

TWX-2160 New Haven Signal Tower

Assembly Instructions

Tools required to build this kit:

- X-Acto® knife & sharp blades
- 120-grit sand paper
- 220-grit sandpaper
- Tite Bond II® wood glue
- Cyanoacrylate glue (Super glue) and Accelerator (Kicker)
 - We recommend heavy viscosity super glue for this kit
- Blue painter's tape (to hold wood pieces while the glue cures)

The individual parts in this kit are held to their respective sheets with small sprues. Use an X-Acto® knife to cut these sprues and then use 220-grit sandpaper to sand the sprue smooth. We strongly recommend sanding all sprue marks smooth, as they will affect alignment of parts if they are left on the parts.

Step 1 Assembling the Roof Trusses

****We recommend using heavy viscosity super glue to assemble the trusses, this will speed up assembly and with the use of Kicker, will cure immediately.**

Locate the C sheet. This is where all the truss components will come from. Remove parts C1, (6pcs of C5 NOTE: Be careful when removing these components, take care not to tear the outside points of the trusses!) and C12.

Interlock all 6 pieces of C5 with C1 (no glue is required for this step). (Photo 1 & 2)

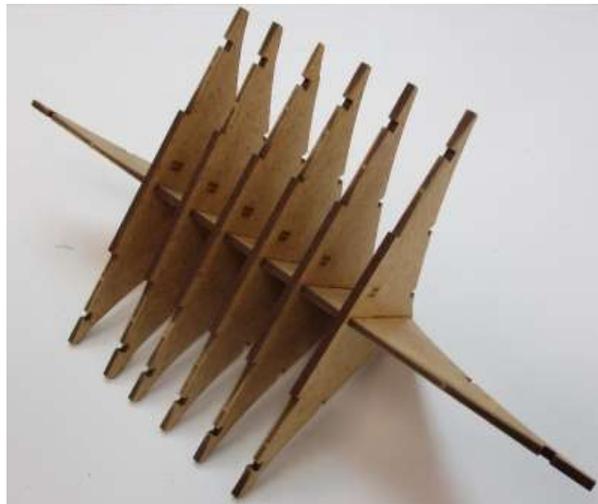


Photo 1

Place part C12 on the underside of the main truss assembly. (Photo 2)

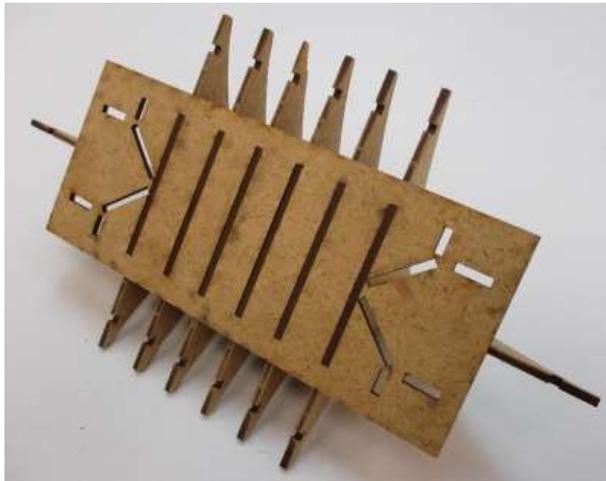


Photo 2

Mark on the bottom of C12 where the short ends of C12 fall. Remove C12 and apply a small bead of super glue to the long bottom edge of C12 (between the marks you made). (Photo 3)

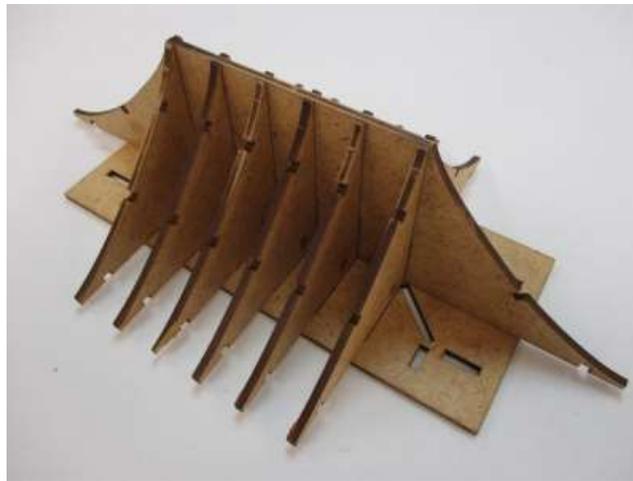


Photo 3

Place the assembly on the table as shown in Photo 3. Ensure all six pieces of C5 are inserted into C12 and press downward on C1 to ensure a tight joint. Use accelerator to instantly cure the super glue.

Now remove four pieces of part C6. These are the angled trusses. Apply a small bead of super glue to the bottom of each C6 and install as shown below. (Photo 4 & 5)



Photo 4



Photo 5

Now remove four pieces of C13 (the parts are marked with a "C"). Apply a small bead of super glue to the bottom edge of C6 (where it contacts C12). Position C6 as shown below. (Photo 6 & 7)



Photo 6

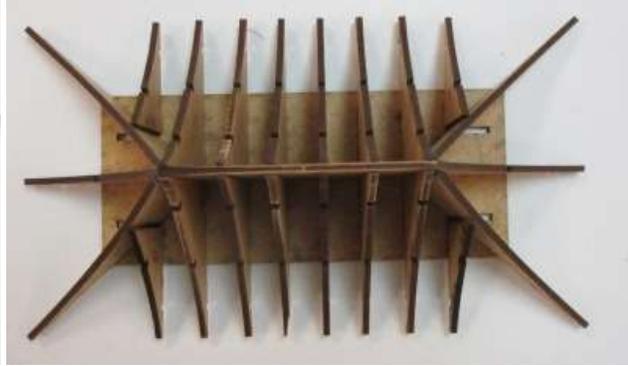


Photo 7

Remove four pieces of C11 (these parts are marked with a G). Apply a small bead of super glue to the bottom edge (where these contact C12) and glue into position. (Photo 8 & 9)



Photo 8



Photo 9

Remove 2 pieces each of parts C6 and C7. These are stringers that mount underneath the trusses on all four sides of the truss assembly. Using a small dab of super glue on each notch mount the underside stringers. (Photo 10 & 11)



Photo 10



Photo 11

Once all four underside stringers have been installed the assembly should look like the photo below. (Photo 12)



Photo 12

Now remove four pieces of C2. Apply a small dab of super glue to the underside notch and the end that just sits on C12. Glue these four trusses in position. (Photo 13 & 14)



Photo 13



Photo 14

Remove four pieces of C3. Apply a small dab of super glue to the underside notch and to the vertical edge that contact the angled truss. Glue all four pieces in place. NOTE: ensure the bottom edge of all C3's are aligned with the bottom edge of the angled truss. (Photo 15 & 16)



Photo 15

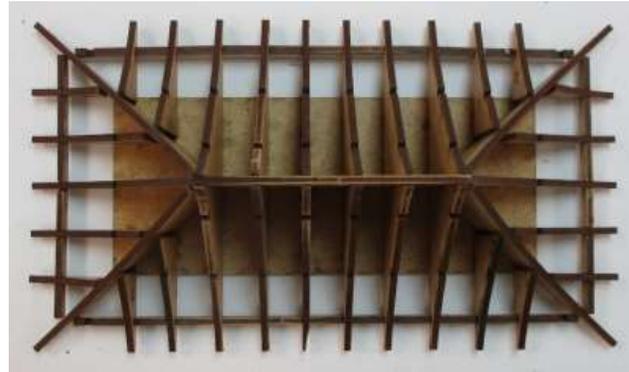


Photo 16

Remove four pieces of C4. Apply a small dab to the underside notch as well as the vertical edge that contacts the angled truss. Glue all four pieces in position. NOTE: ensure the bottom edge of all C4's are aligned with the bottom edge of the angled truss. (Photo 17 & 18)



Photo 17



Photo 18

Remove 2 pieces each of parts C8, C9 and C10. These parts will create a horizontal surface to support the roof. Glue these parts in place using a small dab of super glue on each notch.

You will need to test fit parts C8 and cut two angles on each end, to allow C8 to fit between the angled trusses. (Photo 19 & 20)



Photo 19



Photo 20

Install two pieces of C10, one on both sides.

Repeat this process for parts C9. Test fit then cut the angled ends and mount C9 in the trusses. (Photo 21)



Photo 21

Mount parts C10 to the end trusses (no cut angles are necessary). (Photo 22)



Photo 25

The truss assembly is now completed. Your truss assembly should look like the photo below. (Photo 26)



Photo 26

Step 2 Assembling the Roof

Locate sheet E and remove two pieces of E1 and two pieces of E2. Once side of these roof panels has horizontal lines etched into them. This is to help the roof curl. The non-line side of the roof panels will face outward and the side with the lines will mount against the trusses. (Photo 27)

This section will require a copious amounts of super glue. Using the super glue sparingly in these steps will yield undesirable results!



Photo 27

Curl all four roof panels now. Just a slight curl is all we are looking for, this will help aid in mounting these panels to the trusses.

Start with the long roof panels; E2 and just one side of the truss assembly. Apply a liberal amount of super glue to approximately $\frac{3}{4}$ " of the ends of all the trusses on one long side. As well as a liberal amount of super glue to the bottom most horizontal stringer. (Photo 28)

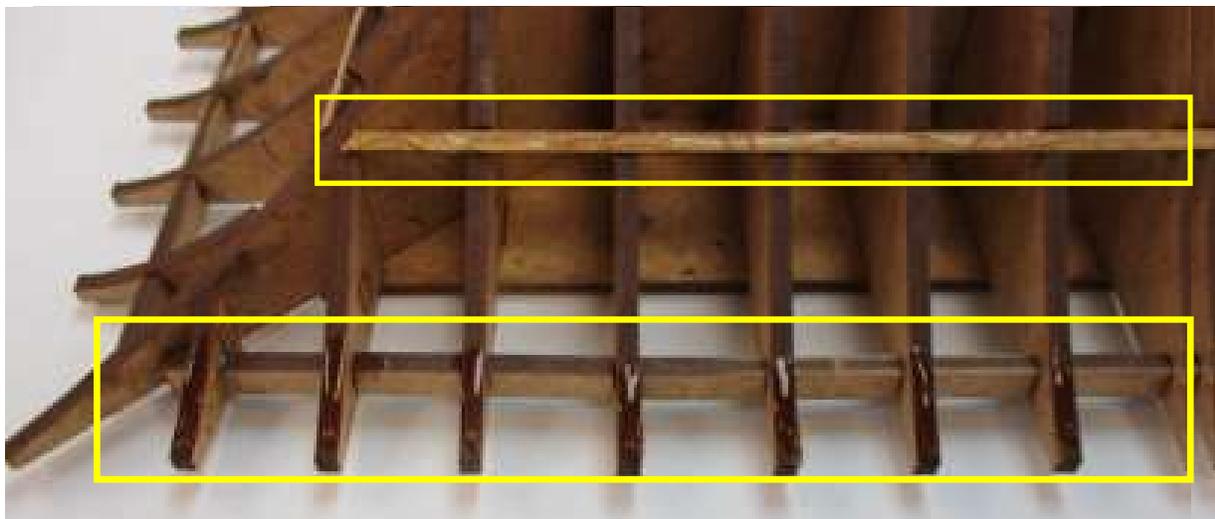


Photo 28

Before pressing the roof panel into the super glue, carefully position the tips of the E2 roof panel as closely to on center of the angled trusses as possible. This is critical as it will effect how the end panels mount. (Photo 29 & 30)



Photo 29



Photo 30

Also align the long bottom edge of E2 with the ends of the trusses you are gluing it to. Once you have the alignment correct, press the roof panel into the super glue and squeeze tightly, to ensure the glue adheres to both surfaces (the roof panel and the trusses). Make any minor adjustments needed. Once you are satisfied with the positioning apply accelerator to the underside of the roof panel to set the super glue. *HINT: It you press firm along the horizontal stringer and hold for one minute, the glue should set up enough to allow you to squeeze the end of the roof panel with one hand while applying kicker with the other!*

Once the bottom edge of E2 has been secured carefully lift up on the top of the roof panel. Apply a ½" long strip of super glue to the six center trusses (to secure the top edge of the roof panel to the trusses). (Photo 31)



Photo 31

Repeat these steps for the other side of the truss assembly, so both long roof panels will be mounted to the trusses.

Now its time to mount the end roof panels. Apply a liberal amount of super glue to the bottom $\frac{3}{4}$ " of the end trusses (as well as the horizontal stringer). (Photo 32)



Photo 32

The end roof panels need to install up underneath the edges of the long roof panels. (See photo 33 for clarity)



Photo 33

The curved edges of the end roof panel (E1) set the required curvature for the long roof panels, therefore you must slide the end panels up and into position from the bottom. It is also critical that the 2 corners be aligned to create the corners of the roof. (Photo 34)



Photo 34

Once you have the end roof panel in position, squeeze the roof panel against the trusses to ensure a tight bond between the two surfaces and apply the accelerator to cure the super glue instantly. Do not worry about gluing the top surface of the end roof panel, it will hold itself in place securely without glue.

Repeat this step for the opposite end. Once all four roof panels are assembled the roof should look like this. (Photo 35)



Photo 35

Note that the four corners at the ends of the trusses are even with one another.

Now its time to trim the excess long roof panel material so it is even with the end panels. You can do this very carefully with a new sharp X-Acto® knife blade and / or sandpaper. If you use sandpaper start with 120-grit paper to cut through the material and 220-grit sandpaper to finish. If you cut too far back you can use super glue and accelerator as a gap filling medium to seal the joint and then sand smooth (as we did on the right seam of the photo below). (Photo 36)



Photo 36

Perform this shaping to both ends of the roof. Once completed your roof should look something like this. (Photo 37)



Photo 37

Step 3 Adhering the Spanish Tile

Locate the four pre-cut Spanish Tile pieces that came with your kit. These panels will mount on top of the roof assembly we just completed. Once again, copious amounts of heavy viscosity super glue should be used when gluing the tile pieces to the roof deck.

Locate one long side tile. Apply a liberal amount of super glue in the pattern as shown in the photo below. (Photo 38)



Photo 38

Align the Spanish Tile points with the corners of the roof. **NOTE: The Spanish tile panel should extend past the bottom edge of the roof deck by about 1/16"**. Once you have the tile panel positioned squeeze one end of the tile against the roof deck and apply a liberal amount of accelerator to the space between the tile panel and the roof deck. (The raised tiles will allow the kicker to flow into the wet super glue and cure it instantly.)

Make certain the bottom edge of the Spanish tile is laying against the roof deck when you apply the accelerator! Also make sure the super glue you applied in the center of the roof is securing the middle of the Spanish Tile to the center of the roof deck!

Once the tile is set carefully lift the top edge back and apply a liberal bead of super glue along the top edge of the roof deck to secure the top of the tiles to the deck.

Once the tiles are secured it should look like photo 39.

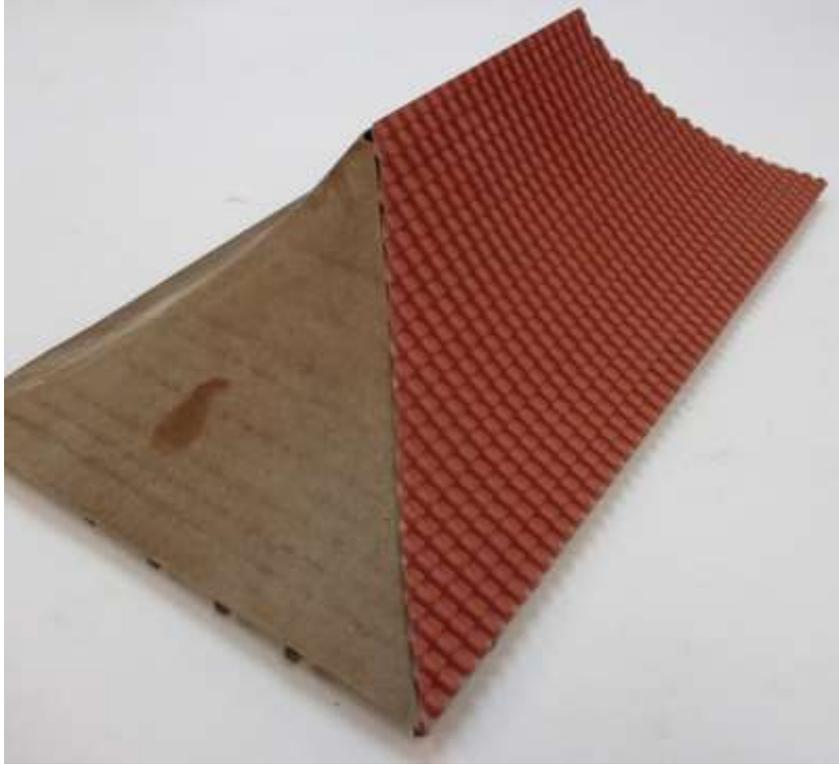


Photo 39

NOTE: The top edge of the Spanish Tile should stick up above the top edge of the roof deck! This is done to create as small a seam as possible for the cap tiles. (Photo 40)

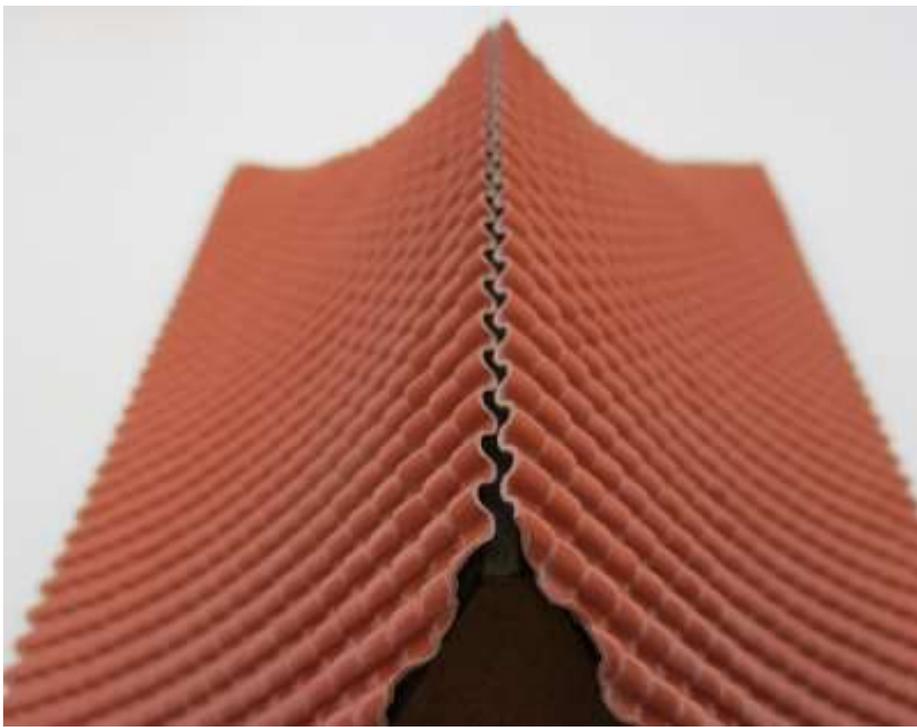


Photo 40

Repeat these steps for the opposite of the roof, mounting both long roof tiles first.

Locate the Spanish Tile panels for the roof ends. Apply a liberal amount of super glue in the pattern shown below on one end of the roof deck. (Photo 41)



Photo 41

The end tiles mount in a similar fashion as the roof deck did, meaning it must be slid upwards from the bottom, so the edges are underneath (or as underneath as possible) the long side tile panels. (Photo 42)

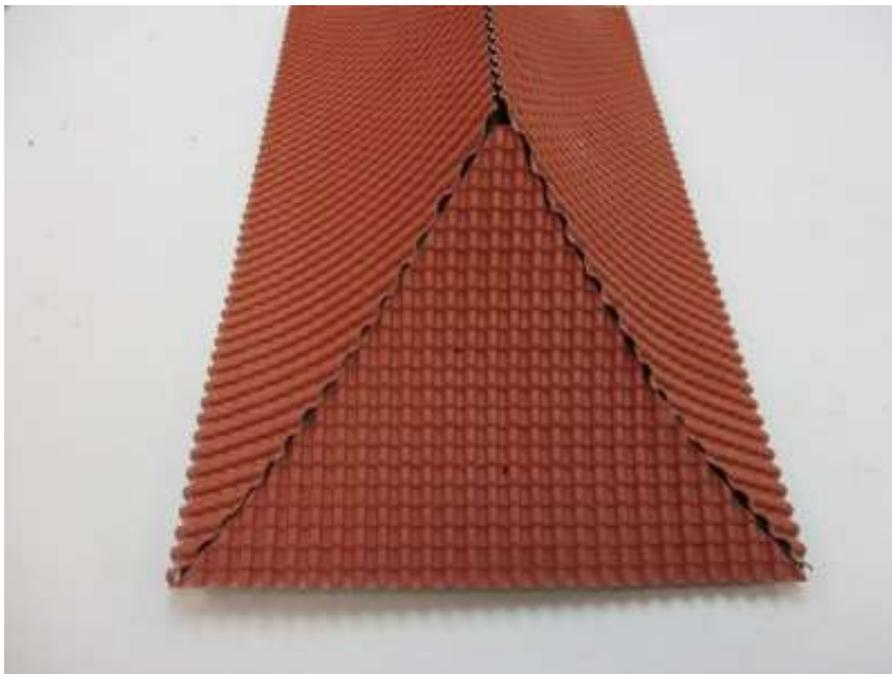


Photo 42

Use the accelerator as necessary to cure the super glue (It can be sprayed from the bottom edge, between the tiles and the roof deck).

Repeat these steps for the opposite end panel.

Okay, so you're looking at this roof and wondering what have you gotten yourself into! No worries, it is almost behind you, just a couple more steps and you'll be really impressed with how great it looks!

Step 4 Applying the ridge tiles

Locate the three narrow strips of Spanish Tile included in the kit. Using either a straight edge and X-Acto® knife or a sharp pair of scissors cut a long section of tile as shown below. (Photo 43)



Photo 43

You will need five of these strips total. Be sure to select the more detailed side of the sheets.

Begin with the top of the roof, where the two larger panels meet. Using thick viscosity super glue apply a small bead long the ridge line and glue the strip as shown in the photo. (Photo 44)

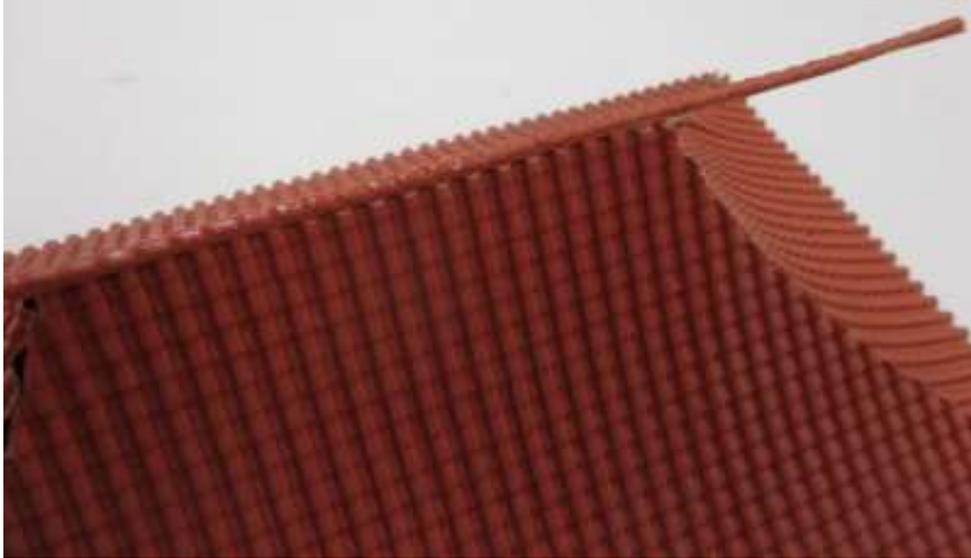


Photo 44

Its okay if the ridge tile strip doe not cover over every tile on either side, do your best to split the distance along the length of the ridge.

Next apply a bead of thick viscosity super glue to one of the corner seams and glue another strip in place, do your best to “tuck” the diagonal strips underneath the top ridge cap. Remember, if it is not perfect, don’t worry (we have a trick coming up that will fix this issue!). (Photo 45)



Photo 45

Once the diagonal ridge cap is in place trim the end so it is even with the edges of the roof panels.

Continue gluing the ridge caps on the diagonal seams until all four seams are covered. (Photo 46)



Photo 46

At this point it is most probable that you have some unsightly areas in the assembly (specifically the ridge caps and where they come together. Additionally, you have areas where you can see daylight underneath the ridge caps. (Photo 47 & 48)

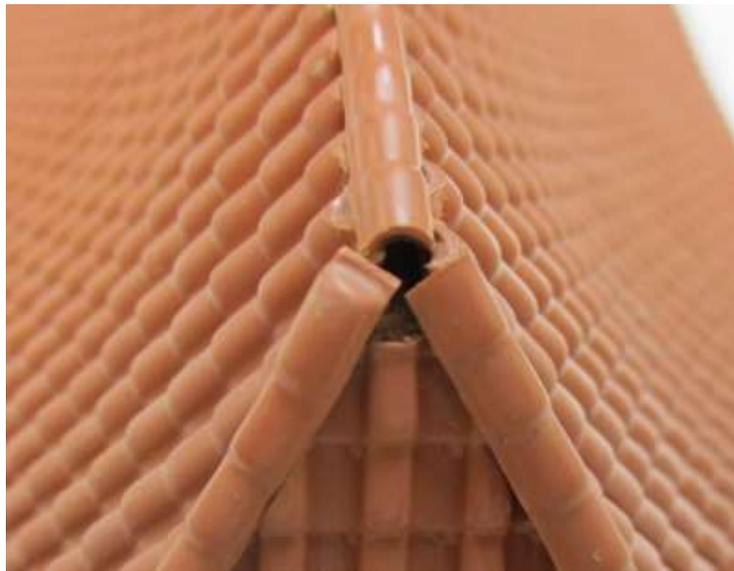


Photo 47



Photo 48

DO NOT use modeling filler, such as Squadron® white putty to fill these gaps. That filler contains Tolulene, which will soften the vac formed plastic and cause it deform. Instead, we recommend using DAP® Alex Fast Dry caulk (plus silicone), available from any home improvement store. (Photo 49)



Photo 49

There are several variations of this caulk sold, so ensure you purchase the correct type. The UPC code for this variation is 0470798184251. "DAP® Alex Fast Dry Acrylic Latex Caulk Plus Silicone"

Dispense a liberal amount of the caulk onto a scrap piece of cardboard and using either your finger or a small applicator tool (miniature putty knife, X-Acto® blade, etc.) fill the air gaps between the underside of the ridge caps and the troughs in the roof panels. Do not be afraid to apply a lot of caulk, as it can be wiped off easily and takes about 6 minutes to start setting up, so you have time to work it and clean it up. (Photo 50)



Photo 50

The DAP® Alex Plus caulk is an excellent material for this application. It dries completely within 20 minutes and can be painted with enamels or acrylics with no problems. As you can see, once painted, all the holes in the ridge line literally vanish! (Photo 51)



Photo 51

The roof is now completed. Set it aside (or start painting) and continue with building the main structure.

Step 5 Assembling the walls

Remove part A1 (foundation) from the A sheet and parts B1, B2, B3 and B4 from the B sheet. Glue parts B1, B2, B3 and B4 together using wood glue along the joint ends. Use the foundation to align these inner walls, but do not glue the inner wall to the foundation (this will allow you to paint the foundation separately later). (Photo 52 & 53)

NOTE: refer to the orientation of the inner wall panels with the foundation below, it is very important you get these walls oriented correctly!



Photo 52

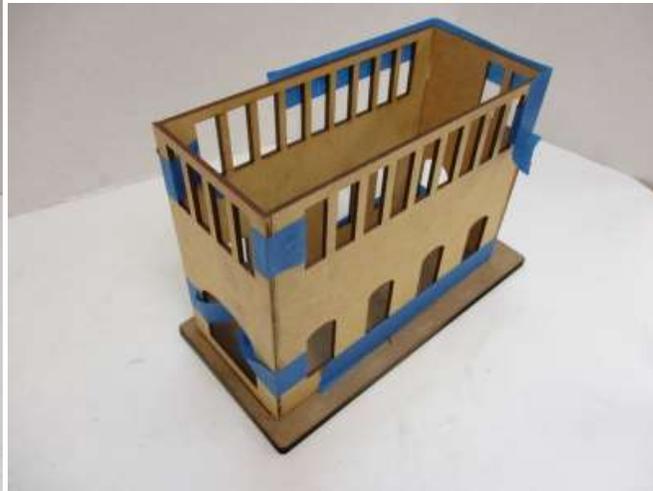


Photo 53

Use blue painter's tape to hold the joints tightly together until the glue sets.

Once the inner walls have dried completely remove parts A2, A3, A4 and A5 from the A sheet. Glue these four walls to the inner walls. Apply a bead of glue to the backside of each A panel (the backside does NOT have the horizontal etch lines) and glue to the inner walls. Use blue painter's tape to keep the joints tight and square. (Do not glue the A walls to the foundation!). (Photo 54)



Photo 54

Use small clamp if you have them, make sure the outer A walls are securely fastened to the inner B walls and that the corners are tight and square.

Remove parts B9, B10, B11 and B12 from the B sheet. These parts make up the bottom footer for the structure. Using wood glue and painter's tape (to hold these in place) mount them as follows. (Do not glue the footers to the foundation). (Photo 55 & 56)



Part B12
Photo 55

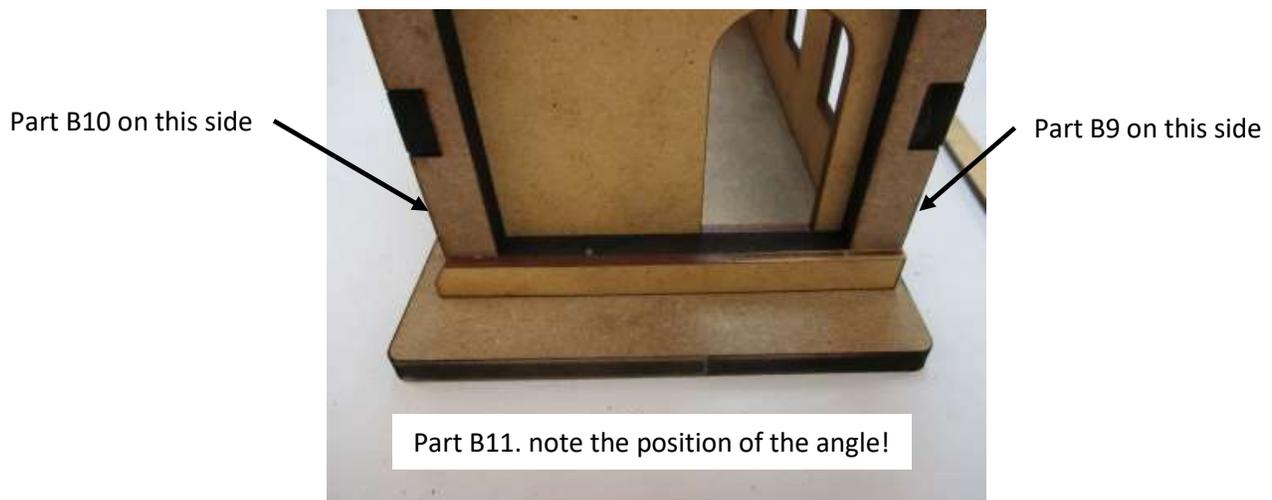


Photo 56

Once these parts have dried use a piece of 220-grit sandpaper and sand a small curve on three of the corners (the corner with the angle is excluded) of the footers. (Photo 57)



Photo 57

Once you have the corners rounded its time to round the corners of the A wall sheets. Locate the Corner Curvature Tool included in the kit. This tool will help provide a visual reference for the curve required. (Note: it is not imperative that every corner be exact, the tool serves only as a guide to help you see the curve you are creating.) Using 120-grit sandpaper (to help chew through the material faster) start by sanding a 45 degree angle on each corner of the structure. (Photo 58)



Photo 58

Only sand the corner of the A walls from the top of the walls down to the top of the footers. Do not sand the footers any further than you did previously.

Once you have a 45 degree angle sanded use the Curvature Tool to gauge how much additional material that needs to be removed. You are simply trying to create a curve in the corners. (Photo 59)



Photo 59

Make any adjustments needed to create a rounded corner. Once you are close, switch to the 220-grit sand paper to finish the curve You want to create a consistent rounded corner along the entire length of the wall. (Photo 60)

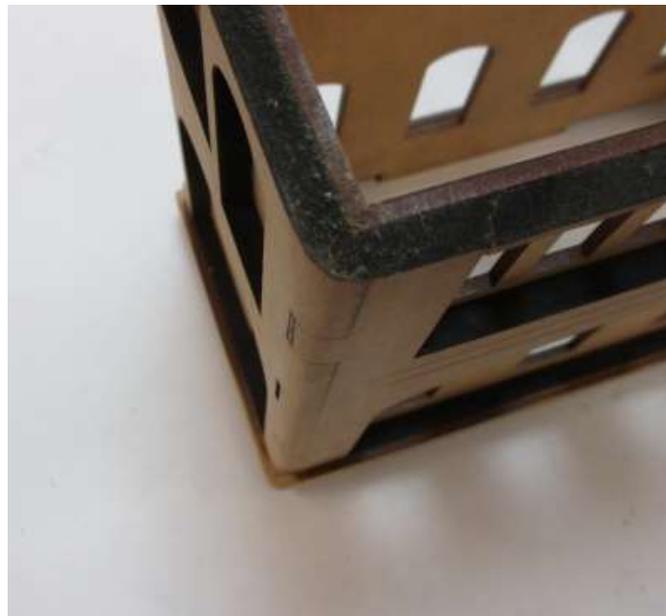


Photo 60

You need to round all four corners of the A walls. (Photo 61)



Photo 61

Remove parts B5, B6, B7 and B8 from the B sheet. These are the window frames. Using wood glue, glue these frames into position as shown below Note: The horizontal strip that intersects all the vertical posts goes on the bottom. (Photo 62, 63 & 64)



Photo 62



Photo 63



Photo 64

At this point the main structure assembly is completed. We recommend filling any cracks with joint compound and sanding smooth (any cracks in the exterior will show up after the building is painted (I learned this the hard way!), so now is the time to make those cracks disappear!

Step 6 Assembling the Doors

Remove parts B13 (2 pieces) and B14 from the B sheet. Also remove parts G5 and G6 (2 pieces) from the G sheet. These are the doors and door laminates. Remove the protective film from the back side of G5 and apply it to the double door (B14). Do the same for parts G6 and B13 (Photo 65)



Photo 65

Remove parts D1, D2, D3 and D4 from the D sheet. (Note: D5, D6, D7 and D8 are not used in this kit and can be discarded). These pieces create a set back for the double door and the single door in the building

door openings. Use some super glue to layer D1, D2 and the double door as shown below (Photo 66 & 67)



Photo 66



Photo 67

D1 is the base, D2 on top, double door on top of D1, in between opening in D2.

Repeat these steps for the single door; D3, D4 and one single door. (photo 68 & 69)



Photo 68



Photo 69

Mount the doors in the structure using super glue. (Photo 70, 71, 72, 73 & 74)



Photo 70



Photo 71



Photo 72



Photo 73



photo 74

Once the doors are installed its time to apply the door frame laminates. Remove parts G2 and G3 from the G sheet. Remove the protective film on the backside to expose the adhesive and apply around all three doors.



Door Frame Installation

Step 7 Assembling the staircase

Locate sheet F. Remove all the components from this sheet. Clean up the sprue marks and begin assembly as follows.

Start with the inner stair stringer (F4). Using super glue, glue the top platform (F1) in the slot at the top of the stringer. Also glue one stair tread (F5) at the top of the stair stringer and one stair tread (F5) at the bottom of the stair stringer. (Photo 75)



Photo 75

Now glue the outside stair stringer in place as shown below. (photo 76)



Photo 76

Now glue the end railing (F6) in place. (Photo 77)



Photo 77

Begin gluing the stair treads (F5) between the stair stringers, starting at the top and working down the staircase. It is very important that the stair treads snap into their respective slots, as this effects the alignment of the entire staircase. (Photo 77 above & 79 below)



Photo 79

Once you have all the stair treads in place the staircase is almost finished. Remove part G7 from the G sheet and remove the protective film. G7 is applied over top of the outside stair stringer to hide all the stair tread slots. (Photo 80)



Photo 80

The staircase is now complete.

Step 8 Assembling the decorative laminate

Remove the two vinyl pieces I1 and I2. Remove the protective film from the backside of I2 and apply it to the top of I1. The angled ends must line up. (Photo 81)



Photo 81

Temporarily place the staircase on the end of the end of the structure, to help align the starting point for the decorative laminate band. (Photo 82)



Photo 82

Apply a bead of super glue to backside of the laminate band and start at the angled end, against the stair case. Be sure to keep the laminate band inside the lines etched in the exterior walls. Use the accelerator to cure the super glue instantly as you work around the perimeter of the structure. Make

sure the laminate is tightly against the structure as you round the corners and work down alongside the walls. (Photo 83, 84 & 85)



Photo 83



Photo 84



Photo 85

The laminate band is long than it needs to be. So, when you get to the end, round the last corner and cut it off so it does not interfere with staircase. Refer to photo 83 above.

Now is a great time to paint the main structure. We used some Rustoleum® texture paint to create the concrete look and give some texture to the main structure, then painted with our desired base coat color.

Step 9 Installing the windows

Locate the frosted vinyl sheet H. Remove the six window films H1, H2, H3 and H4. These films install in the interior of the structure. Use super glue to mount these window films. H1 is used for the bottom arched windows. (Photo 84)



photo 84

Parts H2 are used for the long row of windows on the top of the structure. Part H3 is for the four windows on the top and H4 is for the 2 windows on the top. Install accordingly. Be careful not to get glue on the areas inside the window openings, as this will be seen if you illuminate this structure.

Now locate the G sheet. Remove all twenty four of the rectangular windows and all eight of the arched windows. Remove the protective film from the backside of each window and insert into the opening on the exterior of the structure, pressing the adhesive against the frosted window film. (Photo 85)



Photo 85

Step 10 Installing the Staircase

Locate the staircase assembled in step 7. Glue the staircase / platform diagonal support in place using super glue (Photo 86)



Photo 86

Now apply super glue to the edge of the platform that contacts the building (under the upper door) and the area that contacts the building (at the bottom of the staircase) as well on the top of the support bracket. Glue the staircase to the structure and bracket. Use accelerator to instaly cure the super glue once positioned properly. (Photo 87)



photo 87

The staircase should sit flush against the main structure. (Photo 88)



photo 88

Step 11 Building the Shields

Decide how many shields you would like to include on your New Haven Signal Tower. The shield base and base frame are located on the bottom of the E sheet (where the roof panels came from). The vertical etch lines are the backside of these parts. Create a bow in these parts before gluing them together. (Photo 89)



Photo 89

Once you have the parts bowed glue the shield frame to the shield base using super glue. (Photo 90)



Photo 90

Using super glue across the entire backside of the shield base glue it to the corner of the structure. We included two shields in our model. You can as many as you line to any or all of the corners. (Or leave them off!) (Photo 91)



photo 91

The final step is to place the roof on top of the structure. The truss base fits snugly inside the interior opening of the structure.

We hope you have enjoyed this kit and the signal tower finds a good home on your layout!

Here are some photos of our New Haven Signal Tower;







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