



HO Scale Structure Kit CONCRETE COALING TOWER 933-2903

Thanks for purchasing this Cornerstone Series® kit. Please read the instructions and study the drawings before starting. All parts are made of styrene plastic, so use paints and glues which are compatible.

By 1920, America's railroads were beginning a period of rapid technological change. Steel freight and passenger cars, longer trains and the need for faster service required bigger and more powerful steam locos. In a few years, engines like 2-8-4s, 4-8-4s and simple articulateds could be found handling the important trains on most major roads. To generate power and speed, these bigger engines were equipped with bigger tenders. With their increased capacity, many water and coaling stops could be eliminated. This put more demand on remaining facilities, often creating bottlenecks at busy yards and terminals where several engines required servicing at the same time. In some cases, facilities only a few years old were unable to keep up with the demands placed on them.

As a result, many roads began modernizing facilities and one of the first items replaced was the coaling tower.

Early towers were built of massive wood timbers, which provided the strength to support the great weight. Coaling towers were subjected to hard service so wood required frequent repairs. And, of course, there was also a great danger of fire. But by the 1920s, increasing costs and scarcity of suitable wood forced railroads to consider new materials for coaling tower construction.

One of the most common was reinforced concrete. Economical, long-lasting and fireproof, concrete also offered the most flexibility in design. While several factors influenced the design of each tower, most were built to meet certain local conditions based on the number of engines being serviced, the amount of coal needed and how quickly engines had to be refueled. Interestingly, most concrete coaling towers were custom-built by out-

side contractors to railroad specifications.

While the tower was the dominant part of the operation, additional support facilities were needed. To further reduce costs, much of the tower filling operation was mechanized, creating what was sometimes known as a coaling elevator. This facility included the storage and delivery bin, but also had a below ground concrete dump pit and a hoisting tower to speed refilling.

In operation, the pit was served by its own track, usually running behind the elevator. This allowed coal deliveries without interrupting refueling. Hoppers of coal were spotted over the pit and gravity made quick work of unloading. The pit was usually covered to help keep the coal dry and in cold areas, some roads added steam-heated pipes to loosen frozen loads during winter months. Lifting machinery inside the pit, usually large buckets or bucket conveyors, carried the coal up and into one or more storage bins. This machinery was powered by electricity and was operated from a nearby control house. Some remote locations relied on gasoline powered generators and major facilities were often protected by a generator in the event of a power failure. To keep coal from sticking, round towers were favored. The interior was kept as smooth as possible and a uniform slope helped eliminate friction and sticking. Small discharge chutes on the bottom of the bin were positioned to serve one or more tracks. A lift gate held the coal in place until the chute was lowered. When refueling was completed, counterweights lifted the chute and closed the gate.

The majority of towers were built at engine terminals, located to service both incoming and outbound engines. Complete facilities could also be found out along the mainline, between terminals. This type of installation replaced several smaller facilities and eliminated station stops for through trains. They also had the advantage of allowing engines to

refuel in a less busy location, making the terminals more efficient.

Coaling towers became obsolete as soon as a railroad completed dieselization. Wooden towers were easily dismantled, but the size and sturdy construction that made concrete towers popular also made them nearly impossible to tear down economically. Some retained their sand delivery equipment and continued to service diesels for a few more years until they were no longer needed. A few of these steam-era hallmarks still stand today, stripped of any salvageable metal and abandoned.

ON YOUR LAYOUT

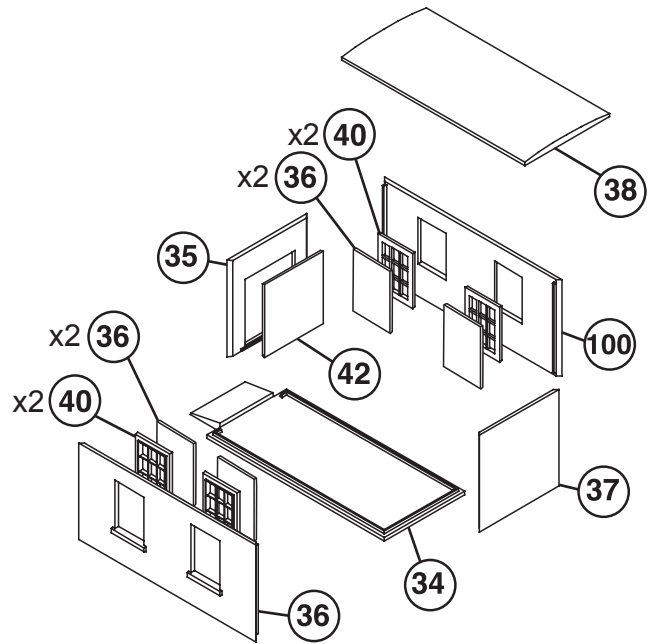
Your finished model will be a unique addition to any engine service facility on your railroad. This 150-ton capacity tower was ideal for servicing medium and most large engines. The design is typical of those used on most roads and could be found in terminals, along side the main or on a busy branchline. It can serve from the 1920s to the end of steam in the early 60s. You could also use the tower in a modern scene by leaving off the metal details and weathering it to show years of neglect.

Towers of this type were typically constructed at major division point terminals where engines were changed and serviced. A complete facility can be built with the Modern Roundhouse (933-2900) and Modern Roundhouse Add-On Stalls kit (933-2901), Machine Shop (933-2902), Modern 130' Turntable (933-2829), Cinder Conveyor & Ash Pit (933-3181), Sanding Towers & Drying House (933-3182), Steel Water Tank (933-3043) or Wood Water Tank kit (933-3531).

For more ideas to detail your roundhouse scene, ask your dealer, visit waltherscornerstone.com or see the latest Walthers HO Scale Model Railroad Reference Book.

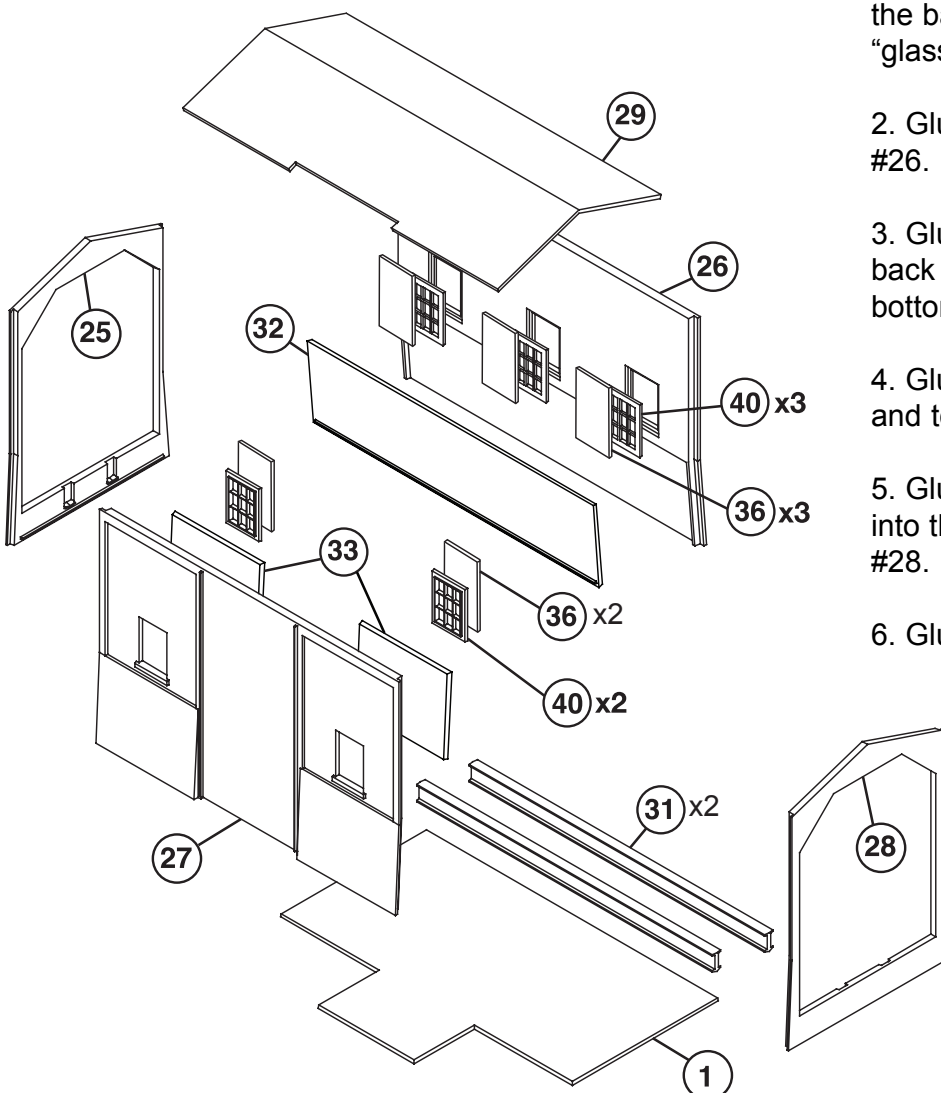
SMALL OUTBUILDING

1. Glue the windows (40) and door (42) into the appropriate openings into the backs of the walls (35, 36). Glue the "glass" (36, from clear sprue) to the backs of the windows.
2. Glue the walls (35, 36, 37) together and to the base (34).
3. Glue roof (38) in place.



SHED

1. Glue windows (40) into the openings in the backs of the walls (26, 27). Glue the "glass" (36) to the backs of the windows.
2. Glue inner wall (32) to the back of wall #26. Note: ridge goes on the bottom.
3. Glue the inner wall sections (33) to the back of wall #27. Note: ridges are on the bottom.
4. Glue the walls (25, 26, 27, 28) together and to the base (1).
5. Glue the track-mounting I-beams (31) into the slots in the backs of walls #25 and #28.
6. Glue roof (29) in place.



MAIN HOUSE (BUNKER)

1. Glue the pulley bulkheads (94) into the top of the left two openings in the back of wall #3. Glue the bulkheads (94) into the end openings in the backs of wall #12.

2. Glue the inner wall (4) to the back of wall #3. Note: glue above the ridge.

3. Glue the inner wall sections (13, 14) to the inside of wall #12. Note: Cut off 1/8" of the outside ridges.

4. Glue pilasters (7, 8) into the appropriate holes and slots on #4. Then glue the pilaster sides (9, 10) in place.

5. Glue pilasters (7, 8) into the appropriate holes in part #'s 13 & 14. Then glue the pilaster sides (9, 10, 15, 16) in place.

6. Place the two pulley halves (95, 96) together and push and glue the end pegs into the holes in #94. Note: one side has two pulleys, the other side one. Be careful when gluing the opposite side pulleys on so you don't snap off the pulley(s) on the other side.

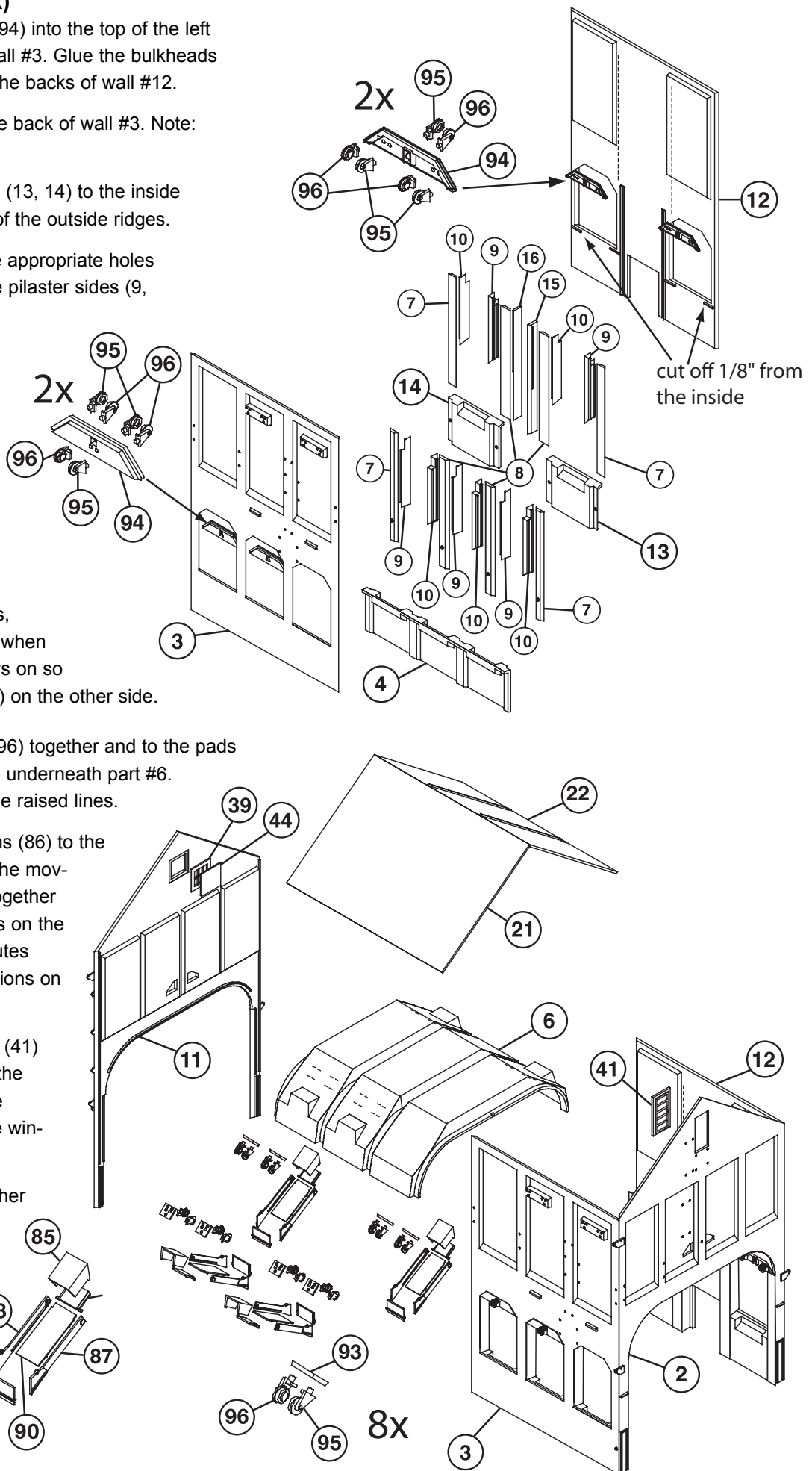
7. Glue 8 sets of pulleys (95, 96) together and to the pads (93). Then glue these in place underneath part #6. Note: glue pads in between the raised lines.

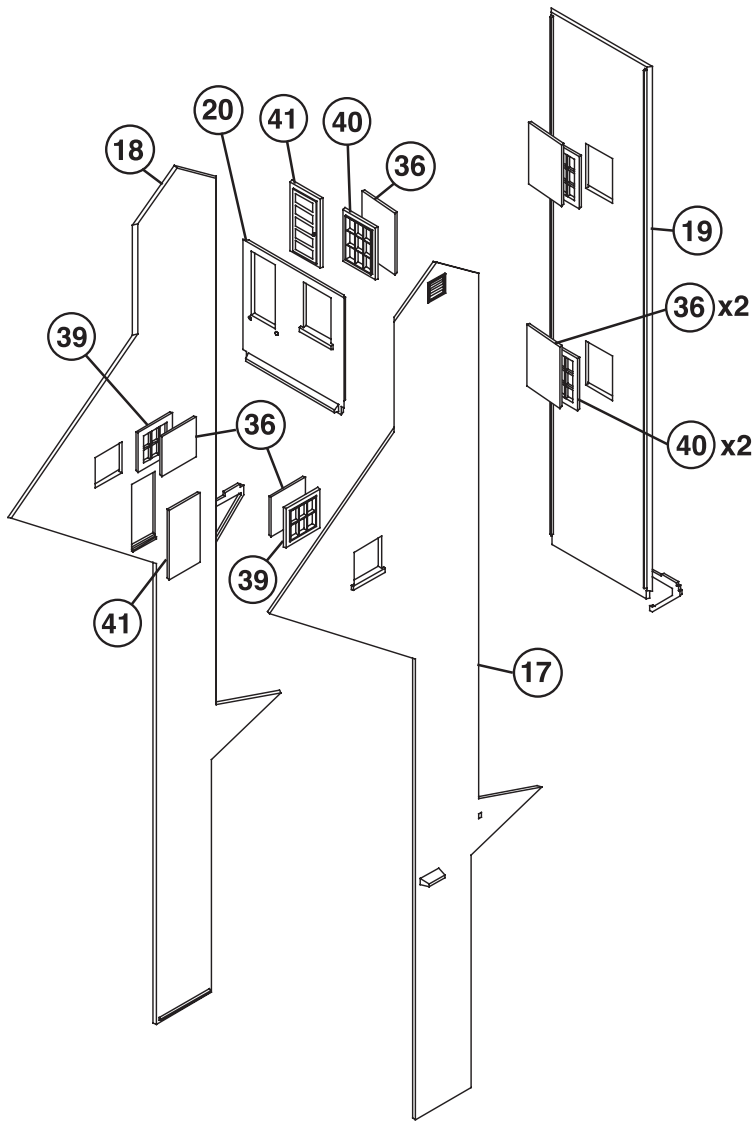
8. Glue the fixed chute bottoms (86) to the inner fixed chutes (85). Glue the movable chutes (87, 88, 89, 90) together and then snap it onto the pegs on the fixed chute. Then glue the chutes onto the side walls of depressions on the underside of part #6.

9. Glue window (39) and door (41) into the holes in the backs of the appropriate walls (2, 11). Glue "glass" (44) on the back of the window.

10. Glue walls (2, 3, 12) together first. Then glue in the ceiling (6). Note: it goes below the ridge found on part #2 and the notch will lock into the tab. Next glue on the other end wall (11).

11. Glue the roof halves (21, 22) in place.





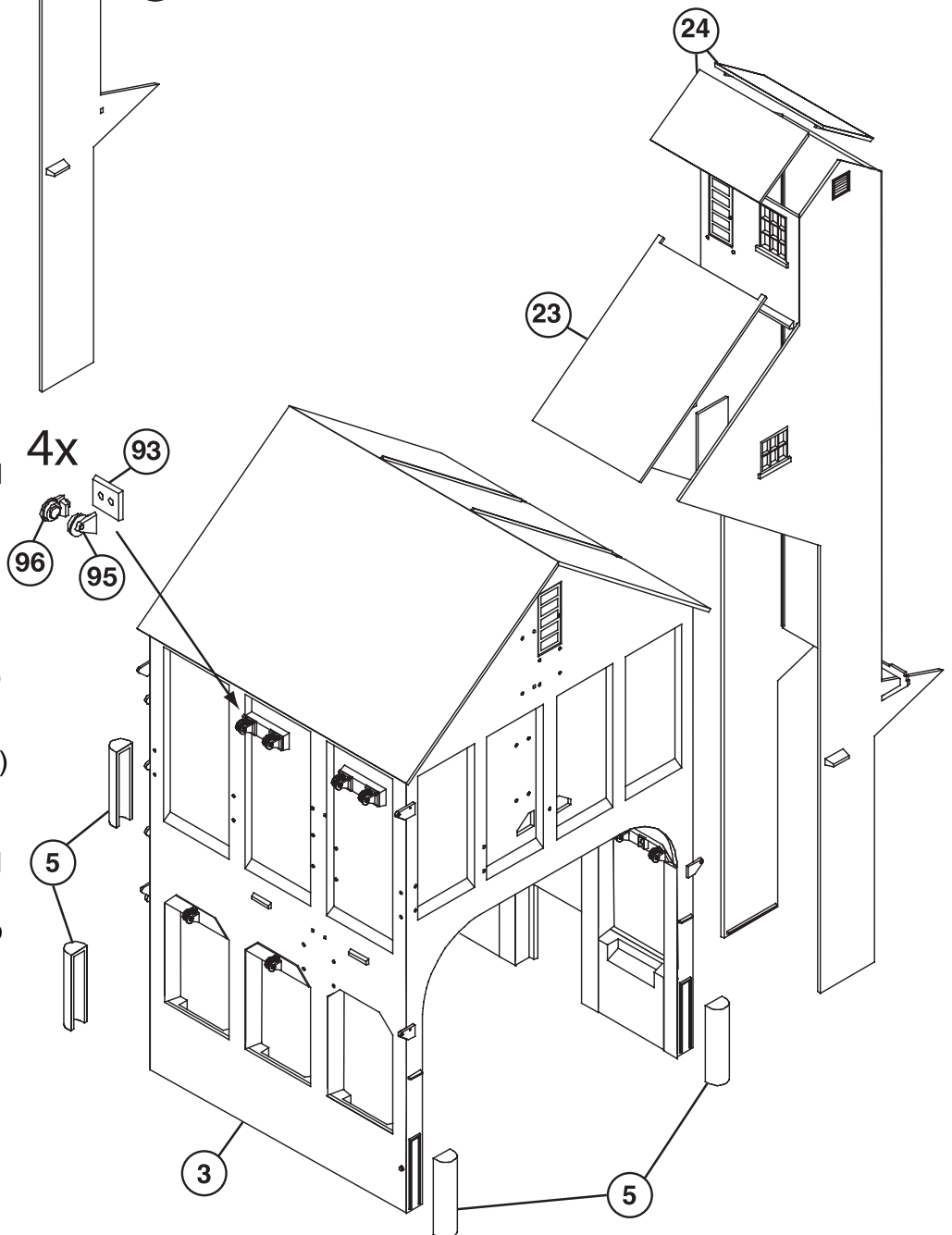
12. Glue windows (39, 40) and doors (41) into the holes in the backs of the appropriate conveyor walls (17, 18, 19, 20). Glue "glass" (36) into the backs of the windows.

13. Glue the conveyor walls (17, 18, 19, 20) together and to the side and roof of the bunker as shown.

14. Glue roofs (23, 24) in place.

15. Glue end pieces (5) onto the four ends.

16. Glue the pulley pads (93) onto wall #3. Note: the three holes in the back will locate onto the three dimples found on the wall. Glue the pulleys (95, 96) together and then to the pads.



17. Glue the brackets (80, 81) into their appropriate holes in walls #2 and #3.

18. Glue the ladders (78, 79, 98) into their respective holes on walls.

19. Glue railings (61, 64) to platform (72). Glue completed piece to brackets on wall #2, below door.

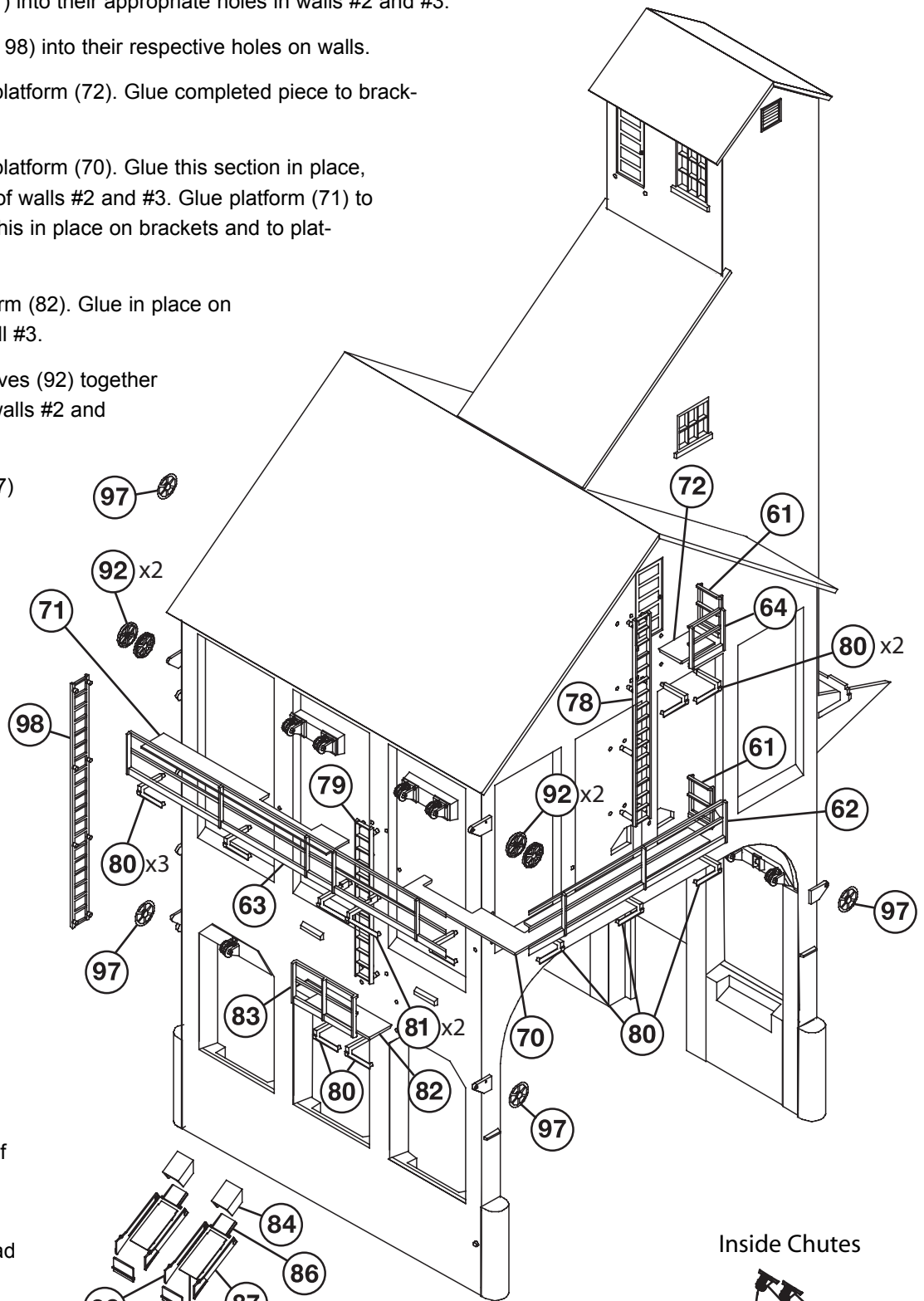
20. Glue railings (61, 62) to platform (70). Glue this section in place, wrapping around the corner of walls #2 and #3. Glue platform (71) to the end of railing #63. Glue this in place on brackets and to platform #70.

21. Glue railing (83) to platform (82). Glue in place on brackets below ladder on wall #3.

22. Glue the chain wheel halves (92) together and then to the plates of walls #2 and #11.

23. Glue the hand wheels (97) in place.

24. Glue the outer fixed chutes together (84, 86). Next glue the movable chutes together (87, 88, 89, 90) and then snap onto pegs of the fixed chutes. Glue the finished chutes to the side of wall #3. Note: use the ridges on the walls to position correctly.



Rigging Instructions

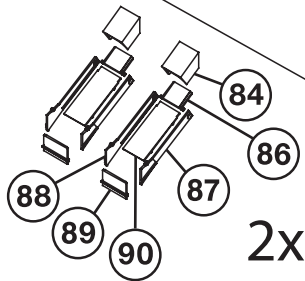
Outside Chutes

1. Cut the thread to equal lengths (the length is dependent on the position of the chutes, either raised or lowered).

2. Glue one end of the thread to the chute side, run it up around the pulley and then through the hole at the top of the weight (99). Repeat for other side. Note: Enlarge hole in top of #99.

Inside Chutes

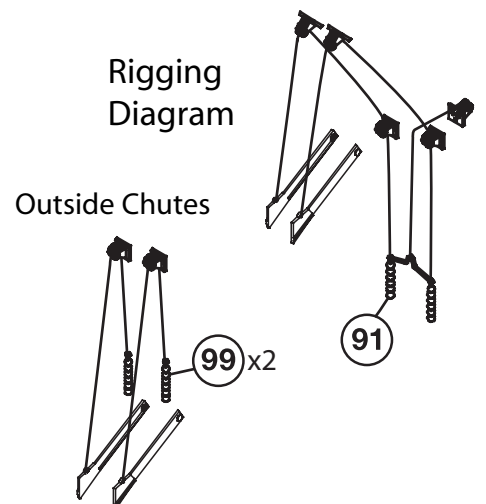
1. Cut two threads of equal length per chute (four chutes total).
2. Glue one end of the thread to the chute side, run it up and around two sets of pulleys and the through the hole in the corner of the weight (91). Repeat for other thread. Note: Enlarge holes at the ends of #91.
3. Cut another length of thread to go from the hole at top middle of the weight, through the hole in part #94 and wrap around the pulley on the other side of the wall.



Inside Chutes

Rigging Diagram

Outside Chutes



25. When gluing the stairs/railings, start at the top and work in sections. Glue platform (65) to railing (50). Next, glue stairs (73) to #50. Glue other railing (51) to the stairs. Glue the platform (66) to the bottom of the stairs and railings. Then glue railing #52 to #66. Glue this completed stairway section in place on the structure. Note: glue pegs from the end of the railings into the holes below the door.

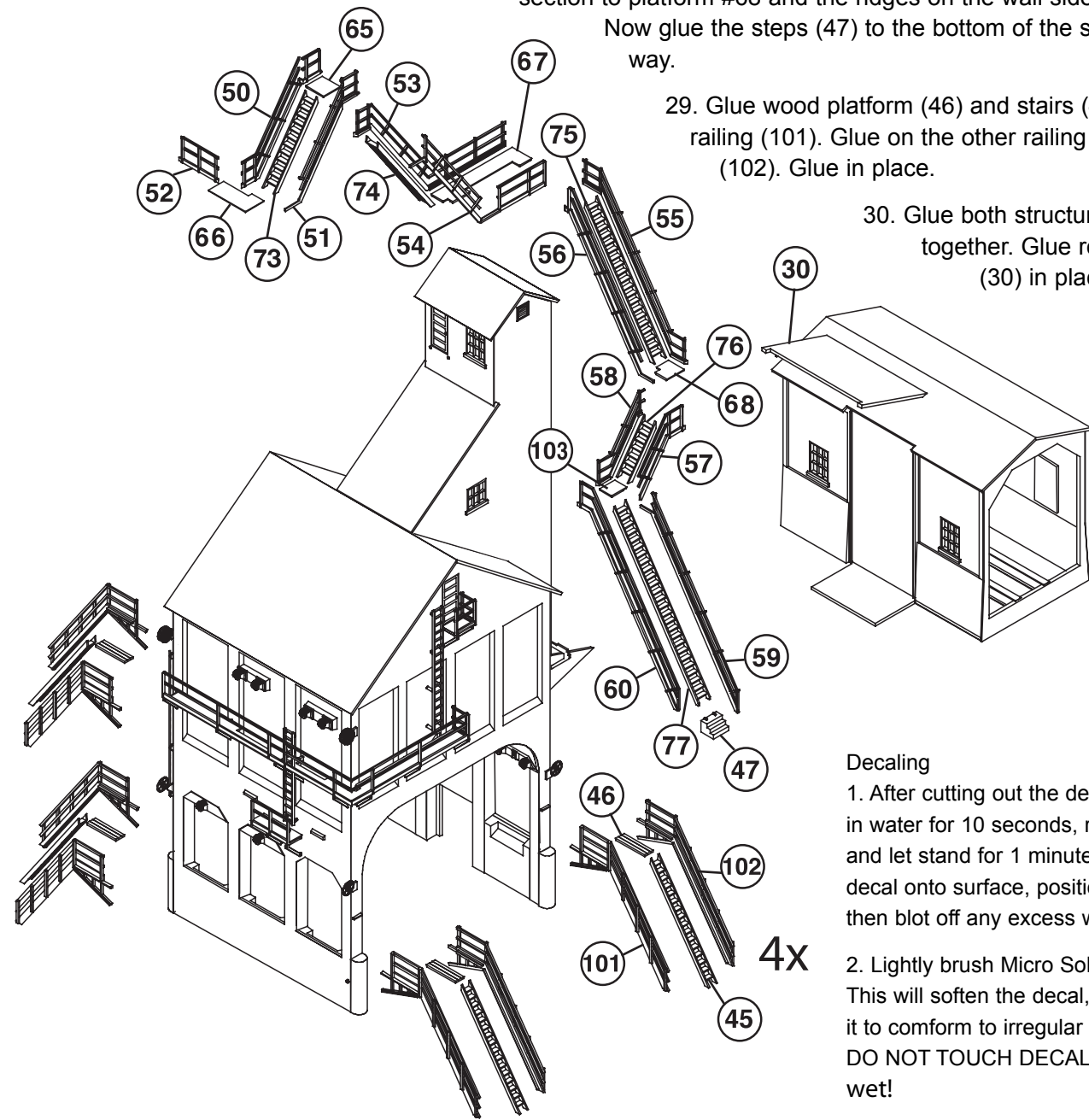
26. Glue platform (67) to the bottom of railing (54). Then glue the stairs (74) to the side of #54 and to the top of #67. Glue the other railing (53) on. Now glue this section in place under platform #65 and onto the ledge and bracket on the wall.

27. Glue the platform (68) to the bottom of the railing (55). Glue the stairs (75) to the side of #55 and on the top of #68. Glue the other railing (56) in place. Next, glue this section to the bottom of platform #67 and to the wall bracket.

28. Glue the platform (103) to the railing (58). Glue the stairs (76) to #58 and #103. Then glue on the other railing (57). Glue the long railing (60) to #103. Next, glue stairs (77) to the side of #60. Glue other long railing (59) to #77 and #103. Glue this section to platform #68 and the ridges on the wall sides. Now glue the steps (47) to the bottom of the stairway.

29. Glue wood platform (46) and stairs (45) to railing (101). Glue on the other railing (102). Glue in place.

30. Glue both structures together. Glue roof (30) in place.



Decaling

1. After cutting out the decal, dip in water for 10 seconds, remove and let stand for 1 minute. Slide decal onto surface, position and then blot off any excess water.

2. Lightly brush Micro Sol[®] on top. This will soften the decal, allowing it to conform to irregular surfaces. DO NOT TOUCH DECAL while wet!

3. When decal is thoroughly dry, check for any trapped air bubbles. Prick them with the point of a small pin or hobby knife blade and apply more Micro Sol[®].