☐

Materials Used

Mat No	Acronym	Description	Only R-Value Used	RValue [h.s.f.F/Btu]	Thickness [ft]	Conductivity [Btu/h.ft.F]	Density [lb/cf]	SpecificHeat [Btu/lb.F]
187	Mat1187	GYP OR PLAS BOARD, 1/2IN	No	0.4533	0.0417	0.0920	50.00	0.2000
178	Mat1178	CARPET W/RUBBER PAD	Yes	1.2300				
265	Mat1265	Soil, 1 ft	No	2.0000	1.0000	0.5000	100.00	0.2000
48	Mat148	6 in. Heavyweight concrete	No	0.5000	0.5000	1.0000	140.00	0.2000
4	Mat14	Steel siding	No	0.0002	0.0050	26.0000	480.00	0.1000
1001	ApLbMat1001	Outside surface resistance	Yes	0.3300				
1002	ApLbMat1002	Inside surface resistance	Yes	0.6900				
1003	ApLbMat1003	ASPHALT-SHINGLE AND SIDING	Yes	0.4400				
1005	ApLbMat1005	R-25 Generic Insulation	No	25.0000	0.5450	0.0218	0.30	0.2000
1006	ApLbMat1006	R-13 Generic Insulation	No	13.0000	0.2837	0.0218	0.30	0.2000

Constructs Used

No	Name	Simple Construct	Massless Construct	Conductance [Btu/h.s.f.F]	Heat Capacity [Btu/sf.F]	Density [lb/cf]	RValue [h.s.f.F/Btu]
1057	1 ft. soil, concrete floor, carpet and rubber pad	No	No	0.27	34.00	113.33	3.7

Layer	Material No.	Material	Thickness [ft]	Framing Factor
1	265	Soil, 1 ft	1.0000	0.000
2	48	6 in. Heavyweight concrete	0.5000	0.000
3	178	CARPET W/RUBBER PAD		0.000

No	Name	Simple Construct	Massless Construct	Conductance [Btu/h.sf.F]	Heat Capacity [Btu/sf.F]	Density [lb/cf]	RValue [h.sf.F/Btu]
1060	Shingles, R-25 Ins, Mtl Deck	No	No	0.04	0.27	4.66	26.5
							☐
Layer	Material No.	Material	Thickness [ft]	Framing Factor			
1	1001	Outside surface resistance		0.000			☐
2	1003	ASPHALT-SHINGLE AND SIDING		0.000			☐
3	4	Steel siding	0.0050	0.000			☐
4	1005	R-25 Generic Insulation	0.5450	0.000			☐
5	1002	Inside surface resistance		0.000			☐
No	Name	Simple Construct	Massless Construct	Conductance [Btu/h.sf.F]	Heat Capacity [Btu/sf.F]	Density [lb/cf]	RValue [h.sf.F/Btu]
1061	Mtl Bldg, R-13 Ins., Gyp Brd	No	No	0.07	0.67	13.83	14.5
							☐
Layer	Material No.	Material	Thickness [ft]	Framing Factor			
1	1001	Outside surface resistance		0.000			☐
2	4	Steel siding	0.0050	0.000			☐
3	1006	R-13 Generic Insulation	0.2837	0.000			☐
4	187	GYP OR PLAS BOARD, 1/2IN	0.0417	0.000			☐
5	1002	Inside surface resistance		0.000			☐



Air Handler #1 - AHU-1 - Total Load Summary

Air Handler Description: AHU-1 Variable Air Volume
Supply Air Fan: Draw-Thru with program estimated horsepower of 5.87 HP
Fan Input: 90% motor and fan efficiency with 2 in. water across the fan
Sensible Heat Ratio: 0.82 --- This system occurs 1 time(s) in the building. ---

Air System Peak Time: 5pm in July.
Outdoor Conditions: 95° DB, 78° WB, 117.45 grains

Summer: Ventilation controls outside air, ---- Winter: Ventilation controls outside air.

Zone Space sensible loss:	103,773 Btuh	
Infiltration sensible loss:	0 Btuh	0 CFM
Outside Air sensible loss:	261,007 Btuh	5,900 CFM
Supply Duct sensible loss:	0 Btuh	
Return Duct sensible loss:	0 Btuh	
Return Plenum sensible loss:	0 Btuh	
Total System sensible loss:		364,779 Btuh

Heating Supply Air: $103,773 / (.999 \times 1.08 \times 16) =$	5,900 CFM
Winter Vent Outside Air (100.0% of supply) =	5,900 CFM

Zone space sensible gain:	354,465 Btuh	
Infiltration sensible gain:	0 Btuh	
Draw-thru fan sensible gain:	14,898 Btuh	
Supply duct sensible gain:	0 Btuh	
Reserve sensible gain:	0 Btuh	
Total sensible gain on supply side of coil:		369,362 Btuh

Cooling Supply Air: $369,362 / (.999 \times 1.1 \times 20) =$	16,805 CFM
Summer Vent Outside Air (35.1% of supply) =	5,900 CFM

Return duct sensible gain:	0 Btuh	
Return plenum sensible gain:	0 Btuh	
Outside air sensible gain:	129,678 Btuh	5,900 CFM
Blow-thru fan sensible gain:	0 Btuh	
Total sensible gain on return side of coil:		129,678 Btuh
Total sensible gain on air handling system:		499,040 Btuh

Zone space latent gain:	80,500 Btuh	
Infiltration latent gain:	0 Btuh	
Outside air latent gain:	212,089 Btuh	
Total latent gain on air handling system:		292,589 Btuh
Total system sensible and latent gain:		791,630 Btuh

Check Figures

Total Air Handler Supply Air (based on a 20° TD):	16,805 CFM
Total Air Handler Vent. Air (35.11% of Supply):	5,900 CFM
Total Conditioned Air Space:	16,484 Sq.ft
Supply Air Per Unit Area:	1.0195 CFM/Sq.ft
Area Per Cooling Capacity:	249.8745 Sq.ft/Ton
Cooling Capacity Per Area:	0.0040 Tons/Sq.ft
Total Heating Required With Outside Air:	364,779 Btuh
Total Cooling Required With Outside Air:	65.97 Tons