STRUCTURAL CALCULATIONS

FOR

412 W Hospitality Lane Upgrades

SAN BERNARDINO, CALIFORNIA

County of San Bernardino
BUILDING AND SAFETY
THE PLANS AND DETAILS HAVE BEEN
REVIEWED
FOR CODE COMPLIANCE
THE REVIEW OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR ANY VIOLATION OF ANY CODE OR ORDINANCE OF THIS COUNTY
By
Date 06/07/2024
THESE PLANS SHALL BE ON THE JOB FOR ALL REQUESTED INSPECTIONS

TI-2024-00041

Craig Chamberlain, M.S., S.E.

Structural Engineer S 4588

IMEG Corporation

IMEG# 23008184.00

REVIEWED

FOR CODE COMPLIANCE

June 5, 2024

TRB AND ASSOCIATES

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›909.477.6915 ›Fax: 909.477.6916 ›imegcorp.com

Table of Contents

PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	2/14/2024	RW	# 23008184.00

Description: Gravity Loads - Roof

Gravity Loads

Classroom and Library Roof

Item	Deck	Joists	Girders	Columns	Seismic	Comments
Roofing	5.0	5.0	5.0	5.0	5.0	min roofing
Plywood	1.5	1.5	1.5	1.5	1.5	1/2" thk plywood
Insulation	1.5	1.5	1.5	1.5	1.5	fiberglass insulation
MEP		1.5	1.5	1.5	1.5	
Ceiling		2.5	2.5	2.5	2.5	Suspended ceiling
Sprinklers		1.5	1.5	1.5	1.5	
		1.8	1.8	1.8	1.8	1/2" acoustic tiles
Joists/trusses			0.9	0.9	0.9	2x8 @ 24" OC
Columns				1.0	1.0	
Interior Partitions	0.0	0.0	0.0	0.0	5.0	
Miscellaneous	0.0	1.2	1.8	1.8	1.8	
Dead Load	8.0	16.5	18.0	19.0	24.0	
Live Load	20.0	20.0	20.0	20.0		reducible

LX Series

PHE4 - 14 SEER Single Pkg. R-410A Heat Pump

Project Name: **IMEG Hospitality Phase 1 Reno** Unit Model #: **PHE4B4224**

Quantity: **1** Tag #: **RTU-1** System: **PHE4B4224**

Cooling Performance		
Total net capacity	39.2	MBH
Sensible net capacity	30.9	MBH
Seasonal Efficiency (at ARI)	14.00	SEER
Efficiency (at ARI)	11.60	EER
Ambient DB temp.	105.0	°F
Entering DB temp.	80.0	°F
Entering WB temp.	67.0	°F
Unit Leaving DB temp.	59.6	°F
Unit Leaving WB temp.	58.2	°F
Leaving air temp dew point	57.30	°F
Power input	3.61	kW
Sound power	73	dB(a)

Refrigerant		
Refrigerant type	R-410A	
Sys1	9 lb	6 oz

Heat Pump Performance		
Heating output capacity	40.5	MBH
Ambient DB temp.	47	°F
Entering DB temp.	60	°F
Leaving DB temp.	86.8	°F
Air temp. rise	26.8	°F
Power Input	2.92	kW
Cop	4.07	COP
HSPF	8	
Capacity @ 47(°F)	39.00	MBH
COP @ 47(°F)	3.60	COP
Capacity @ 17(°F)	23.00	MBH
Applied electric heat	7.2	kW

Heating Performance		
Entering DB temp.	60	°F
Heating output capacity (Max)	24.6	MBH
Applied electric heat	7.2	kW
Installed	Field	
Supply air	1400	cfm
Leaving DB temp.	76.3	°F
Air temp. rise	16.3	°F

Supply Air Blower Performance		
Supply air	1400	cfm
Ext. static pressure	0.96	IWG
Blower speed description	High (5)	
Duct location	Bottom	
Motor rating	0.75	HP
Elevation	0	ft
Drive type	DIRECT	

Electrical Data			
Power supply	208-1-60		230-1-60
Unit min circuit ampacity	70.3	A	74.9 A
Unit max over-current protection	80	A	80 A

Dimensions & Weight		
Hgt 47 in	Len 52 in	Wth 46 in
Weight with factory installed options		436 lb

Note: Please refer to the tech guide for listed maximum static pressures

3.5 Ton

- LX® Series Packaged Units are Manufactured at an ISO 9001 Registered Facility and Each Rooftop is Completely Computer-Run Tested Prior To Shipment

Unit Features

- Unit Cabinet is Constructed of G-90 Galvanized Steel with a Powder Paint Coating at 750 Hour Salt Spray Tested
- Bottom and Side Electrical and Gas Utility Connections
- Easy Access to All Components
- Single Piece Water-Shed Top Cover and Drip Edge
- Field Convertible Duct Connections From Horizontal to Downflow Allows Greater Flexibility
- Full Perimeter, Removable Base Rails with Built in Rigging and Access Provisions
- Non-Corrosive Condensate Pan Internally Sloped to Meet Strict Requirements of ASHRAE 62-89 Indoor Quality Standard
- Single Speed Scroll Compressor
- Compressor is Internally Protected Against High Pressure and Temperature
- Standard Cooling Operation Down to 45 F
- Variable Speed Direct Drive High Static Motor and Slide-out Blower Assembly

Warranty

- Extended 10-Years limited parts and compressor warranty. *Requires registration within 90 days of purchase.

York® Sun™ Pro 3-12.5 Ton Package

Single Package R-410A Heat Pump

Project Name: **IMEG Hospitality Phase 1 Reno** | Unit Model #: **XP120C00R2A1AAA3A2**

Quantity: **9** Tag #: **RTU-2,3,4,7,8,9,,10,15,16** | System: **XP120C00R2A1AAA3A2**

Cooling Performance

Total gross capacity	115.3 MBH
Sensible gross capacity	85.2 MBH
Total net capacity	104.9 MBH
Sensible net capacity	74.8 MBH
Efficiency (at ARI)	11.00 EER
Integrated eff. (at ARI)	14.50 IEER
Ambient DB temp.	105.0 °F
Entering DB temp.	80.0 °F
Entering WB temp.	67.0 °F
Evap Coil Leaving DB temp.	60.3 °F
Evap Coil Leaving WB temp.	58.0 °F
Unit Leaving DB temp.	62.7 °F
Unit Leaving WB temp.	58.9 °F
Leaving air temp dew point	56.60 °F
Power input (w/o blower)	10.20 kW
Sound power	83 dB(a)

Refrigerant

Refrigerant type	R-410A
Sys1	12 lb 14 oz
Sys2	12 lb 12 oz

Heat Pump Performance

Ambient DB temp.	47 °F
Entering DB temp.	60 °F
Leaving DB temp.	84.4 °F
Air temp. rise	24.4 °F
Design Gross Capacity	105.2 MBH
Design Power Input	6.12 kW
Capacity @ 47(°F)	102.00 MBH
COP @ 47(°F)	3.50 COP
Capacity @ 17(°F)	59.00 MBH
COP @ 17(°F)	2.25 COP
Requires field-supplied drive	Yes
Applied electric heat	18 kW

Heating Performance

Entering DB temp.	60 °F
Heating output capacity (Max)	61.4 MBH
Nominal electric heat	24 kW
Applied electric heat	18.0 kW
Installed	Field
Supply air	4000 cfm
Leaving DB temp.	74.2 °F
Air temp. rise	14.2 °F
Stages	2

Supply Air Blower Performance

Supply air	4000 cfm
Ext. static pressure	1.43 IWG
Addl. Unit Losses (Options/Accessories)	0.57 IWG
Blower speed	1309 rpm
Max BHP of Motor (including service factor)	3.45 HP
Duct location	Bottom
Motor rating	3.00 HP
Actual required BHP	3.28 HP
Power input	3.06 kW
Elevation	0 ft
Drive type	BELT
Requires field-supplied drive	true

Electrical Data

Power supply	208-3-60		230-3-60	
Unit min circuit ampacity	110.1	A	119.7	A
Unit max over-current protection	125	A	125	A

Dimensions & Weight

Hgt 51 in	Len 89 in	Wth 59 in
Weight with factory installed options		1140 lb

Clearances

Right	12 in	Front	36 in	Rear	12 in
Top	72 in	Bottom	0 in	Left	36 in

Note: Please refer to the tech guide for listed maximum static pressures

10 Ton

- York Sun Pro units are manufactured at an ISO 9001 registered facility and each rooftop is completely computer-run tested prior to shipment.

Unit Features

- Two Stage Cooling
- Field Installed Electric Heat
- Either supply and/or return can be field converted from vertical to horizontal configuration without cutting panels.
- Full perimeter base rails with built in rigging capabilities
- Unit Cabinet Constructed of Powder Painted Steel, Certified At 750 Hours Salt Spray Test (ASTM B-117 Standards)
- Scroll Compressor[s]
- Slide-out Blower/3 HP Belt Drive Motor Assembly
- Unit Ships with 2" Pleated Filters (MERV 13)
- Solid Core Liquid Line Filter Driers
- Replacement Filters: 4 - (24" x 20").
- Dual refrigerant circuits for efficient part load operation
- Single Point Power Connection
- Through-the-Curb and Through-the-Base Utility Connections
- Short Circuit Current: 5kA RMS Symmetrical
- Copper tube/aluminum fin condenser coil, Copper tube/aluminum fin evaporator coil
- Composite Drain Pan - Front Connection
- Tool-free maintenance with features like hinged doors for all-access panels, slide-out blower and blower motor tray

BAS Controller

- IntelliSpeed control of the VFD based on stages of cooling. Provides Single Zone VAV Fan Operation as defined by ASHRAE 90.1 section 6.4.3.10.
- Smart Equipment Controller including Discharge Air, Return Air, and Outdoor Air Temperature Sensors.

Standard Unit Controller: Smart Equipment Control Board

- Safety Monitoring - Monitors the High and Low-Pressure Switches, the Freezestats, the Gas Valve, if Applicable, and the Temperature Limit Switch on Gas and Electric Heat Units. The Unit Control Board will Alarm on Ignition Failures, Safety Lockouts and Repeated Limit Switch Trips.

Warranty

- One (1) Year Limited Warranty on the Complete Unit
- Five (5) Year Warranty - Compressors and Electric Heater Elements

York® Sun™ Pro 3-12.5 Ton Package

Single Package R-410A Heat Pump

Project Name: **IMEG Hospitality Phase 1 Reno** | Unit Model #: **XP090C00R2A1AAA3A2**

Quantity: **4** Tag #: **RTU-5,6,11,12** | System: **XP090C00R2A1AAA3A2**

Cooling Performance

Total gross capacity	92.7	MBH
Sensible gross capacity	67.0	MBH
Total net capacity	83.8	MBH
Sensible net capacity	58.1	MBH
Efficiency (at ARI)	11.20	EER
Integrated eff. (at ARI)	14.60	IEER
Ambient DB temp.	105.0	°F
Entering DB temp.	80.0	°F
Entering WB temp.	67.0	°F
Evap Coil Leaving DB temp.	59.3	°F
Evap Coil Leaving WB temp.	57.2	°F
Unit Leaving DB temp.	62.1	°F
Unit Leaving WB temp.	58.3	°F
Leaving air temp dew point	55.90	°F
Power input (w/o blower)	8.50	kW
Sound power	83	dB(a)

Refrigerant

Refrigerant type	R-410A	
Sys1	13	lb
Sys2	13	lb 2 oz

Heat Pump Performance

Ambient DB temp.	47	°F
Entering DB temp.	60	°F
Leaving DB temp.	84.8	°F
Air temp. rise	24.8	°F
Design Gross Capacity	80.4	MBH
Design Power Input	5.3	kW
Capacity @ 47(°F)	87.00	MBH
COP @ 47(°F)	3.50	COP
Capacity @ 17(°F)	51.00	MBH
COP @ 17(°F)	2.25	COP
Requires field-supplied drive	Yes	
Applied electric heat	13.5	kW

Heating Performance

Entering DB temp.	60	°F
Heating output capacity (Max)	46.0	MBH
Nominal electric heat	18	kW
Applied electric heat	13.5	kW
Installed	Field	
Supply air	3000	cfm
Leaving DB temp.	74.2	°F
Air temp. rise	14.2	°F
Stages	2	

Supply Air Blower Performance

Supply air	3000	cfm
Ext. static pressure	1.5	IWG
Addl. Unit Losses (Options/Accessories)	0.33	IWG
Blower speed	1214	rpm
Max BHP of Motor (including service factor)	3.45	HP
Duct location	Bottom	
Motor rating	3.00	HP
Actual required BHP	2.79	HP
Power input	2.60	kW
Elevation	0	ft
Drive type	BELT	
Requires field-supplied drive	true	

Electrical Data

Power supply	208-3-60		230-3-60	
Unit min circuit ampacity	90.6	A	97.8	A
Unit max over-current protection	100	A	100	A

Dimensions & Weight

Hgt	51	in	Len 89	in	Wth 59 in
Weight with factory installed options					1095 lb

Clearances

Right	12	in	Front	36	in	Rear	12 in
Top	72	in	Bottom	0	in	Left	36 in

Note: Please refer to the tech guide for listed maximum static pressures

7.5 Ton

- York Sun Pro units are manufactured at an ISO 9001 registered facility and each rooftop is completely computer-run tested prior to shipment.

Unit Features

- Two Stage Cooling
- Field Installed Electric Heat
- Either supply and/or return can be field converted from vertical to horizontal configuration without cutting panels.
- Full perimeter base rails with built in rigging capabilities
- Unit Cabinet Constructed of Powder Painted Steel, Certified At 750 Hours Salt Spray Test (ASTM B-117 Standards)
- Scroll Compressor[s]
- 3 HP High Static Belt Drive Blower
- Unit Ships with 2" Pleated Filters (MERV 13)
- Solid Core Liquid Line Filter Driers
- Replacement Filters: 4 - (24" x 20").
- Dual refrigerant circuits for efficient part load operation
- Single Point Power Connection
- Through-the-Curb and Through-the-Base Utility Connections
- Short Circuit Current: 5kA RMS Symmetrical
- Copper tube/aluminum fin condenser coil, Copper tube/aluminum fin evaporator coil
- Composite Drain Pan - Front Connection
- Tool-free maintenance with features like hinged doors for all-access panels, slide-out blower and blower motor tray

BAS Controller

- IntelliSpeed control of the VFD based on stages of cooling. Provides Single Zone VAV Fan Operation as defined by ASHRAE 90.1 section 6.4.3.10.
- Smart Equipment Controller including Discharge Air, Return Air, and Outdoor Air Temperature Sensors.

Standard Unit Controller: Smart Equipment Control Board

- Safety Monitoring - Monitors the High and Low-Pressure Switches, the Freezestats, the Gas Valve, if Applicable, and the Temperature Limit Switch on Gas and Electric Heat Units. The Unit Control Board will Alarm on Ignition Failures, Safety Lockouts and Repeated Limit Switch Trips.

Warranty

- One (1) Year Limited Warranty on the Complete Unit
- Five (5) Year Warranty - Compressors and Electric Heater Elements

LX Series

PHE4 - 14 SEER Single Pkg. R-410A Heat Pump

Project Name: **IMEG Hospitality Phase 1 Reno** Unit Model #: **PHE4A2424**

Quantity: **1** Tag #: **RTU-13,14** System: **PHE4A2424**

Cooling Performance		
Total net capacity	22.5	MBH
Sensible net capacity	17.3	MBH
Seasonal Efficiency (at ARI)	14.00	SEER
Efficiency (at ARI)	11.60	EER
Ambient DB temp.	105.0	°F
Entering DB temp.	80.0	°F
Entering WB temp.	67.0	°F
Unit Leaving DB temp.	60.0	°F
Unit Leaving WB temp.	58.2	°F
Leaving air temp dew point	57.10	°F
Power input	2.13	kW
Sound power	70	dB(a)

Refrigerant		
Refrigerant type	R-410A	
Sys1	4 lb 9 oz	

Heat Pump Performance		
Heating output capacity	24.6	MBH
Ambient DB temp.	47	°F
Entering DB temp.	60	°F
Leaving DB temp.	88.5	°F
Air temp. rise	28.5	°F
Power Input	1.89	kW
Cop	3.81	COP
HSPF	8	
Capacity @ 47(°F)	23.60	MBH
COP @ 47(°F)	3.70	COP
Capacity @ 17(°F)	13.60	MBH
Applied electric heat	5.8	kW

Heating Performance		
Entering DB temp.	60	°F
Heating output capacity (Max)	19.7	MBH
Applied electric heat	5.8	kW
Installed	Field	
Supply air	800	cfm
Leaving DB temp.	82.8	°F
Air temp. rise	22.8	°F

Supply Air Blower Performance		
Supply air	800	cfm
Ext. static pressure	0.5	IWG
Blower speed description	High (5)	
Duct location	Bottom	
Motor rating	0.50	HP
Elevation	0	ft
Drive type	DIRECT	

Electrical Data		
Power supply	208-1-60	230-1-60
Unit min circuit ampacity	53.3 A	56 A
Unit max over-current protection	60 A	60 A

Dimensions & Weight		
Hgt 44 in	Len 52 in	Wth 36 in
Weight with factory installed options		330 lb

Note: Please refer to the tech guide for listed maximum static pressures

2 Ton

- LX® Series Packaged Units are Manufactured at an ISO 9001 Registered Facility and Each Rooftop is Completely Computer-Run Tested Prior To Shipment

Unit Features

- Unit Cabinet is Constructed of G-90 Galvanized Steel with a Powder Paint Coating at 750 Hour Salt Spray Tested
- Bottom and Side Electrical and Gas Utility Connections
- Easy Access to All Components
- Single Piece Water-Shed Top Cover and Drip Edge
- Field Convertible Duct Connections From Horizontal to Downflow Allows Greater Flexibility
- Full Perimeter, Removable Base Rails with Built in Rigging and Access Provisions
- Non-Corrosive Condensate Pan Internally Sloped to Meet Strict Requirements of ASHRAE 62-89 Indoor Quality Standard
- Single Speed Scroll Compressor
- Compressor is Internally Protected Against High Pressure and Temperature
- Standard Cooling Operation Down to 45 F
- Variable Speed Direct Drive High Static Motor and Slide-out Blower Assembly

Warranty

- Extended 10-Years limited parts and compressor warranty. *Requires registration within 90 days of purchase.

York® Sun™ Core 3-12.5 Ton Package

Single Package R-410A Heat Pump

Project Name: **IMEG Hospitality Phase 1 Reno** | Unit Model #: **XXE12A2C3AA1A111A3**

Quantity: **1** Tag #: **RTU-17** | System: **XXE12A2C3AA1A111A3**

Cooling Performance		
Total gross capacity	121.6	MBH
Sensible gross capacity	92.7	MBH
Total net capacity	111.4	MBH
Sensible net capacity	82.5	MBH
Efficiency (at ARI)	11.00	EER
Integrated eff. (at ARI)	14.60	IEER
Ambient DB temp.	95.0	°F
Entering DB temp.	80.0	°F
Entering WB temp.	67.0	°F
Evap Coil Leaving DB temp.	58.5	°F
Evap Coil Leaving WB temp.	57.5	°F
Unit Leaving DB temp.	60.9	°F
Unit Leaving WB temp.	58.2	°F
Leaving air temp dew point	56.90	°F
Power input (w/o blower)	8.90	kW
Sound power	86	dB(a)

Refrigerant		
Refrigerant type	R-410A	
Sys1	12 lb	4 oz
Sys2	12 lb	4 oz

Heat Pump Performance		
Ambient DB temp.	47	°F
Entering DB temp.	60	°F
Leaving DB temp.	87	°F
Air temp. rise	27	°F
Design Gross Capacity	116.6	MBH
Design Power Input	7.51	kW
Capacity @ 47(°F)	114.00	MBH
COP @ 47(°F)	3.40	COP
Capacity @ 17(°F)	62.00	MBH
COP @ 17(°F)	2.25	COP
Applied electric heat	18.6	kW

Heating Performance		
Entering DB temp.	60	°F
Heating output capacity (Max)	63.4	MBH
Nominal electric heat	24.8	kW
Applied electric heat	18.6	kW
Installed	Field	
Supply air	4000	cfm
Leaving DB temp.	74.7	°F
Air temp. rise	14.7	°F
Stages	1	

Supply Air Blower Performance		
Supply air	4000	cfm
Ext. static pressure	1.5	IWG
Addl. Unit Losses (Options/Accessories)	0.24	IWG
Blower speed	1045	rpm
Max BHP of Motor (including service factor)	5.25	HP
Duct location	Bottom	
Motor rating	5.25	HP
Actual required BHP	3.20	HP
Power input	2.98	kW
Elevation	0	ft
Drive type	BELT	

Electrical Data				
Power supply	208-3-60		230-3-60	
Unit min circuit ampacity	118.5	A	127.9	A
Unit min over-current protection	125	A	150	A
Unit max over-current protection	125	A	150	A

Dimensions & Weight					
Hgt	49 in	Len	87 in	Wth	62 in
Weight with factory installed options				1070	lb

Clearances					
Right	18 in	Front	48 in	Rear	18 in
Top	72 in	Bottom	1 in	Left	12 in

Note: Please refer to the tech guide for listed maximum static pressures

10 Ton

- All units are manufactured at an ISO 9001 registered facility and each rooftop is completely computer-run tested prior to shipment.

Unit Features

- Two Stage Cooling
- Unit Cabinet Constructed of Powder Painted Steel, Certified At 750 Hours Salt Spray Test (ASTM B-117 Standards)
- Either supply and/or return can be field converted from vertical to horizontal configuration without cutting panels.
- Full perimeter base rails with built in rigging capabilities
- Scroll Compressors
- High Static Belt Drive Blower
- Solid Core Liquid Line Filter Driers
- Unit Ships with 2" Throwaway Filters
- Replacement Filters: 4 - (20" x 20"). Unit accepts 2" or 4" wide filters.
- Single Point Power Connection
- Short Circuit Current: 5kA RMS Symmetrical
- Copper tube/Aluminum fin Condenser Coil, Copper tube/Aluminum fin Evaporator Coil

BAS Controller

- Smart Equipment Controller including Discharge Air, Return Air, and Outdoor Air Temperature Sensors.

Standard Unit Controller

- An Integrated Low-Ambient Control, Anti-Short Cycle Protection, Lead-Lag, Fan On and Fan off Delays, Low Voltage Protection, Allows all units to operate in the cooling mode down to 0 °F outdoor ambient without additional components or intervention.
- Safety Monitoring - Monitors the high and low-pressure switches, the freezestats, the gas valve, if applicable, and the temperature limit switch on gas and electric heat units. The unit control board will alarm on ignition failures, safety lockouts and repeated limit switch trips.
- Smart Equipment Control Board
- On-Board Diagnostic and Fault Code display

Warranty

- One (1) Year Limited Warranty on the Complete Unit
- Five (5) Year Warranty - Compressors

FEATURES

- Includes fully modulating economizer. (See Form ECO-184 for Economizer Specs).
- CO2 controller standard on economizer. Space or duct mounted CO2 sensor provided as option:
  - CO2WM - Wall Mount With LED
  - CO2DM - Duct Mount
- LEED economizer option.
- Access for motor, blower, and blower drives.
- Adjustable motor sheave.
- Motor with automatic internal thermal protection.
- Modulating option includes fully programmable (factory set) variable frequency drive controlled by a differential pressure transducer designed to continuosly monitor space pressure.

DOWN DISCHARGE CENTRIFUGAL POWER EXHAUST ECONOMIZER FOR YORK UNITS

ZH/ZF/ZR 102-150: ZJ/XP 078-150

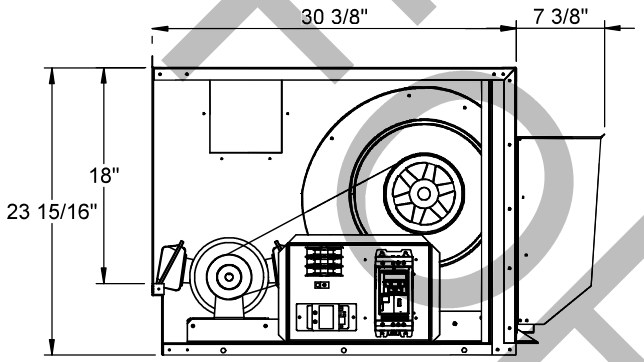
VOLTAGE	External Static (in. W.G)				FLA	Hp	Wt
	0.1	0.2	0.3	0.4			
230V/3Ph	4,200 cfm	4,000 cfm	3,900 cfm	3,800 cfm	5.6	2	220 Lbs. (Includes Economizer)
460V/3Ph					2.8		

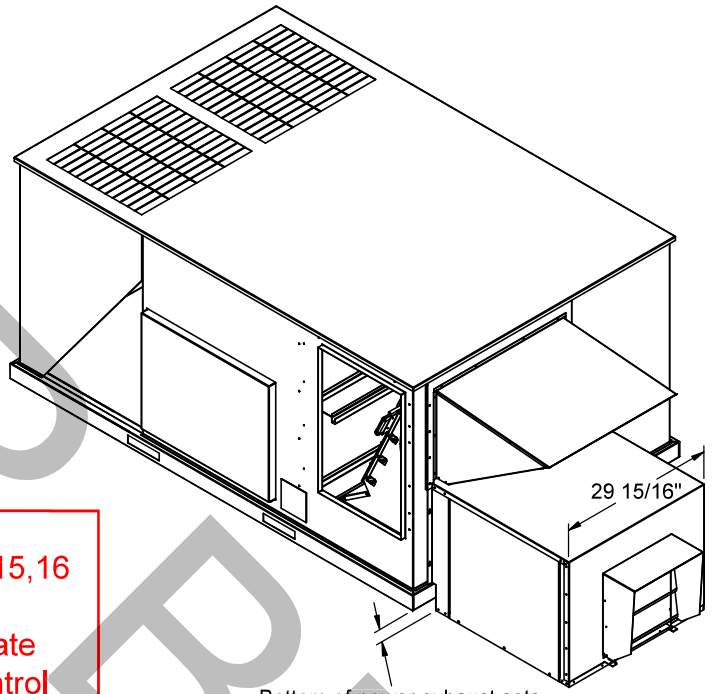
ProVent P/N	
CONSTANT VOLUME	MODULATING
PEDCPRDLCDB25CS 208/230V 3Ph Selectable Dry Bulb	PEDCPRDLCDB25MS 208/230V 3Ph Selectable Dry Bulb
PEDCPRDLCEN25CS 208/230V 3Ph Enthalpy	PEDCPRDLCEN25MS 208/230V 3Ph Enthalpy
PEDCPRDLCDB46CS 460V 3Ph Selectable Dry Bulb	PEDCPRDLCDB46MS 460V 3Ph Selectable Dry Bulb
PEDCPRDLCEN46CS 460V 3Ph Enthalpy	PEDCPRDLCEN46MS 460V 3Ph Enthalpy

Note: For factory installed LEED economizer / power exhaust option, part number, FLOWECPRD3715, must be added.

PLEASE NOTE:

1. Return air duct, dampers, return air grills are specific for each unit.
2. For proper electrical wire sizing, Provent power exhaust full load amps need to be added to equation.

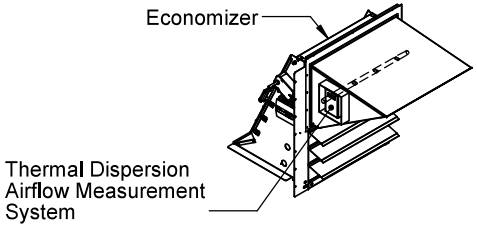




Bottom of power exhaust sets 2" below unit base rail.

LEED ECONOMIZER / POWER EXHAUST OPTION

- ProVent P/N: FLOWECPRD3715
- Outside air measurement for dilution utilizing thermal dispersion technology and ASHRAE 62.1 compliant. Provides LEED credit by supplying feedback on ventilition system performance ensuring that the ventilation system maintains design requirements.
- Factory installed onto economizer/power exhaust standard.
- Provides analog outputs for BMS, visual or audible alert, and generates an alarm when conditions vary by 10% or more of set point.



amca CERTIFIED RATINGS — AIR LEAKAGE — AIR PERFORMANCE — AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.

Only Ruskin Company Model CD-60 is AMCA Certified

RTU 5,6,11,12
RTU 2,3,4,7,8,9,10,15,16

'SE' at end will indicate that BACnet can control modulating power exhaust

ProVent
3847 WABASH DR.
MIRA LOMA, CA 91725
PHONE (951) 685-1101
FAX (619) 872-9799

SUBMITED TO: _____
COMPANY: _____
JOB NAME: _____
EQUIPMENT: _____
NOTES: _____

FORM NO:	PART NUMBER:
PE-88	PEDCPRDLCS SERIES

DATE:	REV:	DRAWN BY:
8/12/2016	1	JG

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DOWN DISCHARGE CENTRIFUGAL POWER EXHAUST ECONOMIZER FOR YORK PRESTIGE UNITS

XY 07-09; ZX 08-14; ZY 07-12; XX08-12

VOLTAGE	External Static (in. W.G) 0.1	0.2	0.3	0.4	FLA	Hp	Est. Wt
230V/3Ph	4,400 cfm	4,300 cfm	4,100 cfm	3,900 cfm	3.2	2	248 Lbs. (Includes Economizer)
460V/3Ph					1.6		

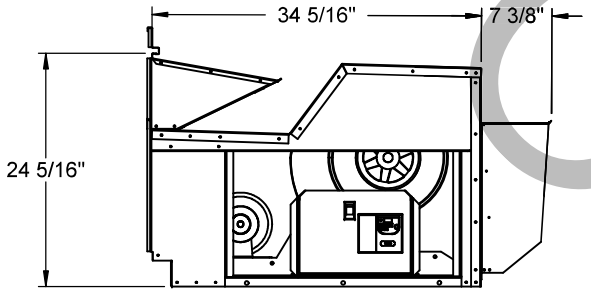
FEATURES

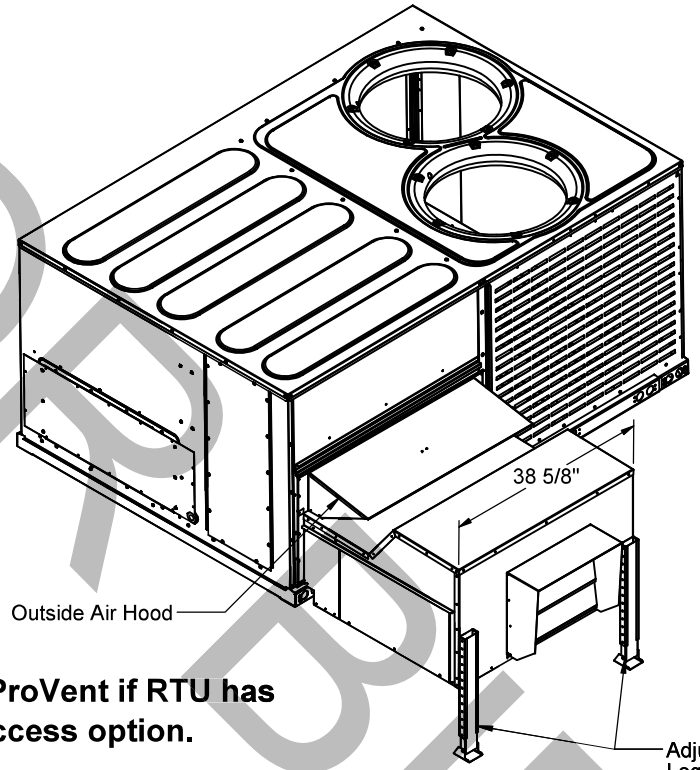
- Includes fully modulating economizer. (See Form ECO-90 for Economizer Specs).
- CO2 controller standard on economizer. Space or duct mounted CO2 sensor provided as option:
  - CO2WM - Wall Mount With LED
  - CO2DM - Duct Mount
- Access for motor, blower, and blower drives.
- Adjustable motor sheave.
- Motor with automatic internal thermal protection.
- Modulating option includes fully programmable (factory set) variable frequency drive controlled by a differential pressure transducer designed to continuosly monitor space pressure.

PLEASE NOTE:

1. Return air duct, dampers, return air grills are specific for each unit.
2. For proper electrical wire sizing, Provent power exhaust full load amps need to be added to equation.

ProVent P/N	
CONSTANT VOLUME	**MODULATING**
PEDCPRLDB06C 208/230V 1Ph Selectable Dry Bulb	**PEDCPRLDB06M** 208/230V 1Ph Selectable Dry Bulb
PEDCPRLEN06C 208/230V 1Ph Enthalpy	**PEDCPRLEN06M** 208/230V 1Ph Enthalpy
PEDCPRLDB25C 208/230V 3Ph Selectable Dry Bulb	**PEDCPRLDB25M** 208/230V 3Ph Selectable Dry Bulb
PEDCPRLEN25C 208/230V 3Ph Enthalpy	**PEDCPRLEN25M** 208/230V 3Ph Enthalpy
PEDCPRLDB46C 460V 3Ph Selectable Dry Bulb	**PEDCPRLDB46M** 460V 3Ph Selectable Dry Bulb
PEDCPRLEN46C 460V 3Ph Enthalpy	**PEDCPRLEN46M** 460V 3Ph Enthalpy





RTU 17

Note:
Please contact ProVent if RTU has a hinged filter access option.

Only Ruskin Company Model CD-60 is AMCA Certified

ProVent
3847 WABASH DR.
MIRA LOMA, CA 91725
PHONE (951) 685-1101
FAX (619) 872-9799

SUBMITED TO: _____
COMPANY: _____
JOB NAME: _____
EQUIPMENT: _____
NOTES: _____

FORM NO:	PART NUMBER:
PE-55	PEDCPRL SERIES

DATE:	REV:	DRAWN BY:
10/6/2022	M	CNG

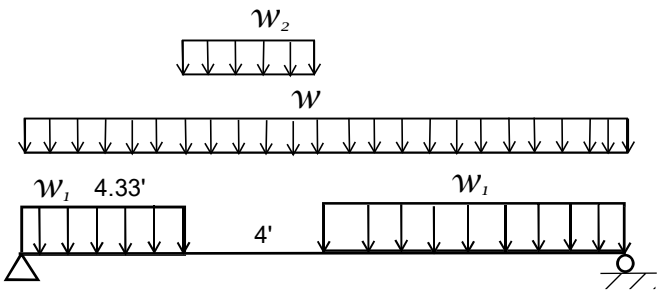
Page 8 of 37

PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	2/14/2024	RW	# 23008184.00

(E) TJI ROOF JOIST @ RTU - 1

(E) 11 7/8 TJI 110@ 16" O.C.

1 / S601



L = 19.6'

w_{DL} = 16.5 psf

w_{RLL} = 0

w_{1DL} = 0

w_{1RLL} = 20 psf

AC unit: RTU-1
UNIT WT= 436 LBS
CURB WT=230 LBS

(436 lbs + 230 lbs)/2 = 333 lbs @ each side

333 lbs /(47.5" /12) = 84 plf
roof curb base length

Say 112 plf

w_{2DL} = 112 plf

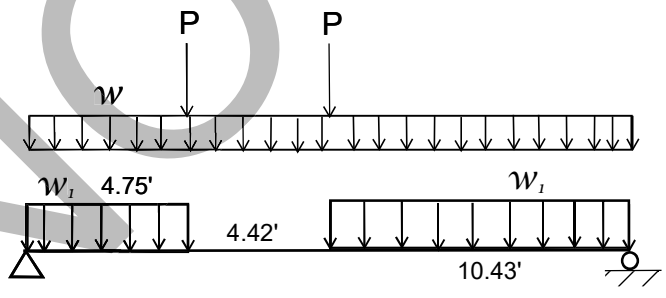
w_{2RLL} = 0

$w_{2\,WIND}$ = 317 plf
see page 13

See next page for design

(E) TJI JOIST @ RTU 17 ,12, 2, 6, 9

2 / S601 6 / S601



L = 19.6'

w_{DL} = 16.5 psf

w_{RLL} = 0

w_{1DL} = 0

w_{1RLL} = 20 psf

AC unit:

(1360 lbs + 387 lbs)/2 = 873.5 lbs @ each side

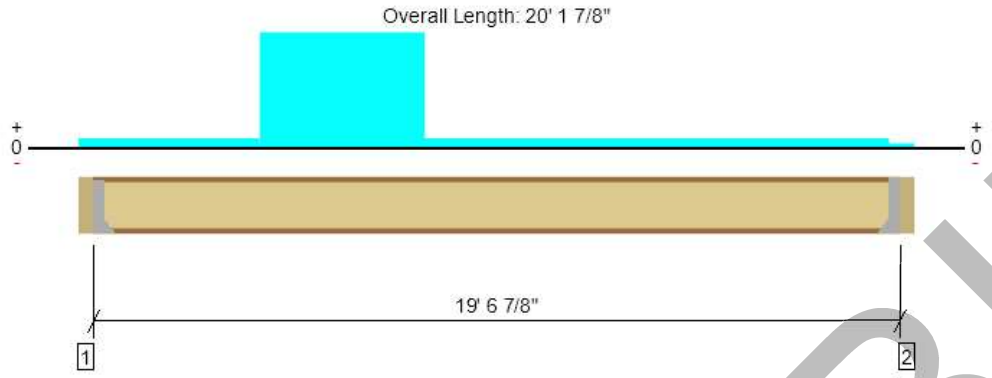
873.5 lbs /(83.375" /12) = 125.7 plf
roof curb base length

P_{DL} = 125.7 plf

P_{WL} = 330 plf

floor Level, RTU-1 Roof: Joist

2 piece(s) 11 7/8" TJI® 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1060 @ 3 1/2"	2912 (1.75")	Passed (36%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Shear (lbs)	1060 @ 3 1/2"	4992	Passed (21%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Moment (Ft-lbs)	5498 @ 7' 3 5/8"	10112	Passed (54%)	1.60	1.0 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.345 @ 9' 6 3/8"	0.979	Passed (L/681)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Total Load Defl. (in)	0.685 @ 9' 6 9/16"	1.305	Passed (L/343)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)

Member Length : 19' 6 7/8"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Roof Live	Wind	Factored	
1 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	532	195	877	1073	See note [1]
2 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	360	221	392	702	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 5" o/c	
Bottom Edge (Lu)	19' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

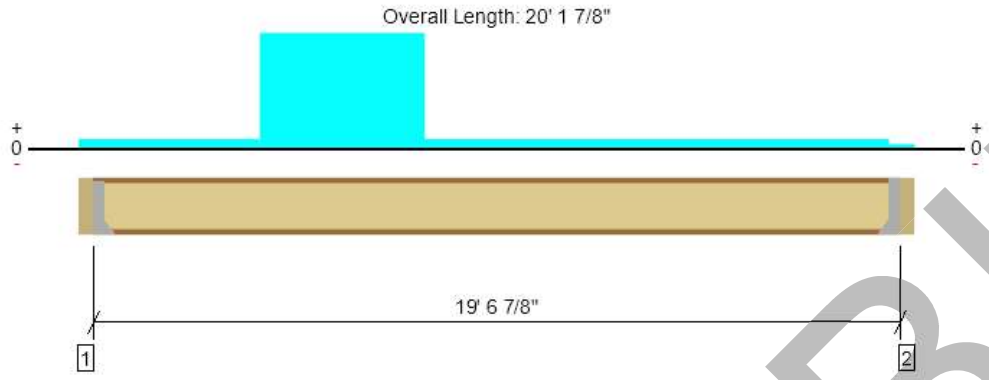
Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10dx1.5	2-Strong-Grip	
2 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location	Spacing	Dead (0.90)	Roof Live (1.25)	Wind (1.60)	Comments
1 - Uniform (PSF)	0 to 20' 1 7/8"	16"	16.5	-	-	Default Load
2 - Uniform (PSF)	0 to 4' 3 15/16"	16"	-	20.0	-	
3 - Uniform (PSF)	8' 4" to 19' 7 3/16"	16"	-	20.0	-	
4 - Uniform (PLF)	4' 4" to 8' 4"	N/A	112.0	-	317.0	

floor Level, RTU-1 Roof: Joist

Current Solution: 1 piece(s) 11 7/8" TJI® 210 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1060 @ 3 1/2"	1608 (1.75")	Passed (66%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Shear (lbs)	1060 @ 3 1/2"	2648	Passed (40%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Moment (Ft-lbs)	5498 @ 7' 3 5/8"	6072	Passed (91%)	1.60	1.0 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.592 @ 9' 6 3/8"	0.979	Passed (L/397)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Total Load Defl. (in)	1.174 @ 9' 6 9/16"	1.305	Passed (L/200)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)

Member Length : 19' 6 7/8"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

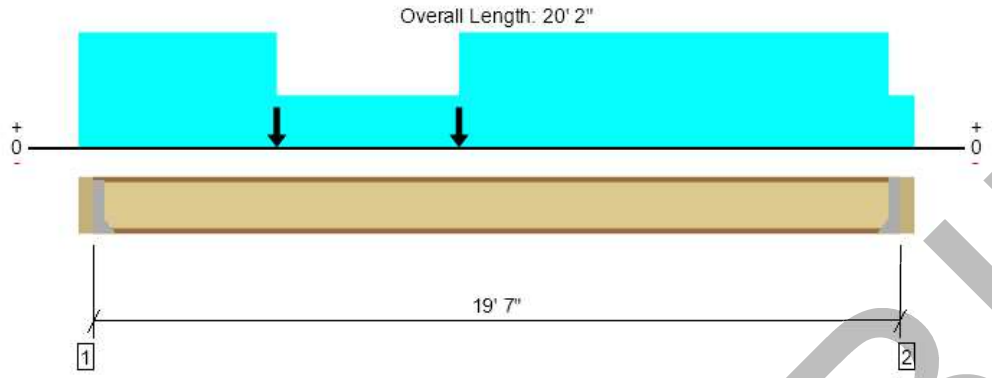
All Product Solutions

Depth	Series	Plies	Spacing	Cost Index
16"	TJI® 110	1	24"	0.51 *
11 7/8"	TJI® 210	1	16"	0.79

The purpose of this report is for product comparison only. Load and support information necessary for professional design review is not displayed here. Please print an individual Member Report for submittal purposes.

floor Level, RTU-17 Roof: Joist

1 piece(s) 11 7/8" TJI® 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	834 @ 3 1/2"	1456 (1.75")	Passed (57%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Shear (lbs)	834 @ 3 1/2"	2496	Passed (33%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Moment (Ft-lbs)	4332 @ 9' 2 1/16"	5056	Passed (86%)	1.60	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Live Load Defl. (in)	0.534 @ 9' 9 5/8"	0.979	Passed (L/440)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Total Load Defl. (in)	1.121 @ 9' 9 1/2"	1.306	Passed (L/210)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)

Member Length : 19' 7"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Roof Live	Wind	Factored	
1 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	442	191	580	846	See note [1]
2 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	335	214	300	630	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 8" o/c	
Bottom Edge (Lu)	19' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10dx1.5	2-Strong-Grip	
2 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

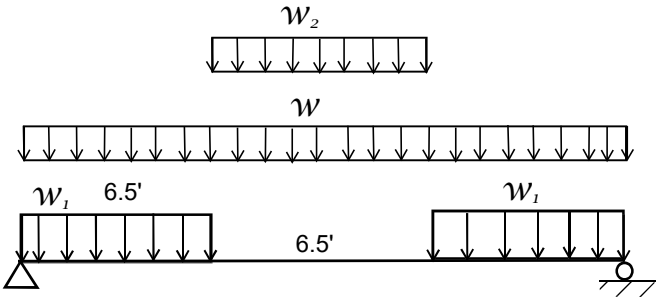
Vertical Loads	Location	Spacing	Dead (0.90)	Roof Live (1.25)	Wind (1.60)	Comments
1 - Uniform (PSF)	0 to 20' 2"	16"	16.5	-	-	Default Load
2 - Uniform (PSF)	0 to 4' 9"	16"	-	20.0	-	
3 - Point (PLF)	4' 9"	16"	125.0	-	330.0	
4 - Uniform (PSF)	9' 2 1/16" to 19' 7 3/16"	16"	-	20.0	-	
5 - Point (PLF)	9' 2 1/16"	16"	125.0	-	330.0	

PROJECT	DATE	BY	PROJECT NO.
		RW	

(E) TJI ROOF JOIST @ RTU 11, Worst case

(2) 11 7/8 TJI 110@ 16" O.C. OR NEW 4X12 BEAM

2 / S601



L = 19.6'

w_{DL} = 16.5 psf

w_{RLL} = 0

w_{1DL} = 0

w_{1RLL} = 20 psf

AC unit:

RTU-11
UNIT WT=1,315 LBS
CURB WT=387 LBS

(1315 lbs + 387 lbs)/2 = 851 lbs @ each side

851 lbs /(83.375" /12) = 122 plf

roof curb base length

w_{2DL} = 122 plf

w_{2RLL} = 0

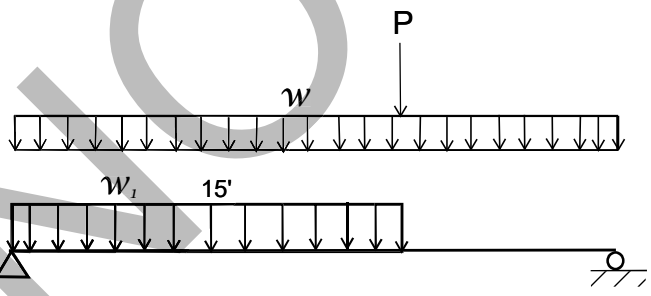
$w_{2\,WIND}$ = 330 plf

see page 13

See next page for design

(E) TJI JOIST @ RTU 15 ~16, 3 ~ 5

2 / S601



L = 19.6'

w_{DL} = 16.5 psf

w_{RLL} = 0

w_{1DL} = 0

w_{1RLL} = 20 psf

AC unit:

(1350 lbs + 387 lbs)/2 = 869 lbs @ each side

869 lbs /(83.375" /12) = 125 plf

roof curb base length

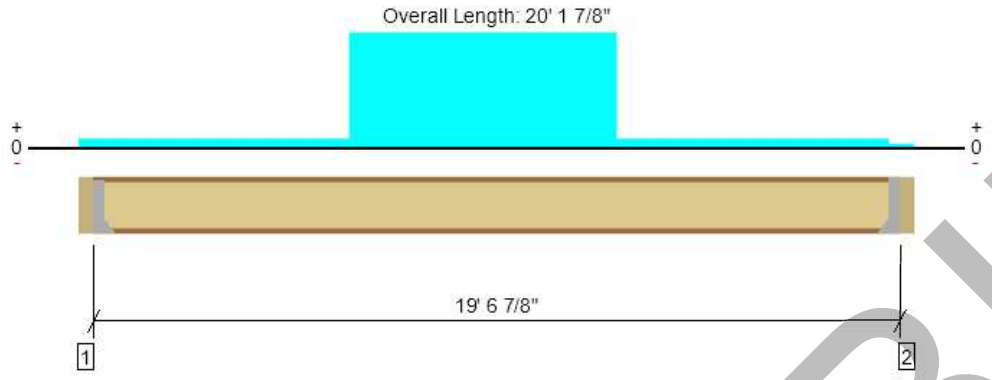
P_{DL} = 125 plf

P_{WL} = 330 plf

floor Level, Roof: Joist

2 piece(s) 11 7/8" TJI® 110 @ 16" OC

RTU 11



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1290 @ 3 1/2"	2912 (1.75")	Passed (44%)	1.60	1.0 D + 0.6 W (All Spans)
Shear (lbs)	1290 @ 3 1/2"	4992	Passed (26%)	1.60	1.0 D + 0.6 W (All Spans)
Moment (Ft-lbs)	9531 @ 9' 10 1/2"	10112	Passed (94%)	1.60	1.0 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.664 @ 10' 1/8"	0.979	Passed (L/354)	--	1.0 D + 0.6 W (All Spans)
Total Load Defl. (in)	1.219 @ 10' 3/16"	1.305	Passed (L/193)	--	1.0 D + 0.6 W (All Spans)

Member Length : 19' 6 7/8"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Roof Live	Wind	Factored	
1 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	632	179	1108	1297	See note [1]
2 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	605	170	1037	1227	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 6" o/c	
Bottom Edge (Lu)	19' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie

Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10dx1.5	2-Strong-Grip	
2 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location	Spacing	Dead (0.90)	Roof Live (1.25)	Wind (1.60)	Comments
1 - Uniform (PSF)	0 to 20' 1 7/8"	16"	16.5	-	-	Default Load
2 - Uniform (PSF)	0 to 6' 6"	16"	-	20.0	-	
3 - Uniform (PSF)	13' to 19' 7 3/16"	16"	-	20.0	-	
4 - Uniform (PLF)	6' 6" to 13'	N/A	122.0	-	330.0	

Weyerhaeuser Notes

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
ray wang imeg (909) 942-5547 raymond.wang@imegcorp.com	

Weyerhaeuser

2/14/2024 6:54:28 PM UTC

ForteWEB v3.7, Engine: V8.4.0.40, Data: V8.1.5.0

File Name: uio

Page 1 / 1

Wood Beam

Project File: tube steel_backup_1.ec6

DESCRIPTION: (N) 4x12

CODE REFERENCES

Calculations per NDS 2018, IBC 2021, ASCE 7-16
Load Combination Set : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.1

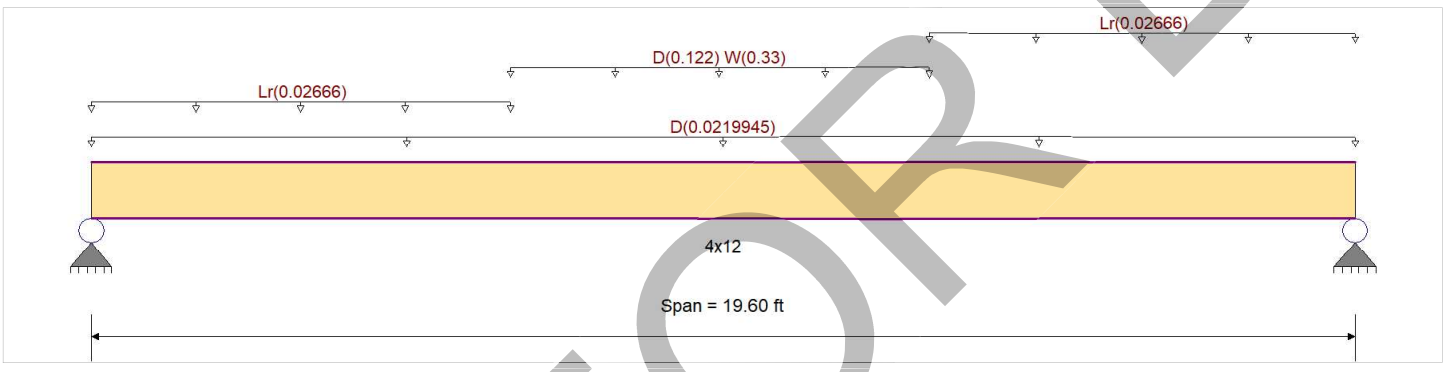
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	1,000.0 psi
Fb -	1,000.0 psi
Fc - Prll	1,500.0 psi
Fc - Perp	625.0 psi
Fv	180.0 psi
Ft	675.0 psi

E : Modulus of Elasticity

Ebend- xx	1,700.0 ksi
Eminbend - xx	620.0 ksi
Density	31.210 pcf

Repetitive Member Stress Increase



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.01650 ksf, Tributary Width = 1.333 ft, (Roof load)
Uniform Load : Lr = 0.020 ksf, Extent = 0.0 -->> 6.50 ft, Tributary Width = 1.333 ft, (Roof load)
Uniform Load : D = 0.1220, W = 0.330 k/ft, Extent = 6.50 -->> 13.0 ft, Tributary Width = 1.0 ft, (AC)
Uniform Load : Lr = 0.020 ksf, Extent = 13.0 -->> 19.60 ft, Tributary Width = 1.333 ft, (Roof load)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.800 : 1	Maximum Shear Stress Ratio	=	0.174 : 1
Section used for this span		4x12	Section used for this span		4x12
fb: Actual	=	1,620.13 psi	fv: Actual	=	50.14 psi
F'b	=	2,024.00 psi	F'v	=	288.00 psi
Load Combination		+D+0.60W	Load Combination		+D+0.60W
Location of maximum on span	=	9.800 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	0.786 in	Ratio =	299 >=180	Span: 1 : W Only
Max Upward Transient Deflection	0 in	Ratio =	0 <180	n/a
Max Downward Total Deflection	0.907 in	Ratio =	259 >=240	Span: 1 : +D+0.60W
Max Upward Total Deflection	0 in	Ratio =	0 <240	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	CD	CM	C_t	CLx	C_F	Cfu	C_i	C_r	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.672	0.157	0.90	1.00	1.00	1.00	1.100	1.00	1.00	1.15	4.71	765.1	1,138.5	0.67	25.5	162.0
+D+Lr					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.543	0.139	1.25	1.00	1.00	1.00	1.100	1.00	1.00	1.15	5.28	858.1	1,581.3	0.82	31.2	225.0
+D+0.750Lr					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.528	0.132	1.25	1.00	1.00	1.00	1.100	1.00	1.00	1.15	5.14	834.8	1,581.3	0.78	29.8	225.0
+D+0.60W					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.800	0.174	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	9.97	1,620.1	2,024.0	1.32	50.1	288.0

Wood Beam

Project File: tube steel_backup_1.ec6

DESCRIPTION: (N) 4x12

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	CD	CM	C_t	CLx	C_F	Cfu	C_i	C_r	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D-0.60W					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.044	0.020	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	0.55	89.9	2,024.0	0.15	5.6	288.0
+D+0.750Lr+0.450W					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.729	0.168	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	9.08	1,476.1	2,024.0	1.27	48.2	288.0
+D+0.750Lr-0.450W					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.096	0.039	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	1.19	193.6	2,024.0	0.30	11.3	288.0
+D+0.450W					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.695	0.153	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	8.65	1,406.4	2,024.0	1.15	44.0	288.0
+D-0.450W					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.061	0.024	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	0.76	123.9	2,024.0	0.19	7.1	288.0
+0.60D+0.60W					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.649	0.139	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	8.08	1,314.1	2,024.0	1.05	39.9	288.0
+0.60D-0.60W					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.196	0.046	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	2.44	396.0	2,024.0	0.35	13.2	288.0
+0.60D					1.00	1.00	1.00	1.100	1.00	1.00	1.15			0.0	0.00	0.0	0.0
Length = 19.60 ft	1	0.227	0.053	1.60	1.00	1.00	1.00	1.100	1.00	1.00	1.15	2.82	459.1	2,024.0	0.40	15.3	288.0

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.60W	1	0.9070	9.800		0.0000	0.000

Vertical Reactions

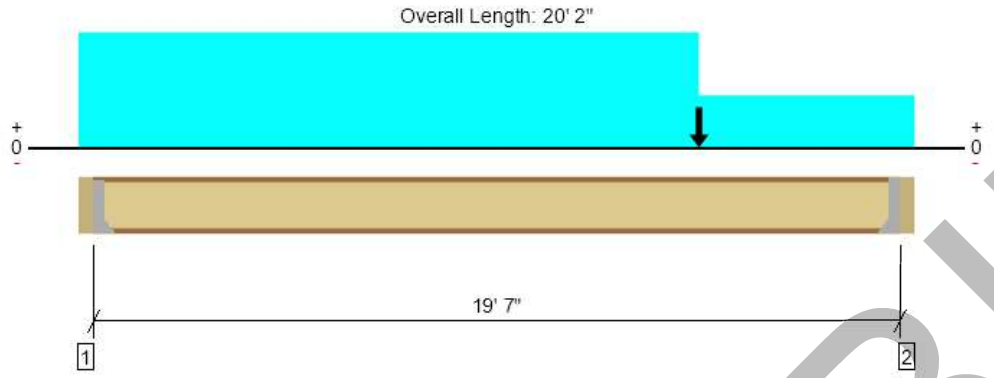
Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	1.344	1.334
Max Upward from Load Combinations	1.344	1.334
Max Upward from Load Cases	1.078	1.067
D Only	0.698	0.694
+D+Lr	0.872	0.869
+D+0.750Lr	0.828	0.825
+D+0.60W	1.344	1.334
+D+0.750Lr+0.450W	1.313	1.305
+D+0.450W	1.183	1.174
+0.60D+0.60W	1.065	1.056
+0.60D	0.419	0.416
Lr Only	0.174	0.175
W Only	1.078	1.067

(E) TJI JOIST @ RTU 15 ~16

floor Level, Roof: Joist

1 piece(s) 11 7/8" TJI® 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	502 @ 3 1/2"	1138 (1.75")	Passed (44%)	1.25	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	502 @ 3 1/2"	1950	Passed (26%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	2587 @ 10' 7 1/4"	3950	Passed (66%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.374 @ 10' 4 11/16"	0.979	Passed (L/628)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Total Load Defl. (in)	0.790 @ 10' 4 13/16"	1.306	Passed (L/298)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)

Member Length : 19' 7"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Roof Live	Wind	Factored	
1 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	263	253	110	516	See note [1]
2 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	347	147	330	606	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 4" o/c	
Bottom Edge (Lu)	19' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10dx1.5	2-Strong-Grip	
2 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location	Spacing	Dead (0.90)	Roof Live (1.25)	Wind (1.60)	Comments
1 - Uniform (PSF)	0 to 20' 2"	16"	16.5	-	-	Default Load
2 - Uniform (PSF)	0 to 15'	16"	-	20.0	-	
3 - Point (PLF)	15'	16"	125.0	-	330.0	

Weyerhaeuser Notes

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
ray wang imeg (909) 942-5547 raymond.wang@imegcorp.com	

Weyerhaeuser

2/14/2024 7:25:57 PM UTC

ForteWEB v3.7, Engine: V8.4.0.40, Data: V8.1.5.0

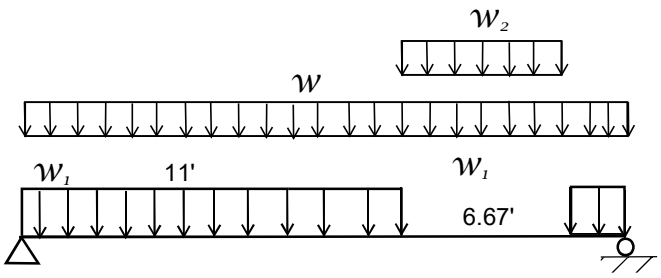
File Name: uio

Page 1 / 1

PROJECT	DATE	BY	PROJECT NO.
CastleView ES HVAC Replacement	09/18/2023	RW	21006767.00

(E) TJI ROOF JOIST @ RTU - 7, 8, 10

(E) 11 7/8 TJI 110@ 16" O.C.



L = 19.6'

w_{DL} = 16.5 psf

w_{RLL} = 0

w_{1DL} = 0

w_{1RLL} = 20 psf

AC unit:

RTU-7
UNIT WT=1,350 LBS
CURB WT=387 LBS

(1360 lbs + 387 lbs)/2 = 873.5 lbs @ each side

873.5 lbs /(80.375" /12) = 130 plf

roof curb base length

w_{2DL} = 130 plf

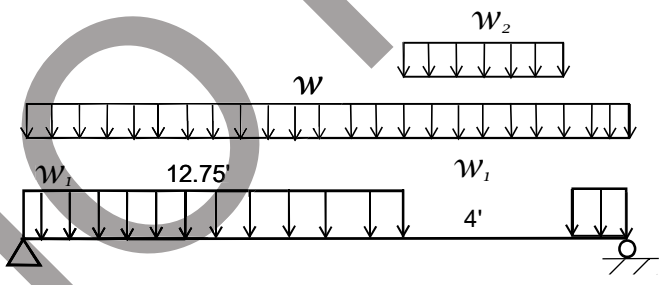
w_{2RLL} = 0

$w_{2\ WIND}$ = 334 plf

see page 13

See next page for design

(E) TJI ROOF JOIST @ RTU - 14



L = 19.6'

w_{DL} = 16.5 psf

w_{RLL} = 0

w_{1DL} = 0

w_{1RLL} = 20 psf

AC unit: RTU-14
UNIT WT=330 LBS
CURB WT=195 LBS

(330 lbs + 195lbs)/2 = 263 lbs @ each side

263 lbs /(47.5" /12) = 66 plf

roof curb base length

w_{2DL} = 66 plf

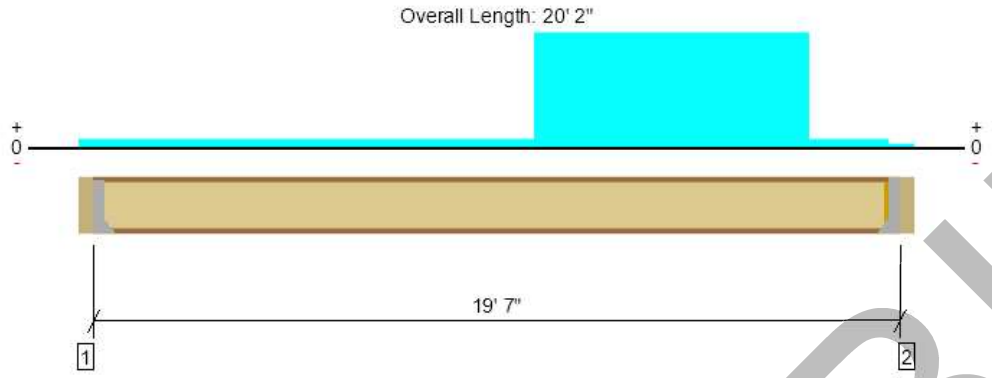
w_{2RLL} = 0

$w_{2\ WIND}$ = 298 plf

see page 13

floor Level, RTU-7 Roof: Joist

2 piece(s) 11 7/8" TJI® 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1796 @ 19' 10 1/2"	2912 (1.75")	Passed (62%)	1.60	1.0 D + 0.6 W (All Spans)
Shear (lbs)	1796 @ 19' 10 1/2"	4992	Passed (36%)	1.60	1.0 D + 0.6 W (All Spans)
Moment (Ft-lbs)	8238 @ 12' 8 9/16"	10112	Passed (81%)	1.60	1.0 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.532 @ 11'	0.979	Passed (L/442)	--	1.0 D + 0.6 W (All Spans)
Total Load Defl. (in)	1.022 @ 11'	1.306	Passed (L/230)	--	1.0 D + 0.6 W (All Spans)

Member Length : 19' 7"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Roof Live	Wind	Factored	
1 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	467	219	630	915	See note [1]
2 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	844	126	1598	1802	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 9" o/c	
Bottom Edge (Lu)	19' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie

Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS3.56/11.88	2.00"	N/A	12-10dx1.5	2-Strong-Grip	
2 - Face Mount Hanger	U410	2.00"	N/A	14-10dx1.5	6-10d	Web Stiffeners

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location	Spacing	Dead (0.90)	Roof Live (1.25)	Wind (1.60)	Comments
1 - Uniform (PSF)	0 to 20' 2"	16"	16.5	-	-	Default Load
2 - Uniform (PSF)	0 to 11'	16"	-	20.0	-	
3 - Uniform (PLF)	11' to 17' 8 1/16"	N/A	130.0	-	334.0	
4 - Uniform (PSF)	17' 8 1/16" to 19' 7 3/16"	16"	-	20.0	-	

Weyerhaeuser Notes

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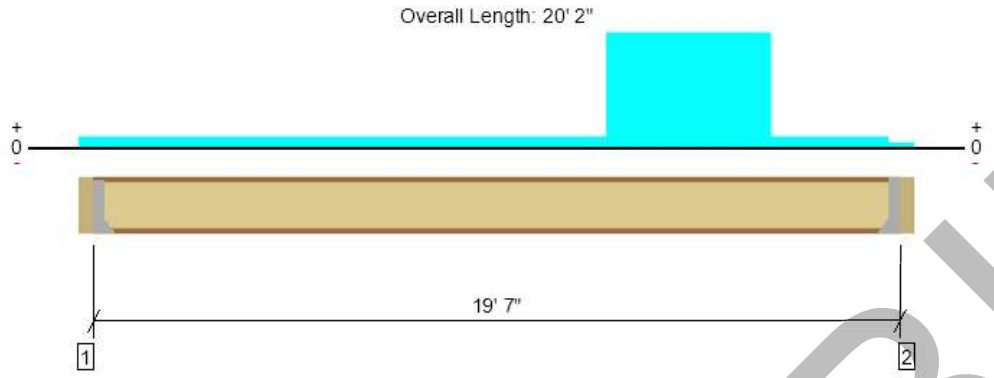
The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
ray wang imeg (909) 942-5547 raymond.wang@imegcorp.com	

floor Level, RTU-14 Roof: Joist

1 piece(s) 11 7/8" TJI® 110 @ 16" OC



Drawing is Conceptual. All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	938 @ 19' 10 1/2"	1456 (1.75")	Passed (64%)	1.60	1.0 D + 0.6 W (All Spans)
Shear (lbs)	938 @ 19' 10 1/2"	2496	Passed (38%)	1.60	1.0 D + 0.6 W (All Spans)
Moment (Ft-lbs)	4242 @ 13' 5 7/8"	5056	Passed (84%)	1.60	1.0 D + 0.6 W (All Spans)
Live Load Defl. (in)	0.614 @ 10' 8 1/8"	0.979	Passed (L/382)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)
Total Load Defl. (in)	1.107 @ 10' 7 3/16"	1.306	Passed (L/212)	--	1.0 D + 0.45 W + 0.75 L + 0.75 Lr (All Spans)

Member Length : 19' 7"
System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2018
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/240) and TL (L/180).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)				Accessories
	Total	Available	Required	Dead	Roof Live	Wind	Factored	
1 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	291	241	312	612	See note [1]
2 - Hanger on 11 7/8" DF beam	3.50"	Hanger[1]	1.75" / - [2]	417	175	880	945	See note [1]

- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- [1] See Connector grid below for additional information and/or requirements.
- [2] Required Bearing Length / Required Bearing Length with Web Stiffeners

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	2' 8" o/c	
Bottom Edge (Lu)	19' 7" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

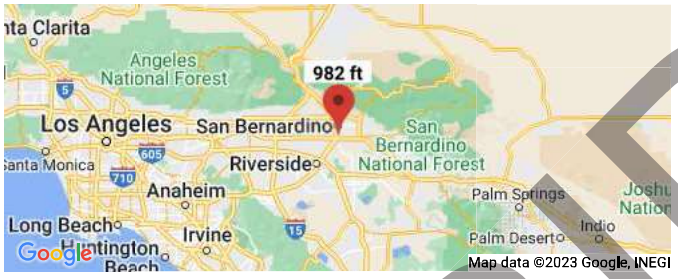
Connector: Simpson Strong-Tie						
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories
1 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10dx1.5	2-Strong-Grip	
2 - Face Mount Hanger	IUS1.81/11.88	2.00"	N/A	10-10dx1.5	2-Strong-Grip	

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Loads	Location	Spacing	Dead (0.90)	Roof Live (1.25)	Wind (1.60)	Comments
1 - Uniform (PSF)	0 to 20' 2"	16"	16.5	-	-	Default Load
2 - Uniform (PSF)	0 to 12' 9"	16"	-	20.0	-	
3 - Uniform (PLF)	12' 9" to 16' 9"	N/A	66.0	-	298.0	
4 - Uniform (PSF)	16' 9" to 19' 7 3/16"	16"	-	20.0	-	

Hazards by Location

Search Information



Address:	412 W Hospitality Ln, San Bernardino, CA 92415, USA
Coordinates:	34.0662486, -117.2926468
Elevation:	982 ft
Timestamp:	2023-12-14T01:56:09.024Z
Hazard Type:	Seismic
Reference Document:	ASCE7-16
Risk Category:	IV
Site Class:	D

Basic Parameters

Name	Value	Description
S_S	2.446	MCE_R ground motion (period=0.2s)
S_1	0.981	MCE_R ground motion (period=1.0s)
S_{MS}	2.446	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.631	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.914	Coefficient of risk (0.2s)
CR_1	0.89	Coefficient of risk (1.0s)
PGA	1.03	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	1.133	Site modified peak ground acceleration
T_L	8	Long-period transition period (s)
SsRT	2.475	Probabilistic risk-targeted ground motion (0.2s)
SsUH	2.708	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	2.446	Factored deterministic acceleration value (0.2s)
S1RT	0.993	Probabilistic risk-targeted ground motion (1.0s)
S1UH	1.115	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.981	Factored deterministic acceleration value (1.0s)
PGAd	1.03	Factored deterministic acceleration value (PGA)

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazards by Location

Search Information

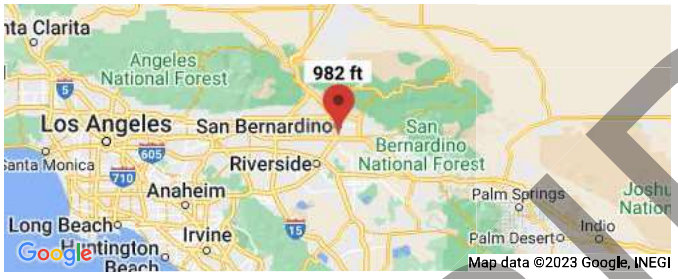
Address: 412 W Hospitality Ln, San Bernardino, CA 92415, USA

Coordinates: 34.0662486, -117.2926468

Elevation: 982 ft

Timestamp: 2023-12-14T01:54:50.420Z

Hazard Type: Wind



ASCE 7-16

MRI 10-Year	67 mph
MRI 25-Year	72 mph
MRI 50-Year	77 mph
MRI 100-Year	82 mph
Risk Category I	90 mph
Risk Category II	96 mph
Risk Category III	102 mph
Risk Category IV	107 mph

ASCE 7-10

MRI 10-Year — Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

MRI 25-Year — Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

MRI 50-Year — Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

MRI 100-Year — Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

Risk Category I — Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

Risk Category II — Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

Risk Category III-IV — Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

ASCE 7-05

ASCE 7-05 Wind Speed — Special Region mph

You are in a special wind region. Please contact the Authority Having Jurisdiction.

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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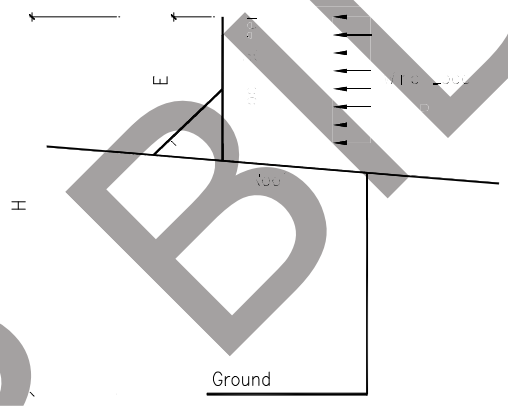
PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	2/14/2024	RW	# 23008184.00

Wind Load on Roof Screen Based on CBC 2022 / ASCE 7-16

INPUT DATA & DESIGN SUMMARY

BASIC WIND VELOCITY	V =	96	mph	(ASCE 7-16 26.5.1)
EXPOSURE TYPE (B, C, D)	== >	C		
SCREEN TOP ELEVATION	H =	44	ft	
MEAN ROOF HEIGHT	h =	39	ft	
BUILDING WIDTH	B =	90	ft	
IMPORTANCE FACTOR	I =	1.0		(ASCE 7-16 Tab. 1.5-2)
SCREEN VERTICAL SIZE	E =	6	ft	
SCREEN HORIZONTAL SIZE	D =	8	ft, (ASCE Fig. 6-21)	
DESIGN MEMBER TRIBUTARY AREA	A_f =	20	ft^2	
TOPOGRAPHIC FACTOR	K_{Zt} =	1.0	Flat, (ASCE 7-16 26.8 & Table 26.8-1)	



Out-of-plane load for screen design **P = 39.8 psf**

F = 0.796 kips

WIND ANALYSIS

Out-of-plane wind force for screen design (ASCE 7-10, Eq.29.5-2)

$$F_h = q_h (GC_r) A_f = (0.00256 K_z K_{zt} K_d V^2 I) (GC_r) A_f = (39.8 \text{ psf}) A_f = 0.796 \text{ kips}$$

Where : GC_r = Max{ Min[2 - A_f / (B h) , 1.9] , 1.0} = 1.90

h_c = 41 ft, centroid height of the screen

B h = 3510 ft^2, building side area (ASCE 6.5.15.1)

K_Z = 1.05 , (ASCE Tab. 6-3)

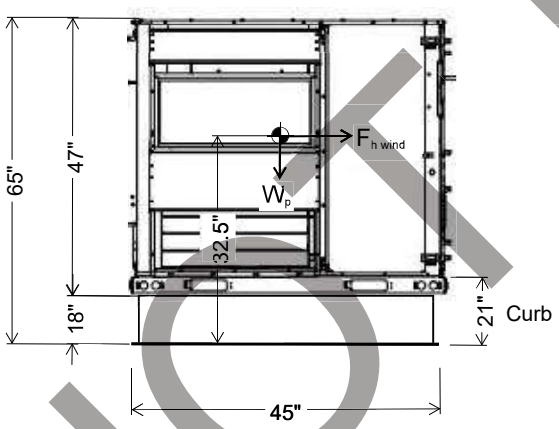
K_d = 0.85 , (ASCE Tab. 6-4)

RTU - 1

$F_{h\ wind}$ = 39.8 psf *0.6 * 52" /12 * 5.42' = 561 lbs ASD

> 1,141 lbs page 28

Seismic load governs

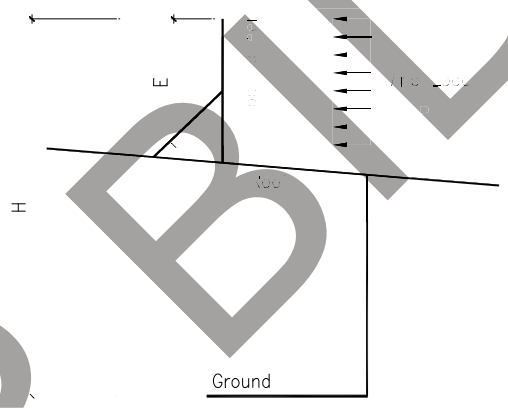


PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	2/14/2024	RW	# 23008184.00

Wind Load on Roof Screen Based on CBC 2022 / ASCE 7-16

INPUT DATA & DESIGN SUMMARY

BASIC WIND VELOCITY	V =	96	mph	(ASCE 7-16 26.5.1)
EXPOSURE TYPE (B, C, D)	== >	C		
SCREEN TOP ELEVATION	H =	44	ft	
MEAN ROOF HEIGHT	h =	39	ft	
BUILDING WIDTH	B =	90	ft	
IMPORTANCE FACTOR	I =	1.0		(ASCE 7-16 Tab. 1.5-2)
SCREEN VERTICAL SIZE	E =	6	ft	
SCREEN HORIZONTAL SIZE	D =	8	ft,	(ASCE Fig. 6-21)
DESIGN MEMBER TRIBUTARY AREA	A_f =	20	ft^2	
TOPOGRAPHIC FACTOR	K_{Zt} =	1.0	Flat,	(ASCE 7-16 26.8 & Table 26.8-1)



Out-of-plane load for screen design **P = 39.8 psf**

F = 0.796 kips

WIND ANALYSIS

Out-of-plane wind force for screen design (ASCE 7-10, Eq.29.5-2)

$$F_h = q_h (GC_r) A_f = (0.00256 K_z K_{zt} K_d V^2 I) (GC_r) A_f = (39.8 \text{ psf}) A_f = 0.796 \text{ kips}$$

Where :

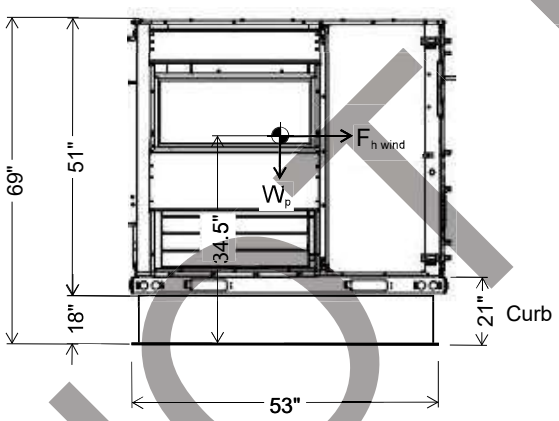
GC_r	=	Max{ Min[2 - A_f / (B h) , 1.9] , 1.0} =	1.90
h_c	=	41	ft, centroid height of the screen
B h	=	3510	ft^2, building side area (ASCE 6.5.15.1)
K_Z	=	1.05	, (ASCE Tab. 6-3)
K_d	=	0.85	, (ASCE Tab. 6-4)

RTU - 7

$F_{h\ wind}$ = 39.8 psf *0.6 * 90" /12 * 5.75' = 1,030 lbs ASD

> 2,997 lbs page 29

Seismic load governs

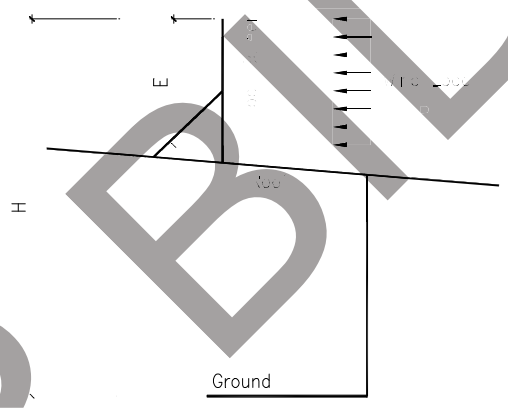


PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	2/14/2024	RW	# 23008184.00

Wind Load on Roof Screen Based on CBC 2022 / ASCE 7-16

INPUT DATA & DESIGN SUMMARY

BASIC WIND VELOCITY	V =	96	mph	(ASCE 7-16 26.5.1)
EXPOSURE TYPE (B, C, D)	== >	C		
SCREEN TOP ELEVATION	H =	44	ft	
MEAN ROOF HEIGHT	h =	39	ft	
BUILDING WIDTH	B =	90	ft	
IMPORTANCE FACTOR	I =	1.0		(ASCE 7-16 Tab. 1.5-2)
SCREEN VERTICAL SIZE	E =	6	ft	
SCREEN HORIZONTAL SIZE	D =	8	ft,	(ASCE Fig. 6-21)
DESIGN MEMBER TRIBUTARY AREA	A_f =	20	ft^2	
TOPOGRAPHIC FACTOR	K_{Zt} =	1.0	Flat,	(ASCE 7-16 26.8 & Table 26.8-1)



Out-of-plane load for screen design **P = 39.8 psf**

F = 0.796 kips

WIND ANALYSIS

Out-of-plane wind force for screen design (ASCE 7-10, Eq.29.5-2)

$$F_h = q_h (GC_r) A_f = (0.00256 K_z K_{zt} K_d V^2 I) (GC_r) A_f = (\ 39.8\ \text{psf}\ ) A_f = 0.796\ \text{kips}$$

Where :

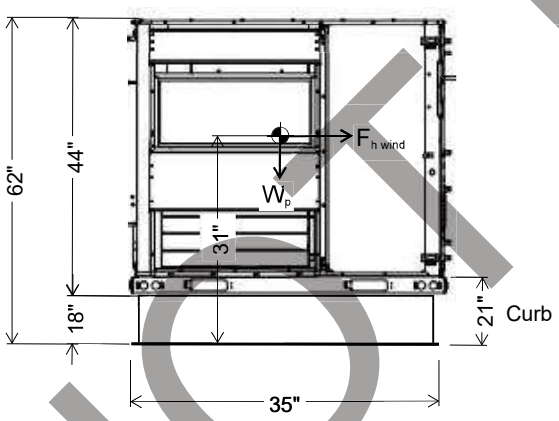
GC_r	=	Max{ Min[2 - A_f / (B h) , 1.9] , 1.0} =	1.90
h_c	=	41	ft, centroid height of the screen
B h	=	3510	ft^2, building side area (ASCE 6.5.15.1)
K_Z	=	1.05	, (ASCE Tab. 6-3)
K_d	=	0.85	, (ASCE Tab. 6-4)

RTU - 14

$F_{h\ wind}$ = 39.8 psf *0.6 * 52" /12 * 5.17' = 535 lbs ASD

< 1,141 lbs

Seismic load governs



PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	3/28/2024	RW	# 23008184.00

EQUIPMENT ANCHORAGE CALCULATION

EQUIPMENT TAG(S): **RTU - 1, 13 & 14**

1A / S601

EQUIPMENT MAKE & MODEL:

SEISMIC DESIGN FORCE

PER 2022 CBC SECTION 1613A, SEISMIC FORCES SHALL BE DETERMINED BY ASCE 7-16 SECTION 13.3

W_p =	**666**	, COMP. WEIGHT	
a_p =	**2.5**	, COMP. AMP. FACTOR	… TABLE 13.5-1 OR 13.6-1
R_p =	**2.0**	, COMP. RESP. FACTOR	… TABLE 13.5-1 OR 13.6-1
S_{DS} =	**1.631**	, SHORT PERIOD SPECTRAL ACCELERATION	… SECTION 11.4.4
I_p =	**1.00**	, IMPORTANCE FACTOR	… SECTION 13.1.3
z =	**1.0**	, COMP. ATTACH. ELEV. (FT. OR LEVEL)	
h =	**1.0**	, ROOF ELEV. (FT. OR LEVEL)	

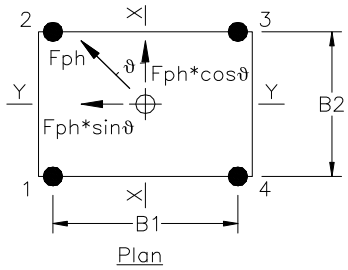
$F_{ph,calc}$ =	2.45 Wp =	1629 LB	= $0.4*a_p*S_{DS}*I_p*(1+2*z/h)W_p/R_p$	**<== GOVERNS**	… EQN 13.3-1
$F_{ph,min}$ =	0.49 Wp =	326 LB	= $0.3S_{DS}I_pW_p$		… EQN 13.3-3
$F_{ph,max}$ =	2.61 Wp =	1738 LB	= $1.6S_{DS}I_pW_p$		… EQN 13.3-2

F_{ph} =	**2.45 Wp =**	**1629 LB**	**= MIN($F_{PH,MAX}$,MAX($F_{PH,CALC}$,$F_{PH,MIN}$)), SEISMIC LATERAL FORCE**
F_{pv} =	**0.33 Wp =**	**217 LB**	**= 0.2*S_{DS}*W_p, SEISMIC VERTICAL FORCE** … SECTION 13.3.1

F_{ph} =	**1.71 Wp =**	**1141 LB**	***0.7 Allowable Stress Design**
F_{pv} =	**0.23 Wp =**	**152 LB**	***0.7 Allowable Stress Design**

DIMENSIONS

B1 =	**46.5 IN.**	, LENGTH BETWEEN ANCHORAGE LOCATIONS
B2 =	**42.0 IN.**	, WIDTH BETWEEN ANCHORAGE LOCATIONS
H =	**56.5 IN.**	, C.G. HEIGHT OF EQUIPMENT
N_1 =	**12**	, NO. OF ANCHORAGE LOCATIONS AT LONG EDGES
N_2 =	**6**	, NO. OF ANCHORAGE LOCATIONS AT SHORT EDGES
N =	**18**	, TOTAL NO. ANCHORAGE LOCATIONS



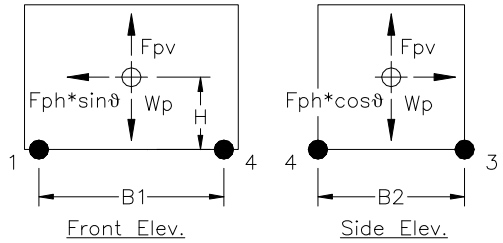
Plan

AREA MOMENT OF INERTIA AND CRITICAL ANGLE

Ixx = 4108 $= \left[\frac{N_1(N_1+2)}{3(N_1-2)} + (N_2-4)\right] \times \left(\frac{B_1}{2}\right)^2$

Iyy = 5292 $= \left[\frac{N_2(N_2+2)}{3(N_2-2)} + (N_1-4)\right] \times \left(\frac{B_2}{2}\right)^2$

α = 0.96 rad = 55 deg $= \tan^{-1}\left(\frac{Iyy \times B_1}{Ixx \times B_2}\right)$



REACTIONS

P_T = 432 LB $= \left(\frac{F_{pv} - 0.6W_p}{N} + \frac{F_{ph}\cos\theta \times H \times \frac{B_2}{2}}{Iyy} + \frac{F_{ph}\sin\theta \times H \times \frac{B_1}{2}}{Ixx}\right)$, TENSION AT LOCATION 4

P_S = 63 LB $= \left(\frac{F_{ph}}{N}\right)$, SHEAR FORCE AT EACH LOCATION

PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	3/28/2024	RW	# 23008184.00

1 Bolts at each Location

Tension Demand, T: 432 LB **436 lb/bolt** $.= [T^2+V^2]^{0.5}$

Shear Demand, V: 63 LB

Calculation of Lag Screw Capacity per NDS 2015

Specific Gravity, G:	0.5			
Lag Diameter, D:	1/4"	0.25	in.	
Lag Length, L:	3"	3	in.	
Side Member Thickness, t_s:	1/4"	0.25	in.	e

Applicable Adjustment Factors [Table 10.3.1)

Wind/Earthquake Load Typical Design Load

1.6	**[Table 2.3.2]**	**Load Duration Factor, C_D**
≤19%		In-Service Moisture Content
≤19%		Fabrication Moisture Content
1.0	**[Table 10.3.3]**	**W Wet Service Factor, C_M**
1.0	**[Table 10.3.3]**	**V Wet Service Factor, C_M**
T ≤ 100°F		Service Temperature
1.0	**[Table 10.3.4]**	**Temperature Factor, C_t**
1.0	**[See Add'l Sheet]**	**Group Action Factor, C_g**
Perpendicular to Grain		Direction of Loading
1 in. O.C	**[Table 11.5.1B]**	Min Spacing for CΔ=1.0
0.75 in. O.C	**[Table 11.5.1B]**	Min Spacing
6 in. O.C		Actual Provided Spacing
1 in.	**[Table 11.5.1A]**	Min End Distance for CΔ=1.0
0.5 in.	**[Table 11.5.1A]**	Min End Distance for CΔ=0.5
2 in.		Actual Provided End Distance
1.0	**[11.5.1]**	**Geometry Factor, $C_Δ$**
No		Lag into end grain?
1.0	**[11.5.2]**	**W End Grain Factor, C_{eg}**
1.0	**[11.5.2]**	**Z End Grain Factor, C_{eg}**
No		Toe-Nailed?
1.0	**[11.5.4]**	**W Toe-Nail Factor, C_{tn}**
1.0	**[11.5.4]**	**Z Toe-Nail Factor, C_{tn}**

Capacity Calculation with Adjustment Factors

W: 225 lb/in. of thread penetration [Table 11.2A]

L_{T-E}: 1.84375 in. of thread penetration [Table L2]

Z_{II}: 210 [Table 11K]

Z_Y: 150 [Table 11K]

PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	3/28/2024	RW	# 23008184.00

W'p: **664 lb** = $W\ L_{T\text{-}E}\ C_D\ C_M\ C_t\ C_{eg}\ C_{tn}$

Z_{II}': **336 lb** = $Z_{II}\ C_D\ C_M\ C_t\ C_g\ C_\Delta\ C_{eg}\ C_{tn}$

Z_Y': **240 lb** = $Z_Y\ C_D\ C_M\ C_t\ C_g\ C_\Delta\ C_{eg}\ C_{tn}$

Design Parameters

Penetration, ρ:

2.75 in. *ρ>8D => Z need not be reduced per Table 11K*

W'p: **664 lb**

Z_{II}': **336 lb**

Z_Y': **240 lb**

Check Screw Capacity with Combined Lateral and Withdrawal Loads [11.4.1]

Zα' = ZII'(W' p) / (ZII'sin2α + W'p cos2α)=

650 lb/bolt > **436 lb/bolt**

α: 1.425 rad = $\tan^{-1}$(T/V)

Okay

ZΥ' = ZΥ'(W' p) / (ZΥ'sin2α+ W'p cos2α)=

640 lb/bolt > **436 lb/bolt**

α: 1.425 rad = $\tan^{-1}$(T/V)

Okay

Design is Adequate

Lag Design Summary

D: **1/4"** **ϕ**

L: **3"**

t_s: **1/4"**

Design is Adequate

2 in. [Table 11.5.1A] ...End Distance

6 in. O.C. [Table 11.5.1B] ...Spacing

1 in. [Table 11.5.1C] ...Edge Distance

PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	3/28/2024	RW	# 23008184.00

EQUIPMENT ANCHORAGE CALCULATION

EQUIPMENT TAG(S): **RTU - 2 ~12, 15 ~ 17** (1A / S601)

EQUIPMENT MAKE & MODEL:

SEISMIC DESIGN FORCE

PER 2022 CBC SECTION 1613A, SEISMIC FORCES SHALL BE DETERMINED BY ASCE 7-16 SECTION 13.3

W_p =	**1750**	, COMP. WEIGHT	
a_p =	**2.5**	, COMP. AMP. FACTOR	… TABLE 13.5-1 OR 13.6-1
R_p =	**2.0**	, COMP. RESP. FACTOR	… TABLE 13.5-1 OR 13.6-1
S_{DS} =	**1.631**	, SHORT PERIOD SPECTRAL ACCELERATION	… SECTION 11.4.4
I_p =	**1.00**	, IMPORTANCE FACTOR	… SECTION 13.1.3
z =	**1.0**	, COMP. ATTACH. ELEV. (FT. OR LEVEL)	
h =	**1.0**	, ROOF ELEV. (FT. OR LEVEL)	

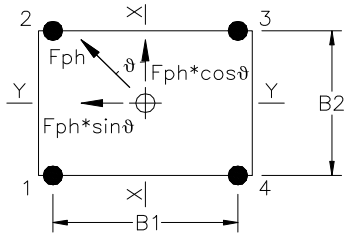
$F_{ph,calc}$ =	2.45 Wp =	4281 LB	= $0.4*a_p*S_{DS}*I_p*(1+2*z/h)W_p/R_p$	**<== GOVERNS**	… EQN 13.3-1
$F_{ph,min}$ =	0.49 Wp =	856 LB	= $0.3S_{DS}I_pW_p$		… EQN 13.3-3
$F_{ph,max}$ =	2.61 Wp =	4567 LB	= $1.6S_{DS}I_pW_p$		… EQN 13.3-2

F_{ph} =	**2.45 Wp =**	**4281 LB**	**= MIN($F_{PH,MAX}$,MAX($F_{PH,CALC}$,$F_{PH,MIN}$)), SEISMIC LATERAL FORCE**
F_{pv} =	**0.33 Wp =**	**571 LB**	**= 0.2*S_{DS}*W_p, SEISMIC VERTICAL FORCE** … SECTION 13.3.1

F_{ph} =	**1.71 Wp =**	**2997 LB**	***0.7 Allowable Stress Design**
F_{pv} =	**0.23 Wp =**	**400 LB**	***0.7 Allowable Stress Design**

DIMENSIONS

B1 =	**80.375 IN.**	, LENGTH BETWEEN ANCHORAGE LOCATIONS
B2 =	**50.5 IN.**	, WIDTH BETWEEN ANCHORAGE LOCATIONS
H =	**57.5 IN.**	, C.G. HEIGHT OF EQUIPMENT
N_1 =	**20**	, NO. OF ANCHORAGE LOCATIONS AT LONG EDGES
N_2 =	**8**	, NO. OF ANCHORAGE LOCATIONS AT SHORT EDGES
N =	**28**	, TOTAL NO. ANCHORAGE LOCATIONS



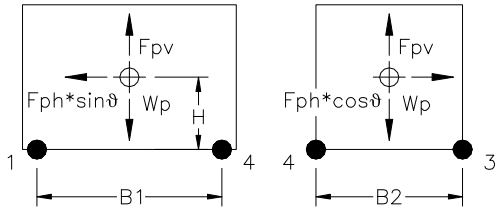
Plan

AREA MOMENT OF INERTIA AND CRITICAL ANGLE

Ixx = 19620 $= \left[\frac{N_1(N_1+2)}{3(N_1-2)} + (N_2-4)\right] \times \left(\frac{B_1}{2}\right)^2$

Iyy = 13034.611 $= \left[\frac{N_2(N_2+2)}{3(N_2-2)} + (N_1-4)\right] \times \left(\frac{B_2}{2}\right)^2$

α = 0.81 rad $= \tan^{-1}\left(\frac{Iyy \times B_1}{Ixx \times B_2}\right)$
47 deg



REACTIONS

P_T = 463 LB $= \left(\frac{F_{pv} - 0.6W_p}{N} + \frac{F_{ph}\cos\theta \times H \times \frac{B_2}{2}}{Iyy} + \frac{F_{ph}\sin\theta \times H \times \frac{B_1}{2}}{Ixx}\right)$, TENSION AT LOCATION 4

P_S = 107 LB $= \left(\frac{F_{ph}}{N}\right)$, SHEAR FORCE AT EACH LOCATION

PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	3/28/2024	RW	# 23008184.00

1 Bolts at each Location

Tension Demand, T: 463 LB **475 lb/bolt** .= $[T^2+V^2]^{0.5}$

Shear Demand, V: 107 LB

Calculation of Lag Screw Capacity per NDS 2015

Specific Gravity, G:	0.5			
Lag Diameter, D:	1/4"	0.25	in.	
Lag Length, L:	3"	3	in.	
Side Member Thickness, t_s:	1/4"	0.25	in.	e

Applicable Adjustment Factors [Table 10.3.1)

Wind/Earthquake Load Typical Design Load

1.6	**[Table 2.3.2]**	**Load Duration Factor, C_D**
≤19%		In-Service Moisture Content
≤19%		Fabrication Moisture Content
1.0	**[Table 10.3.3]**	**W Wet Service Factor, C_M**
1.0	**[Table 10.3.3]**	**V Wet Service Factor, C_M**
T ≤ 100°F		Service Temperature
1.0	**[Table 10.3.4]**	**Temperature Factor, C_t**
1.0	**[See Add'l Sheet]**	**Group Action Factor, C_g**
Perpendicular to Grain		Direction of Loading
1 in. O.C	**[Table 11.5.1B]**	Min Spacing for CΔ=1.0
0.75 in. O.C	**[Table 11.5.1B]**	Min Spacing
6 in. O.C		Actual Provided Spacing
1 in.	**[Table 11.5.1A]**	Min End Distance for CΔ=1.0
0.5 in.	**[Table 11.5.1A]**	Min End Distance for CΔ=0.5
2 in.		Actual Provided End Distance
1.0	**[11.5.1]**	**Geometry Factor, $C_Δ$**
No		Lag into end grain?
1.0	**[11.5.2]**	**W End Grain Factor, C_{eg}**
1.0	**[11.5.2]**	**Z End Grain Factor, C_{eg}**
No		Toe-Nailed?
1.0	**[11.5.4]**	**W Toe-Nail Factor, C_{tn}**
1.0	**[11.5.4]**	**Z Toe-Nail Factor, C_{tn}**

Capacity Calculation with Adjustment Factors

W: 225 lb/in. of thread penetration [Table 11.2A]

L_{T-E}: 1.84375 in. of thread penetration [Table L2]

Z_{II}: 210 [Table 11K]

Z_Y: 150 [Table 11K]

PROJECT	DATE	BY	PROJECT NO.
412 W Hospitality Lane Upgrades	3/28/2024	RW	# 23008184.00

W'p: **664 lb** = $W\ L_{T\text{-}E}\ C_D\ C_M\ C_t\ C_{eg}\ C_{tn}$

Z_{II}': **336 lb** = $Z_{II}\ C_D\ C_M\ C_t\ C_g\ C_\Delta\ C_{eg}\ C_{tn}$

Z_Y': **240 lb** = $Z_Y\ C_D\ C_M\ C_t\ C_g\ C_\Delta\ C_{eg}\ C_{tn}$

Design Parameters

Penetration, ρ:

2.75 in. *ρ>8D => Z need not be reduced per Table 11K*

W'p: **664 lb**

Z_{II}': **336 lb**

Z_Y': **240 lb**

Check Screw Capacity with Combined Lateral and Withdrawal Loads [11.4.1]

Zα' = ZII'(W' p) / (ZII'sin2α + W'p cos2α)=

632 lb/bolt > **475 lb/bolt**

α: 1.343 rad = $\tan^{-1}$(T/V)

Okay

ZΥ' = ZΥ'(W' p) / (ZΥ'sin2α+ W'p cos2α)=

609 lb/bolt > **475 lb/bolt**

α: 1.343 rad = $\tan^{-1}$(T/V)

Okay

Design is Adequate

Lag Design Summary

D: **1/4"** **ϕ**

L: **3"**

t_s: **1/4"**

Design is Adequate

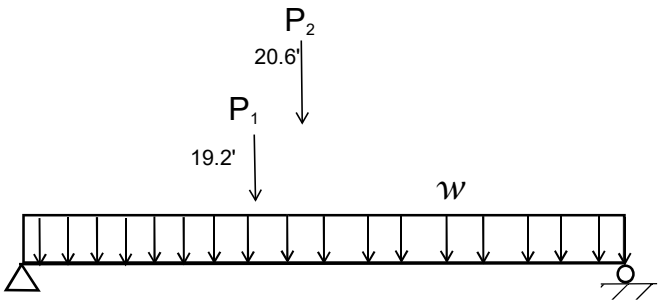
2 in. [Table 11.5.1A] ...End Distance

6 in. O.C. [Table 11.5.1B] ...Spacing

1 in. [Table 11.5.1C] ...Edge Distance

PROJECT	DATE	BY	PROJECT NO.
CastleView ES HVAC Replacement	09/18/2023	RW	21006767.00

(E) 5 1/8 x27 GLB @ Grid line 4



w_{DL} = 18.0 psf

w_{RLL} = 15.0 psf

roof live load reduction:

A_t = 20' * 45' /2 = 450 ft²

R_1 = 1.2 - 0.001A_t = 0.75

20psf * 0.75 = 15 psf

AC unit:

RTU-16
UNIT WT=1,350 LBS
CURB WT=387 LBS

1350+ 387 = 1,737 lbs

1,737 lbs *18'/20' = 1,563 lbs

Distribute to GLB beam

P_1 = 1,563 lbs

RTU-17
UNIT WT=1,320 LBS
CURB WT=405 LBS

1320+ 405 = 1,725 lbs

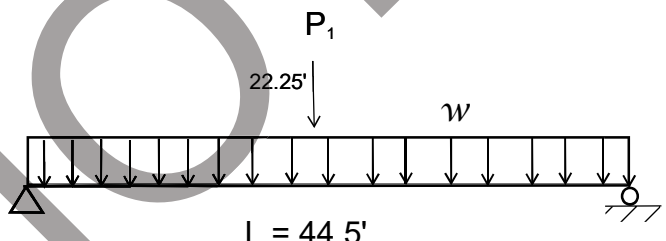
1,725 lbs *7'/20' = 604 lbs

Distribute to GLB beam

P_2 = 604 lbs

See next page for design

(E) 5 1/8 x27 GLB @ Grid line 10



w_{DL} = 18.0 psf

w_{RLL} = 15.0 psf

AC unit:

RTU-5
UNIT WT=1,300 LBS
CURB WT=387 LBS

1300+ 387 = 1,687 lbs

P_1 = 1,687 lbs

See page 36 for design

Wood Beam

Project File: tube steel_backup_1.ec6

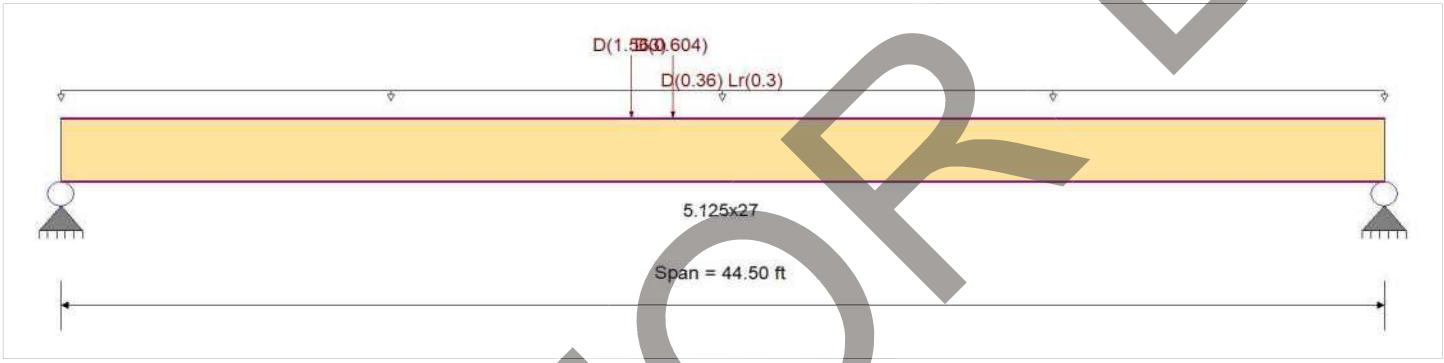
DESCRIPTION: (E) 5 1/8x27 @ Grid line 4

CODE REFERENCES

Calculations per NDS 2018, IBC 2021, ASCE 7-16
Load Combination Set : IBC 2018

Material Properties

Analysis Method :	Allowable Stress Design	Fb +	2400 psi	*E : Modulus of Elasticity*	
Load Combination :	IBC 2018	Fb -	1850 psi	Ebend- xx	1800 ksi
		Fc - Prll	1650 psi	Eminbend - xx	950 ksi
Wood Species :	DF/DF	Fc - Perp	650 psi	Ebend- yy	1600 ksi
Wood Grade :	24F-V4	Fv	265 psi	Eminbend - yy	850 ksi
		Ft	1100 psi	Density	31.21 pcf
Beam Bracing :	Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0180, Lr = 0.0150 ksf, Tributary Width = 20.0 ft, (Roof load)
Point Load : D = 1.563 k @ 19.20 ft, (P1)
Point Load : D = 0.6040 k @ 20.60 ft, (P2)

Reinforcing required

DESIGN SUMMARY

Design N.G.

Maximum Bending Stress Ratio	=	1.391 : 1	Maximum Shear Stress Ratio	=	0.475 : 1
Section used for this span		5.125x27	Section used for this span		5.125x27
fb: Actual	=	3,570.70 psi	fv: Actual	=	157.23 psi
F'b	=	2,566.19 psi	F'v	=	331.25 psi
Load Combination		+D+Lr	Load Combination		+D+Lr
Location of maximum on span	=	20.788 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	1.760 in	Ratio =	303 >=180	Span: 1 : Lr Only
Max Upward Transient Deflection	0 in	Ratio =	0 <180	n/a
Max Downward Total Deflection	4.318 in	Ratio =	123 <240	Span: 1 : +D+Lr
Max Upward Total Deflection	0 in	Ratio =	0 <240	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	CD	CM	C_t	CLx	C_V	Cfu	C_i	C_r	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 44.50 ft	1	1.162	0.385	0.90	1.00	1.00	1.00	0.855	1.00	1.00	1.00	111.41	2,147.1	1,847.7	8.46	91.7	238.5
+D+Lr					1.00	1.00	1.00	0.855	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 44.50 ft	1	1.391	0.475	1.25	1.00	1.00	1.00	0.855	1.00	1.00	1.00	185.29	3,570.7	2,566.2	14.50	157.2	331.3
+D+0.750Lr					1.00	1.00	1.00	0.855	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 44.50 ft	1	1.253	0.425	1.25	1.00	1.00	1.00	0.855	1.00	1.00	1.00	166.81	3,214.6	2,566.2	12.99	140.9	331.3
+0.60D					1.00	1.00	1.00	0.855	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 44.50 ft	1	0.392	0.130	1.60	1.00	1.00	1.00	0.855	1.00	1.00	1.00	66.85	1,288.2	3,284.7	5.08	55.0	424.0

For GLB, $M_{allow.} = F'_b * S = 2{,}566.19 psi * 5.125 * 27^2/6 = 133.2$ kip-ft

185.29 k-ft - 133.2 kip-ft = 52.1 kip-ft ← Extra moment capacity required

Wood Beam

Project File: tube steel_backup_1.ec6

DESCRIPTION: (E) 5 1/8x27 @ Grid line 4

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+Lr	1	4.3182	22.250		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	15.898	15.639
Max Upward from Load Combinations	15.898	15.639
Max Upward from Load Cases	9.223	8.964
D Only	9.223	8.964
+D+Lr	15.898	15.639
+D+0.750Lr	14.229	13.970
+0.60D	5.534	5.378
Lr Only	6.675	6.675

Moment 52.1 kip-ft resisted by steel plate

3
S602

Tension load: T = M / d

T = 52.1 *12 kip-in / (27"/2) = 46.3 kips

for 1/4 x 5.5 " steel plate:

$T_{Allow.}$ = 50 ksi * 1/4 * 5.5 *0.7 = 48.1 kips

> 46.3 kips Okay

for 1/4 Simp. SDS screw:

Z = 420 lbs Cd = 1.0

Z" = 420 lbs

28' long steel plate, 2 rows of screw @ 4" O.C.

[(28' * 12 -3") /4" +1] *2 = 168 screws Total

420 lbs * 168 = 70.77 kips

> 46.3 kips Okay

Wood Beam Project File: tube steel_backup_1.ec6

LIC# : KW-06015149, Build:20.23.08.01 IMEG CORP (c) ENERCALC INC 1983-2023

DESCRIPTION: (E) 5 1/8x27 @ Grid line 4

M=132.49k-ft @ X=10.72 ft

For GLB, $M_{allow.}$ = 133.2 kip-ft > 132.49 k-ft

steel plate start from 10ft at each end of Glu-lam beam

Say 8 ft for conservative

Wood Beam

Project File: tube steel_backup_1.ec6

DESCRIPTION: (E) 5 1/8x27 @ Grid line 10

CODE REFERENCES

Calculations per NDS 2018, IBC 2021, ASCE 7-16
Load Combination Set : IBC 2018

Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2018

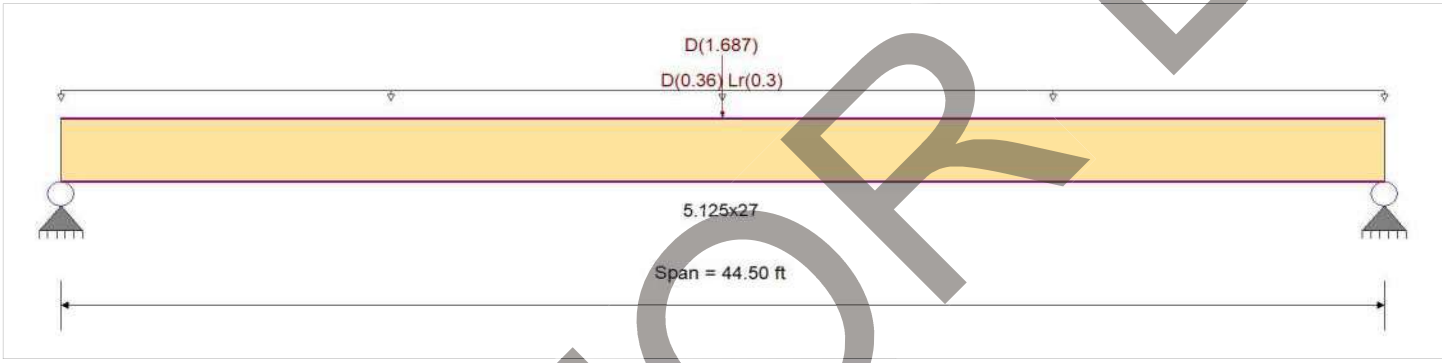
Wood Species : DF/DF
Wood Grade : 24F-V4

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	2,400.0 psi
Fb -	1,850.0 psi
Fc - Prll	1,650.0 psi
Fc - Perp	650.0 psi
Fv	265.0 psi
Ft	1,100.0 psi

E : Modulus of Elasticity

Ebend- xx	1,800.0 ksi
Eminbend - xx	950.0 ksi
Ebend- yy	1,600.0 ksi
Eminbend - yy	850.0 ksi
Density	31.210 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight NOT internally calculated and added
Uniform Load : D = 0.0180, Lr = 0.0150 ksf, Tributary Width = 20.0 ft, (Roof load)
Point Load : D = 1.687 k @ 22.250 ft, (P1)

Beam @ Grid line 4 Governs

DESIGN SUMMARY

Design N.G.

Maximum Bending Stress Ratio	=	1.368 : 1	Maximum Shear Stress Ratio	=	0.463 : 1
Section used for this span		5.125x27	Section used for this span		5.125x27
fb: Actual	=	3,510.05 psi	fv: Actual	=	153.23 psi
F'b	=	2,566.19 psi	F'v	=	331.25 psi
Load Combination		+D+Lr	Load Combination		+D+Lr
Location of maximum on span	=	22.250 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward Transient Deflection	1.760 in	Ratio =	303 >=180	Span: 1 : Lr Only
Max Upward Transient Deflection	0 in	Ratio =	0 <180	n/a
Max Downward Total Deflection	4.227 in	Ratio =	126 <240	Span: 1 : +D+Lr
Max Upward Total Deflection	0 in	Ratio =	0 <240	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios										Moment Values			Shear Values		
Segment Length	Span #	M	V	CD	CM	C_t	CLx	C_V	Cfu	C_i	C_r	M	fb	F'b	V	fv	F'v
D Only														0.0	0.00	0.0	0.0
Length = 44.50 ft	1	1.125	0.368	0.90	1.00	1.00	1.00	0.855	1.00	1.00	1.00	107.88	2,079.0	1,847.7	8.09	87.7	238.5
+D+Lr					1.00	1.00	1.00	0.855	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 44.50 ft	1	1.368	0.463	1.25	1.00	1.00	1.00	0.855	1.00	1.00	1.00	182.14	3,510.0	2,566.2	14.14	153.2	331.3
+D+0.750Lr					1.00	1.00	1.00	0.855	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 44.50 ft	1	1.228	0.413	1.25	1.00	1.00	1.00	0.855	1.00	1.00	1.00	163.57	3,152.3	2,566.2	12.62	136.9	331.3
+0.60D					1.00	1.00	1.00	0.855	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 44.50 ft	1	0.380	0.124	1.60	1.00	1.00	1.00	0.855	1.00	1.00	1.00	64.73	1,247.4	3,284.7	4.86	52.6	424.0

Wood Beam

Project File: tube steel_backup_1.ec6

DESCRIPTION: (E) 5 1/8x27 @ Grid line 10

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+Lr	1	4.2266	22.412		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1 Values in KIPS

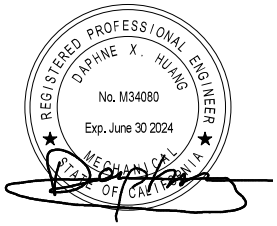
Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	15.529	15.529
Max Upward from Load Combinations	15.529	15.529
Max Upward from Load Cases	8.854	8.854
D Only	8.854	8.854
+D+Lr	15.529	15.529
+D+0.750Lr	13.860	13.860
+0.60D	5.312	5.312
Lr Only	6.675	6.675

PROJECT SPECIFICATIONS
For
SAN BERNARDINO COUNTY

412 W. HOSPITALITY LANE UPGRADES

Craig M. Chamberlain, SE — S4588
Structural Engineer
IMEG

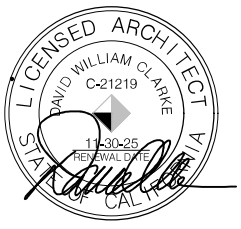
Daphne Huang, PE — M34080
Mechanical/Plumbing Engineer
IMEG



Nestor C. Ignacio, Jr., PE — E16934
Electrical Engineer
IMEG

John M. Thompson, PE — C82557
Civil Engineer
IMEG

David Clarke — C21219
Architect
Marks Architects



PROJECT MANUAL

412 W Hospitality Lane Upgrades

Project No: 23008184.00

San Bernardino, California

PREPARED FOR:

SAN BERNARDINO COUNTY

,

San Bernardino County
The Hospitality Lane Professional Center
412 West Hospitality Lane, San Bernardino, CA 92408
Project No. 23008184.00

TABLE OF CONTENTS

SECTION 01 0000 - SPECIAL PROJECT CONDITIONS

Conditions of the Contract are hereby made a part of this Section.

PART 1 - GENERAL

1.01 SUPERINTENDENT

A. The Contractor shall keep on the project at all times during all construction operations, a competent superintendent, who will be responsible for the coordination of all subcontractors, and quality control of the project.

B. The Superintendent shall be approved by the Architect and the Owner at the commencement of the work. The Contractor will not be allowed to change the Superintendent without approval of the Architect and Owner.

1.02 PROTECTION OF BUILDING

A. Each Subcontractor shall be responsible for protection of his own materials and equipment.

1.03 TESTING LABORATORY

A. The Owner shall select the testing laboratory and pay for all testing costs except as described in the following paragraphs.

B. The testing laboratory shall report the results of all tests, in writing, simultaneously to the Architect. The Owner will not pay testing laboratory costs for tests or inspections required because of deficiencies in material or work. Tests and/or inspections may be required in order to determine whether or not there is a deficiency. Should the tests and/or inspections indicate a deficiency, these tests and/or inspections shall be paid for by the Contractor responsible for the deficiency.

C. Upon completion of all tests and inspections, the Architect shall provide an approved copy to the Owner as part of project closeout.

1.04 ORDERING EQUIPMENT AND MATERIALS

A. Upon award of the contract all Subcontractors shall immediately order all equipment and materials required, in ample quantities and for delivery at proper times to permit uninterrupted progress of the work.

B. If at the time of ordering, it is determined that a shortage exists in any item, the Architect and Owner shall be immediately notified, in writing.

1.05 MANUFACTURERS' DIRECTIONS

A. All manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned, as directed by the manufacturer unless herein specified to the contrary.

B. Two (2) copies of manufacturers' instructions shall accompany all deliveries to the job.

1.06 TOILET FACILITIES FOR WORKMEN (SEE SECTION 01 5000 - TEMPORARY FACILITIES)

1.07 FINAL APPROVAL AND ACCEPTANCE

A. For final approval and acceptance, the building shall be complete and ready for occupancy, with all connections to utilities in place, all equipment installed in operating condition, and "Record Drawings" delivered to the Architect. See Section 01 7700 - Project Closeout.

1.08 MATERIALS AND WORKMANSHIP GUARANTEES

A. All portions of the work shall be guaranteed against defects in workmanship and materials for a period of one (1) year from date of acceptance of the structure, unless a longer guarantee is specifically called for herein.

B. Neither the final payment, nor occupancy by the Owner, nor Notice of Completion, shall be considered to relieve the Contractor of his responsibility for any materials or workmanship found to be defective, and he shall remedy any such defects and pay for damage to other work resulting from such defects, which may appear within a period of one (1) year after the date on which Notice of Completion has been filed.

C. The Owner shall report to the Contractor, through the Architect, any such defects found, and the Contractor shall make all repairs with reasonable promptness.

1.09 DRAWINGS AND SPECIFICATIONS

A. Drawings which form a part of the Contract Documents and which accompany these Specifications are listed in the "Index to Drawings" on the Drawings.

B. Specifications which form a part of the Contract Documents consist of Sections as listed in the "Table of Contents" in the forepart of these Specifications.

C. Division of the Specifications: For convenience, these Specifications are arranged in several trade sections, but such separation shall not be considered as the limits of the work required by any sub-contractor or trade. The terms and conditions of such limitations are wholly between the Owner and the Contractor.

D. Addenda to Specifications: Instructions issued by the Architect covering changes in, or special interpretations of, Drawings or Specifications, during the Bidding

Process, will be incorporated in the Contract Documents by means of Addenda before executing a Contract. The Contractor shall assure himself that changes and interpretations covered by such instructions have been correctly listed and described in the related Addenda.

1.10 CODES AND REGULATIONS

A. General: The Contractor shall comply with all laws, ordinances, regulations and building code requirements governing the particular work, including, but not limited to those of:

1. The California Building Code and San Bernardino County regulations.
2. Industrial Safety of the State of California.
3. The California Electrical Code, latest adopted edition.
4. The California Plumbing Code, latest adopted edition.
5. The California Mechanical Code, latest adopted edition.
6. Federal Standards of the Department of Labor, Occupational Safety & Health Administration and all applicable State, County & City codes, ordinances, and regulations having jurisdiction thereof.
7. California Fire Code, latest adopted edition.
8. California Energy Regulations, latest adopted edition.

B. Amendments: The above documents, latest editions as amended to date, are hereby made an integral part of these Specifications insofar as they apply to this work.

1.11 SHOP DRAWINGS AND SUBMITTALS (See Section 01 3300)

A. Each Subcontractor shall submit thru the General Contractor, for the review of the Architect, Shop Drawings and/or Submittals required by the Specifications, or that which may be required by the Architect, and no work shall be fabricated by the subcontractor, except at his own risk, until such review and approvals have been made.

1. One (1) electronic copy of Submittals and Shop Drawings shall be submitted to the Architect for review.
2. Each Submittal and/or Shop Drawing shall be accompanied by a letter of transmittal which shall give a list of numbers and dates of the Drawings/ Submittals submitted. The General Contractor shall be responsible for accurately reviewing all Submittals and/or Shop Drawings prior to

transmitting them to the Architect. Each Shop Drawing or Submittal shall bear the stamp of the contractor indicating he has reviewed them and verified their completeness and accuracy. Each subcontractor and the General Contractor shall be responsible for verifying all measurements. Shop Drawings and/or Submittals which do not contain the Contractors stamp shall be returned without the Architect's review, and the Architect shall not be responsible for any construction delays due to this.

B. Shop Drawings and/or Submittals shall be complete in every respect and bound in sets. The Shop Drawings and/or Submittals submitted shall be marked with the name of project and numbered consecutively.

1. Variations: If the Shop Drawings or submittals show variations, changes or substitutions from the requirements of the Construction Documents because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations, in his letter of transmittal in order that, if acceptable, suitable action may be taken for proper adjustment, otherwise, the Contractor will not be relieved of the responsibility for executing the work in accordance with the Construction Documents, even though such Shop Drawings have been reviewed.

2. Departures: If the Shop Drawings or Submittals as submitted indicate a departure from the Construction Document requirements which the Architect finds to be in the interest of the Owner, and/or be so minor as not to involve a change in the Contract price or time for performance, he may accept the Shop Drawings and/or Submittals.

3. Review of Shop Drawings and/or Submittals will be general and except as otherwise provided above, shall not be construed: 1) as permitting any departure from the Construction Documents requirements; 2) as relieving the Contractor of the responsibility of any error in details, dimensions or otherwise that may exist on the Shop Drawings and/or Submittals; 3) as approving departures from additional details or instructions previously furnished by the Architect.

1.12 MANUFACTURED ITEMS

A. Manufactured items installed on this project, but not specifically covered in these specifications or on the Drawings, are to be installed in strict accordance with the manufacturer's printed instructions.

1.13 SCAFFOLDING

A. Scaffolding shall be the responsibility of each trade requiring same. Scaffolding shall be as approved by the State of California Safety Orders and CAL-OSHA.

1.14 SUBSTITUTIONS OF MATERIALS AND EQUIPMENT

A. During Bidding Process: No substitutions allowed.

B. After execution of Contract: See Section 01 2500 - Substitutions and Product Options after Execution of Contract.

1.15 RECORD DRAWINGS

A. Subcontractors for Plumbing, Electrical, and HVAC work, shall provide and keep up to date, a complete set of "Record Drawings" in accordance with the requirements of Section 01 7839. These Record Drawings shall show every change from the approved Drawings and Specifications showing location, size and kind of every valve, fixture and run of pipe, wire and conduit. Prints for this purpose may be obtained from the Architect at the Contractor's cost. The job set of these Drawings shall be available for review on the job and be used only as a record set. On completion of this work, same shall be turned over to the Architect for review, before being given to the Owner.

1.16 REQUEST FOR INFORMATION

A. All questions raised by the General Contractor and/or subcontractor during the construction period will be written on the Request For Information (RFI) form. A copy for use on this job is enclosed at the end of this section, and shall be duplicated for use by the Contractor. A word document of the RFI form is available from the Architect upon request.

B. All questions are to be described in as much detail as possible, referencing the drawings and/or specifications. In order to expedite responses, make sure questions are printed, typed, or written in legible fashion. In order to establish priorities, the Contractor is to indicate on the form, a "respond by" date. Do not use "ASAP". The Architect shall make every effort to respond to all RFI's in a timely fashion, however, only those that indicate a "respond by" date will have priority.

C. RFI's shall be sent to the Architect by e-mail.

END OF SECTION

SECTION 01 25 00 - SUBSTITUTIONS AND PRODUCT OPTIONS AFTER EXECUTION OF CONTRACT

PART 1 - GENERAL

1.01 DESCRIPTION

A. General:

1. Furnish all work and services for furnishing, submitting, processing and handling of requests for substitution and data for product options after execution of Contract. Any substitution or product option must be in accord with provisions of Contract Documents.

2. Completely coordinate with work of other trades.

3. See appropriate sections for specific items.

4. See General Conditions for additional information.

B. After bid opening, substitution requests and product options shall be governed by this section.

1.02 PRODUCT SELECTION - GENERAL

A. Bids shall have been based on materials, equipment and procedures specified.

B. Certain types of equipment and kinds of material are described in specifications by means of trade names, catalog numbers and/or manufacturer's names.

C. Listing of a manufacturer implies acceptance of them only as supplier of a product which complies with specified item.

D. Architect reserves right to require substitution or product option items to comply with color and pattern-wise base specified items.

E. No substitution permitted between bid opening and execution of Contract.

F. No substitution permitted after execution of Contract except by change order.

1.03 CONTRACTOR'S OPTIONS

A. For products specified only by reference standards, use any product meeting standards.

B. For products specified by naming several products or manufacturers, use any product or manufacturer named.

C. For products specified by naming one manufacturer and product and several option manufacturers or products, select any named product and manufacturer which meets all specification criteria.

1. Contract Documents are based on use of base specified manufacturer.

2. By using an optional manufacturer or product, Contractor represents that he will be responsible for all adjustments to fit product to the work and for providing all additional work, equipment, and services required by use of product, at no additional cost.

1.04 SUBSTITUTION AFTER EXECUTION OF CONTRACT

A. No substitution will be considered after execution of Contract except for non-availability of specified item due to:

1. Strikes.

2. Lockouts.

3. Bankruptcy.

4. Discontinuance of production.

5. Proven shortage.

B. Notify General Contractor who will notify Architect, in writing, with substantiating data as soon as non-availability becomes apparent.

C. Notify in time to avoid delay in construction. Long lead items not brought to the attention of the Architect as outlined in Section 01 1000, paragraph 1.04 A and B shall not be accepted as a reason for substitution.

D. Forward submittal data as required for substitutions.

1.05 REQUESTS FOR SUBSTITUTION

A. Only written requests with complete submittal data will be considered.

B. Submit request in three copies.

C. In making request for substitutions, or in using an approved substitution item, Contractor represents:

1. He has investigated proposed product or method, and has determined that it is equal or superior in all respects to that specified, and that it will perform intended function.

2. He will provide same guarantee for substitute item as for product or method specified.

3. He will coordinate installation of accepted substitution into work, to include building modifications if necessary, making such changes as may be required for work to be complete in all respects.

4. He waives all claims for additional costs or additional time related to substitution which subsequently become apparent.

5. Acknowledgement of acceptance of these provisions in request.

D. No verbal or written approvals other than by change order will be valid.

1.06 SUBSTITUTION SUBMITTAL DATA

A. Complete data substantiating compliance of proposed substitution with Contract Documents.

B. For products:

1. Product identification, including manufacturer's name.

2. Manufacturer's literature, marked to indicate specific model, type, size, and options to be considered:

a. Product description.

b. Performance and test data.

c. Reference standards.

d. Difference in power demand, air quantities, etc.

e. Dimensional differences from specified unit.

3. Full size samples if requested. Architect reserves right to impound sample until physical units are installed on project for comparison purposes. Request pay all costs of furnishing and return of samples. Architect is not responsible for loss of, or damage to, samples.

4. Name and address of similar projects and name of Owner's representative who can be contacted, to discuss product, installation, and field performance data.

C. For construction methods:

1. Detailed description of proposed method.

2. Illustrate on drawings.

D. Itemized comparison of proposed substitute to specified item.

E. Data relating to changes in construction schedule.

F. Relation to separate contracts.

G. Cost of proposed substitution in comparison with product or method specified.

1.07 REJECTION OF SUBSTITUTION

A. Substitution will not be considered if:

1. They are indicated or implied on shop drawings, or project data submittals, without formal request submitted in accord with this section.

2. Acceptance will require substantial revision of Contract Documents, or building spaces.

3. Request for substitution does not indicate specific item for which request is submitted. Acceptance of a manufacturer only will not be made.

END OF SECTION

SECTION 01 2900 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. General

1. Furnish all labor, materials, tools, equipment and services for applications for payment as indicated, in accord with provisions of Contract Documents.

2. Completely coordinate with work of all other trades.

3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.

4. See General Conditions and Supplementary Conditions for additional general requirements.

1.02 SUBMITTALS

A. Project data

1. Submittals: Prior to first application for payment.

a. Schedule of Values.

b. Application for Payment.

2. Submittals: Monthly.

a. Application for Payment.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 GENERAL

A. Within three (3) days of the first day of each month, General Contractor shall submit to Architect, for transmittal to Owner, itemized Application for Payment for work completed during previous calendar month, with a “three-week look ahead” schedule of work to be completed.

B. Provide supporting data substantiating General Contractor's right to payment as Owner may require.

C. Submit Applications for Payment on AIA Documents G702-1992, Application and Certificate for Payment, and G703, Continuation Sheet. A copy of the form may be obtained from the Architect.

1. Provide one (1) digital copy to the Architect.

2. Signed by duly authorized agent of General Contractor.

3. Application for Payment shall show entire value of work installed, materials and equipment suitably stored at site, and materials and equipment suitably stored off site in insured or bonded warehouse, when approved in advance by Owner.

4. Itemize Applications for Payment:

a. Work in place to date.

b. Materials and equipment stored on site.

c. Total amount due to date.

d. Retention amount of 10% deducted.

(1). For public works projects, the retention is limited to 5%.

e. Amount of previous application.

f. Amount due for this period.

5. Provide signed "Conditional Lien Release" for each itemized amount requested for payment. The "Conditional Lien Release" shall be for the amount requested.

D. Along with first Application for Payment, Contractor shall obtain and submit, one (1) digital copy Consent of Surety to Reduction in or Partial Release of Retainage, AIA G707A-1994 (sample attached at the end of this section).

3.02 SCHEDULE OF VALUES

A. Subdivide the Schedule of Values items into defined areas of the building; the value of said subdivisions shall be mutually agreeable by the General Contractor, the Owner and Architect.

B. Bond cost, when a part of contract amount, will be paid with 1st payment. Overhead and profit shall be distributed into each Schedule of Values item in proportion to the value of said item to the total value of the contract.

C. Where the Schedule of Values items are separated into a Labor Amount and a Material Amount, payments shall be made for materials delivered and suitably stored. Where the Schedule of Values item is not separated into a Labor Amount and a Material Amount, payments shall be made for materials upon installation. The Labor Amount shall include all estimated on-site installation costs (including labor, applicable taxes, insurance, fringe benefits, erection equipment, tools, and overhead/profit). The Material Amount shall include all estimated material and manufactured equipment costs (including delivery costs, taxes, insurance and overhead/profit.).

3.04 PROGRESS PAYMENTS

A. Owner will, within 15 days after receipt of Application for Payment, either make payment to General Contractor, for such amount Owner determines is properly due, or notify General Contractor of reasons for withholding payment.

3.05 FINAL COMPLETION AND FINAL PAYMENT

A. Final payment constituting entire unpaid balance of Contract amount will be paid by Owner to General Contractor within 30 days after final Certificate for Payment has been issued by Architect, and the following have been completed: (See Section 01 7700 - Project Closeout).

1. A complete Set of Record Drawings have been completed and submitted to the Architect.

2. All guarantees and warrantees have been completed and submitted to the Architect.

3. All Operations and Maintenance manuals have been bound in a binder and submitted to the Architect.

4. The Contractor has completed AIA Form G706-1994, Contractor's Affidavit of Payment of Debts and Claims and AIA Form G706A-1994, Contractor's Affidavit of Release of Liens, and submitted to the Architect (samples attached at the end of this section).

5. The Contractor has obtained - Consent of Surety Company to Final Payment, AIA G707-1994 (sample attached at the end of this section).

END OF DOCUMENT

SECTION 01 2910 - PAYMENT FOR DELIVERED MATERIALS AND EQUIPMENT

PART 1 - GENERAL - NOT USED

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PAYMENT FOR DELIVERED MATERIALS AND EQUIPMENT

A. Owner may make payments to General Contractor for materials and equipment ready, but not yet incorporated in the Work, delivered and suitably stored at site or another location approved in writing by Owner.

1. For purpose of above paragraph, "materials and equipment" eligible for payment are defined as finished goods made specifically for subject job and requiring extensive time to be manufactured or obtained. Raw materials or work-in-progress at manufacturer's plant are not eligible for payment. Items such as tubing, conduit, pipe, drywall, etc., and items which are readily available for purchase will not be considered eligible.

B. Payment by Owner for such materials and equipment not yet incorporated in the Work will be made provided the following is accomplished:

1. Items must be listed separately on Application for Payment.

2. Provide receipted invoices as evidence that General Contractor is unconditional owner of equipment or material with Application for Payment.

3. Execute transfer of title, attached, with each request.

4. Describe method used to store off-site items.

5. Identify items in storage as property of Owner, and furnish description of identification method.

6. Provide written inventory, including General Contractor certification that all quantities have been received in good condition.

7. Owner must approve location of off-site storage, in writing.

8. Secure proof of insurance in Owner's name, at no additional cost to Owner.

9. Satisfactory proof of adequate transportation of items to site.

C. Owner retains right to verify storage by physical inspection prior to invoice approval and at any item thereafter. Such payment does not relieve responsibility for protecting, safeguarding, transporting and proper installation of equipment or materials. Warranty and guarantee period does not commence until installation and substantial completion of work.

D. Payment will be treated same as "work-in-place" with payment due upon evidence of delivery to job site (or other location acceptable to Owner except that these payments will not be included in value of work in place for payment of labor and mark-up. Each subsequent invoice will restate prior month's materials and equipment not incorporated in the work and current month addition and deletions for materials and equipment incorporated into the Work.

E. Upon making of partial payments by Owner, all materials and equipment covered thereby becomes sole property of Owner. Partial payments, however, does not constitute acceptance of work by Owner, nor are they to be construed as waiver of any right or claim by Owner.

END OF SECTION

TRANSFER OF TITLE

_____
Date

KNOW ALL MEN BY THESE PRESENTS, THAT _____
(General Contractor)

in consideration of

_____

paid by _____, the receipt of which is hereby acknowledged, does hereby grant, sell, transfer and deliver unto _____ the following goods and chattels, namely:

(Description of Material)

being materials manufactured especially for Colorado River Station under construction at 1111 Bailey Avenue, Needles, California.

TO HAVE AND TO HOLD all and singular the said goods and chattels to the said SunLine Transit Agency, its successors and assigns to their own use, forever.

AND we hereby convenant with the grantee that we are the lawful owner of said goods and chattels; that they are free from all encumbrances, security agreements, mortgages, or other liens; that we will warrant and defend same against claims and demands of all persons.

WE ALSO AGREE that SunLine Transit Agency shall have access to said goods at any time and that goods are covered by Certificate of Insurance attached hereto.

IN WITNESS hereof we, the said _____ have executed
(General Contractor)
this instrument this _____ day of _____ in the year two thousand and twenty _____.

Signed in the presence of:

_____	_____
(Firm Name)	(Firm Name)
_____	_____
(General Contractor)	**(Subcontractor or Supplier)**

SECTION 01 3100 - PROGRESS REPORTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Project Data:

1. Progress Report.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 GENERAL

A. Each subcontractor shall prepare a comprehensive daily log and maintain it during entire project period.

B. Each subcontractor shall present a copy of the daily log to General Contractor for compilation into weekly Progress Reports.

C. General Contractor shall present copies of Progress Reports with Application for Payment.

D. Progress reports to include the following data for each day of entire project period.

1. Manpower, by trade.

2. Work being performed, with location.

3. Weather.

4. Situations or circumstances which could delay work or give cause for claims for extension of time or added cost.

5. List of visitor's names, to include officials, Owner's representatives, and other authorities. Record their observations.

6. Other information as required by AHJ project inspector.

E. Progress reports to include progress photographs.

1. Minimum of twelve (12) color digital photographs taken from different viewpoints of interest to current progress. Photographs shall be emailed to the Architect.

2. Identify all photographs with project name, date, and view or vantage point.

END OF SECTION

SECTION 01 3200 - CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Immediately after Contract award, prepare and submit progress schedule of work consistent with Contract Documents as herein specified.

B. Coordinate Subcontractors schedules for entire project.

1. Resolve conflicts among schedules of Subcontractors.

2. Revise as required by conditions and progress of work.

3. Furnish copy of schedule for entire project to each Subcontractor.

1.02 SUBMITTALS (SEE SECTION 01 3300)

A. Initial construction schedule to Owner and Architect prior to start of work, but not later than date set for preconstruction conference.

B. Updated schedules accurately depicting progress to last day of each month accompanied with each Application for Payment.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 FORM OF SCHEDULES

A. Prepare in form of horizontal bar chart.

1. Provide separate horizontal bar column of each operation.

2. Order: Table of contents from Project Manual or Chronological order of beginning and completion of each item of work, whichever is most applicable.

3. Identify each column:

a. By major specification section number.

b. By distinct graphic delineation.

4. Horizontal time scale: Identify first week day of each week.

5. Scale and spacing: To allow space for updating.

B. Sheet size: Maximum 11" x 17".

3.02 CONTENTS OF SCHEDULES

A. Provide complete sequence of construction by activity.

1. Shop drawings, product data and samples:

a. Submittal dates.

b. Dates reviewed copies will be required.

2. Decision dates for:

a. Products specified by allowances.

b. Selection of finishes.

3. Product procurement and delivery dates.

4. Dates for beginning, and completion of each element of construction.

B. Identify work of separate floors, or separate phases, or other logically grouped activities.

C. Show projected percentage of completion for each item of work as of last day of every month.

D. Provide separate subschedule showing submittals, review times, procurement schedules, and delivery dates.

E. Provide subschedule to define critical portions of entire schedule.

3.03 UPDATING

A. Show all changes occurring since previous submission of updated schedules.

B. Indicate progress of each activity, show completion dates.

C. Include:

1. Major changes in scope.

2. Activities modified since previous updating.

3. Review projections due to changes.

D. Provide narrative report including:

1. Discussion of problem areas including current and anticipated delay factors and their impact.

2. Corrective action taken or proposed and its effect.

3. Effect of change in schedule of subcontractors.

4. Description of revisions.

    a. Effect on schedule due to change of scope.

    b. Revisions in duration of activities.

    c. Other changes that may affect schedule.

3.04 DISTRIBUTION

A. Distribute copies of revised schedules to:

1. Owner.

2. Architect.

3. Subcontractors.

4. Job site file.

5. On site AHJ job inspector.

6. Other concerned parties.

B. Instruct recipients to report any inability to comply and provide detailed explanation, with suggested remedies.

END OF SECTION

SECTION 01 3300 - SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND PROJECT DATA

PART 1 - GENERAL

1.01 DESCRIPTION

A. General:

1. Furnish all labor, materials, tools, equipment, and services for furnishing, processing, delivery, reproduction and other functions for scheduling and handling of shop drawings, product data, samples and project data as indicated, in accord with provisions of Contract Documents.

2. Completely coordinate with work of all other trades.

3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.

4. See Division 1 for General Requirements.

B. See General Conditions for additional requirements.

C. See technical sections for data required.

1.02 DEFINITIONS

A. "Base" manufacturer: Manufacturer listed as manufacturer in Part 2 "Products", of specification section, unless specifically indicated as "optional" manufacturer. More than one manufacturer can be "base" manufacturer. Base manufacturer(s) are either: The particular manufacturer the project was designed around or a manufacturer of an identical product. It does not include manufacturers listed as "optional manufacturers" in Part 2 of specification section.

1.03 SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND PROJECT DATA GENERAL

A. Submit all items to General Contractor for transmittal to:

Marks Architects, Inc.
73121 Fred Waring Drive, Suite 200
Palm Desert, CA 92260
Attn: David W. Clarke, CA Lic. C21219
david@marksarchitects.com

B. Contractor is responsible for making all submissions.

1. Submit to address indicated.

2. Transmit all items with Marks Architects transmittal form (see enclosed).

3. Identify each transmittal using applicable 6 digit specification section number with a dash and an added number, i.e., metal handrails might be numbered 05 5000 - 1 . If returned for re-submission, second submission would be 05 5000-1A.

C. Provide all information required for complete review of each item in one submittal.

D. Make submittals sufficiently in advance of date required to allow Architect reasonable time for review and re-submission if necessary.

1. Items not submitted in accord with provisions of this section will be returned, without action, for re-submission.

2. Submissions on items not approved for use by specifications, addenda, or change order will be rejected.

1.04 SHOP DRAWINGS AND PRODUCT DATA SUBMITTALS

A. Shop drawings and product data submittals are required as called for by submittal paragraph of specification section.

B. Identify drawings with manufacturer, item, use, type, project designation, specification section or drawing detail reference.

C. Submit (1) one electronic copy in PDF format of each shop drawing until review is complete.

1. Submit electronic drawings in PDF format to scale not larger than 24" x 36".

2. Allow clear space, approximately 20 sq. inches, for stamping on right hand side.

D. Submit (1) one electronic copy in PDF format of standard items such as equipment brochures, cuts of fixtures, or standard catalog items.

1. Indicate exact item or model and all proposed options.

2. Include scale details, sizes, dimensions, performance characteristics, capacities, wiring diagrams, controls and other pertinent data.

1.05 SAMPLE SUBMITTALS

A. Identify samples with manufacturer's name, item, use, type, project designation, specification section or drawing detail reference, color, range, texture, finish and other pertinent data.

B. Submit (3) three samples to Architect at Architect's office address indicated, or construction site at job meeting. For on-site mock-ups or large wall samples, only one sample is required.

1. Include one (1) electronic copy in PDF format of brochures, shop drawings, and installation instructions, if required, with transmittal.

2. Submit transmittal for site-built samples to address indicated.

C. Architect shall retain one (1) set of samples for comparison purposes until completion of work.

1. Samples will be returned or may be used in the work unless technical section specifically indicated otherwise.

2. Remove samples when directed.

3. Pay all costs of furnishing, construction, and removing samples.

1.06 PROJECT DATA SUBMITTALS

A. Submit (1) one electronic copy in PDF format of project data as indicated in individual sections.

B. If submittal does not comply with Contract Documents, Architect will so inform the Contractor. Contractor will resubmit until no further objection is made.

C. Use of transmittal form required (see enclosed).

1.07 CONTRACTOR ACTION: SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Review, approve and stamp all items prior to submission to Architect.

B. Stamp must indicate that Contractor has:

1. Verified all field dimensions and quantities.

2. Verified all field construction criteria, materials, catalog numbers and similar data.

3. Reviewed and coordinated all submittal data with requirements of the Work and Contract Documents.

4. Certified that submittals comply with Contract Documents.

C. Reproduce and distribute submittals receiving "No Exceptions Taken" or "Make Corrections Noted" stamp.

1. Architect shall distribute copies to Owner and Architect's Consultants.

D. Resubmit items stamped "Revise and Resubmit", "Submit Specified Item", or "Rejected".

1. Add letter suffix to previous transmittal number, to indicate re-submission.

1.08 SUBMITTALS

A. Project data: Submit prior to first application for payment:

1. Product list.

2. Schedule of submittals.

1.09 PRODUCT LIST

A. Complete list of products and subcontractors proposed for use.

B. Only products and manufacturers which have been specified or approved by addendum may be used.

C. Partial payment request will not be processed until satisfactory product list has been received.

D. Format for product list:

1. Specification section.

2. Product.

3. Manufacturer.

4. Subcontractor.

1.10 SCHEDULE OF SUBMITTALS

A. The Contractor shall prepare a "Schedule of Submittals" and verify that all submittal requirements required in these specifications are available and notify the Architect of any discrepancies. The "Schedule of Submittals" shall be used as a checklist of required shop drawings, product data, samples and project data, and shall not relieve the Contractor of his responsibility to provide shop drawings or other submittals that are not listed in the Schedule.

B. Schedule all submittals requiring Architect approval during first quarter of construction period.

1.11 ARCHITECT APPROVAL: SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Approval is only for conformance with the design concept of the project and compliance with the intent of the information given in the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication processes or to techniques of construction; and for coordination of the work of all trades.

B. Approved samples, submitted or constructed, constitute criterion for judging completed work. Work or items not equal to samples will be rejected.

C. Start of work (which requires submittals) prior to return of submittals, with Architect's stamp indicating approval, is at Contractor's risk.

END OF SECTION

SUBMITTAL TRANSMITTAL FORM

Specification Section:
Sequence Number:
Re-submittal Letter:

Routing Sequence	Checked By	Date Rec'd	Date Sent	No. Copies	Comments
GENERAL CONTRACTOR Attn:					
ARCHITECT Marks Architects, Inc. 73121 Fred Waring Drive Suite 200 Palm Desert, CA 92260 Attn: David W. Clarke	David W. Clarke				
CONTRACTOR / VENDOR / IOR Attn:					
OWNER Attn:					

SHOP DRAWINGS	DESCRIPTION	MANUFACTURER	ACTION

Action Legend:

A. No Exceptions Taken
B. Revise and Resubmit
C. Rejected
D. Incorporate Corrections Noted and Return Corrected Copy to Architect
E. Submit Specified Items
F. Resubmittal Not Required

Remarks:

SCHEDULE OF SUBMITTALS

SECTION	DESCRIPTION	MANUALS	SUBMITTALS	SAMPLES	SHOP DRAWINGS

KEYNOTES

SECTION 01 3400 - COORDINATION DRAWINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. General

1. Furnish all labor, materials, tools, equipment and services for all coordination drawings as indicated, in accord with provisions of Contract Documents.

2. Completely coordinate with work of all other trades.

3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.

4. See Division 1 for General Requirements.

B. Coordination drawings: Overlay drawings showing all work in and above ceilings and in mechanical rooms with horizontal and vertical dimensions, to avoid interference with structural framing, ceilings, partitions and other services.

C. Prior to start of work in any given area, each Subcontractor shall approve, in writing, all coordination drawings affecting his work in that area.

D. Any relocations required as result of failure to resolve interferences, provide correct coordination drawings, or call attention to changes required in other work that result of modifications to Contract shall be paid for by responsible Subcontractor.

1.02 PRODUCTION OF COORDINATION DRAWINGS

A. General Contractor shall provide background drawings, showing partitions, ceiling heights, and structural framing locations and elevations, and existing obstructions. Drawing copies may be obtained from Architect.

B. Coordination meetings shall be scheduled by General Contractor. Resolve major interferences at initial coordination meeting prior to production of any drawings. Meet as required to resolve interferences and correct coordination drawings during the course of construction.

C. Produce all initial coordination drawings within 15 days after initial meeting.

1.03 AFTER APPROVAL

A. After Subcontractors' written approval of coordination drawings, method used to resolve interferences not previously identified shall be determined by General Contractor.

B. All changes to approved coordination drawings shall be approved in writing by General Contractor prior to start of work in affected area.

1.04 PRECEDENCE OF SERVICES

A. In event of conflicts involving location and layout of the work following priority will be used to resolve disputes. Structure has highest priority:

1. Structure.
2. Ceiling grid/tile/light fixtures.
3. Gravity drainage lines.
4. Large pipe mains/pneumatic conveyor.
5. Pneumatic tube.
6. Ductwork/diffusers, registers and grilles.
7. Sprinkler heads.
8. Small piping and tubing/electrical conduit.
9. Access panels.

1.05 SUBMITTALS (SECTION 01 3300)

A. Project data:

1. One (1) electronic copy of contractor - approved drawings to Architect for review and comment, prior to start of work.
2. Architect and his Consultants shall review and may provide comments on submittals.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 4000 - GENERAL TESTING PROCEDURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. General:

1. Furnish all labor, materials, tools, equipment and services for quality control as indicated, in accord with provisions of Contract Documents.

2. Completely coordinate with work of all other trades.

3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.

4. See Division 1 for General Requirements.

B. See General Conditions for inspection and testing required by the Owner.

C. Owner will arrange and pay for certain testing and inspections indicated; Contractor shall pay for all other testing and inspection, including:

1. Re-testing of Owner provided tests due to failure.

2. Concrete testing for qualification of materials and for Contractor's convenience: Section 03 0000.

3. Contractor's duties for Owner provided tests, as specified.

1.02 QUALITY ASSURANCE

A. Test and inspection method standards: See technical sections.

B. Qualifications of independent testing agencies:

1. Meet American Council of Independent Laboratories, "Recommended Requirements of Independent Laboratory Qualification", latest edition.

2. Meet requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as used in Construction", latest edition.

3. Satisfy inspection criteria of Materials Reference Laboratory of National Bureau of Standards.

4. See technical sections for additional requirements.

5. For each independent testing agency submit:

   a. Report of Materials Reference Laboratory most recent inspection, with memorandum of remedies of any deficiencies reported.

   b. Certificate of equipment calibration.

C. Testing equipment calibration: By accredited calibration agency, at 12 month intervals, maximum, by devices of accuracy traceable to either:

1. National Bureau of Standards.

2. Accepted values of natural physical constants.

1.03 JOB CONDITIONS

A. Employment of independent testing agency by Owner does not relieve obligation of Contractor to comply with Contract Documents.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PERFORMANCE

A. Perform indicated inspection, sampling and testing of materials and methods of construction.

B. Use test/inspection/sampling methods conforming with methods indicated.

C. Report each test/inspection/sampling as indicated.

1. Report results called for by test method, in form specified.

D. Retest failed products and systems.

3.02 REPORTS

A. Submit copies of the reports promptly by email to the following:

1. Architect: Marks Architects, Inc.

2. Authority Having Jurisdiction: City of Needles; San Bernardino County

3. General Contractor:

4. Structural Engineer (when applicable): Tang Structural Engineers, Inc.