

# DAMMON ENGINEERING, INC.

dammonengineering.com

*CONSULTING*

*DESIGN*

*STUDIES*

*EXPERT WITNESS*

554 Old Spanish Trail  
Slidell, LA 70458

P.O. Box 2830  
Slidell, LA 70459

985-649-5832  
FAX 985-641-5950

November 16, 2011

To: Hunter Charbonnet  
Casey Civil, LLC  
1080 Old Spanish Trail, Ste.8  
Slidell, LA 70458

REF: Roof Curb Calculations  
PNK Support Facility  
Baton Rouge, LA

Dear Mr. Charbonnet,

Dammon Engineering was contacted to verify adequate structural support for various roof mounted equipment for the above referenced project.

Equipment:

- United Intertech Intake Ventilation Hood = Approx 680lbs.
- Twin City Fan & Blower Exhaust Fans:  
Various sizes, calculations are based on heaviest hood = 165lbs.

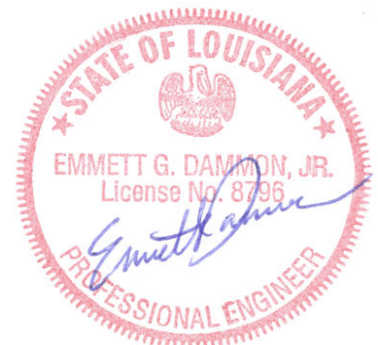
Assumptions:

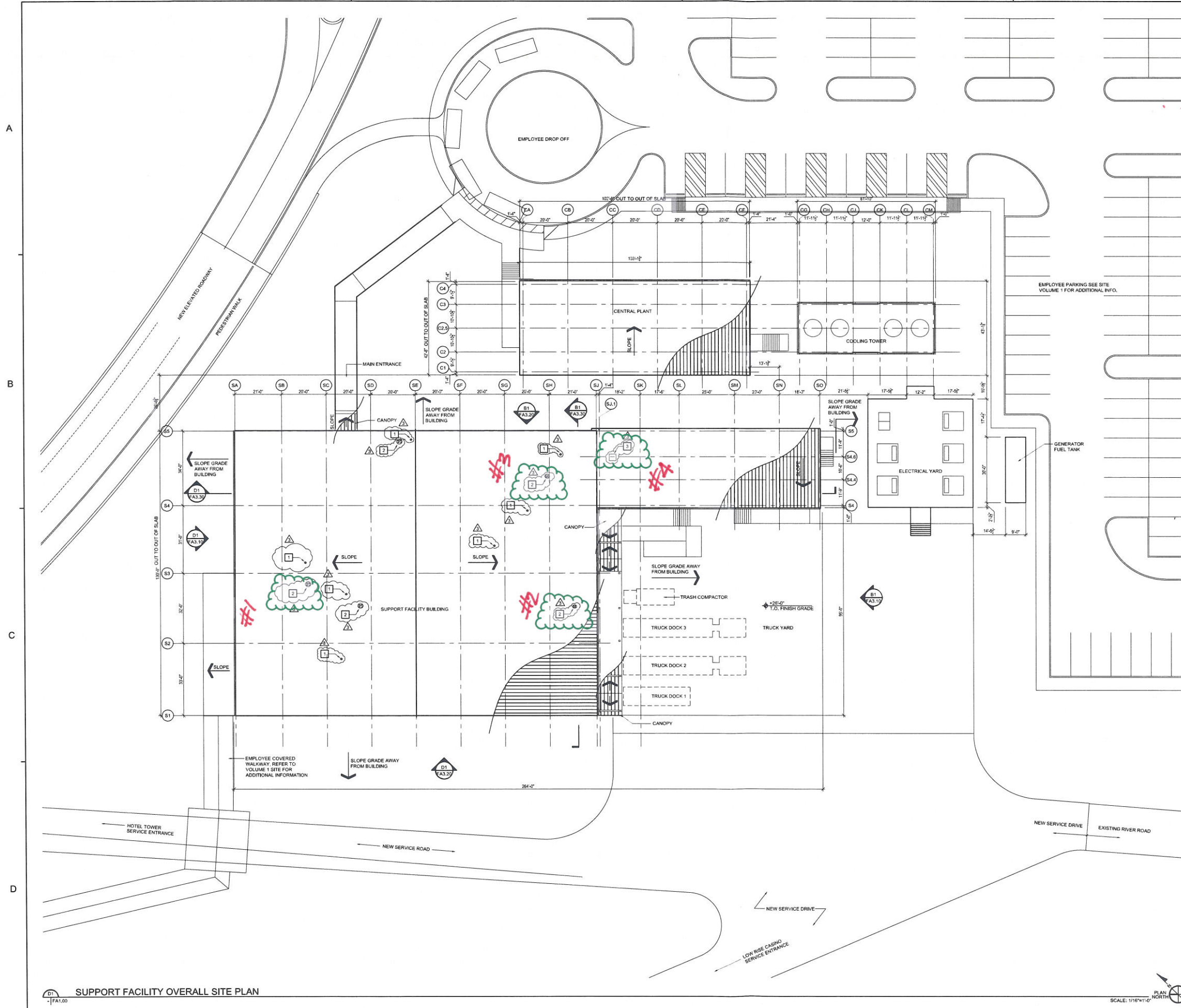
- Roof curb bearing on a minimum of 2 Horizontal Z-shape (Z8.50x0.105) roof purlins
- Maximum Deflection of Purlins =  $L/360$
- Placement of Roof Curbs as shown on Sheet FA1.00 (attached)

The proposed Roof curb Supports are approved as shown in the attached calculations. Install all framing and roof curb components per manufacturer requirements to provide a complete curb system.

Sincerely,

Emmett G. Dammon, P.E.  
Dammon Engineering





**GENERAL NOTES:**

- SEE SHEET C-8.11 FOR SITE COORDINATES FOR THE SUPPORT FACILITY BUILDINGS. THE CENTRAL PLANT IS DIMENSIONED FROM THE SUPPORT FACILITY LOCATION.
- SEE SITE VOLUME 1 FOR GRADING, UNDERGROUND UTILITIES AND AREA SITE WORK.
- UNDERGROUND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH CHAPTER 10. SEE 10.8 FOR SPECIFIC REQUIREMENTS FOR PIPING RUN UNDER BUILDINGS. FIRE PUMP, IF PROVIDED TO MEET THE REQUIREMENTS OF NFPA 20, 2007 EDITION.

**PLAN KEYNOTES**

- 1 VTR
- 2 EXHAUST FAN
- 3 INTAKE VENT ON ROOF CURB

EXECUTIVE ARCHITECT  
**MARNELL ARCHITECTURE**  
 ARCHITECTURE • PLANNING • DESIGN  
 2225 MANNING AVENUE, SUITE 100, LAS VEGAS, NEVADA 89148  
 WWW.MARNELLARCHITECTS.COM

ARCHITECT  
**MANNING ARCHITECTS**  
 ARCHITECTURE INTERIORS | PLANNING  
 850 POLYDRAS STREET, SUITE 1250  
 NEW ORLEANS, LOUISIANA 70119-1001  
 WWW.MANNINGARCHITECTS.COM

**PNK (BATON ROUGE) PARTNERSHIP**  
 8918 SPANISH RIDGE AVENUE  
 LAS VEGAS, NEVADA 89148

DATE	ISSUED FOR
11/12/10	PROGRESS PACKAGE
11/19/10	CONCEPT PRICING
12/21/10	D. D. PACKAGE
02/28/11	CONSTRUCTION
04/20/11	ASI 0026
05/11/11	ASI 0031
08/05/11	ASI 0036

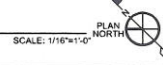
"THESE PLANS HAVE BEEN PREPARED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE COMPLY WITH THE INTERNATIONAL BUILDING CODE. I WILL OBSERVE THE WORK."



PROJECT NO. N10.023.00  
 DRAWN BY PJK  
 CHECKED BY RCH  
 DRAWING TITLE  
**SUPPORT FACILITY  
 OVERALL  
 SITE PLAN**

SHEET NO. **FA1.00**

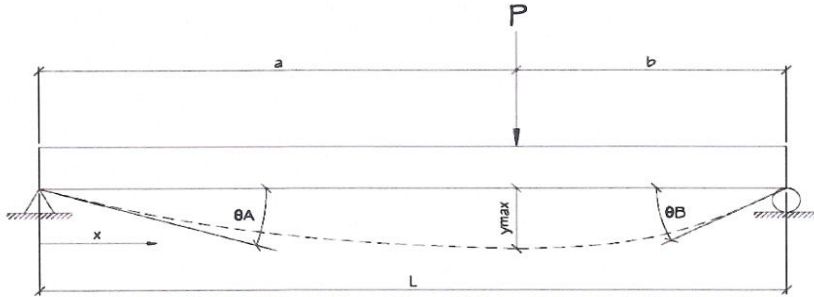
**SUPPORT FACILITY OVERALL SITE PLAN**  
 -|FA1.00



### Beam Deflection Calculations

Project: PNK Support Facility  
 Job#: \_\_\_\_\_

Location: #1  
 Date: 11/16/2011



P=	0.0825 k	x=	240 in
L=	384 in		
E=	29000 ksi	y <sub>max</sub> = L/360 =	1.07 in
I=	14.67 in <sup>4</sup>		
a=	240 in		
b=	144 in		

$$y = \frac{Pa(L-x)}{6EIL}(x^2 + a^2 - 2Lx)$$

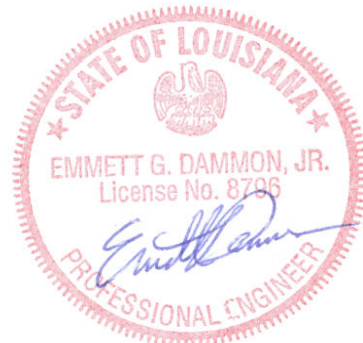
y= -0.20106 in OK

$$\theta_A = -\frac{Pb}{6EIL}(L^2 - b^2)$$

theta\_A= -0.00154 °

$$\theta_B = \frac{Pa}{6EIL}(L^2 - a^2)$$

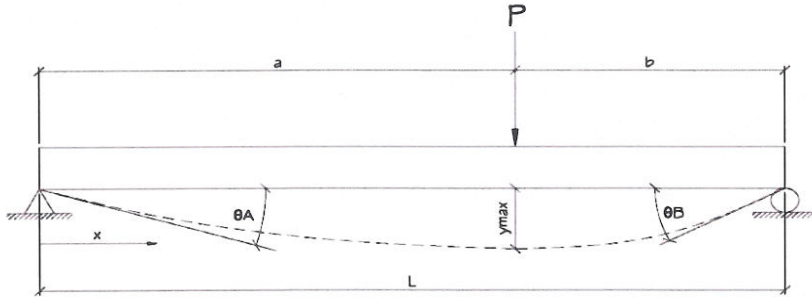
theta\_B= 0.001815 °



### Beam Deflection Calculations

Project: PNK Support Facility  
 Job#: \_\_\_\_\_

Location: #2  
 Date: 11/16/2011



P=	0.0825 k	x=	216 in
L=	384 in		
E=	29000 ksi	y <sub>max</sub> = L/360 =	1.07 in
I=	14.67 in <sup>4</sup>		
a=	216 in		
b=	168 in		

$$y = \frac{Pa(L-x)}{6EIL}(x^2 + a^2 - 2Lx)$$

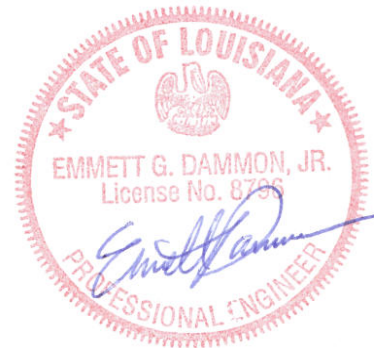
y= -0.22167 in OK

$$\theta_A = -\frac{Pb}{6EIL}(L^2 - b^2)$$

theta A= -0.00169 °

$$\theta_B = \frac{Pa}{6EIL}(L^2 - a^2)$$

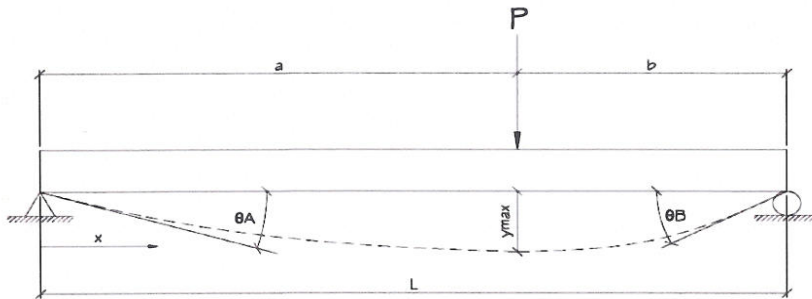
theta B= 0.001833 °



### Beam Deflection Calculations

Project: PNK Support Facility  
 Job#:

Location: #3  
 Date: 11/16/2011



P=	0.0825 k	x=	216 in
L=	382 in		
E=	29000 ksi	y <sub>max</sub> = L/360 =	1.06 in
I=	14.67 in <sup>4</sup>		
a=	216 in		
b=	166 in		

$$y = \frac{Pa(L-x)}{6EIL}(x^2 + a^2 - 2Lx)$$

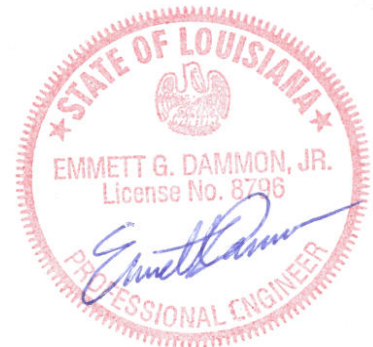
y= -0.21755 in OK

$$\theta_A = -\frac{Pb}{6EIL}(L^2 - b^2)$$

theta A= -0.00166 °

$$\theta_B = \frac{Pa}{6EIL}(L^2 - a^2)$$

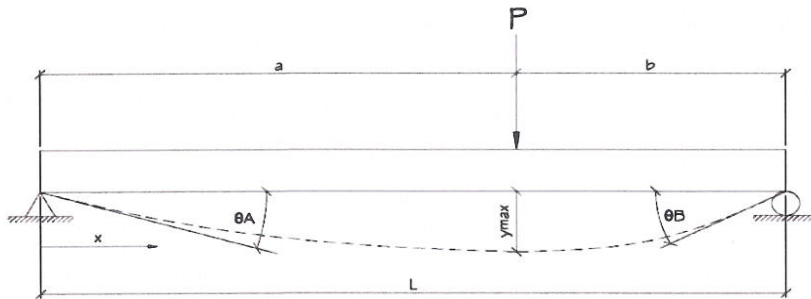
theta B= 0.001814 °



### Beam Deflection Calculations

Project: PNK Support Facility  
 Job#:

Location: #4  
 Date: 11/16/2011



P=	0.35 k	x=	144 in
L=	218 in		
E=	29000 ksi	$y_{max} = L/360 =$	0.61 in
I=	14.67 in <sup>4</sup>		
a=	144 in		
b=	74 in		

$$y = \frac{Pa(L-x)}{6EIL}(x^2 + a^2 - 2Lx)$$

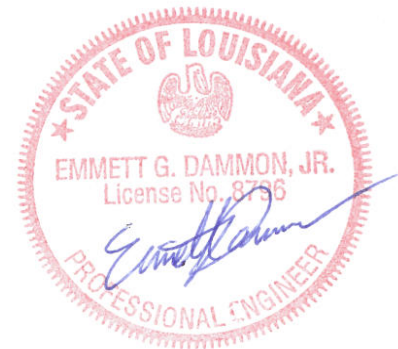
$y = -0.14284$  in      OK

$$\theta_A = -\frac{Pb}{6EIL}(L^2 - b^2)$$

$\theta_A = -0.00196$  °

$$\theta_B = \frac{Pa}{6EIL}(L^2 - a^2)$$

$\theta_B = 0.002426$  °





Intake Vent

3

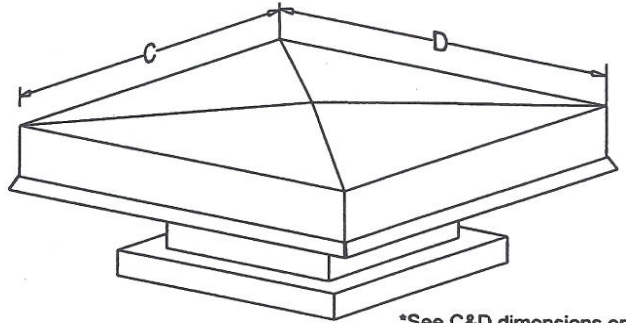


(ENGINEERS)  
SUBMITTAL DATA

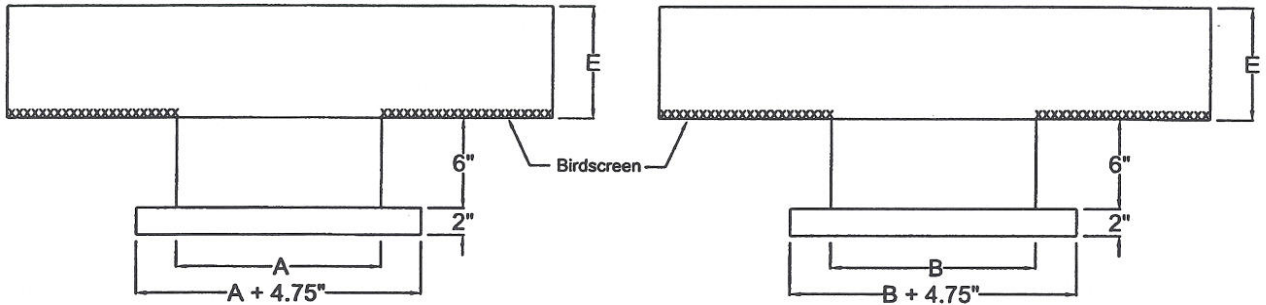
### Ventilator Hoods

#### STANDARD SPECIFICATIONS

- HOOD: 16 ga. (.052") Mill Finish Aluminum
- BASE SECTION: 13 ga. (.090") Mill Finish Aluminum
- BIRDSCREEN: 1/2" x 1" (.051") Flattened Aluminum (2B)
- FINISH: Standard Mill
- MINIMUM SIZE: 12" x 12"
- MAXIMUM SIZE: 60" x 120"
- FRAMING: Under 12 Square Feet Hood Area:  
1-1/2" x 1-1/2" x .125" 6063-T6 Extruded Aluminum Angle - All Welded
- 12 Sq. Ft. through 40 Sq. Ft.:  
1-1/2" x 1-1/2" x .25" 6063-T6 Extruded Aluminum Angle - All Welded



\*See C&D dimensions on following pages



\*These drawings are for dimensional purposes and may not represent actual construction.

\*\* See Curb Cut Sheet to Follow

Tag	Qty.	A	B	Hood-Throat Ratio	Options
	1	59	59	2: 1	with Curb
INTAKE VENT: APPROXIMATELY 680 LBS					

#### Options

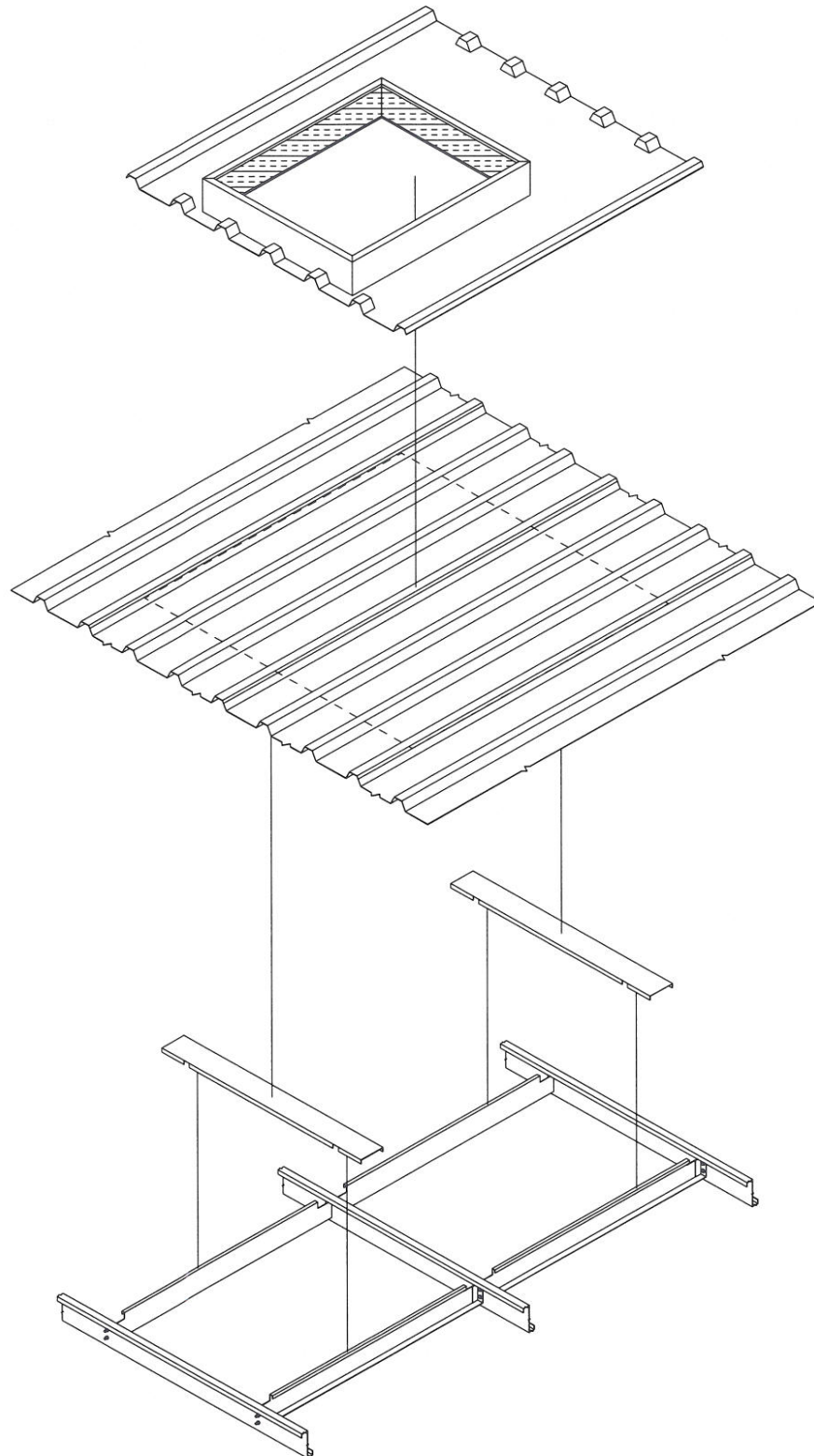
- Insulated Internal Hood
  - Anti-Condensate Coating
  - 1" Fiberglass Insulation
- Hinged Lid (MAX 60" x 60" Throat)
- Insect Screen
- Roof Pitched - ( )/12"
- Galvanized Steel Construction
- 304 Stainless Steel Construction
- Powder Coating
  - Polyester
  - Fluoropolymer 70%
- Dampers - Backdraft or Motor Operated
- Filter Racks
- Heavier Construction
- Additional Throat Height
- Hood Tie Downs (125 mph wind)

Job Name:	Pinnacle Casino
Location:	
Architect:	
Engineer:	
Contractor:	Mechanical Construction

<input type="checkbox"/> MODEL GEV (Exhaust)	<input checked="" type="checkbox"/> MODEL GIV (Intake)
<input type="checkbox"/> 1:1 Ratio (100%)	<input type="checkbox"/> 1.75:1 Ratio (175%)
<input type="checkbox"/> 1:5 Ratio (150%)	<input checked="" type="checkbox"/> 2:1 Ratio (200%)
DRAWN BY: SRB	DATE: 12-03-99
REV. NO. 17	APPROVED BY: SDC
	REV. DATE: 8-31-09
	DWG. NO.: F-6

001-221319-0 4 of 7




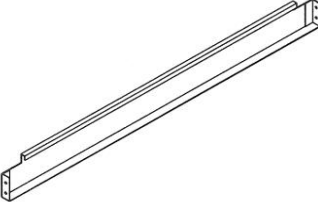

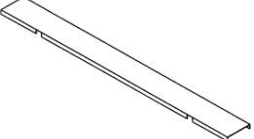


## ROOF CURB INSTALLATION INSTRUCTIONS: R-PANELS



### Installation Check List:

- \_\_\_ Attach Sub-frame(s) ..... Step 1
- \_\_\_ Layout Curb(s) on Roof Panel ..... Step 2
- \_\_\_ Mount Back-up Channels ..... Step 3
- \_\_\_ Apply Sealants & Set Curb in Place ..... Step 4
- \_\_\_ Fasten Curb to Back-up Channels ..... Step 5

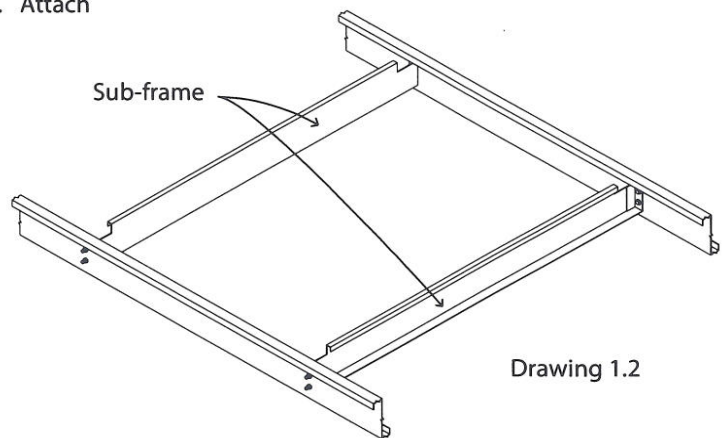
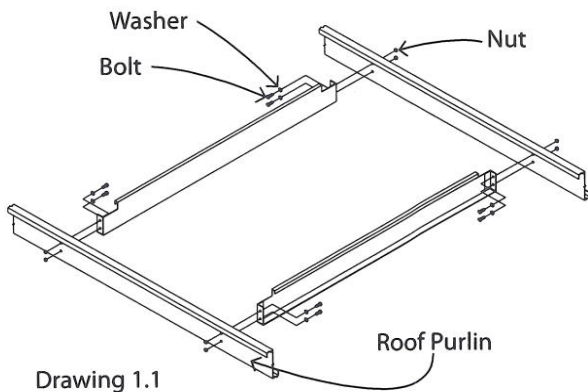
### PARTS LIST

	<u>Flat Washer</u>		<u>Polyurethane Sealant Caulk</u>
	<u>Nut</u>		<u>14 Gauge Galvanized Steel Subframe</u> 5-1/2" tall Length is equal to the purlin spacing minus 1-3/8"
	<u>3/8" x 1" bolts</u>		<u>Back-up Channel</u>
	<u>#14 - 1 1/8" Neoprene Self-Tap Screw</u>		
	<u>Triple Bead Sealant Tape</u>		

## BEGIN INSTALLATION

### ① ATTACH SUB-FRAMES

Attach sub-frames to purlins (see drawing 1.1 and 1.2). Finger tighten all hardware, then upset threads to secure nuts. Attach sub-frames using the nuts, bolts, and washers.



**\*NOTICE\*** Sub-frame max. loading 500 lbs.

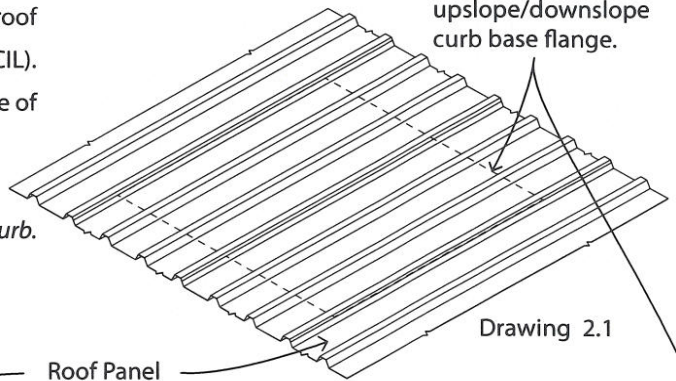
**WARNING!**  
ALWAYS USE FALL PROTECTION WHILE  
WORKING AROUND ROOF OPENINGS.

### ② LAYOUT CURB ON ROOF PANEL

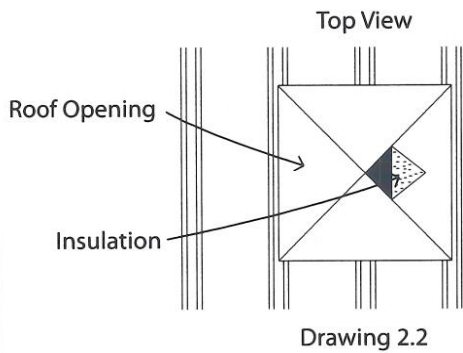
Mark base flange locations and throat area cut lines by setting roof curb in place on roof panel (DO NOT USE LEAD PENCIL). Upslope/downslope cut lines will be 2 1/2" less than outer edge of base flange.

*Note #1: For uninsulated curb(s), throat opening is actual I.D. of curb.  
For insulated curb(s), use actual I.D. and add 1 3/4" to each side.*

Cut Line will be 2 1/2" less than outer edge of upslope/downslope curb base flange.

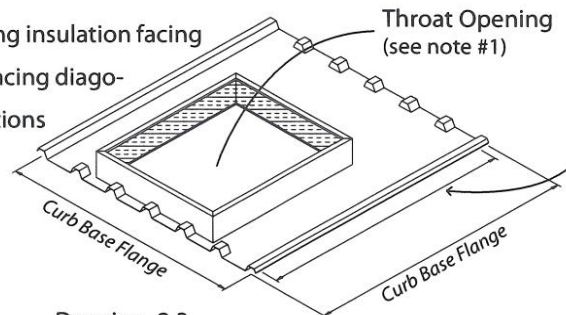


Drawing 2.1



Drawing 2.2

Remove Insulation leaving insulation facing in place. Cut insulation facing diagonally and tuck sections under roof panels to trim roof openings.



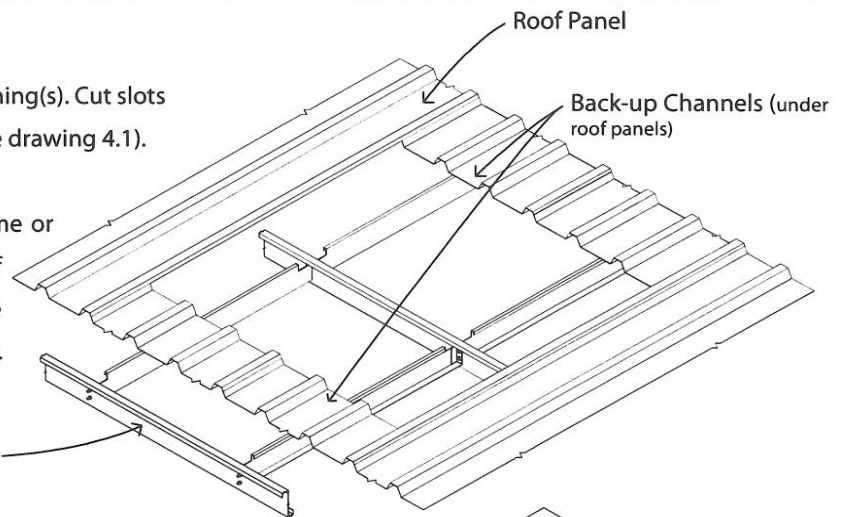
Drawing 2.3

\*Notice\* Sub-frames and back-up channels not shown in the above picture.

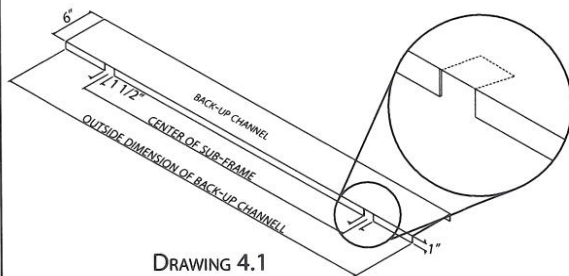
### ③ MOUNT BACK-UP CHANNELS

Center back-up channels with the center roof opening(s). Cut slots in back-up channels to slide over sub-frame(s) (see drawing 4.1).

Back-up channels are not be screwed to sub-frame or purlin. Slide back-up channels underneath roof panel (see drawing 4.2). Back-up channels are to be flush with roof opening as showing in drawing 4.2.

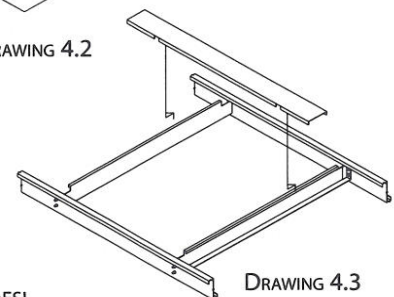


DRAWING 4.2



DRAWING 4.1

Fold cut tabs up 90 degrees underneath the back-up channels as shown.



DRAWING 4.3

\*NOTICE\* DO NOT SCREW BACK-UP CHANNELS TO SUB-FRAMES!

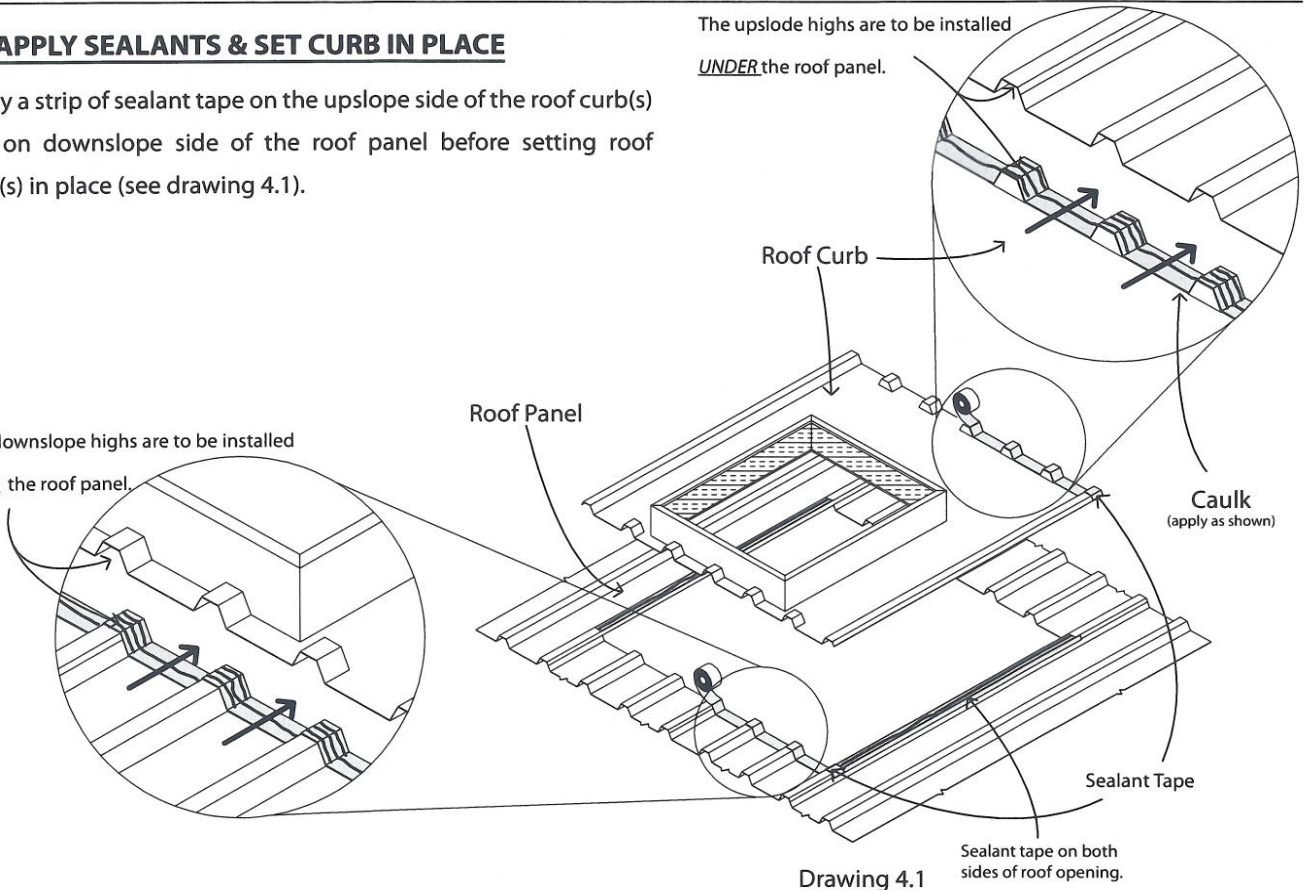
**WARNING!**  
ALWAYS USE FALL PROTECTION WHILE WORKING AROUND ROOF OPENINGS.

### ④ APPLY SEALANTS & SET CURB IN PLACE

Apply a strip of sealant tape on the upslope side of the roof curb(s) and on downslope side of the roof panel before setting roof curb(s) in place (see drawing 4.1).

The downslope highs are to be installed OVER the roof panel.

The upslope highs are to be installed UNDER the roof panel.

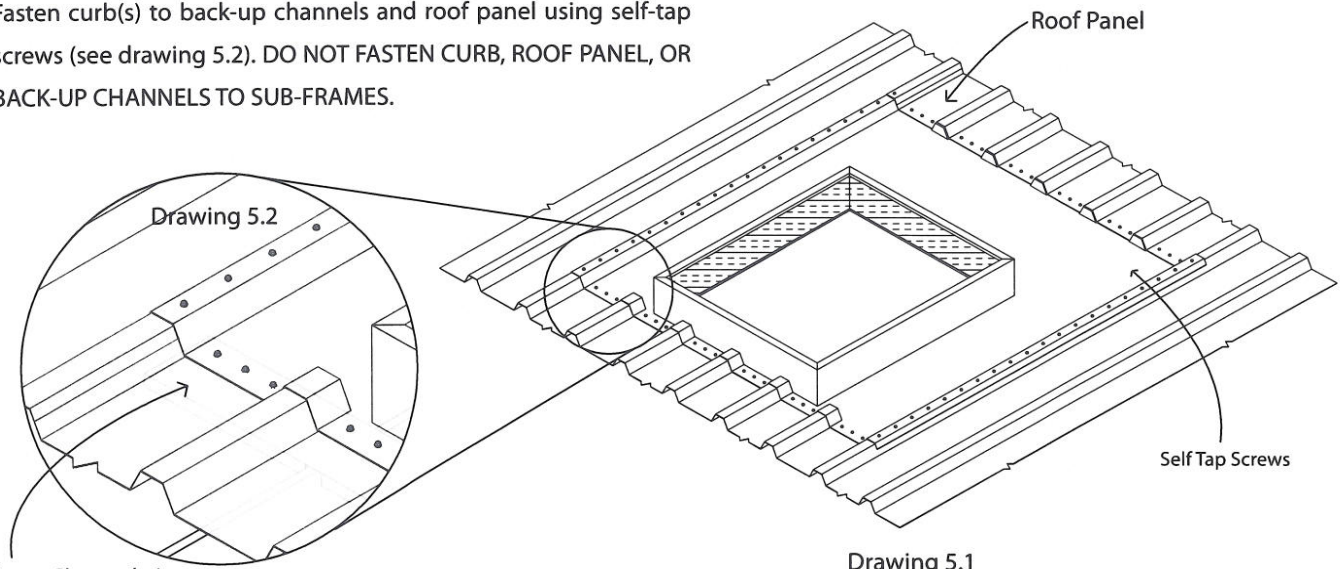


Drawing 4.1

\*NOTICE\* Sub-frames and back-up channels not shown in the above picture(s).

### ⑤ FASTEN CURB TO BACK-UP CHANNELS

Fasten curb(s) to back-up channels and roof panel using self-tap screws (see drawing 5.2). DO NOT FASTEN CURB, ROOF PANEL, OR BACK-UP CHANNELS TO SUB-FRAMES.



Drawing 5.1

Back-up Channels (under roof panels)

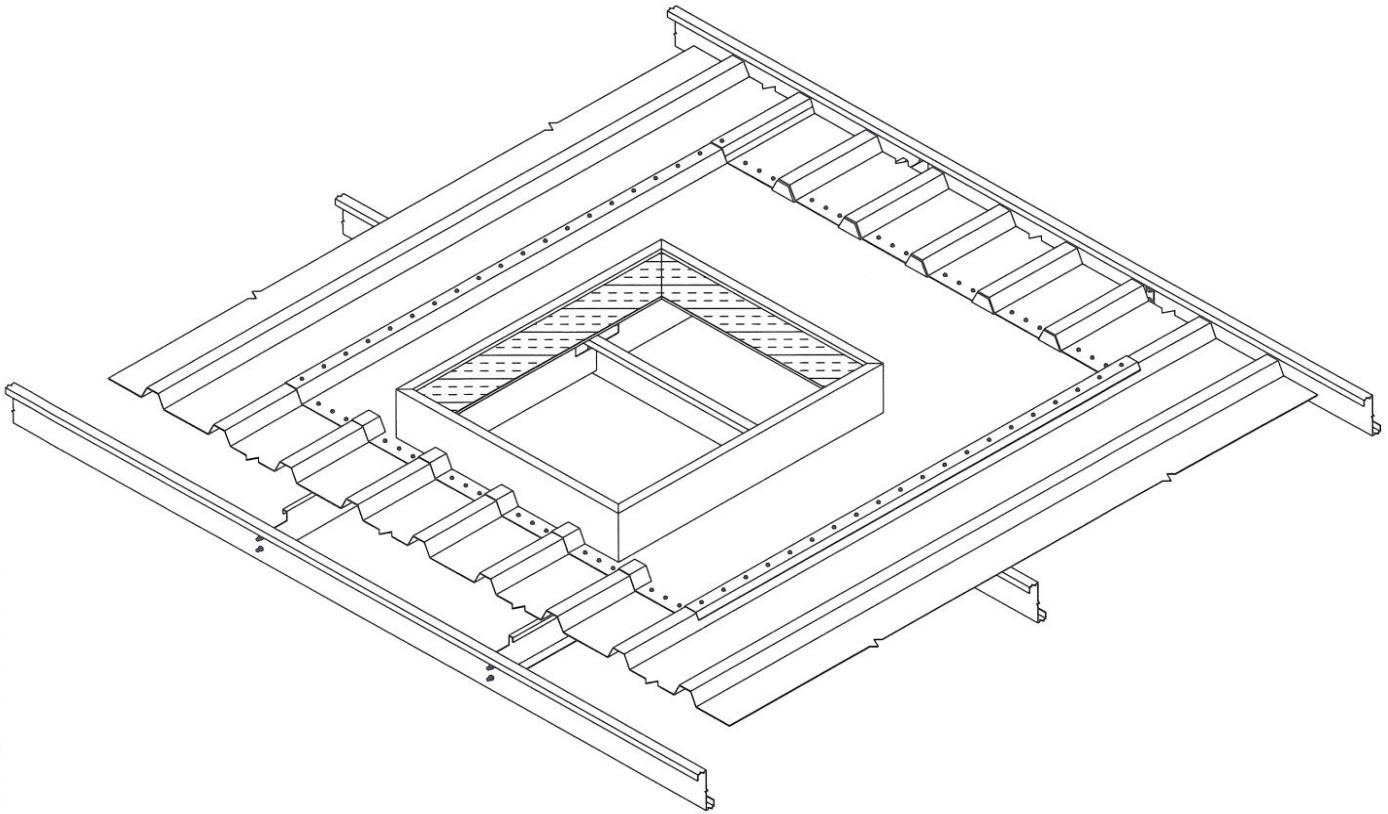
\*NOTICE\* Sub-frames and back-up channels not shown in the above picture(s).

#### **WARNING!**

ALWAYS USE FALL PROTECTION WHILE WORKING AROUND ROOF OPENINGS.



## COMPLETED INSTALLATION



### **WARNING!**

ALWAYS USE FALL PROTECTION WHILE  
WORKING AROUND ROOF OPENINGS.