LOGO DE CORAL TRADING

Miami, Nov. 9th 2010

To Whom It May Concern

I, Oswaldo E. Berrios, do hereby authorize Frank Esteban Chacon Ruiz to sign a building application and act in all matters regarding the renovation of warehouse units 7, 8 and 9 located at 16215 SW 117th Ave., Building A, Miami, FL 33177.

Thank you,

Yours sincerely,

[Oswaldo E. Berrios]

State of Florida
County of Dade

Sworn to before me this 9th day of November 2010, by Oswaldo E. Berrios, who produced ID # 4 111349

EDGAR OVALLES
Commission # DD 993155
Expires July 21, 2014
Bonded Thru Troy Fain Insurance 800-385-7019

Miami Dade County Building Department
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11144 Nw 78th Lane DORAL FL. 33178 Phone XXXXXX

Examiner	Date Time Stamp	Disp.	Trade	Stamp Name
David Ferreira	11/19/2010 2:16:14 PM	A	MECH	Approved

Florida Energy Efficiency Code For Building Construction

Florida Department of Community Affairs

EnergyGauge Summit® Fla/Com-2008, Effective: March 1, 2009 -- Form 400A-2008

Method A: Whole Building Performance Method for Commercial Buildings

PROJECT SUMMARY

Short Desc:	AGROCAMPO	**Description:**	AGROCAMPO
Owner:			
Address1:	16215 SW 117 AVENUE	**City:**	MIAMI
Address2:		**State:**	FLORIDA
		Zip:	33177
Type:	Retail	**Class:**	Renovation to existing buildi
Jurisdiction:	MIAMI-DADE COUNTY, MIAMI-DADE COUNTY, FL (231000)		
Conditioned Area:	1508 SF	**Conditioned & UnConditioned Area:**	1508 SF
No of Stories:	1	**Area entered from Plans**	1508 SF
Permit No:	0	**Max Tonnage**	4.6
		If different, write in:	_____

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Compliance Summary

Component	Design	Criteria	Result
Gross Energy Cost (in $)	336.0	534.0	**PASSED**
LIGHTING CONTROLS			**PASSES**
EXTERNAL LIGHTING			**None Entered**
HVAC SYSTEM			**PASSES**
PLANT			**None Entered**
WATER HEATING SYSTEMS			**None Entered**
PIPING SYSTEMS			**None Entered**
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

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CERTIFICATIONS

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

Prepared By: _____ Building Official: _____

Date: 11/8/10 Date: _____

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

Owner Agent: _____ Date: 11/8/10

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

Architect: JULIO PULIDO AR Reg No: AR# 93904

Electrical Designer: ROLANDO GUARDO PE Reg No: PE# 61028

Lighting Designer: _____ Reg No: _____

Mechanical Designer: ROLANDO GUARDO PE Reg No: PE# 61028

Plumbing Designer: ROLANDO GUARDO PE Reg No: PE# 61028

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

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Project: AGROCAMPO
Title: AGROCAMPO
Type: Retail
(WEA File: FL_MIAMI_INTL_AP.tm3)

Building End Uses

	1) Proposed	2) Baseline
Total	*21.10*	*39.90*
	$336	*$628*
ELECTRICITY(MBtu/kWh/$)	21.10 6212 *$336*	39.90 11725 *$628*
AREA LIGHTS	0.50 153 *$8*	12.60 3694 *$198*
MISC EQUIPMT	3.00 884 *$48*	3.00 884 *$47*
PUMPS & MISC	0.00 2 *$0*	0.00 2 *$0*
SPACE COOL	14.40 4230 *$229*	16.00 4702 *$252*
SPACE HEAT	0.10 38 *$2*	0.00 10 *$1*
VENT FANS	3.10 905 *$49*	8.30 2433 *$130*

Passing requires Proposed Building cost to be at most 85% of Baseline cost. This Proposed Building is at 53.5%

PASSES

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External Lighting Compliance

Description	Category	Tradable?	Allowance (W/Unit)	Area or Length or No. of Units (Sqft or ft)	ELPA (W)	CLP (W)

None

Project: AGROCAMPO
Title: AGROCAMPO
Type: Retail
(WEA File: FL_MIAMI_INTL_AP.tm3)

Lighting Controls Compliance

Acronym	Ashrae ID	Description	Area (sq.ft)	Design CP	Min CP	Compli-ance
AGROCAMPO	3	Storage & Warehouse - Bulky Active Storage	1,508	1	1	PASSES

PASSES

Project: AGROCAMPO
Title: AGROCAMPO
Type: Retail
(WEA File: FL_MIAMI_INTL_AP.tm3)

System Report Compliance

AHU-1 System 1 — Constant Volume Air Cooled Split System < 65000 Btu/hr — No. of Units 1

Component	Category	Capacity	Design Eff	Eff Criteria	Design IPLV	IPLV Criteria	Comp-liance
Cooling System	Air Conditioners Air Cooled Split System < 65000 Btu/h Cooling Capacity		13.00	12.23	8.00		PASSES
Heating System	Electric Furnace		1.00	1.00			PASSES
Air Handling System -Supply	Air Handler (Supply) - Constant Volume		0.30	0.90			PASSES

PASSES

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Plant Compliance

Description	Installed No	Size	Design Eff	Min Eff	Design IPLV	Min IPLV	Category	Compliance
							None	

Water Heater Compliance

Description	Type	Category	Design Eff	Min Eff	Design Loss	Max Loss	Compliance
						None	

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
						None	

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Project: AGROCAMPO
Title: AGROCAMPO
Type: Retail
(WEA File: FL_MIAMI_INTL_AP.tm3)

Other Required Compliance

Category	Section	Requirement (write N/A in box if not applicable)	Check
Report	13-101	Input Report Print-Out from EnergyGauge FlaCom attached	✓
Operations Manual	13-102.1, 13-410, 13-413	Operations manual provided to owner	✓
Windows & Doors	13-406.AB.1.1	Glazed swinging entrance & revolving doors: max. 1.0 cfm/ft²; all other products: 0.4 cfm/ft²	✓
Joints/Cracks	13-406.AB.1.2	To be caulked, gasketed, weather-stripped or otherwise sealed	✓
Dropped Ceiling Cavity	13-406.AB.3	Vented: seal & insulated ceiling. Unvented seal & insulate roof & side walls	✓
System	13-407	HVAC Load sizing has been performed	✓
Reheat	13-407.B	Electric resistance reheat prohibited	✓
HVAC Efficiency	13-407, 13-408	Minimum efficiences: Cooling Tables 13-407.AB.3.2.1A-D; Heating Tables 13-407.AB.3.2.1B, 13-407.AB.3.2.1D, 13-408.AB.3.2.1E, 13-408.AB.3.2F	✓
HVAC Controls	13-407.AB.2	Zone controls prevent reheat (exceptions); simultaneous heating and cooling in each zone; combined HAC deadband of at least 5°F (exceptions)	✓
Ventilation Controls	13-409.AB.3	Motorized dampers reqd, except gravity dampers OK in: 1) exhaust systems and 2) systems with design outside air intake or exhaust capacity ≤300 cfm	✓
ADS	13-410	Duct sizing and Design have been performed	✓
HVAC Ducts	13-410.AB	Air ducts, fittings, mechanical equipment & plenum chambers shall be mechanically attached, sealed, insulated & installed per Sec. 13-410 Air Distribution Systems	✓
Balancing	13-410.AB.4	HVAC distribution system(s) tested & balanced. Report in construction documents	✓
Piping Insulation	13-411.AB	In accordance with Table 13-411.AB.2	✓
Water Heaters	13-412.AB	Performance requirements in accordance with Table 13-412.AB.3. Heat trap required	✓
Swimming Pools	13-412.AB.2.6	Cover on heated swimming pools: Time switch (exceptions); Readily accessible on/off switch	N/A
Hot Water Pipe Insulation	13-411.AB.3	Table 13-411.AB.2 for circulating systems, first 8 feet of outlet pipe from storage tank and between inlet pipe and heat trap	✓
Water Fixtures	13-412.AB.2.5	Shower hot water flow restricted to 2.5 gpm at 80 psi. Public lavatory fixture how water flow 0.5 gpm max; if self-closing valve 0.25 gallon recirculating, 0.5 gallon non recirculating	✓
Motors	13-414	Motor efficiency criteria have been met	✓
Lighting Controls	13-415.AB	Automatic control required for interior lighting in buildings >5,000 s.f.; Space control; Exterior photo sensor; Tandom wiring with 1 or 3 linear fluuorescent lamps>30W	✓

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EnergyGauge Summit® v3.22

INPUT DATA REPORT

Project Information

Project Name: AGROCAMPO

Project Title: AGROCAMPO

Address: 16215 SW 117 AVENUE

State: FLORIDA

Zip: 33177

Owner:

Orientation: North

Building Type: Retail

Building Classification: Renovation to existing building

No.of Stories: 1

GrossArea: 1508 SF

Zones

No	Acronym	Description	Type	Area [sf]	Multiplier	Total Area [sf]	
1	AGROCAMPO	AGROCAMPO	CONDITIONED	1508.0	1	1508.0	☐

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Spaces

No	Acronym	Description	Type	Depth [ft]	Width [ft]	Height [ft]	Multi plier	Total Area [sf]	Total Volume [cf]
In Zone:	**AGROCAMPO**								
1	AGROCAMP	AGROCAMPO	Storage & Warehouse - Bulky Active Storage	1.00	1508.00	12.00	1	1508.0	18096.0

Lighting

No	Type	Category	No. of Luminaires	Watts per Luminaire	Power [W]	Control Type	No.of Ctrl pts
In Zone:	**AGROCAMPO**						
In Space:	**AGROCAMPO**						
1	Compact Fluorescent	General Lighting	1	50	50	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.sf.F/Btu]
In Zone:	**AGROCAMPO**										
1	Pr0Zo3Wal	R-5	11.00	8.00	2	88.0	North	0.2000			5.0
2	Pr0Zo3Wal	R-5	24.00	8.00	2	192.0	South	0.2000			5.0

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:	**AGROCAMPO**									
In Wall:	**Pr0Zo3Wal**									
1	Pr0Zo3WalWil	User Defined	No	1.0000	1.15	0.90	7.00	6.00	1	42.0

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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.sf.F/Btu]
In Zone: AGROCAMPO											
In Wall: Pr0Zo3Wa1											
1	Pr0Zo3Wa2Dr1	Aluminum door, 1.25 in. polystyrene	No	3.00	7.00	1	21.0	0.1919	43.67	0.53	5.21

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.sf.F/Btu]
In Zone: AGROCAMPO											
1	Pr0Zo3Rf1	R-11	75.50	10.00	1	755.0	0.00	0.0909			11.0

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. [Btu/sf. F]	Dens. [lb/cf]	R-Value [h.sf.F/Btu]
In Zone: AGROCAMPO										

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Pr0Zo3Fl1	1 ft. soil, concrete floor, carpet and rubber pad	75.30	10.00	1	753.0	0.1745	54.00	108.00	5.73	☐

Systems

AHU-1 **System 1** **Constant Volume Air Cooled Split System < 65000 Btu/hr** **No. Of Units 1**

Component	Category	Capacity	Efficiency	IPLV	
1	Cooling System	55500.00	13.00	8.00	☐
2	Heating System	23000.00	1.00		☐
3	Air Handling System -Supply	2000.00	0.30		☐

Plant

Equipment	Category	Size	Inst.No	Eff.	IPLV	
						☐

Water Heaters

W-Heater Description	CapacityCap.Unit	I/P Rt.	Efficiency	Loss	
					☐

Ext-Lighting

Description	Category	No. of Luminaires	Watts per Luminaire	Area/Len/No. of units [sf/ft/No]	Control Type	Wattage [W]	
							☐

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Piping

No	Type	Operating Temperature [F]	Insulation Conductivity [Btu-in/h.sf.F]	Nomonal pipe Diameter [in]	Insulation Thickness [in]	Is Runout?

Fenestration Used

Name	Glass Type	No. of Panes	Glass Conductance [Btu/h.sf.F]	SHGC	VLT
ApLbWnd1	User Defined	1	1.0000	1.1494	0.9000

Materials Used

Mat No	Acronym	Description	Only R-Value Used	RValue [h.sf.F/Btu]	Thickness [ft]	Conductivity [Btu/h.ft.F]	Density [lb/cf]	SpecificHeat [Btu/lb.F]
264	Matl264	ALUMINUM, 1/16 IN	No	0.0002	0.0050	26.0000	480.00	0.1000
214	Matl214	POLYSTYRENE, EXP., 1-1/4IN,	No	5.2100	0.1042	0.0200	1.80	0.2900
178	Matl178	CARPET W/RUBBER PAD	Yes	1.2300				
265	Matl265	Soil, 1 ft	No	2.0000	1.0000	0.5000	100.00	0.2000
48	Matl48	6 in. Heavyweight concrete	No	0.5000	0.5000	1.0000	140.00	0.2000

Constructs Used

No	Name	Simple Construct	Massless Construct	Conductance [Btu/h.sf.F]	Heat Capacity [Btu/sf.F]	Density [lb/cf]	RValue [h.sf.F/Btu]
1002	Aluminum door, 1.25 in. polystyrene	No	No	0.19	0.53	43.67	5.2

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Layer	Material No.	Material	Thickness [ft]	Framing Factor
1	264	ALUMINUM, 1/16 IN	0.0050	0.000
2	214	POLYSTYRENE, EXP., 1-1/4IN,	0.1042	0.000
3	264	ALUMINUM, 1/16 IN	0.0050	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]
1005	1 ft. soil, concrete floor, carpet and rubber pad	No	No	0.17	54.00	108.00	5.7

Layer	Material No.	Material	Thickness [ft]	Framing Factor
1	265	Soil, 1 ft	2.0000	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]
1049	R-11	No	Yes	0.09			11.0

Layer	Material No.	Material	Thickness [ft]	Framing Factor
1	1007	R-11		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]
1051	R-5	No	Yes	0.20			5.0

Layer	Material No.	Material	Thickness [ft]	Framing Factor
1	1009	R-5		0.000

MIAMI ENGINEERING SERVICES

PROPOSED ADDITION/REMODELING FOR:

MR. FRANK CHACON

AGROCAMPO CHACON

16215 SW 117th AVENUE #9

MIAMI, FL 33177

STRUCTURAL CALCULATIONS

This cover sheet is provided as per Florida Statue 61G15-31 in lieu of signing and sealing each individual sheet. Calculations have been prepared by the undersigned engineer assuming responsibility for manual and computer generated information.

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MISAEL RODRIGUEZ, P.E.
FL PROF. REG. 64050

PAGES: 1 TO 25

11/10/10

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CHAPTER#3: STEEL STAIR DESIGN.....21-25

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CHAPTER #1: FOUNDATION DESIGN

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JOB TITLE AGROCAMPO

JOB NO. _____ CALCULATION NO. _____ ORIGINATOR _____ DATE _____

SHEET _____ OF _____ REVIEWER _____ DATE _____

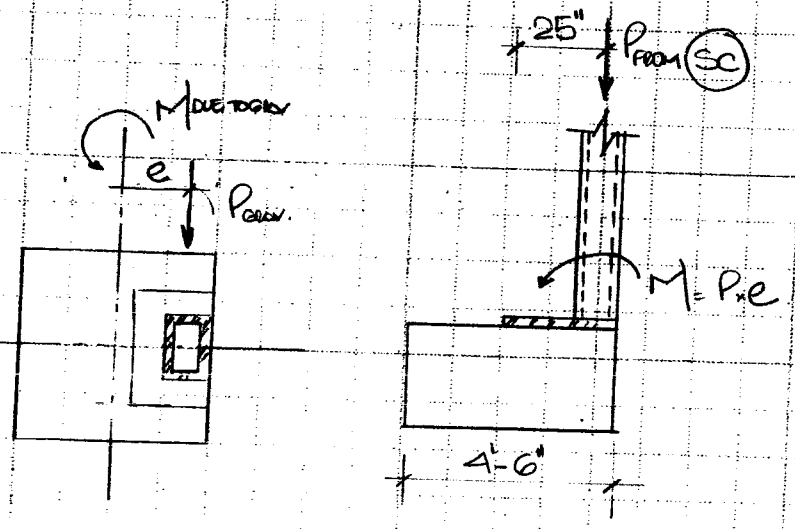
- DESIGN OF FOOTING (ECCENTRIC) @ STEEL COLUMN.

CRITERIA DESIGN

BEARING SOIL CAP: 3000 PSF

Q = 1.5K

W = 2K



SEE ATTACHED CALC. X FOOTING DESIGN

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Title :
Dsgnr:
Description :

Job #
Date: 12:00AM, 12 NOV 10

2

Scope :

General Footing Analysis & Design

Description Design of eccentric footing at steel column

General Information

Code Ref: ACI 318-02, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Allowable Soil Bearing	3,000.0 psf	**Dimensions...**	
Short Term Increase	1.330	Width along X-X Axis	4.500 ft
Seismic Zone	0	Length along Y-Y Axis	4.500 ft
Biaxial Applied Loads			
Live & Short Term Combined		Footing Thickness	20.00 in
f'c	3,000.0 psi	Col Dim. Along X-X Axis	4.00 in
Fy	60,000.0 psi	Col Dim. Along Y-Y Axis	4.00 in
Concrete Weight	150.00 pcf	Base Pedestal Height	8.000 in
Overburden Weight	160.00 psf	Min Steel %	0.0014
		Rebar Center To Edge Distance	3.50 in

Loads

Applied Vertical Load...

Dead Load	1.500 k	...ecc along X-X Axis	25.000 in
Live Load	2.000 k	...ecc along Y-Y Axis	0.000 in
Short Term Load	k		

Applied Moments...	Creates Rotation about Y-Y Axis (pressures @ left & right)	Creates Rotation about X-X Axis (pressures @ top & bot)
Dead Load	k-ft	k-ft
Live Load	k-ft	k-ft
Short Term	k-ft	k-ft

Applied Shears...	Creates Rotation about Y-Y Axis (pressures @ left & right)	Creates Rotation about X-X Axis (pressures @ top & bot)
Dead Load	k	k
Live Load	k	k
Short Term	k	k

Summary

Footing Design OK

4.50ft x 4.50ft Footing, 20.0in Thick, w/ Column Support 4.00 x 4.00in x 8.0in high
4.50ft x 4.50ft Footing, 20.0in Thick, w/ Column Suppo

	DL+LL	DL+LL+ST
Max Soil Pressure	1,062.6	1,062.6 psf
Allowable	3,000.0	3,990.0 psf
"X' Ecc, of Resultant	7.418 in	7.418 in
"Y' Ecc, of Resultant	0.000 in	0.000 in
X-X Min. Stability Ratio	No Overturning	1.500 :1
Y-Y Min. Stability Ratio	No Overturning	

	Actual	Allowable
Max Mu	0.647 k-ft per ft	
Required Steel Area		0.432 in2 per ft

Shear Stresses....	Vu	Vn * Phi
1-Way	1.052	93.113 psi
2-Way	2.511	186.226 psi

Footing Design

Shear Forces	ACI C-1	ACI C-2	ACI C-3	Vn * Phi
Two-Way Shear	2.29 psi	2.51 psi	0.89 psi	186.23 psi
One-Way Shears...				
Vu @ Left	0.00 psi	0.00 psi	0.00 psi	93.11 psi
Vu @ Right	0.11 psi	0.08 psi	-1.05 psi	93.11 psi
Vu @ Top	1.04 psi	0.78 psi	0.33 psi	93.11 psi
Vu @ Bottom	1.04 psi	0.78 psi	0.33 psi	93.11 psi

Moments	ACI C-1	ACI C-2	ACI C-3	Ru / Phi	As Req'd	
Mu @ Left	0.07 k-ft	0.05 k-ft	-0.65 k-ft	2.6 psi	-0.43 in2	per ft
Mu @ Right	0.00 k-ft	0.00 k-ft	0.00 k-ft	0.0 psi	0.04 in2	per ft
Mu @ Top	0.53 k-ft	0.40 k-ft	0.14 k-ft	2.2 psi	0.43 in2	per ft
Mu @ Bottom	0.53 k-ft	0.40 k-ft	0.14 k-ft	2.2 psi	0.43 in2	per ft

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Examiner	Date Time Stamp	Disp.	Trade	Stamp Name
David Ferreira	11/19/2010 2:16:14 PM	A	MECH	Approved

Title :
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Job #
Date: 12:00AM, 12 NOV 10

Scope :

Rev: 580002
User: KW-0607042, Ver 5.8.0, 1-Dec-2003
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General Footing Analysis & Design

Description Design of eccentric footing at steel column

Soil Pressure Summary

Service Load Soil Pressures	Bottom-	Top-Rig	Bottom-	Top-Lef
DL + LL	1,062.62	1,062.62	102.40	102.40 psf
DL + LL + ST	1,062.62	1,062.62	102.40	102.40 psf
Factored Load Soil Pressures				
ACI Eq. C-1	1,347.21	1,347.21	129.83	129.83 psf
ACI Eq. C-2	1,009.51	1,009.51	97.28	97.28 psf
ACI Eq. C-3	793.31	793.31	76.45	76.45 psf

ACI Factors (per ACI 318-02, applied internally to entered loads)

ACI C-1 & C-2 DL	1.200	ACI C-2 Group Factor	0.750	Add"l "1.4" Factor for Seismic	1.400
ACI C-1 & C-2 LL	1.600	ACI C-3 Dead Load Factor	0.900	Add"l "0.9" Factor for Seismic	0.900
ACI C-1 & C-2 ST	1.600	ACI C-3 Short Term Factor	1.300		
....seismic = ST * :	1.100 Used in ACI C-2 & C-3				

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Rev: 580001
User: KW-0607042, Ver 5.8.0, 1-Dec-2003
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Steel Column Base Plate

beams.ecw:Calculations

Description Design of base plate

General Information

Code Ref : AISC 9th Ed ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Loads

Axial Load	3.82 k
X-X Axis Moment	1.27 k-ft

Plate Dimensions

Plate Length	12.000 in
Plate Width	12.000 in
Plate Thickness	0.375 in

Support Pier Size

Pier Length	24.000 in
Pier Width	24.000 in

Steel Section TS4x4x1/2

Section Length	4.000 in
Section Width	4.000 in
Flange Thickness	0.500 in
Web Thickness	0.000 in

Allowable Stresses

Concrete f'c	3,000.0 psi
Base Plate Fy	36.00 ksi
Load Duration Factor	1.330

Anchor Bolt Data

Dist. from Plate Edge	2.000 in
Bolt Count per Side	2
Tension Capacity	3.040 k
Bolt Area	0.613 in2

Summary

Baseplate OK

Concrete Bearing Stress **Bearing Stress OK**

Actual Bearing Stress	88.5 psi
Allow per ACI318-95, A3.1 = 0.3 * f'c * Sqrt(A2/A1) * LDF	2,394.0 psi
Allow per AISC J9	2,793.0 psi

Partial Bearing : Bolts in Tension

Plate Bending Stress **Thickness OK**

Actual fb	25,009.7 psi
Max Allow Plate Fb	35,910.0 psi

Tension Bolt Force **Bolt Tension OK**

Actual Tension	0.148 k
Allowable	3.040 k

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Date: 12:13AM, 12 NOV 10

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Rev: 580008
User: KW-0607042, Ver 5.8.0, 1-Dec-2003
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Steel Column

Description Design of Steel column

General Information

Code Ref: AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section	TS4X4X1/2	Fy	36.00 ksi	X-X Sidesway :	Restrained
		Duration Factor	1.330	Y-Y Sidesway :	Restrained
Column Height	10.330 ft	Elastic Modulus	29,000.00 ksi		
End Fixity	Pin-Pin	X-X Unbraced	10.330 ft	Kxx	1.000
Live & Short Term Loads Combined		Y-Y Unbraced	10.330 ft	Kyy	1.000

Loads

Axial Load...

Dead Load	5.12 k	Ecc. for X-X Axis Moments	0.000 in
Live Load	3.32 k	Ecc. for Y-Y Axis Moments	0.000 in
Short Term Load	k		

Summary

Column Design OK

Section : TS4X4X1/2, Height = 10.33ft, Axial Loads: DL = 5.12, LL = 3.32, ST = 0.00k, Ecc. = 0.000in
Unbraced Lengths: X-X = 10.33ft, Y-Y = 10.33ft

Combined Stress Ratios	Dead	Live	DL + LL	DL + ST + (LL if Chosen)
AISC Formula H1 - 1				
AISC Formula H1 - 2				
AISC Formula H1 - 3	0.0563	0.0365	0.0928	0.0697

XX Axis : Fa calc'd per Eq. E2-1, K*L/r < Cc
YY Axis : Fa calc'd per Eq. E2-1, K*L/r < Cc

Stresses

Allowable & Actual Stresses	Dead	Live	DL + LL	DL + Short
Fa : Allowable	14.31 ksi	14.31 ksi	14.31 ksi	19.03 ksi
fa : Actual	0.81 ksi	0.52 ksi	1.33 ksi	1.33 ksi
Fb:xx : Allow [F1-6]	21.60 ksi	21.60 ksi	21.60 ksi	28.73 ksi
Fb:xx : Allow [F1-7] & [F1-8]	21.60 ksi	21.60 ksi	21.60 ksi	28.73 ksi
fb : xx Actual	0.00 ksi	0.00 ksi	0.00 ksi	0.00 ksi
Fb:yy : Allow [F1-6]	21.60 ksi	21.60 ksi	21.60 ksi	28.73 ksi
Fb:yy : Allow [F1-7] & [F1-8]	21.60 ksi	21.60 ksi	21.60 ksi	28.73 ksi
fb : yy Actual	0.00 ksi	0.00 ksi	0.00 ksi	0.00 ksi

Analysis Values

F'ex : DL+LL	18,795 psi	Cm:x DL+LL	0.60	Cb:x DL+LL	1.00
F'ey : DL+LL	18,795 psi	Cm:y DL+LL	0.60	Cb:y DL+LL	1.00
F'ex : DL+LL+ST	24,997 psi	Cm:x DL+LL+ST	0.60	Cb:x DL+LL+ST	1.00
F'ey : DL+LL+ST	24,997 psi	Cm:y DL+LL+ST	0.60	Cb:y DL+LL+ST	1.00

Max X-X Axis Deflection 0.000 in at 0.000 ft Max Y-Y Axis Deflection 0.000 in at 0.000 ft

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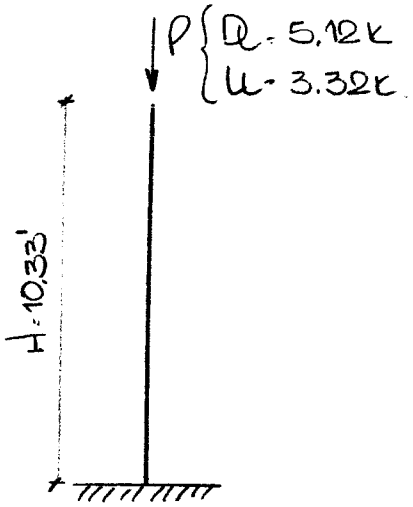
Description Design of Steel column

Section Properties **TS4X4X1/2**

Depth	4.000 in	Weight	21.60 #/ft	Values for LRFD Design....	
Thickness	0.500 in	Ixx	12.300 in4	J	21.800 in4
Width	4.000 in	Iyy	12.300 in4		0.00
		Sxx	6.130 in3	Zx	8.020 in3
Area	6.36 in2	Syy	6.130 in3	Zy	8.020 in3
Rt	2.000 in	Rxx	1.390 in		0.000
		Ryy	1.390 in		

Section Type = TS-Square



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Rev: 580001
User: KW-0607042, Ver 5.8.0, 1-Dec-2003
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Steel Column Base Plate

beams.ecw:Calculations

Description Design of steel plate @ column

General Information

Code Ref : AISC 9th Ed ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Loads

Axial Load	8.44 k
X-X Axis Moment	0.00 k-ft

Plate Dimensions

Plate Length	12.000 in
Plate Width	12.000 in
Plate Thickness	0.313 in

Support Pier Size

Pier Length	24.000 in
Pier Width	24.000 in

Steel Section TS4x4x1/2

Section Length	4.000 in
Section Width	4.000 in
Flange Thickness	0.500 in
Web Thickness	0.000 in

Allowable Stresses

Concrete f'c	3,000.0 psi
Base Plate Fy	36.00 ksi
Load Duration Factor	1.330

Anchor Bolt Data

Dist. from Plate Edge	2.000 in
Bolt Count per Side	2
Tension Capacity	3.040 k
Bolt Area	0.650 in2

Summary

Baseplate OK

Concrete Bearing Stress **Bearing Stress OK**

Actual Bearing Stress	58.6 psi
Allow per ACI318-95, A3.1 = 0.3 * f'c * Sqrt(A2/A1) * LDF	2,394.0 psi
Allow per AISC J9	2,793.0 psi

Full Bearing : No Bolt Tension

Plate Bending Stress **Thickness OK**

Actual fb	34,858.3 psi
Max Allow Plate Fb	35,910.0 psi

Tension Bolt Force **Bolt Tension OK**

Actual Tension	0.000 k
Allowable	3.040 k

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CHAPTER #2: MEZZ. FRAMING DESIGN

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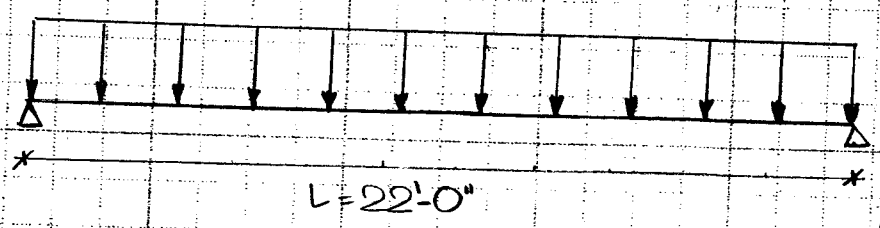
JOB TITLE AGROCOMPO

JOB NO. CALCULATION NO. ORIGINATOR DATE

SHEET OF REVIEWER DATE

- DESIGN OF NEW STEEL BEAM IN ORDER TO SUPPORT NEW MEZZ.

$f_Y = 50$ KSI



$\Delta_{ALLOW} = L/360$

$= 0.73"$

SECTION: W 8 × 40 $f_Y = 50$ KS

L = 22'

TRIB. WIDTH = 6'/2

D = 35 psf

LL = 50 psf (OFFICE SPACE)

- DETERMINE TOTAL UNIFORM LOADS @ STEEL BEAM

TOTAL LOADS @ BEAM
- D = 35 psf × 3' = 105 lb/f
- LL = 50 psf × 3' = 150 lb/f

(SEE ATTACHED COMP. CALC.)

- DETERMINE MAX. DEFLECTION: $\Delta = 5wl^3/384EI = 0.585$ in

$\Delta_{MAX} < \Delta_{ALLOW}$ ∴ IS OK

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Job # 9
Date: 10:20PM, 11 NOV 10

Scope :

Rev: 580006
User: KW-0607042, Ver 5.8.0, 1-Dec-2003
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Steel Beam Design

Description Design of new steel beam in order to support new mezz.

General Information

Code Ref: AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section : W8X40

Center Span	23.00 ft	Pinned-Pinned	Fy	50.00 ksi
Left Cant.	0.00 ft	Bm Wt. Added to Loads	Load Duration Factor	1.00
Right Cant	0.00 ft	LL & ST Act Together	Elastic Modulus	29,000.0 ksi
Lu : Unbraced Length	23.00 ft			

Distributed Loads

Note! Short Term Loads Are WIND Loads.

	#1	#2	#3	#4	#5	#6	#7	
DL	0.120							k/ft
LL	0.150							k/ft
ST								k/ft
Start Location								ft
End Location								ft

Summary

Beam OK
Static Load Case Governs Stress

Using: W8X40 section, Span = 23.00ft, Fy = 50.0ksi
End Fixity = Pinned-Pinned, Lu = 23.00ft, LDF = 1.000

	Actual	Allowable
Moment	20.482 k-ft	70.457 k-ft
fb : Bending Stress	6.923 ksi	23.817 ksi
fb / Fb	**0.291 : 1**	
Shear	3.562 k	59.400 k
fv : Shear Stress	1.199 ksi	20.000 ksi
fv / Fv	**0.060 : 1**	

Max. Deflection	-0.461 in
Length/DL Defl	1,161.9 : 1
Length/(DL+LL Defl)	599.2 : 1

Force & Stress Summary

<<-- These columns are Dead + Live Load placed as noted -->>

	Maximum	DL Only	LL @ Center	LL+ST @ Center	LL @ Cants	LL+ST @ Cants	
Max. M +	20.48 k-ft	10.56	20.48				k-ft
Max. M -							k-ft
Max. M @ Left							k-ft
Max. M @ Right							k-ft
Shear @ Left	3.56 k	1.84	3.56				k
Shear @ Right	3.56 k	1.84	3.56				k
Center Defl.	-0.461 in	-0.238	-0.461	-0.461	0.000	0.000	in
Left Cant Defl	0.000 in	0.000	0.000	0.000	0.000	0.000	in
Right Cant Defl	0.000 in	0.000	0.000	0.000	0.000	0.000	in
...Query Defl @	0.000 ft	0.000	0.000	0.000	0.000	0.000	in
Reaction @ Left	3.56	1.84	3.56	3.56			k
Reaction @ Rt	3.56	1.84	3.56	3.56			k

Fa calc'd per Eq. E2-2, K*L/r > Cc
I Beam, Major Axis, L/rT > (510,000 * Cb / Fy)^.5 , Fb per Eq. F1-7
I Beam, Major Axis, Fb per Eq. F1-8, Fb = 12,000 Cb Af / (l * d)

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Steel Beam Design

Description Design of new steel beam in order to support new mezz.

Section Properties W8X40

Depth	8.250 in	Weight	39.74 #/ft
Web Thick	0.360 in	Ixx	146.000 in4
Width	8.070 in	Iyy	49.100 in4
Flange Thick	0.560 in	Sxx	35.500 in3
Area	11.70 in2	Syy	12.200 in3
Rt	2.210 in	R-xx	3.530 in
Values for LRFD Design....		R-yy	2.040 in
J	1.120 in4	Zx	39.800 in3
Cw	726.00 in6	Zy	18.500 in3
		K	0.954 in

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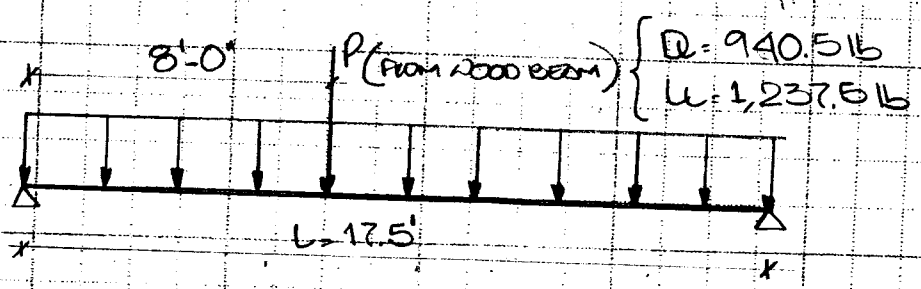
JOB TITLE AGROCOMPO

JOB NO. CALCULATION NO. ORIGINATOR DATE

SHEET OF REVIEWER DATE

– DESIGN OF STEEL BEAM IN ORDER TO SUPPORT NEW MEZZ. W/ CONCRET. WOOD.



SECTION: W8×40

$\Delta_{max} = L/360$

LOADS @ BEAM (UNIF. DISTRIBUTED)

$D = 35\,psf \times 11'/2 = 192.5\,lb/F$

$L = 50\,psf \times 11'/2 = 275\,lb/F$

(SEE ATTACHED CALC. X BEAM DESIGN)

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Description :

Job # 12
Date: 11:22PM, 11 NOV 10

Scope :

Steel Beam Design

Description DESIGN OF NEW STEEL BEAM W/ CONCENTRATED LOADS

General Information

Code Ref: AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section : W8X40

Center Span	17.50 ft	Pinned-Pinned	Fy	50.00ksi
Left Cant.	0.00 ft	Bm Wt. Added to Loads	Load Duration Factor	1.00
Right Cant	0.00 ft	LL & ST Act Together	Elastic Modulus	29,000.0ksi
Lu : Unbraced Length	17.50 ft			

Distributed Loads

Note! Short Term Loads Are WIND Loads.

	#1	#2	#3	#4	#5	#6	#7	
DL	0.209	0.050						k/ft
LL	0.275	0.100						k/ft
ST								k/ft
Start Location								ft
End Location	8.000							ft

Point Loads

Note! Short Term Loads Are WIND Loads.

	#1	#2	#3	#4	#5	#6	#7	
Dead Load	0.940							k
Live Load	1.237							k
Short Term								k
Location	8.000							ft

Summary

Beam OK
Static Load Case Governs Stress

Using: W8X40 section, Span = 17.50ft, Fy = 50.0ksi
End Fixity = Pinned-Pinned, Lu = 17.50ft, LDF = 1.000

	Actual	Allowable		
Moment	25.063 k-ft	88.750 k-ft	Max. Deflection	-0.297 in
fb : Bending Stress	8.472 ksi	30.000 ksi	Length/DL Defl	1,586.9 : 1
fb / Fb	**0.282 : 1**		Length/(DL+LL Defl)	705.9 : 1
Shear	5.829 k	59.400 k		
fv : Shear Stress	1.963 ksi	20.000 ksi		
fv / Fv	**0.098 : 1**			

Force & Stress Summary

<<-- These columns are Dead + Live Load placed as noted -->>

	Maximum	DL Only	LL @ Center	LL+ST @ Center	LL @ Cants	LL+ST @ Cants	
Max. M +	25.06 k-ft	11.12	25.06				k-ft
Max. M -							k-ft
Max. M @ Left							k-ft
Max. M @ Right							k-ft
Shear @ Left	5.83 k	2.59	5.83				k
Shear @ Right	3.54 k	1.60	3.54				k
Center Defl.	-0.297 in	-0.132	-0.297	-0.297	0.000	0.000	in
Left Cant Defl	0.000 in	0.000	0.000	0.000	0.000	0.000	in
Right Cant Defl	0.000 in	0.000	0.000	0.000	0.000	0.000	in
Query Defl @	0.000 ft	0.000	0.000	0.000	0.000	0.000	in
Reaction @ Left	5.83	2.59	5.83	5.83			k
Reaction @ Rt	3.54	1.60	3.54	3.54			k

Fa calc'd per Eq. E2-2, K*L/r > Cc
I Beam, Major Axis, (102,000 * Cb / Fy)^.5 <= L/rT <= (510,000 * Cb / Fy)^.5 , Fb per Eq. F1-6
I Beam, Major Axis, Fb per Eq. F1-8, Fb = 12,000 Cb Af / (l * d)

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Description DESIGN OF NEW STEEL BEAM W/ CONCENTRATED LOADS

Section Properties **W8X40**

Depth	8.250 in	Weight	39.74 #/ft
Web Thick	0.360 in	Ixx	146.000 in4
Width	8.070 in	Iyy	49.100 in4
Flange Thick	0.560 in	Sxx	35.500 in3
Area	11.70 in2	Syy	12.200 in3
Rt	2.210 in	R-xx	3.530 in
Values for LRFD Design....		R-yy	2.040 in
J	1.120 in4	Zx	39.800 in3
Cw	726.00 in6	Zy	18.500 in3
		K	0.954 in

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User: KW-0607042, Ver 5.8.0, 1-Dec-2003
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Steel Beam Design

Description Design of new steel beam

General Information

Code Ref: AISC 9th ASD, 1997 UBC, 2003 IBC, 2003 NFPA 5000

Steel Section : W8X40

Center Span	11.00 ft	Pinned-Pinned	Fy	50.00 ksi
Left Cant.	0.00 ft	Bm Wt. Added to Loads	Load Duration Factor	1.00
Right Cant	0.00 ft	LL & ST Act Together	Elastic Modulus	29,000.0 ksi
Lu : Unbraced Length	11.00 ft			

Distributed Loads

Note! Short Term Loads Are WIND Loads.

	#1	#2	#3	#4	#5	#6	#7	
DL	0.280							k/ft
LL	0.375							k/ft
ST								k/ft
Start Location								ft
End Location								ft

Summary

Beam OK
Static Load Case Governs Stress

Using: W8X40 section, Span = 11.00ft, Fy = 50.0ksi
End Fixity = Pinned-Pinned, Lu = 11.00ft, LDF = 1.000

	Actual	Allowable
Moment	10.508 k-ft	88.750 k-ft
fb : Bending Stress	3.552 ksi	30.000 ksi
fb / Fb	0.118 : 1	
Shear	3.821 k	59.400 k
fv : Shear Stress	1.287 ksi	20.000 ksi
fv / Fv	0.064 : 1	

Max. Deflection	-0.054 in
Length/DL Defl	5,306.2 : 1
Length/(DL+LL Defl)	2,442.1 : 1

Force & Stress Summary

<<-- These columns are Dead + Live Load placed as noted -->>

	Maximum	DL Only	LL @ Center	LL+ST @ Center	LL @ Cants	LL+ST @ Cants	
Max. M +	10.51 k-ft	4.84	10.51				k-ft
Max. M -							k-ft
Max. M @ Left							k-ft
Max. M @ Right							k-ft
Shear @ Left	3.82 k	1.76	3.82				k
Shear @ Right	3.82 k	1.76	3.82				k
Center Defl.	-0.054 in	-0.025	-0.054	-0.054	0.000	0.000	in
Left Cant Defl	0.000 in	0.000	0.000	0.000	0.000	0.000	in
Right Cant Defl	0.000 in	0.000	0.000	0.000	0.000	0.000	in
...Query Defl @	0.000 ft	0.000	0.000	0.000	0.000	0.000	in
Reaction @ Left	3.82	1.76	3.82	3.82			k
Reaction @ Rt	3.82	1.76	3.82	3.82			k

Fa calc'd per Eq. E2-2, K*L/r > Cc
I Beam, Major Axis, (102,000 * Cb / Fy)^.5 <= L/rT <= (510,000 * Cb / Fy)^.5 , Fb per Eq. F1-6
I Beam, Major Axis, Fb per Eq. F1-8, Fb = 12,000 Cb Af / (l * d)

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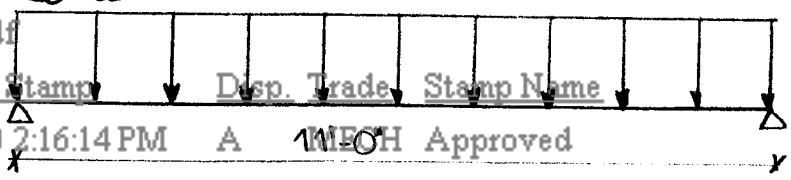
$\Delta_{LL+DL} = L/360$.



$D = 35\,psf \times 7.58' = 270\ lb/F$.

$L = 50\,psf \times 7.58' = 375\ lb/F$

Title :
Dsgnr:
Description :

Job #
Date: 10:10PM, 11 NOV 10

Scope :

Description Design of new steel beam

Section Properties W8X40

Depth	8.250 in	Weight	39.74 #/ft
Web Thick	0.360 in	Ixx	146.000 in4
Width	8.070 in	Iyy	49.100 in4
Flange Thick	0.560 in	Sxx	35.500 in3
Area	11.70 in2	Syy	12.200 in3
Rt	2.210 in	R-xx	3.530 in
Values for LRFD Design....		R-yy	2.040 in
J	1.120 in4	Zx	39.800 in3
Cw	726.00 in6	Zy	18.500 in3
		K	0.954 in

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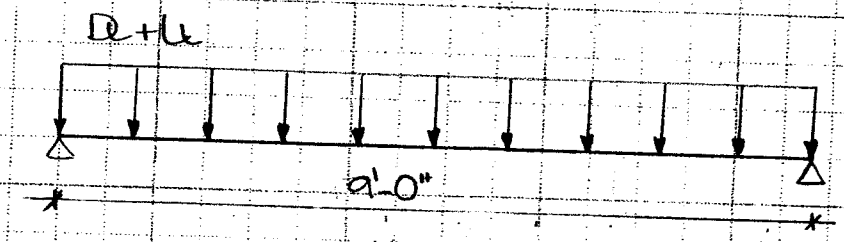
JOB TITLE AGIOCAMPO

JOB NO. CALCULATION NO. ORIGINATOR DATE

SHEET OF REVIEWER DATE

- DESIGN OF NEW WOOD JOIST @ MEZZANINE



DATA

SECTION: 2×8

L = 13'-7"

TRIB. WIDTH = 16"

LL = 50psf (OFFICES SPACE).

DL = 36psf

• DETERMINE TOTAL UNIFORM LOADS

TOTAL LOADS
$$\begin{cases} DL = 36psf \times 1.33' = 47.88\ lb/F \\ LL = 50psf \times 1.33' = 66.55\ lb/F \end{cases}$$

(SEE ATTACHED COMP. CALC.)

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Title :
Dsgnr:
Description :

Job #
Date: 11:26PM, 11 NOV 10

Scope :

Rev: 580006
User: KW-0607042, Ver 5.8.0, 1-Dec-2003
(c)1983-2003 ENERCALC Engineering Software

Timber Beam & Joist

Description Design of wood joist

Timber Member Information

Code Ref: 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000. Base allowables are user defined

		SP-1
Timber Section		2x8
Beam Width	in	1.500
Beam Depth	in	7.250
Le: Unbraced Length	ft	1.16
Timber Grade		Spruce - Pine - Fir (South), Select
Fb - Basic Allow	psi	1,050.0
Fv - Basic Allow	psi	125.0
Elastic Modulus	ksi	1,200.0
Load Duration Factor		1.000
Member Type		Sawn
Repetitive Status		Repetitive

Center Span Data

Span	ft	9.00
Dead Load	#/ft	48.00
Live Load	#/ft	67.00

Results

Ratio = 0.7461

Mmax @ Center	in-k	13.97
@ X =	ft	4.50
fb : Actual	psi	1,063.3
Fb : Allowable	psi	1,425.2
		Bending OK
fv : Actual	psi	62.2
Fv : Allowable	psi	125.0
		Shear OK

Reactions

@ Left End	DL	lbs	216.00
	LL	lbs	301.50
	Max. DL+LL	lbs	517.50
@ Right End	DL	lbs	216.00
	LL	lbs	301.50
	Max. DL+LL	lbs	517.50

Deflections

Ratio OK

Center DL Defl	in	-0.124
L/Defl Ratio		871.3
Center LL Defl	in	-0.173
L/Defl Ratio		624.2
Center Total Defl	in	-0.297
Location	ft	4.500
L/Defl Ratio		363.7

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Title :
Dsgnr:
Description :

Job #
Date: 11:27PM, 11 NOV 10

Scope :

Rev: 580006
User: KW-0607042, Ver 5.8.0, 1-Dec-2003
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Timber Beam & Joist

Description Design of new wood joist 2x8 @ 10" o.c.

Timber Member Information

Code Ref: 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000. Base allowables are user defined

		SP-1
Timber Section		2x8
Beam Width	in	1.500
Beam Depth	in	7.250
Le: Unbraced Length	ft	1.33
Timber Grade		Spruce - Pine - Fir (South), Select
Fb - Basic Allow	psi	1,050.0
Fv - Basic Allow	psi	125.0
Elastic Modulus	ksi	1,200.0
Load Duration Factor		1.000
Member Type		Sawn
Repetitive Status		No

Center Span Data

Span	ft	12.00
Dead Load	#/ft	30.00
Live Load	#/ft	42.00

Results

Ratio = 0.9549

Mmax @ Center	in-k	15.55
@ X =	ft	6.00
fb : Actual	psi	1,183.5
Fb : Allowable	psi	1,239.4
		Bending OK
fv : Actual	psi	53.9
Fv : Allowable	psi	125.0
		Shear OK

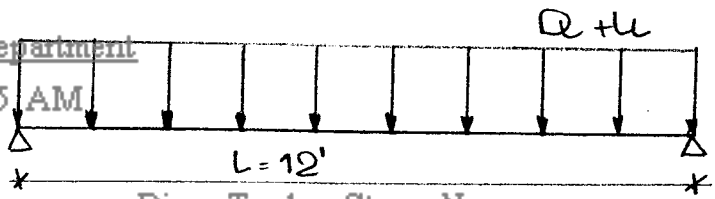
Reactions

@ Left End	DL	lbs	180.00
	LL	lbs	252.00
	Max. DL+LL	lbs	432.00
@ Right End	DL	lbs	180.00
	LL	lbs	252.00
	Max. DL+LL	lbs	432.00

Deflections

Ratio OK

Center DL Defl	in	-0.245
L/Defl Ratio		588.1
Center LL Defl	in	-0.343
L/Defl Ratio		420.1
Center Total Defl	in	-0.588
Location	ft	6.000
L/Defl Ratio		245.0



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LOADS @ BEAM

DL = 36psf × 0.83' = 30 lb/ft

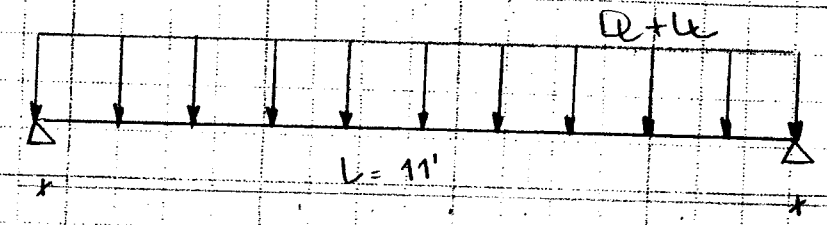
LL = 50psf × 0.83' = 42 lb/ft

JOB TITLE AGROCAMPO

JOB NO. CALCULATION NO. ORIGINATOR DATE

SHEET OF REVIEWER DATE

- DESIGN OF NEW WOOD BEAM (3) 2 x 10



LOADS @ BEAM

$$D = 35\,psf \times \left[\frac{9'}{2} + 0.83'\right] = 193\,lb/f$$

$$L = 50\,psf \times \left[\frac{9'}{2} + 0.83'\right] = 245\,lb/f$$

(SEE ATTACHED CALC. x BEAM DESIGN)

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Timber Beam & Joist

Description Design of new wood beam @ mezz. level.

Timber Member Information

Code Ref: 1997/2001 NDS, 2000/2003 IBC, 2003 NFPA 5000. Base allowables are user defined

		sp-1
Timber Section		3-2x10
Beam Width	in	4.500
Beam Depth	in	9.250
Le: Unbraced Length	ft	1.33
Timber Grade		Spruce - Pine - Fir (South), Select
Fb - Basic Allow	psi	1,050.0
Fv - Basic Allow	psi	125.0
Elastic Modulus	ksi	1,200.0
Load Duration Factor		1.000
Member Type		Sawn
Repetitive Status		No

Center Span Data

Span	ft	11.00
Dead Load	#/ft	193.00
Live Load	#/ft	245.00

Results

Ratio = 0.9850

Mmax @ Center	in-k	79.50
@ X =	ft	5.50
fb : Actual	psi	1,238.8
Fb : Allowable	psi	1,257.7
		Bending OK
fv : Actual	psi	75.0
Fv : Allowable	psi	125.0
		Shear OK

Reactions

@ Left End	DL	lbs	1,061.50
	LL	lbs	1,347.50
	Max. DL+LL	lbs	2,409.00
@ Right End	DL	lbs	1,061.50
	LL	lbs	1,347.50
	Max. DL+LL	lbs	2,409.00

Deflections

Ratio OK

Center DL Defl	in	-0.179
L/Defl Ratio		739.5
Center LL Defl	in	-0.227
L/Defl Ratio		582.5
Center Total Defl	in	-0.405
Location	ft	5.500
L/Defl Ratio		325.8

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CHAPTER #3: STEEL STAIR DESIGN

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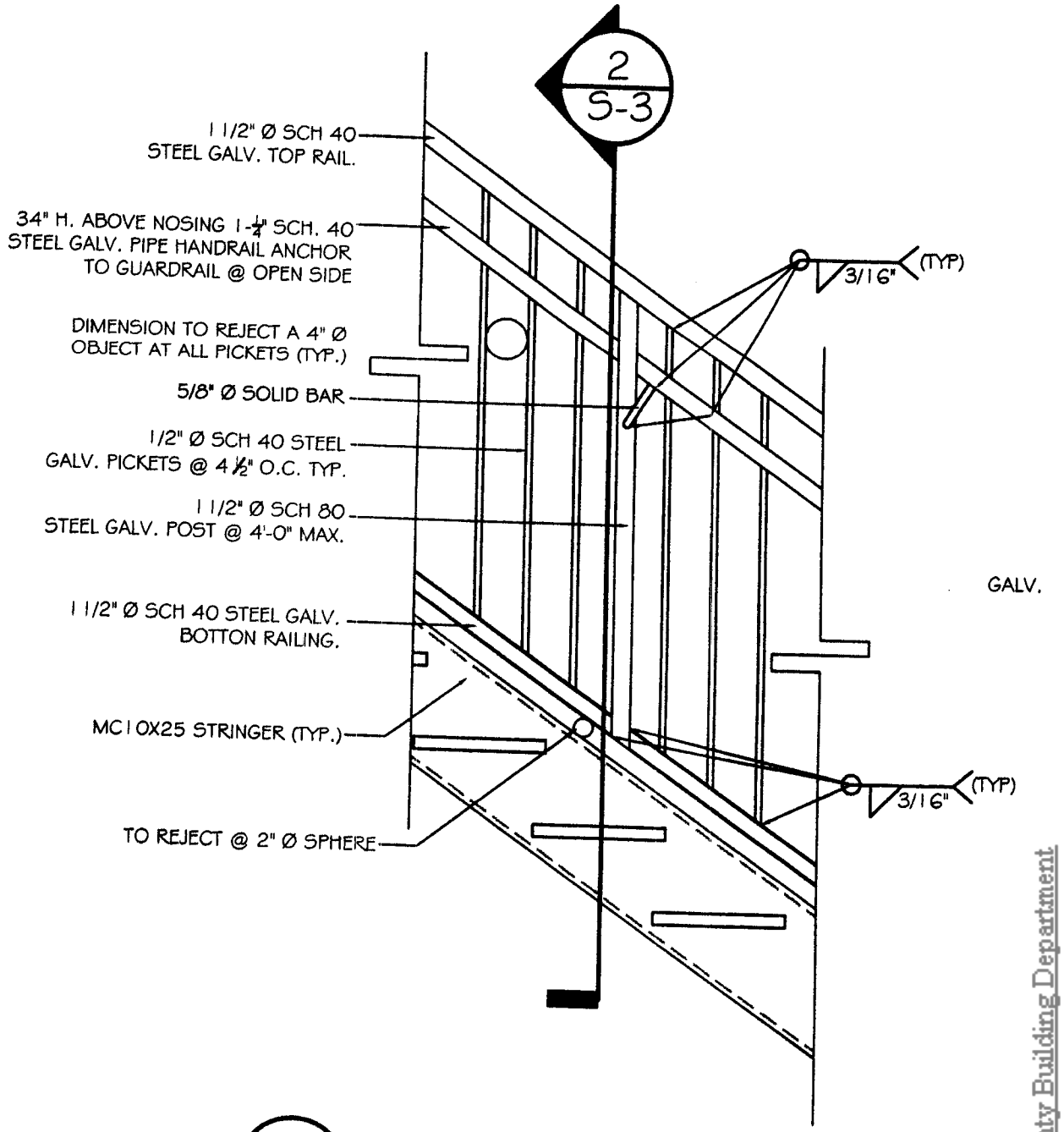

A
S-3
STAIR RAILING DETAIL
SCALE: 1" = 1'-0"

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PROJECT:Agrocampo/ Steel railing design
SHEET # :
DATE: 11/05/10
REV:

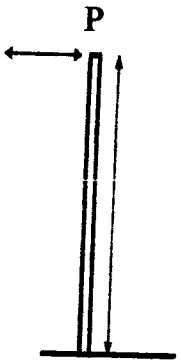
CHECK STEEL POST:

DATA:

1 1/2 " DIA SCH 80 :

P := 200 LB

Sx := 0.412 N^3



L := 3.5 ft

$$M := \frac{P \cdot L \cdot 12}{1000}$$

M = 8.4 KIP-IN

$$fb := \frac{M}{Sx}$$

fb = 20.388 <SI << 36 KSI x0.66=24 Ksi O.K.!

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PROJECT:Agro-Campo
SHEET # :
DATE:
REV:

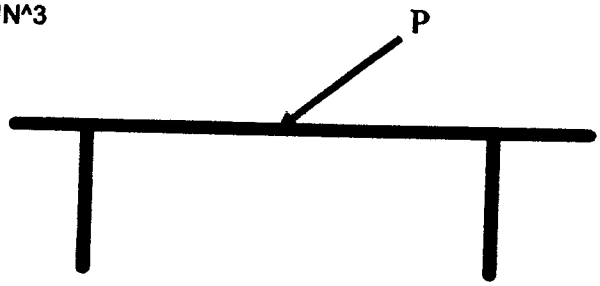
CHECK PICKETS:

DATA:

1/2" DIAM. PIPE SCH 40 VERT. STEEL PICKETS AT 4" O.C.

$P := 200$ LB

$Sx := 0.041$ IN^3



$L := 3.5$ ft

SIMPLE SPAN=48"
DISTRIBUTE LOAD BETWEEN 3 PICKETS.

$$P_S := \frac{P}{1000 \cdot 3} \qquad P_S = 0.067 \quad K$$

$$M := \frac{(P_S \cdot L \cdot 12)}{4}$$

$M = 0.7$ KIP-IN

$$fb := \frac{M}{Sx}$$

$fb = 17.073$ KSI **<< 36 KSI x 0.66=24 Ksi O.K.!**

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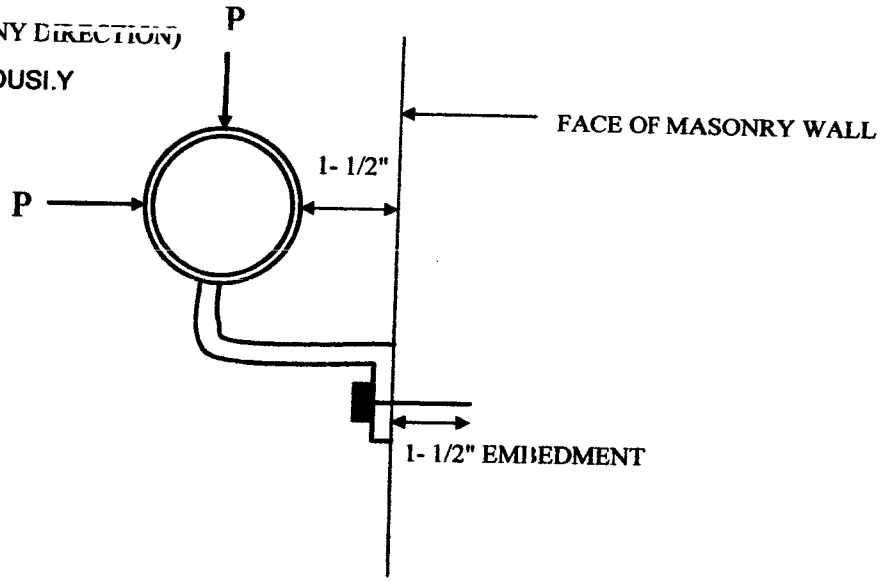
PROJECT:Agrocampo
SHEET # :
DATE:
REV:

GRABRAIL TO CONCRETE:

DATA:

P := 200 LB (IN ANY DIRECTION)
NOT SIMULTANEOUSLY



$M := P\cdot(1.5 + .83)$

$M = 466$ LB-IN

BOLT DESIGN:

$T := \frac{[P\cdot(1.5 + .83)]}{1.75}$

$T = 266.286$ LBS

$V := 200$ LBS

CAPACITY IN TENSION: 750LBS (BY HILTI)

CAPACITY IN SHEAR: 1100LBS (BY HILTI)

USE: 3/8" DIA. EXP. BOLT, 2-1/2" MIN. EMB. F'C=4000 PSI

$\frac{266}{750} + \frac{200}{1100} = 0.536 < 1$ **O.K.!**

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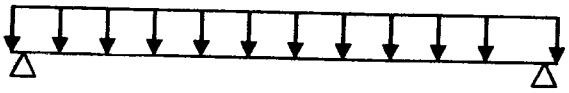
PROJECT: Agrocampo
SHEET # :
DATE:
REV:

STEEL STAIR CALCULATION:MC 10x25 (STRINGER DESIGN)



$L := 17$

DATA:

$LL := 100 \quad PSF$

$qu := 1.2 \cdot (20 \cdot 2) + 1.6 \cdot (100 \cdot 2)$

$qu = 368 \quad PLF$

$$Mu := qu \cdot \frac{(L^2)}{8}$$

$Mu = 1.329 \times 10^4$

$$Sx := \frac{Mu \cdot 12}{0.9 \cdot 36000}$$

$Sx = 4.924 \quad N^3$

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Air System Sizing Summary for AHU-1

Project Name: AGROCAMPO CHACON
Prepared by: RMG Engineering

11/05/2010
03:15PM

Air System Information

Air System Name	AHU-1		Number of zones	1	
Equipment Class	SPLT AHU		Floor Area	1508.0	ft²
Air System Type	SZCAV		Location	Miami IAP, Florida	

Sizing Calculation Information

Zone and Space Sizing Method:

Zone CFM	Sum of space airflow rates	Calculation Months	Jan to Dec
Space CFM	Individual peak space loads	Sizing Data	Calculated

Central Cooling Coil Sizing Data

Total coil load	4.6	Tons	Load occurs at	Aug 1500	
Total coil load	54.8	MBH	OA DB / WB	91.0 / 77.0	°F
Sensible coil load	36.6	MBH	Entering DB / WB	80.4 / 68.4	°F
Coil CFM at Aug 1500	1508	CFM	Leaving DB / WB	57.9 / 56.9	°F
Max block CFM	1508	CFM	Coil ADP	55.4	°F
Sum of peak zone CFM	1508	CFM	Bypass Factor	0.100	
Sensible heat ratio	0.669		Resulting RH	54	%
ft²/Ton	330.2		Design supply temp.	56.0	°F
BTU/(hr-ft²)	36.3		Zone T-stat Check	1 of 1	OK
Water flow @ 10.0 °F rise	N/A		Max zone temperature deviation	0.0	°F

Central Heating Coil Sizing Data

Max coil load	19.8	MBH	Load occurs at	Des Htg	
Coil CFM at Des Htg	1508	CFM	BTU/(hr-ft²)	13.1	
Max coil CFM	1508	CFM	Ent. DB / Lvg DB	64.3 / 76.5	°F
Water flow @ 20.0 °F drop	N/A				

Supply Fan Sizing Data

Actual max CFM	1508	CFM	Fan motor BHP	0.22	BHP
Standard CFM	1508	CFM	Fan motor kW	0.16	kW
Actual max CFM/ft²	1.00	CFM/ft²	Fan static	0.50	in wg

Outdoor Ventilation Air Data

Design airflow CFM	335	CFM	CFM/person	20.94	CFM/person
CFM/ft²	0.22	CFM/ft²			

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11/8/10

Air System Design Load Summary for AHU-1

Project Name: AGROCAMPO CHACON
Prepared by: RMG Engineering

11/05/2010
03:15PM

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1500 COOLING OA DB / WB 91.0 °F / 77.0 °F			HEATING DATA AT DES HTG HEATING OA DB / WB 46.0 °F / 38.6 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	84 ft²	1569	-	84 ft²	-	-
Wall Transmission	434 ft²	3560	-	434 ft²	3605	-
Roof Transmission	755 ft²	3676	-	755 ft²	1291	-
Window Transmission	84 ft²	674	-	84 ft²	1149	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	42 ft²	177	-	42 ft²	302	-
Floor Transmission	753 ft²	0	-	753 ft²	0	-
Partitions	632 ft²	2471	-	632 ft²	1093	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	2240 W	5996	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	1508 W	4661	-	0	0	-
People	16	3236	6280	0	0	0
Infiltration	-	1215	1990	-	3584	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	5% / 5%	1362	413	10%	1103	0
>> Total Zone Loads	-	28598	8683	-	12128	0
Zone Conditioning	-	31154	8683	-	11881	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	1508 CFM	0	-	1508 CFM	0	-
Ventilation Load	335 CFM	4932	9471	335 CFM	8499	0
Supply Fan Load	1508 CFM	559	-	1508 CFM	-559	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	36646	18154	-	19820	0
Central Cooling Coil	-	36646	18157	-	0	0
Central Heating Coil	-	0	-	-	19820	-
>> Total Conditioning	-	36646	18157	-	19820	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

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