FASTER,
SAFER,
EZ SKYFRAMES

READY TO GO, EVEN IF YOUR ROOF ISN'T

THE LOW- COST
STRUCTURIAL
SOLUTION TO
FRAMING ROOF
OPENINGS

CREATED BY HVAC UNITS, EXHAUST FANS, SKYLIGHTS AND ROOF DRAINS

## WHY WE ARE DIFFERENT

- NO welding and NO cutting
- JUST-IN-TIME delivery
- ADJUSTABLE 4' to 10' joist spacings with 15" to 96" openings
- QUICK and EASY installation 20 to 30 minutes
- Can be INSTALLED WITH DECK IN PLACE

	SAMPLE	MECHANICAL LOAD CAP	ACITY (LBS)*	
JOIST SPACING VS. FRAME GAUGE	4'	5'	6'	8'
16 Gauge	1118	1080	1043	968
12 Gauge	2831	2478	2984	2859
10 Gauge	Site Specific	Site Specific	Site Specific	Site Specific

## **APPLICATIONS**

- Steel Deck, Steel Bar Joist or Beams
- "Z" or "C" Purlins
- Steel Deck with Conrete Beams
- Hybrid Joist & Wood Decking
- Panelized Wood Roof Systems

### INSTALLATION

Tools: 3/4" wrench or a cordless impact driver

## FRAME LOAD CAPACITY

- EZ SKYFRAMES are pre-engineered for most applications.
- Site-specific engineering is included as needed.

<sup>\*</sup> Based on a 4' opening between the main rails, using two angle connectors per junction of main and cross rails. Per IBC Section 1607.8.2, at frames supporting light machinery (shaft or motor driven), the maximum frame loads shown have been reduced by 20%. Also an industry standard unbalancing mechanical loading of 2/3 and 1/3 is included. Maximum loads shown are for the EZ SKYFRAMES adjustable frame only. Building roof structure framing capacity (existing or new) shall be verified by a registered structural engineer to ensure proper loading.

# **PARTS LIST**

## **MAIN RAILS (2)**

- Each rail component consists of two indivdual rails, one sliding inside the other.
- 10, 12, or 16-gauge, galvanized steel, cold formed channel 6" deep with and 2" or 4" flanges.

## **CROSS RAILS (2)**

- Each rail component consists of two individual rails one inside the other.
- 10, 12, or 16-gauge, galvanized steel, cold formed channel 6" deep with and 2" or 4" flanges.

## **ANGLE BRACKETS (4)**

• 10-gauge, galvanized, cold formed steel.



## **MAIN RAIL HANGERS (4)**

Powder coated, cold formed A36 3/16" HR steel plate. Connection plates are A36 3/16" HR steel plate, ½" riv nut and 1 ½" x ½" grade 5 tap bolt.

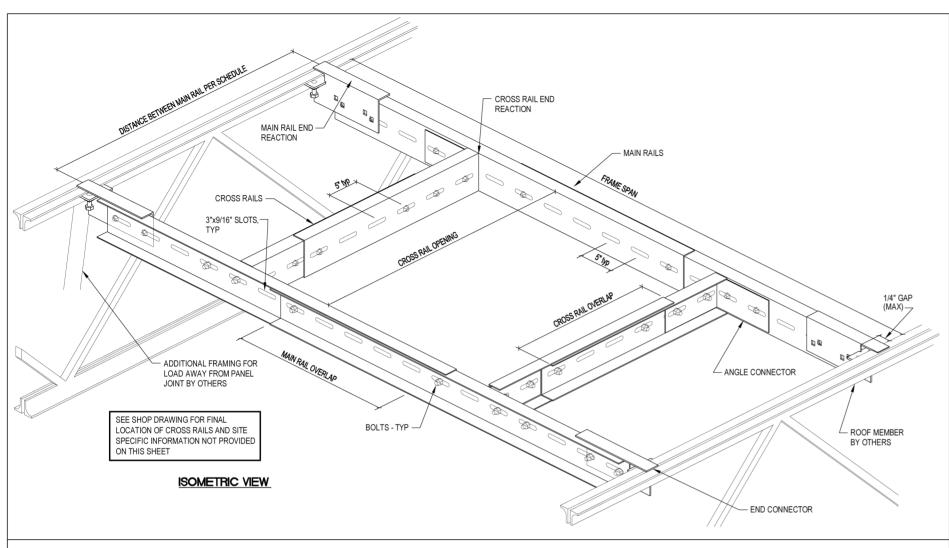
## HARDWARE (32 EA.)

- 1" x 1/2" grade 5 zinc coated carriage bolts.
- ½" serrated zinc coated flange nuts.

## FOR MORE INFORMATION

To learn about all the advantages EZ SKYFRAMES has over conventional angle iron roof frames – including some major safety and cost advantages – call 416.747.7233 or visit www.artisticskylight.com





### Main/Cross Rail Limitations:

- A) Cross Rail end reaction shall not exceed 1000 lbs (1.0 Kip) for a single angle connection. Installation contractor to verify loading distribution diagram of supported equipment and place equipment so the allowable loads are not exceeded.
- B) Main Rail end reaction shall not exceed 1160 lbs (1.160 Kip). Installation contractor to verify the loading distribution diagram of supported equipment and place equipment so the allowable loads are not exceeded.
- C) Maximum Gap between Main Rail and supporting roof framing shall be 1/4". Main Rail may be installed snug to supporting roof framing.
- D) For Frame Span and Cross Rail opening dimensions with corresponding minimum overlaps, See Dimension Table.
- E) Main Rail designs are based on 2 cross rails loading the main rail at 24" apart minimum with the cross rails centered on main rail. Cross Rail designs are based on a distributed loading from the decking loading the cross rails. Any other variations or loading of these rails is outside the scope of this standard design and it must be evaluated for a site specific application by Caruso Turley Scott.

### **QuickFrame Material Specifications:**

- 1. All Main/Cross Rails shall be a minimum 12 GAGE cold formed material and shall conform to ASTM A653 CS TYPE B Grade 50 KSI.
- 2. All Angle Connections shall be a minimum 12 GAGE cold formed material and shall conform to ASTM A653 CS TYPE B Grade 50 KSI. 3. All End Connections shall be a minimum 3/16" material and shall conform to ASTM A36 Steel.
- 4. All bolts shall be 1/2" diameter x 1" long SAE Grade 5 or SAE Grade 8.2 carriage bolts with nuts.
  - 4a. Angle connections shall contain 2 bolts in each leg.
  - 4b. End connections shall contain 2 bolts in main rail.
  - 4c. Main/Cross Rail splice connection shall contain 1 bolt (minimum) at each end of splice. The bolts for angle connectors may not be used as splice bolts.

### Design Criteria:

Wind Load (Maximum):

Building / Design Codes: 2018/2015/2012/2009/2006/2003 International

Building Code (IBC) ASCE / SEI 7-05/7-10/7-16

AISI 2007/2010/2012/2016 North American

Specification (NAS)

90 MPH, Exposure C (2003 to 2009 IBC) 115 MPH, Exposure C (2012 to 2018 IBC)

Building Mean Roof Height = 25'-0"

Seismic Design Category B  $S_{DS} < 0.33$ ;  $S_{D1} < 0.133$ Seismic Load (Maximum):

20 PSF Flat Roof Load (See Note 3) Snow Load (Maximum): Dead / Live Load (Maximum): 20 PSF / 20 PSF (See Note 5)

- 1) Maximum Frame Loads shown in the table are based on the above maximum design loads. Contact QuickFrames if above loads are exceeded because site specific layouts can be designed.
- 2) Maximum Loads shown for all spans and material strengths do not exceed a L/240 deflection ratio.
- 3) Snow Drift loads are not included in design. All sides of the roof projections supported by the frame shall be less than 15 feet long per ASCE 7-05 and 7-10 Section 7.8.
- 4) Dead/Live Loads are roof structure dead and live loads bearing on frame.
- 5) Building Dead Loads between the cross rails are not included in the standard design as roof opening sizes vary by application. Any dead load remaining between the cross rails must be deducted from the loads shown in this table for allowable loading. Site—specific engineering is also available upon request.

  6) QuickFrames installation shall conform to the QuickFrames installation instructions.

### Note:

MAXIMUM LOADS SHOWN ARE FOR THE FAST FRAME ADJUSTABLE FRAME ONLY, BUILDING ROOF STRUCTURE FRAMING CAPACITY (EXISTING OR NEW) SHALL BE CHECKED BY A REGISTERED STRUCTURAL ENGINEER TO ENSURE THE PROPOSED LOAD ON THE FRAME DOES NOT OVERSTRESS ANY ROOF SUPPORTING FRAMING MEMBERS AND/OR BUILDING COMPONENTS.



Project Information:	
· Roof Structure Type:	XXX
· Roof Material:	XXX
·QuickFrame Span:	xxx
• Equipment Type:	XXX
• Equipment Weight:	XXX

17-120-XXX TMH DEE SJH RAIL/CONNECTORS: 12 GA/3/16" N.T.S.

XX/XX/2017 **S12A** 

## 12 gauge X 50 KSI 6"x2" Rail Design - Light Machinery Design - Two Cross Rails Load the Main Rail with 2 Point Loads - One 12 ga x 50 ksi Angle Connector at Each Cross Rail Connection to Main Rail - 3/16" x 36 ksi End Connector with Vertical Weld - Up to 2018 IBC - No Dead Load Between Cross Rails - Cross Rails Centered on Main Rail

					Maximum Opening Span											
DEAD LOAD =	20 PSF	]		20 in	30 in	36 in	39 in	48 in	60 in	66 in	72 in	84 in	96 in	102 in	108 in	120 in
LIVE LOAD =	20 PSF			1.67 ft	2.50 ft	3.00 ft	3.25 ft	4.00 ft	5.00 ft	5.50 ft	6.00 ft	7.00 ft	8.00 ft	8.50 ft	9.00 ft	10.00 ft
SNOW LOAD =	20 PSF		Cross Rails	15 in	20 in	25 in	30 in	35 in	40 in	45 in	50 in	55 in	60 in	65 in	70 in	75 in
WIND LOAD =	7.8 PSF		Min Overlap	10 in	10 in	14 in	21 in	22 in	20 in	24 in	28 in	26 in	24 in	28 in	32 in	30 in
Max Jois	t Span	Main Rails	Min Overlap													
24 in	2.00 ft	20 in	16 in	3321 lb	3290 lb	3271 lb	3262 lb	3234 lb	3196 lb	3178 lb	3159 lb	3121 lb	3084 lb	3065 lb	3047 lb	2439 lb
30 in	2.50 ft	25 in	20 in	3308 lb	3270 lb	3248 lb	3236 lb	3202 lb	3157 lb	3135 lb	3112 lb	3067 lb	3022 lb	2999 lb	2976 lb	2127 lb
42 in	3.50 ft	30 in	18 in	2871 lb	2817 lb	2785 lb	2769 lb	2720 lb	2656 lb	2623 lb	2591 lb	2526 lb	2461 lb	2429 lb	2397 lb	1347 lb
36 in	3.00 ft	30 in	24 in	3295 lb	3251 lb	3224 lb	3211 lb	3171 lb	3118 lb	3092 lb	3065 lb	3012 lb	2959 lb	2933 lb	2906 lb	1815 lb
48 in	4.00 ft	35 in	22 in	3000 lb	2940 lb	2903 lb	2885 lb	2831 lb	2758 lb	2722 lb	2686 lb	2613 lb	2541 lb	2504 lb	2225 lb	1035 lb
54 in	4.50 ft	40 in	26 in	3043 lb	2976 lb	2936 lb	2916 lb	2856 lb	2775 lb	2735 lb	2695 lb	2615 lb	2534 lb	2494 lb	1944 lb	Use 10 GA.
60 in	5.00 ft	45 in	30 in	2692 lb	2616 lb	2570 lb	2547 lb	2478 lb	2386 lb	2340 lb	2294 lb	2202 lb	2110 lb	2064 lb	1523 lb	Use 10 GA.
66 in	5.50 ft	50 in	34 in	3230 lb	3153 lb	3107 lb	3084 lb	3015 lb	2923 lb	2877 lb	2831 lb	2739 lb	2647 lb	2288 lb	1523 lb	Use 10 GA.
72 in	6.00 ft	55 in	38 in	3217 lb	3134 lb	3084 lb	3059 lb	2984 lb	2884 lb	2834 lb	2784 lb	2685 lb	2585 lb	2023 lb	1242 lb	Use 10 GA.
78 in	6.50 ft	60 in	42 in	3204 lb	3114 lb	3060 lb	3034 lb	2953 lb	2845 lb	2791 lb	2738 lb	2630 lb	2522 lb	1758 lb	Use 10 GA.	Use 10 GA.
84 in	7.00 ft	65 in	46 in	3191 lb	3095 lb	3037 lb	3008 lb	2922 lb	2806 lb	2748 lb	2691 lb	2575 lb	2405 lb	1493 lb	Use 10 GA.	Use 10 GA.
90 in	7.50 ft	70 in	50 in	3178 lb	3075 lb	3014 lb	2983 lb	2890 lb	2767 lb	2706 lb	2644 lb	2521 lb	2155 lb	1227 lb	Use 10 GA.	Use 10 GA.
96 in	8.00 ft	75 in	54 in	3165 lb	3056 lb	2990 lb	2957 lb	2859 lb	2728 lb	2663 lb	2597 lb	2466 lb	1906 lb	Use 10 GA.	Use 10 GA.	Use 10 GA.
102 in	8.50 ft	80 in	58 in	3102 lb	2986 lb	2917 lb	2882 lb	2778 lb	2639 lb	2570 lb	2500 lb	2361 lb	1656 lb	Use 10 GA.	Use 10 GA.	Use 10 GA.
108 in	9.00 ft	85 in	62 in	2849 lb	2727 lb	2654 lb	2617 lb	2507 lb	2361 lb	2287 lb	2214 lb	2067 lb	1406 lb	Use 10 GA.	Use 10 GA.	Use 10 GA.
120 in	10.00 ft	85 in	50 in	1663 lb	1528 lb	1447 lb	1406 lb	1284 lb	1122 lb	1041 lb	Use 10 GA.					

Refer to all notes on accompanying sheets for cross rail and end connection limitations.

MAXIMUM LOADS SHOWN ARE FOR THE EZ SkyFrames ADJUSTABLE FRAME ONLY. BUILDING ROOF STRUCTURE FRAMING CAPACITY (EXISTING OR NEW) SHALL BE CHECKED BY A REGISTERED STRUCTURAL ENGINEER TO ENSURE THE PROPOSED LOAD ON THE FRAME DOES NOT OVERSTRESS ANY ROOF SUPPORTING FRAMING MEMBERS AND/OR BUILDING COMPONENTS.



## Design Criteria:

Wind Load (Maximum):

Building / Design Codes: 2018/2015/2012/2009/2006/2003 International

Building Code (IBC) ASCE / SEI 7-05/7-10/7-16 AISI 2007/2010/2012/2016 North American

Specification (NAS)

90 MPH, Exposure C (2003 to 2009 IBC) 115 MPH, Exposure C (2012 to 2018 IBC) Building Mean Roof Height = 25'-0"

Seismic Load (Maximum): Seismic Design Category B S<sub>DS</sub> <0.33; S<sub>D1</sub> <0.133

20 PSF Flat Roof Load (See Note 3) Snow Load (Maximum):

Dead / Live Load (Maximum): 20 PSF / 20 PSF (See Note 5)

- 1) Maximum Frame Loads shown in the table are based on the above maximum design loads. Contact QuickFrames if above loads are exceeded because site specific layouts can be designed.
- 2) Maximum Loads shown for all spans and material strengths do not exceed a L/240 deflection ratio.
- 3) Snow Drift loads are not included in design. All sides of the roof projections supported by the frame shall be less than 15 feet long per ASCE 7-05 and 7-10 Section 7.8.
- 4) Dead/Live Loads are roof structure dead and live loads bearing on frame. 5) Building Dead Loads between the cross rails are not included in the standard design as roof opening sizes vary by application. Any dead load remaining between the cross rails must be deducted from the loads shown in this table for allowable loading. Site—specific engineering is also available upon request. 6) EZ SkyFrames installation shall conform to the EZ SkyFrames installation

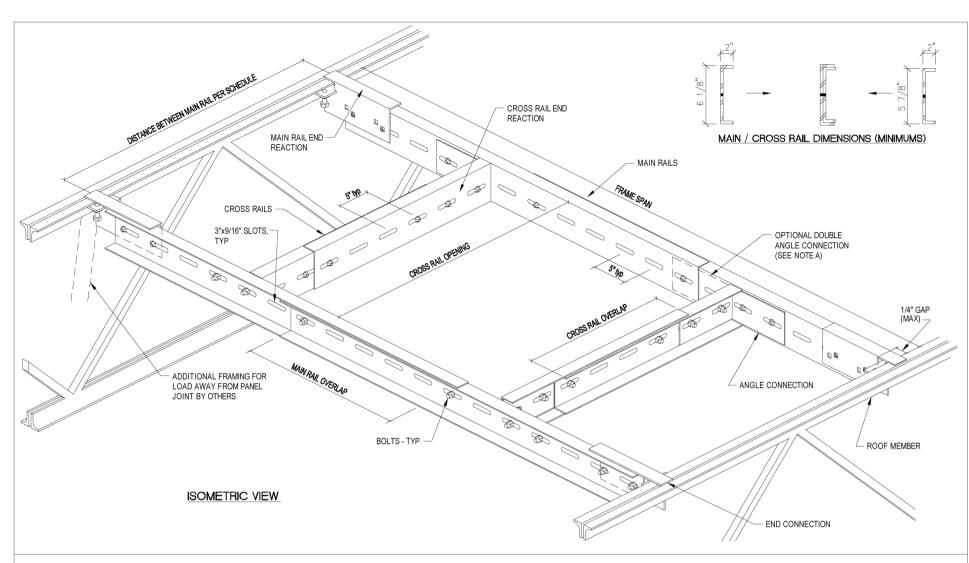
17-120-XXX TMH DEE SJH

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XX/XX/2017

**S12B** 

N.T.S.



### Main/Cross Rail Limitations:

- A) Cross Rail end reaction shall not exceed 575 lbs (0.575 Kip) for a single angle connection or 1150 lbs (1.150 Kip) for the optional double angle connection. Installation contractor to verify loading distribution diagram of supported equipment and place equipment so the allowable loads are not exceeded.
- B) Main Rail end reaction shall not exceed 510 lbs (0.510 Kip). Installation contractor to verify the loading distribution diagram of supported equipment and place equipment so the allowable loads are not exceeded.
- C) Maximum Gap between Main Rail and supporting roof framing shall be 1/4". Main Rail may be installed snug to supporting roof framing.
- D) For Frame Span and Cross Rail opening dimensions with corresponding minimum overlaps, See Dimension Table.

### QuickFrame Material Specifications:

10'-0"

- 1. All Main/Cross Rails shall be a minimum 16 GAGE cold formed material and shall conform to ASTM A653 CS TYPE B.
- All Angle Connections shall be a minimum 12 GAGE cold formed material and shall conform to ASTM A653 CS TYPE B Grade 45 KSI.
- 3. All End Connections shall be a minimum 10 GAGE material and shall conform to ASTM A653 CS TYPE B Grade 45 KSI.
- All bolts shall be 1/2" diameter x 1" long SAE Grade 5 or SAE Grade 8.2 carriage bolts with nuts.
   4a. Angle connections shall contain 2 bolts in each leg. At optional double angle connection,

  - bolts in cross rail may be shared.
  - 4b. End connections shall contain 2 bolts in main rail.
  - 4c. Main/Cross Rail splice connection shall contain 1 bolt (minimum) at each end of splice.

	Main Rail	Dimensions		Cross Rail Dimensions				
Frame Span  Length (ft.)  Length (in.)				/: >				
		Individual Rail Size (in.)	Min. Overlap (in.)	Opening Span (in.)	Individual Rail Size (in.)	Min. Overlap (in.)		
4'-0"	48"	35"	22"	15"-20"	15"	10"		
5'-0"	60"	45"	30"	20"-30"	20"	10"		
6'-0"	72"	60"	48"	30"-45"	30"	15"		
7'-0"	84"	60"	36"	35"-50"	35"	20"		
8'-0" (A)	96"	60"	24"	45"-72"	45"	18"		
8'-0" (B)	96"	75"	54"					
9'-0"	108"	75"	42"	ENGINE	ERING SUMMAR	Y QHEET		
10' 0"	120"	75,1	70"					

## LOAD TABLE SCHEDULE

Maximum Frame Load (pounds) 16 ga Rail / 10 ga End Connector

	4'-0" betwe	en main rails	6'-0" betwe	en main rails	8'-0" between main rails		
	<u>(1)</u>	(2)	<u>(1)</u>	(2)	<u>(1)</u>	(2)	
Span (ft)*	One Angle	Connector	One Angle	Connector	One Angle Connector		
4'-0"	1788	1118	1648	1030	1508	943	
5'-0"	1728	1080	1558	974	1388	868	
6'-0"	1668	1043	1468	918	1268	793	
7'-0"	1600	1000	1370	856	1140	713	
8'-0"(24")	880	550	620	388	360	225	
8'-0"(54")	1548	968	1288	805	1028	643	
9'-0"	920	575	630	394	340	213	
10'-0"	460	288	140	88			
Span (ft)*	Two Angle	Connector	Two Angle Connector		Two Angle Connector		
4'-0"	1788	1118	1648	1030	1508	943	
5'-0"	1728	1080	1558	974	1388	868	
6'-0"	1668	1043	1468	918	1268	793	
7'-0"	1600	1000	1370	856	1140	713	
8'-0"(24")	880	550	620	388	360	225	
8'-0"(54")	1548	968	1288	805	1028	643	

(1) The maximum load the frame can carry when all weight is placed evenly on the main rails and cross rails and distributed evenly between all four support

630

140

- (2) Per IBC Section 1607.8.2, at frames supporting light machinery (shaft or motor driven), the Maximum Frame Loads shown have been reduced by 20%. Also, an industry standard unbalanced mechanical loading of 2/3 and 1/3 is included.
- \* For Main Rail dimensions and overlap requirements, see Main Rail Dimension Table. Refer to all notes on this sheet for cross rail and end connection limitations.

### Design Criteria:

9'-0"

Building / Design Codes:

Seismic Load (Maximum):

920

575

288

2009/2006/2003 International Building Code (IBC)

394

340

213

ASCE / SEL 7-05 AISI 2007 North American Specification (NAS)

Wind Load (Maximum): 90 MPH, Exposure C

> Seismic Design Category B S<sub>DS</sub> <0.33; S<sub>D1</sub> <0.133

Snow Load (Maximum): 20 PSF Flat Roof Load (See Note 3) Dead / Live Load (Maximum): 10 PSF / 20 PSF (See Note 5)

- 1) Maximum Frame Loads shown in the table are based on the above maximum design loads.
- 2) Maximum Loads shown for all spans and material strengths do not exceed a L/240 deflection ratio.
- 3) Snow Drift loads are not included in design. All sides of the roof projections supported by the frame shall be less than 15 feet long per ASCE 7-05 Section
- 4) Dead/Live Loads are roof structure dead and live loads bearing on frame.
- 5) EZ SkyFrames installation shall conform to the Quickframe installation

MAXIMUM LOADS SHOWN ARE FOR THE EZ SkyFrames ADJUSTABLE FRAME ONLY. BUILDING ROOF STRUCTURE FRAMING CAPACITY (EXISTING OR NEW) SHALL BE CHECKED BY A REGISTERED STRUCTURAL ENGINEER TO ENSURE THE PROPOSED LOAD ON THE FRAME DOES NOT OVERSTRESS ANY ROOF SUPPORTING FRAMING MEMBERS AND/OR BUILDING COMPONENTS.

Project Information

· Roof Structure Type: · Roof Material

Material Strength: XXX

XXX Equipment Type Equipment Weight:

13-120-XXX

GEN.

DRAWN: ENGINEER: CHECKED: TMH DEE SJH 16 GA./10 GA. N.T.S

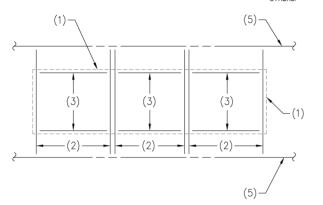
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FRAME WITH R GAU

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- OUTLINE OF MECH'L UNIT.
- MAIN RAIL
- CROSS RAIL
- ROOF FRAMING MEMBER BY OTHERS.



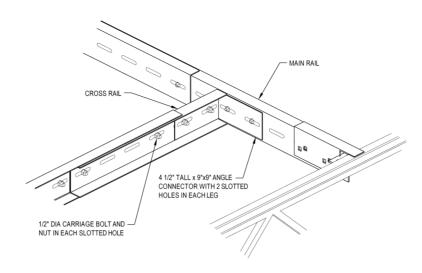
MULTIPLE **EZ SkyFrames** WITHIN SAME BAY SUPPORTING RTU:
- COMPLETE FRAMES MUST BE INSTALLED. SHARING RAILS IS NOT

PERMITTED.
- FOR A CONSERVATIVE CAPACITY, USE "LIGHT MACHINERY" COLUMN OF LOAD TABLE MULTIPLIED BY NUMBER OF COMPLETE FRAMES.

05

ROOF FRAME AT MULTIPLE OPENINGS

NO SCALE



SEE NOTES ON FIRST PAGE FOR LOAD RESTRICTIONS.

ANGLE CONNECTOR DETAIL 03

NO SCALE

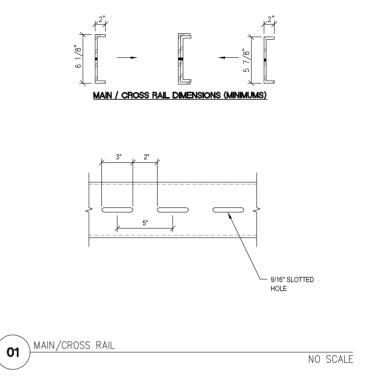
- FOR THE STABILITY AND DESIGN CAPACITY OF THE EZ SkyFrames ADJUSTABLE FRAME. THE METAL DECK IS NOT REQUIRED TO BE ATTACHED TO THE EZ SKYFRAMES ADUSTABLE FRAME.
HOWEVER, THE ENGINEER OF RECORD FOR THE BUILDING MUST CONFIRM WHETHER OR NOT
THE DECK REQUIRES ANY ATTACHMENT OF THE DECK TO THE QUICKFRAMES ADJUSTABLE FRAME, THE FOLLOWING ARE THREE ACCEPTABLE METHODS:

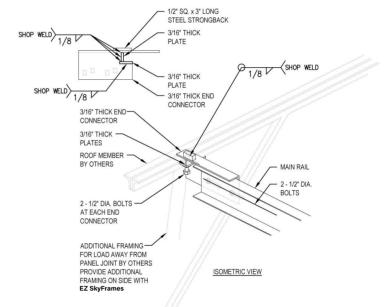
- HILTI X-U SHOTPINS OR APPROVED EQUAL ARE AN ACCEPTABLE CONNECTION. IN ADDITION, ICC APPROVED SCREWS ARE AN ACCEPTABLE CONNECTION.
- B. IF THE CONNECTION AREA IS ACCESSIBLE TO PERFORM PUDDLE WELDS, PUDDLE WELDS FROM THE DECK TO THE EZ SkyFrames ADJUSTABLE FRAME ARE AN ACCEPTABLE CONNECTION.
- C. IF THE METAL DECK IS AT LEAST A MINIMUM OF 20 GAGE IN THICKNESS, 1/8" FILLET WELDS STITCHED ALONG THE BACKSIDE OF THEEZ SkyFrames ADJUSTABLE FRAME SECTION (AT THE BEND FROM THE FLANGE TO THE WEB) IS AN ACCEPTABLE CONNECTION.

IN ADDITION, IN SEISMIC DESIGN CATEGORY C OR HIGHER, THE DECK SHALL BE ATTACHED TO THE MAIN RAIL AND CROSS RAILS PER ONE OF THE THREE METHODS LISTED IN NOTE ABOVE. OPENING IN DECK STEEL DECK BY OTHERS. FOR DIRECTION OF DECK, SEE ENGINEER OF RECORD DRAWINGS MAIN RAIL OR CROSS -RAIL AS OCCURS

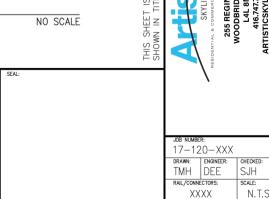
DECK CONNECTION TO MAIN/CROSS RAILS 04

NO SCALE









XX/XX/2017 SHEET

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SITE SPECIFIC UIS AFFIXED WITH

CONSIDERED S