Alameda County Central Railroad Society

Proposal to Alameda County Fairgrounds for Portable Entryway Structure

Version 2

Complete Plans

May 5, 2019

ACCRS/Alameda County Fairgrounds

Portable Entry Structure

Overview

The current entrance to the ACCRS is difficult to find. At the 2018 fair, the opening was about 8 feet with the door buried 12-13 feet behind the edge of the vendor canopies. Using the adjacent area and opening the doors without canopies will make the ACCRS more visible. However, having a more significant visual presence will increase attendance significantly.

The ACCRS proposes an entrance structure, only to be set-up for fair or a specific event the fair asks us to support with that level of presence. The goals of the proposal are:

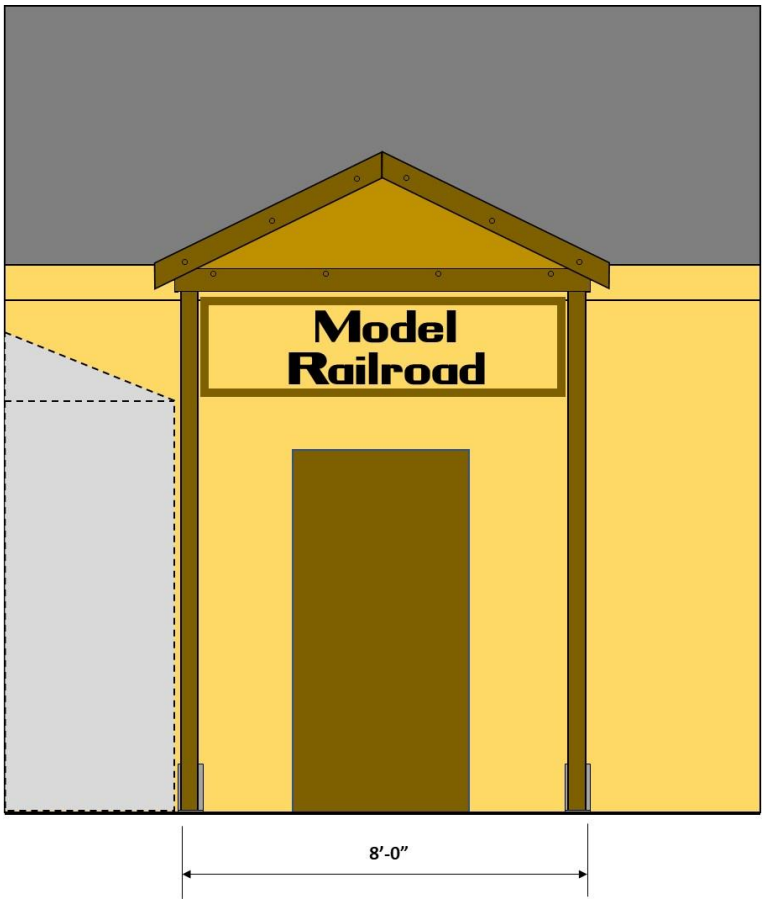
- Should be about 8 feet wide and come out 8 feet from the roof edge of the current building – to the edge of or slightly past the tents set up during the fair.
- Large display placard of ACCRS, The Fair Railroad on the top at the outside makes the railroad much more visible,
- Should be lightweight, but bolt to the building and ground for security
- Will be stored either inside the ACCRS or in the adjacent antique area (only when both are closed).

Design Concept

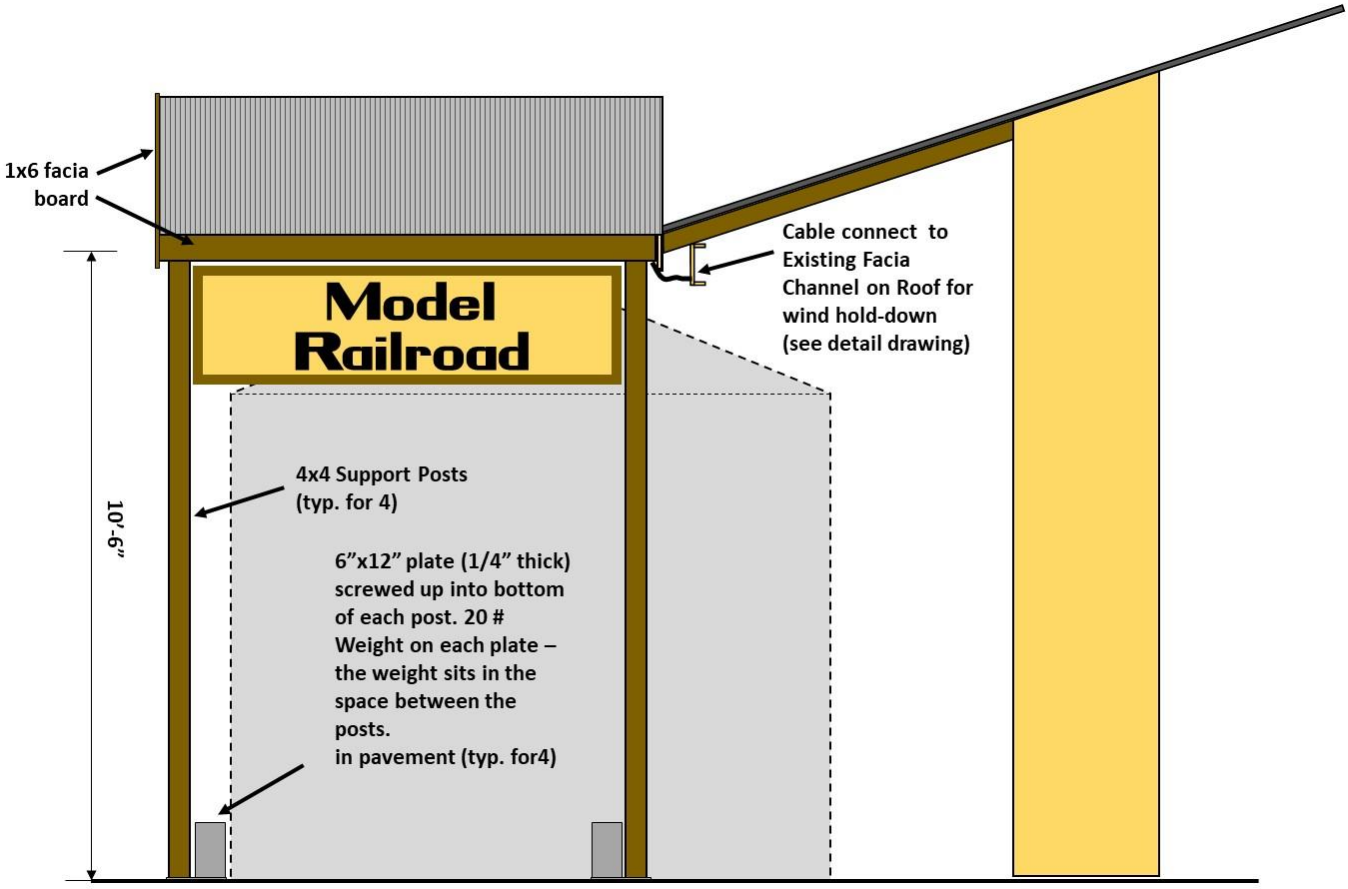
The design concept is to build a lightweight framework using 1" thin wall conduit and fittings. This will be bolted together and connected to the building with cables for security. To make the final installation visually attractive, this framework will be covered with corrugated roofing and 1x6 facia boards.

Installed Views

This is a front view looking at the building of the installed entryway.



This is a side view looking along the building showing the projection off the building and the positioning relative to the tents installed for the fair.



Construction Details

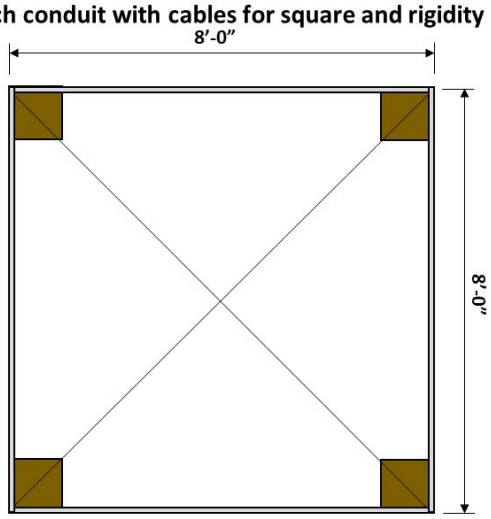
Basic Frame Structure

The basic frame of the entry is made from 1” conduit and fitting. As can be seen in the fabrication drawing, tension wires are used to maintain square and rigidity. The frame consists of three panels. One, 8’x8’ is the base that sits atop the 4’x4” posts and the wall attachments. There are two (2) Roof Joist panels that provide the actual roof structure.

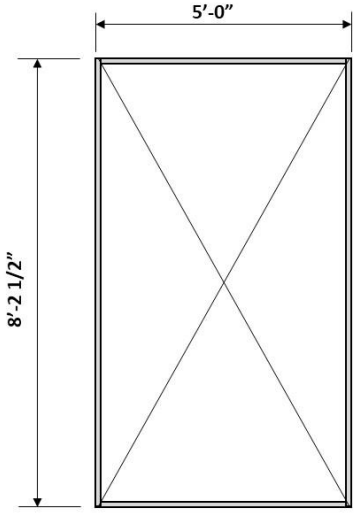
Roof Frame – 1 inch conduit with cables for square and rigidity

Roof Base Frame

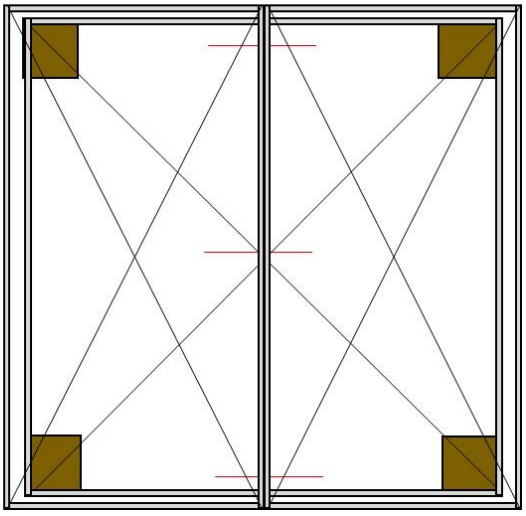
1. Sits level on posts and facia attach
2. Overhangs to support roof joist frames at each end
3. Side pieces extend through the fitting for strength
4. Corner tees will be screwed for strength
5. Two 6”x6” plates screwed to underside of frame at two front outside corners for leg attachment



Roof Joist Frames
(typ. for 2)

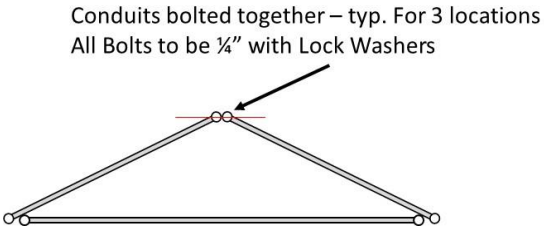


Roof Frame – upper frames over lower frame

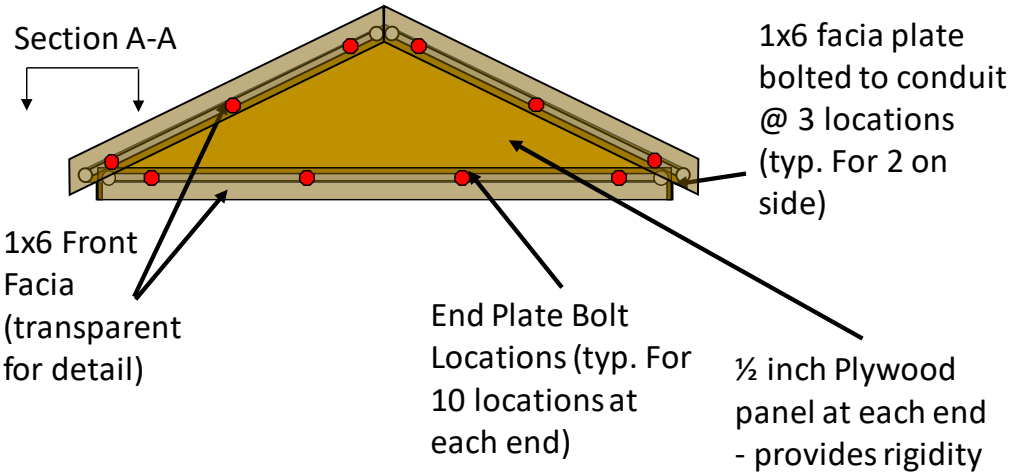


The panels are connected as shown into an integrated frame using 3 ¼” bolts/nuts and plywood panels. This is the top view of the Joist panels attached to the base as seen from above. The red lines and dots show the locations of the 3 bolt/nuts that hold this part of the assembly together.

This is the front view of the assembly showing the bolt locations.

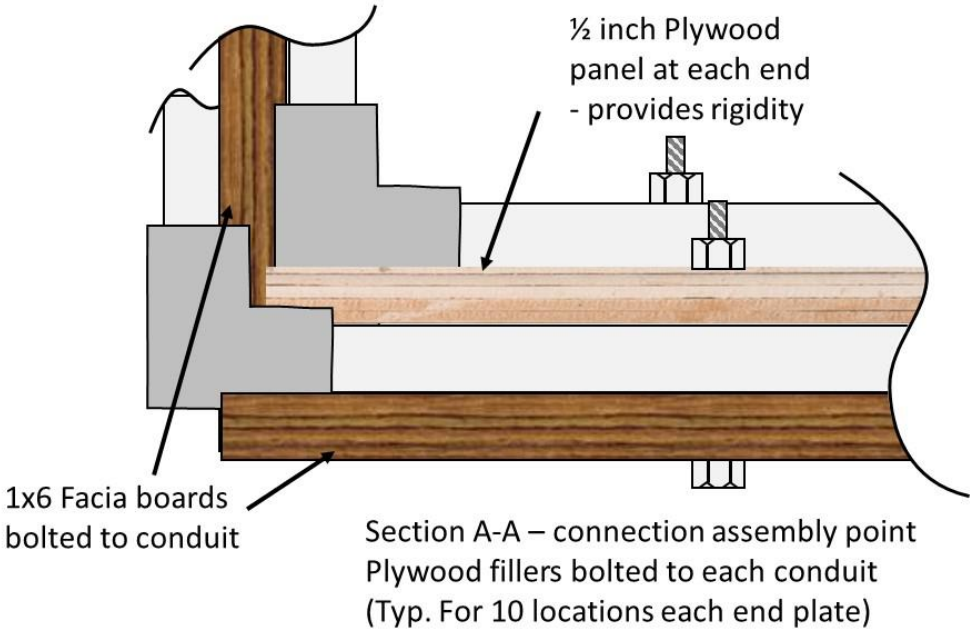


On both ends, there are ½" plywood panels that are bolted to the base and joist frames as shown by the red bolt locations in the view. These bolts attach the plywood panes as well as the 1x6 facia boards as shown.



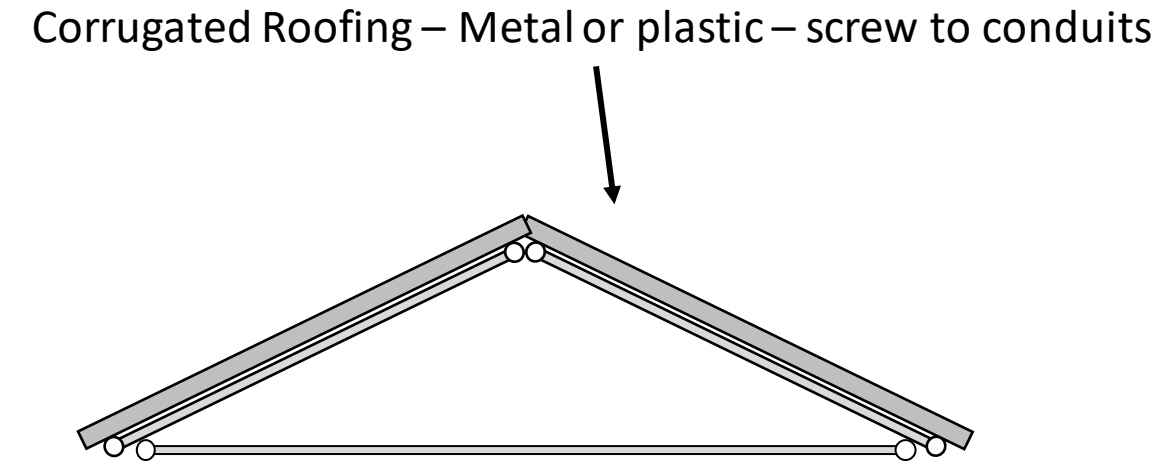
As can be seen, there are 1x6 facia boards around the base (front and two sides) and on the peaks of the roof in the front.

This is a detail of the assembly structure of the conduits, plywood, and facia boards in the front by one of the posts.

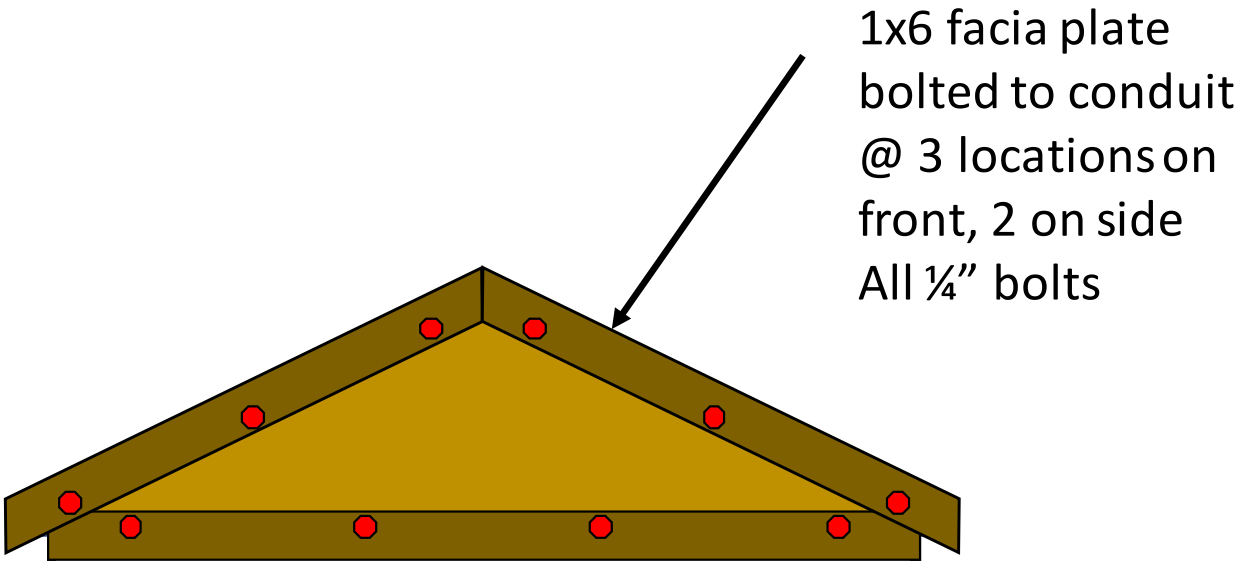


Roofing and Facia Boards

The roofing Is corrugated. For appearances, it is proposed to use metal roofing that is galvanized and silver in color. Plastic can also be used if preferred by the fair.

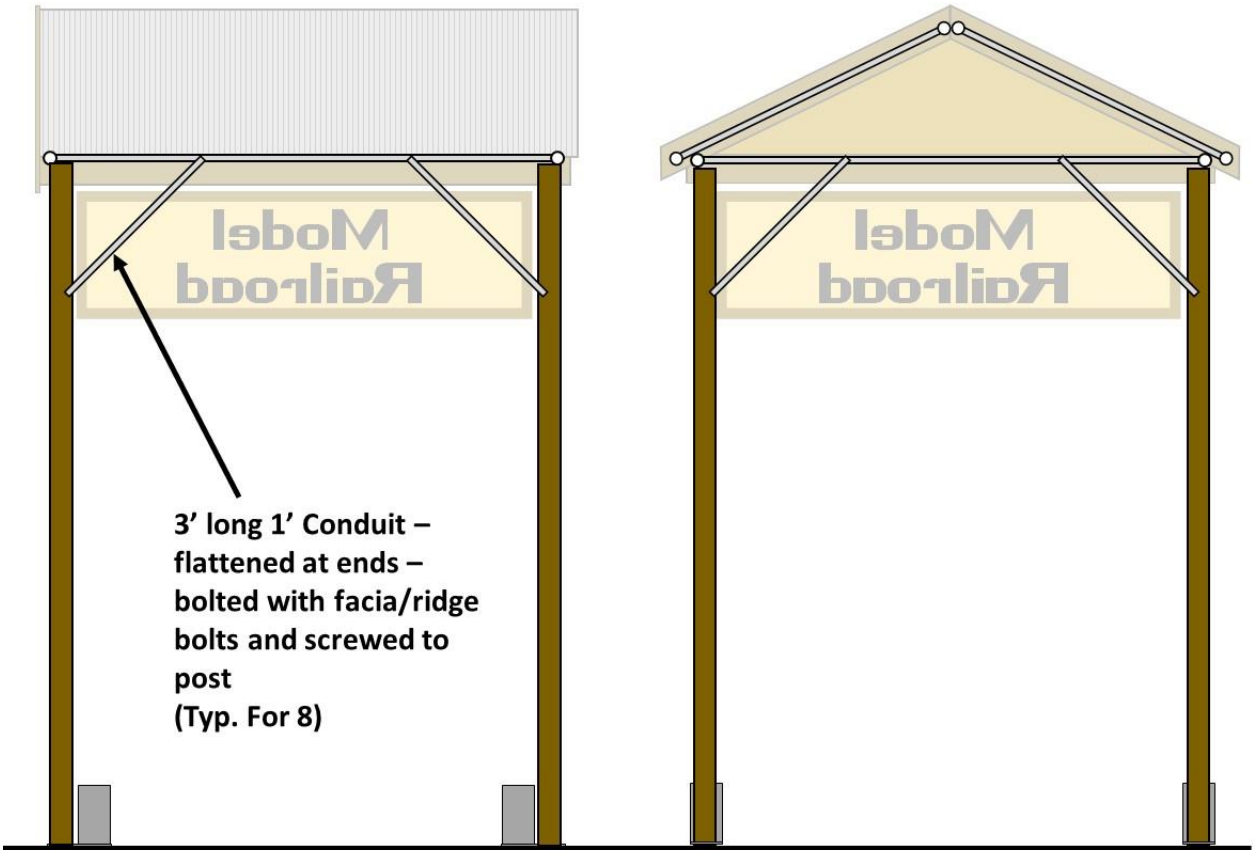


The front facia boards attach with the ¼" bolts that also attach the plywood for a completed appearance. The red dots show the bolt locations.



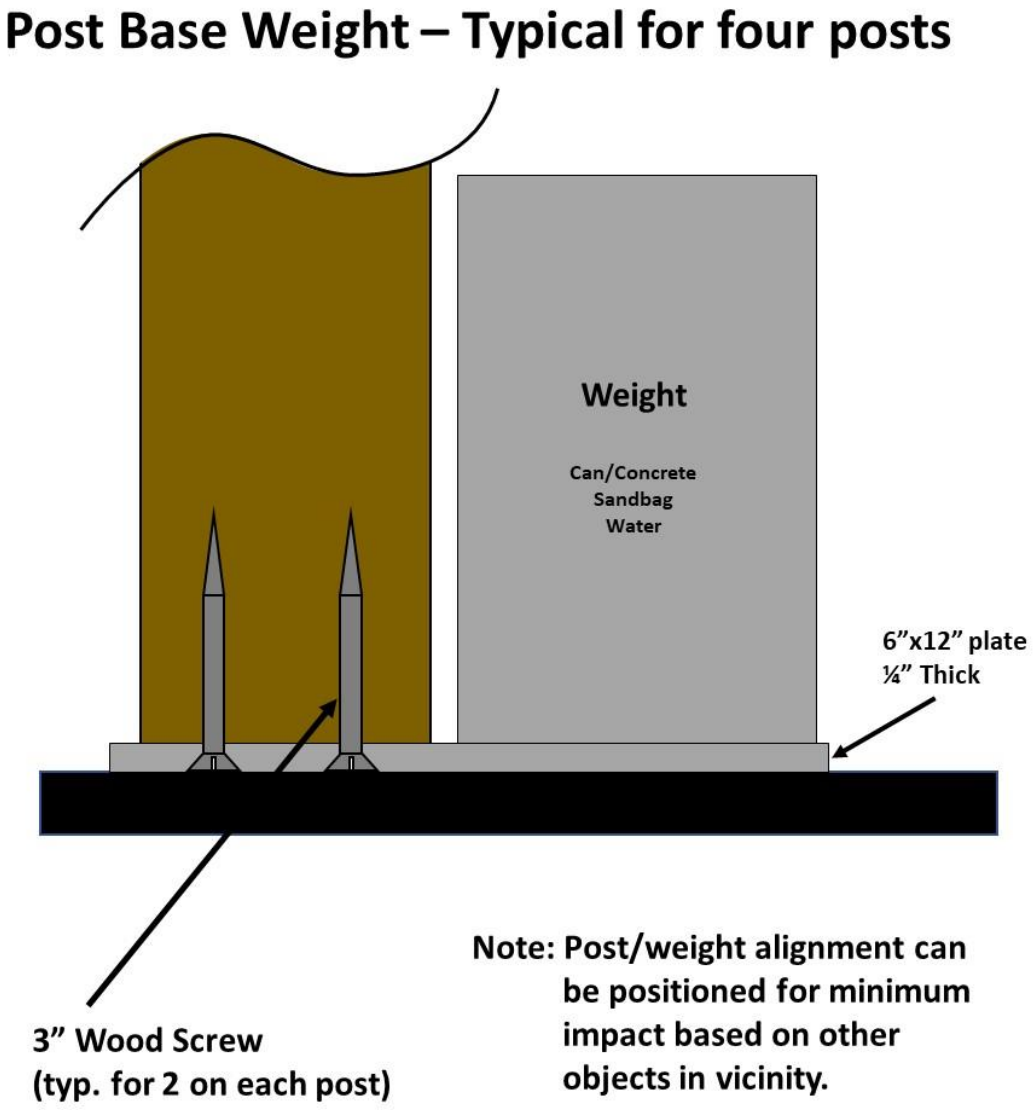
Corner Bracing

The posts will be corner braced at the top behind the signs to minimize any sway. The sway braces are 1” conduit compressed at ends, drilled and bolted/screwed into structure. The braces wil be behind the signs on the three outside facing sides.



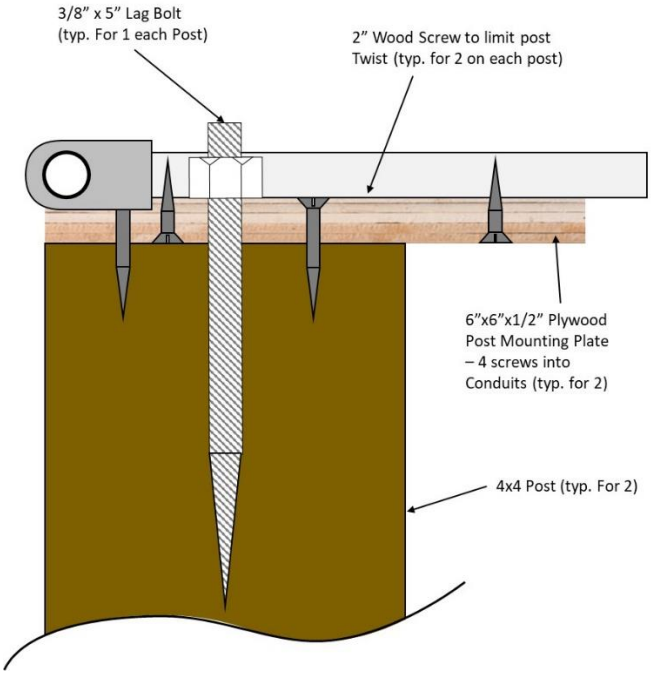
Post Base

A 6”x12” ¼” thick steel plate will be screwed to the bottom of each post to provide a location for a weight to be placed to keep wind movement to a minimum.



Post Top Attachment

There are four 10’-6” 4x4 posts that support the front of the roof and provide a visual definition of the “area” of the entryway. They attach to 6’x6”x1/2” plywood plates screwed to the bottom of the base conduits.



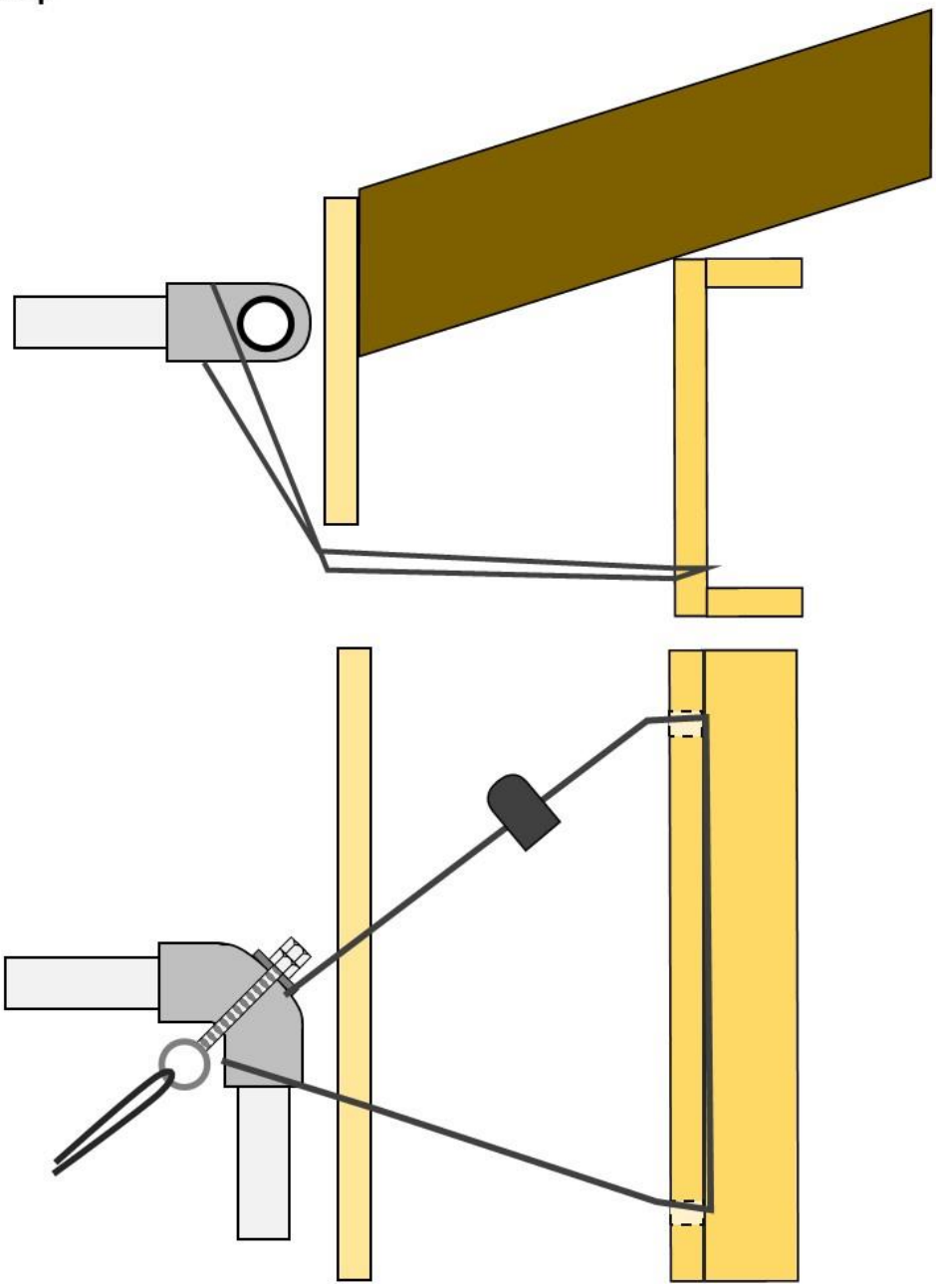
These plates are each attached with 4 screws into the conduit frames. This provides a solid base to connect to the posts. The post attachment is a 3/8” lab blot into the post and then bolted to the plates. In addition, two screws provide twist/torsional rigidity for the posts.

Frame Attachment to Building

To assure no wind issues, the rear corners of the base 8x8 frame will be cabled to the existing channel as shown. Also, the existing cable for the large shade cloths will go through frame and be connected.

Frame Attach to Building Channel

The corners of the base frame by the existing building will each have a looped 3/16" cable around the conduit frame and through two holes int eh channel as shown. Each cable will be secured with a bolt/nut clamp



Signs

The three signs are 7’-2”x2’-0”. It is attached to the posts on the side. It should be very visible from the entire courtyard area.

Assembly Process

The roof can be assembled on the ground and then lifted up and placed. To do this will require coordinating with the fair operations group to use the cherry picker. While this can be installed from ladders, it will be much easier to do with a lift. It should take about 45-60 minutes to install after it is assembled on the ground. One consideration is he current cable for lighting. It is attached to the building in the middle of the entry area. While the structure can be made around this, it would be better to move it to the next strut north. If it cannot be located. The design will let it pass between the frame and the sign, though a final analysis of the elevation will be required.

Storage

As the three roof panels can be stored without the facia panel, the storage size is relatively small.

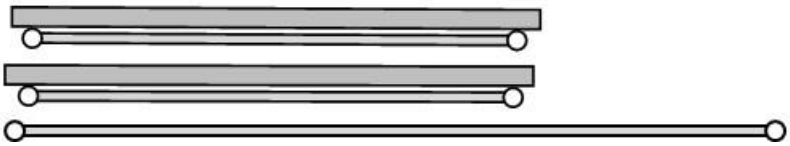
Storage

2 – 5’-5”x 8’ roof panels with attached corrugated roofing

1 8’x8’ frame

2 – 12’ 4x4 posts

5 – 1x6 facial boards 8’ length or less



Bill of Materials

This is the bill of materials for the entryway. All prices were current at Home depot as of March 12. It does not include the steel for the building brackets. The 3/16” cables are tethered using ferrules, this requires a $30 tool if no one has one.

Item Number	Name	Description	Measure	Qty	Price per	Extended
1	1" Conduit	10' piece of 1" thin wall conduit	each	10	$ 9.41	$ 94.10
2	90 deg	1" conduit 90 degree fitting	each	12	$ 2.00	$ 24.00
3	3/16" cable	3/16" steel cable for tension - 120 foot roll	roll	1	$ 53.78	$ 53.78
4	1/4" eye bolt	2.5" long 1/4" eye bolt for tensioners	2 pack	6	$ 1.18	$ 7.08
5	1/4" Lock Nuts	Lock nuts for above	15 pack	1	$ 4.95	$ 4.95
6	1/4" turnbuckles	Turnbuckles to tension wires	each	6	$ 1.61	$ 9.66
7	3/16" ferules	3/16" ferules to lock tension cables - box of 25	box	1	$ 25.00	$ 25.00
8	Facia Boards	8' 2x6 redwood boards for facia	each	7	$ 8.21	$ 57.47
9	Posts	12' 4x4 post	each	2	$ 12.64	$ 25.28
10	1/2" Plywood	4x8 sheet of 23/32" marine grade plywood for end panels	each	1	$ 51.00	$ 51.00
11	Bolts for frame	3" long 1/4" carriage bolts with lock washers and wing nuts for quick	set	23	$ 1.30	$ 29.90
12	3/8" bolts for brackets	3/8" 2" long bolts, washers. Lock washer, and nut	set	8	$ 2.50	$ 20.00
13	1/4" bolts for brackets	2.5" bolts, 2-washers, dual nuts for conduit to bracket	et	2	$ 1.30	$ 2.60
14	Roofing	10'x36" Charcoal Steel roofing	each	2	$ 34.19	$ 68.38
15	Screws for roofing	1" self=tapping sheet metal screws	box	1	$ 6.71	$ 6.71
16	Washers for roofing	Wshers to minimize tearing	box	1	$ 6.71	$ 6.71
17	Post Pins	12" long 1/2" carriage bolt	each	2	$ 5.40	$ 10.80
				Sub Total		$ 497.42
				Tax		$ 46.01
				Grand Total		$ 543.43