Visit Suncam.com for more courses

Continuing Education Course #266
Repair Techniques for Metal Plated Wood Trusses
Part 2: Moderate Truss Repairs

1. What are some possible causes of truss repairs?
- a. Design or manufacturing errors
- b. Shipping damage
- c. Miscommunication
- d. Change Orders
- e. All of the Above

2. If the number, 8-6-12, is shown in f-i-s notation, what is an equivalent way to write that dimension?
- a. 8'-6 3/4" (2.610 m)
- b. 86.75" (2.203 m)
- c. 8.612" (0.219 m)
- d. 8 6/12" = 8 1/2" (0.216 m)

3. Why are manufacturing errors one of least common repair categories?
- a. Wood trusses are fabricated in a controlled environment.
- b. The truss plants have computerized saws.
- c. The manufacturing facilities often have sophisticated jigging technology.
- d. All of the above

4. Why was a simple lumber scab sufficient in Example 6-1?
- a. There was not enough area to develop the required connection for OSB gussets.
- b. No plates were compromised.
- c. The wood member had some noticeable wane but was otherwise structurally sound.
- d. The horizontal bottom chord had a slight curve to it, and the scab was used to make a straight ceiling line.

5. What was the repair solution given in Example 6-2?
- a. New trusses were to be manufactured because the damage was too substantial.
- b. OSB gussets because the geometry of the damaged joints was complicated.
- c. Lumber scabs were applied to both sides because the gaps created a similar situation as a damaged splice plate or broken member.
- d. Metal straps were used because the forces were too high for lumber scabs.

6. In Example 6-3, why were scabs along the top chord not used for this repair?
- a. The aesthetics of the top chord scab was unpleasant.
- b. The top chord was not damaged, therefore no repair was applied to that member.
- c. To maintain the connection between the top chord and roof sheathing.
- d. The scabs on the top chord would have created an eccentric loading situation.

7. What is meant if a nail is clinched?

○ a. The protruding nail is cut at the face of the wood.
○ b. The protruding nail is bent over.
○ c. The protruding nail is driven into the wood only far enough that the tip of the nail is flush with the wood.
○ d. The nail is bent on the way in and so the nail should be pulled out and replaced.

8. In Example 6-5, what was the cause of the undersized floor truss chase in that example?
○ a. The truss fabricators chose the wrong webs.
○ b. The customer changed the size of the ductwork after the trusses were built.
○ c. The truss was set backwards.
○ d. The truss was set upside down.

9. What are some causes of stub and extension repairs?
○ a. Differential settlement of the foundation or warped lumber.
○ b. Variations of the supporting framing, changes in the vertical placement of a beam, or incorrect plan dimensions.
○ c. Incorrect loading criteria such as top chord live load, wind speed, and the weight of the structure.
○ d. The trusses were designed according to an incorrect building code or the top chord was designed at an incorrect slope.

10. Under what circumstances could the cantilever of a truss usually be removed without any further reinforcement?
○ a. If the cantilever is less than 6” in length.
○ b. If the heel height of truss (the height at the end of the cantilever) is less than 6”.
○ c. If there is a vertical web at the bearing causing at least three separate joints.
○ d. If the overall span of the truss is less than 30’

11. Why were the OSB gussets in Example 7-3 sized to encompass all three joints involved in the repair?
○ a. The forces in the members were all small, and the controlling factor was the awkward truss geometry.
○ b. The length of the diagonal would not allow the full development of two sets of OSB gussets.
○ c. The size of the OSB gussets was inconsequential because the cost of the material was very low.
○ d. It was the preference of the crew performing the repair to apply only one set of OSB gussets.

12. What is the recommended height for OSB gussets when designing floor truss repairs?
○ a. 1/4 the height of the floor truss.
○ b. 1/2 the height of the floor truss.
○ c. 3/4 the height of the floor truss.
○ d. The full height of the floor truss.

13. What is the minimum recommend bearing width for most floor trusses?
○ a. 1/8” (3.2 mm)
○ b. 1 1/2” (38 mm)
○ c. 3” (76 mm)
○ d. 6” (152 mm)

14. Examples 7-6 and 7-7 show two alternatives for extending a roof truss with a high heel up to 3 1/2” (89 mm). What is difference between the two approaches?
○ a. One example used a single 2x8 (38 x 184 mm) scab and the other one used a combination of horizontal and vertical 2x4 (38 x 89 mm) scabs.
○ b. One example used a scab truss while the other one used OSB gussets.
○ c. One example used diagonal blocking while the other one required several hangers to make the extension work.
○ d. One example used duct tape while the other one replaced a substantial section of the bottom chord.

15. As a general rule of thumb when creating a new overhang, how far should the lumber scab come back along the top chord of the truss?

○ a. 1/2 the slope distance of the overhang
○ b. The slope distance of the overhang
○ c. Twice the slope distance of the overhang
○ d. Six times the slope distance of the overhang

16. In Example 7-9, the order of the installation steps was critical in the repair design. Which option best describes the correct order of events?

○ a. Install the lumber scabs first, then wrap the straps around the entire assembly.
○ b. Install a 2x10 (38 x 235 mm) block in the extension area. Cover the area with 12” x 24” (0.30 m x 0.61 m) OSB gussets.
○ c. One 2x10 (38 x 235 mm) scab was all that was needed for this repair.
○ d. Install the straps around and centered on the bottom chord to form a U. Install lumber scabs. Wrap straps around scabs to complete an M shape.

17. What was the cause of the repair in Example 8-1?

○ a. Truss was installed backwards.
○ b. Truss was installed upside down.
○ c. Truss was broken in half on delivery.
○ d. A change order was issued after the trusses were already installed.

18. What is the maximum recommended offset distance when 2x8 (38 x 114 mm) scabs are used?

○ a. 1” (25 mm)
○ b. 4 1/2” (114 mm)
○ c. 7” (178 mm)
○ d. 10 1/2” (268 mm)

19. How was the required bracing achieved for the top chord of the truss in Example 8-3?

○ a. No additional bracing was required for the top chord of the truss.
○ b. 1/4” (6 mm) diameter steel cables connected the top chord of the truss to the bottom chord of the same truss.
○ c. Large OSB gussets were applied both sides at each joint.
○ d. 2x4 (38 x 89 mm) horizontal and diagonal bracing members were installed at 3’ o.c. to the top chords of the adjacent trusses.

20. What is the primary reason for repairs that fall into the Major Modifications category?

○ a. Design errors.
○ b. Lack of communication.
○ c. Installation errors.
○ d. All of the above

21. Why was the gable truss in Example 9-1 too tall?

○ a. The builder needed to place a continuous beam across the garage to complete the portal framing.
○ b. The studs were all shifted towards to the outside of the truss which raised the top chord up too high.
○ c. The top chord pitch was too shallow.
○ d. 2x10 (38 x 235 mm) members were used for the top and bottom chord members instead of 2x6 (38 x 140 mm) members as designed.

22. What was the important consideration in Example 9-2?

○ a. Making sure the length of each member was sufficient to develop the required connection.
○ b. The location of new members.

○ c. The proximity of several joints in the model near the peak.
○ d. All of the above.

23. What is the recommended location for a floor truss chase?
○ a. Over the bearing.
○ b. In the center two quarters of the floor truss span.
○ c. In the first or fourth quarters of the floor truss span.
○ d. Chases should not be used at all.

24. In Example 9-5, why were the two bottom chord scabs applied to the same side of the truss?
○ a. To allow passage of some ductwork.
○ b. To allow the end vertical to overlap the bottom chord and develop a modest moment connection.
○ c. It was easier to install the two scabs on one side.
○ d. It made the details look better.

25. What is the primary conceptual difference between Examples 9-6 and 9-7?
○ a. Example 9-6 used only simple lumber scabs to repair the damaged member whereas Example 9-7 required the bottom chord to be stacked in several panels with OSB gussets.
○ b. Example 9-6 used metal strapping to make the repair, whereas Example 9-7 required a specially designed steel connection.
○ c. In Example 9-6 the cut truss was essentially modeled as two half trusses where the vertical reactions were transferred to and supported by the adjacent trusses, whereas Example 9-7 considered the direction of force and used a system concept to allow the adjacent trusses to share the load.
○ d. Example 9-6 needed screws to make the connection, whereas Example 9-7 needed to use larger bolts requiring calculation of the group action factor.