



## HO Structure Kit GAS PLANT WITH WASHING TANKS 933-2905

Thanks for purchasing this Cornerstone Series® kit. Please take a few minutes to read these instructions and study the drawings before starting. All parts are styrene plastic, so use compatible glue and paint to finish your model.

Long before electricity and natural gas, American homes and industries were powered by coal gas, also known as “town” or “manufactured gas,” a byproduct of the coke-making process. First used in Britain in 1792, coal gas remained little more than a sideshow novelty in America until 1816, when the city of Baltimore authorized a private firm to build a generating plant and pipelines to operate gas streetlights. Small gas works, both private and city-owned, soon appeared in large American cities to serve residential customers. Demand kept growing as factories soon converted to gas for lighting and to power machinery.

While gas works came in all shapes and sizes, they shared common elements. The earliest were often a single building housing the entire operation. The process began by baking soft coal at high temperatures in a large, airtight oven known as a retort. Chemical reactions produced gas and coke, which were also sold as fuel. The gas was drawn off the retort into the hydraulic main, where vapors formed liquids including coal tar, which was collected and sold as a raw material that could be refined into a wide range of products and chemicals. The remaining gas was cooled and filtered in a condenser. To remove traces of ammonia and sulfur, the gas was “washed” in water and filtered through various materials. Purified and ready for use, it was piped through a station meter to record production, then into a large storage cylinder that also pressurized underground supply pipes.

By the 1870s, the introduction of “carburetted water gas” and major improvements in distribution systems saw the many small neighborhood plants replaced by a central gas works serving a wide area.

Carburetted water gas soon came to dominate the American gas industry. Made by blending a form of coal gas known as “water” or “blue gas” with oil, the resulting mixture was more efficient and demand grew steadily.

The heart of these operations was the generator, essentially a large steel cylinder where the coal gas was produced. The hot gas was drawn off the generator and passed through a carburetor where oil vapors were introduced. This mixture was then superheated, forcing the oil and gas to mix and bond. To remove coal tar and other impurities from the gas, it was gradually cooled in various holding tanks, then piped into a “scrubber” where it was passed through water. At larger plants, the gas was filtered once more to capture still more impurities. As with earlier production methods, the cleaned gas was then piped through a station meter and into an enormous storage holder to supply the underground pipelines.

Over the next 20 years, fueled by low cost and relatively simple technology, the gas industry flourished. Small towns of only a few thousand residents could now boast of their own gas works. Major institutions such as hospitals and military bases operated their own plants, as did hundreds of large industries. Privately owned gas works (the majority of operations were owned by corporations) mushroomed, supplying gas to customers in an ever-larger area.

But radical changes were in store for the industry in the 20<sup>th</sup> Century. As automobiles became more common, demand for petroleum products grew, raising the cost of the oils needed for gas production. Gas companies also lost money as petroleum became the chemical industry’s preferred source for raw materials once derived from coal tar. Gas works were also falling out of favor under increasing public and government pressure to control the discharge of toxic waste products. The technology to produce and distribute electricity matured quickly, resulting in a cheaper and more efficient energy source. Advances in welding technology made it possible to construct pipelines over long distances, so cheaper, cleaner and more heat-efficient petroleum products could be moved easily from producers to consumers. Huge sources of natural gas were also discovered, which virtually eliminated the need for coal gas plants in major markets. The last commercial gas works ended production in 1966, but private industrial production continued into the 1990s.

### ON YOUR LAYOUT

As the heart of production, your new Gas Plant will be the centerpiece of any gas works and is equally at home in many large industries. The main building is typical of the smaller plants from earlier years, which were later modernized and expanded to allow production of the cheaper water gas.

In many operations, gas was the primary product, while coke and other materials were sold to other users. The Empire Gas Works collection can be used to model a complete facility of this type with a Coke Retort (#933-2910) and Gas Storage Tank (#933-2907).

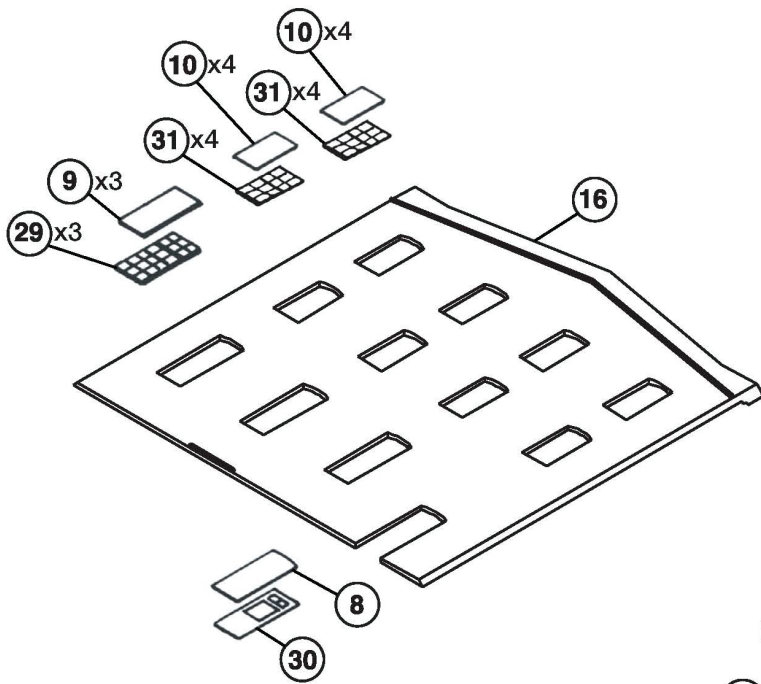
Coal was the life-blood of any gas works and a ready supply was always on hand. Many plants were located alongside waterways, which allowed massive amounts to be delivered by ship. To reach into their holds, Bridge Cranes (#933-2906) with longer booms extending beyond the dock were used. These made quick work of unloading using a large clamshell bucket to stockpile coal nearby.

Many plants received coal by rail and this can be modeled using the Gold Line™ USRA 55-Ton 2-Bay Hopper Six-Packs (#932-970 series) which feature 1940s-50s era paint schemes. These same cars often carried loads of coke on the return trip. Tank cars of various types were also used to ship coal tar. To keep cars moving efficiently, many plants had their own small steam, diesel or electric switch engines.

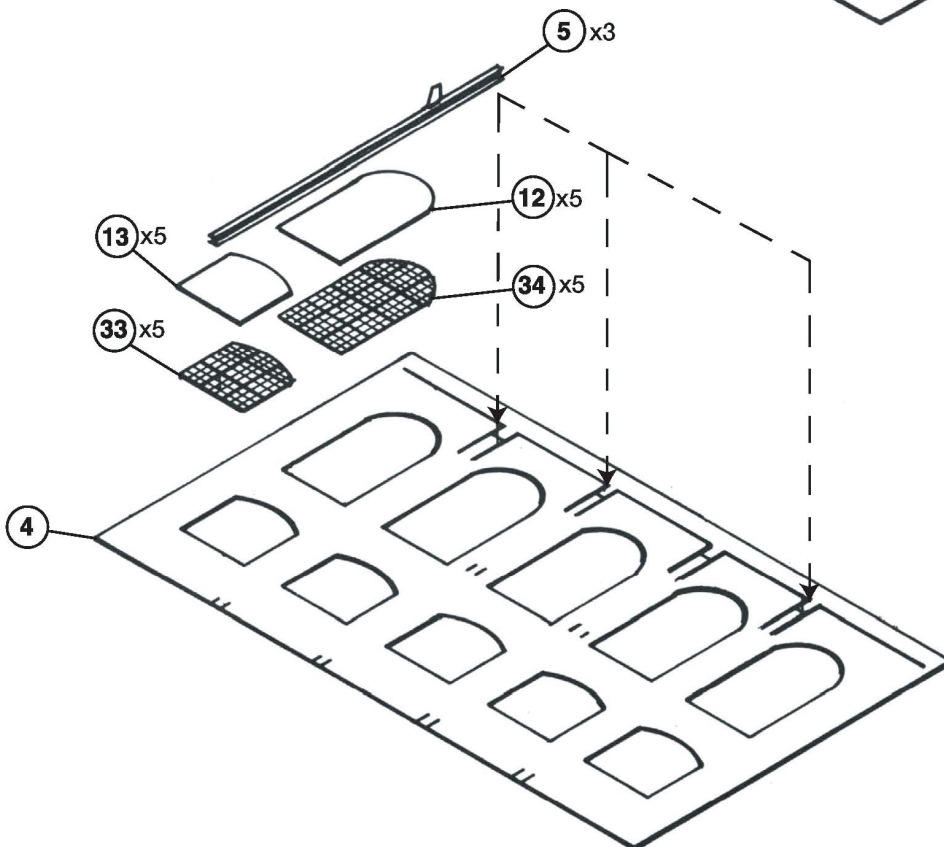
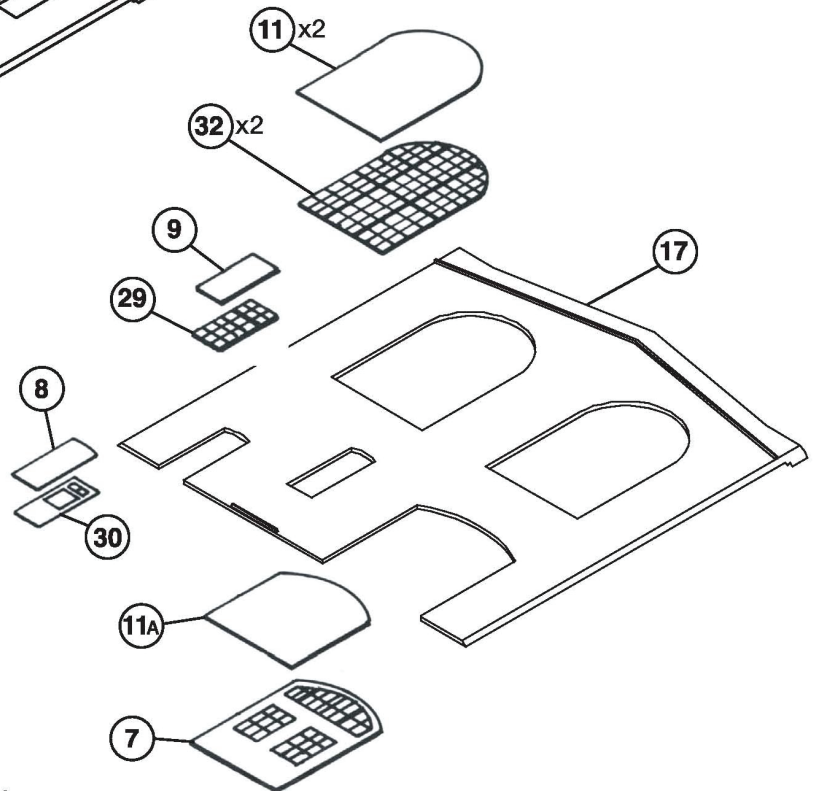
While gas works were often self-contained operations, many were also operated by large industries that required considerable amounts of gas. Your Empire Gas Works kits will be right at home in a steel works equipped with a Blast Furnace (#933-3054), Rolling Mill (#933-3052), and Coke Oven and Quencher (#933-3053), or a cement plant such as Valley Cement (#933-3098).

For figures, vehicles and accessories to set the scene, ask your dealer, visit our Web-site [walterscornerstone.com](http://walterscornerstone.com) or see the latest Walthers HO Scale Model Railroad Reference Book.

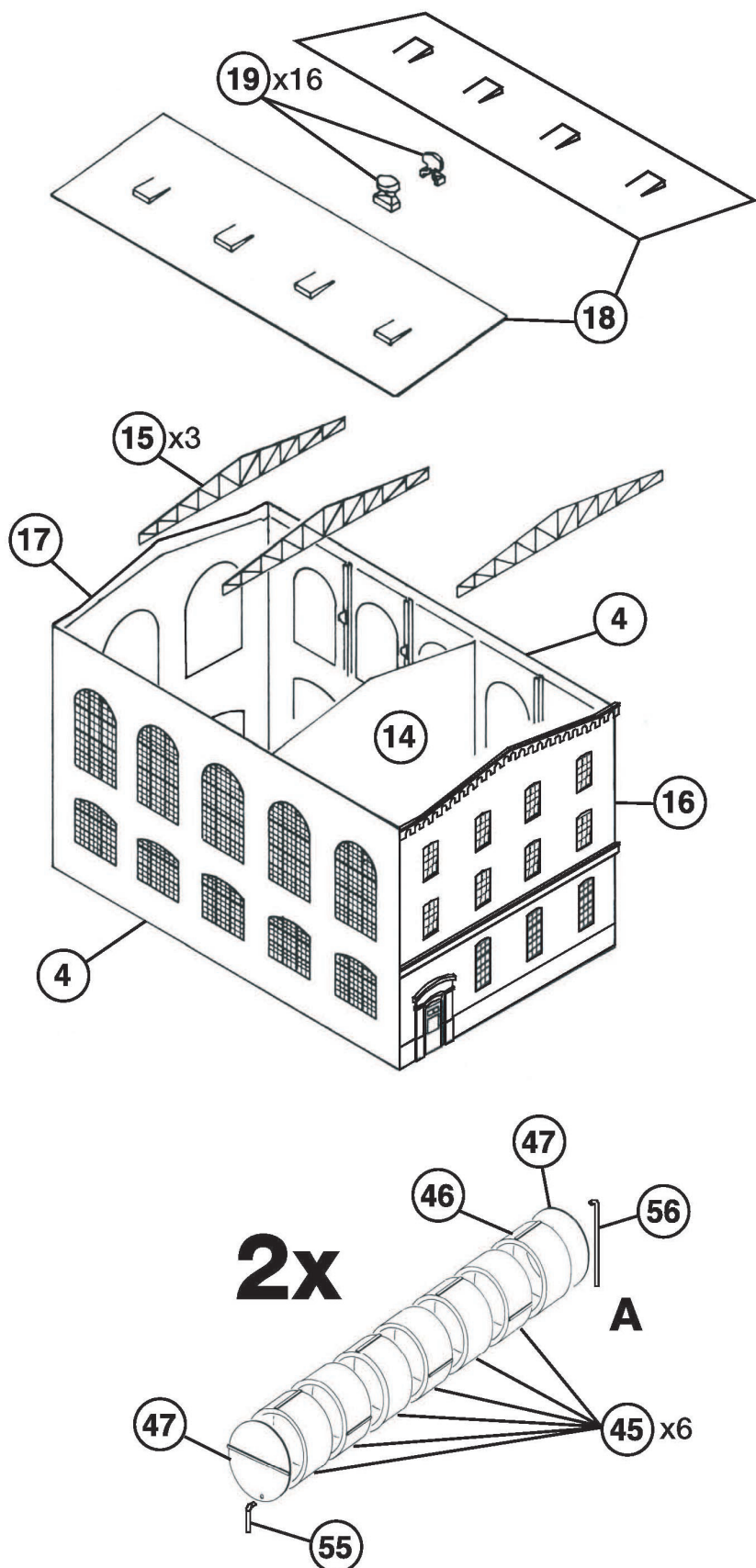




1. Glue the windows (29, 31, 32, 33, 34) and doors (7, 30) into the appropriate openings in the backs of the walls (4, 16, 17). Then glue the “glass” (8, 9, 10, 11, 11A, 12) onto the backs of their respective windows and doors.



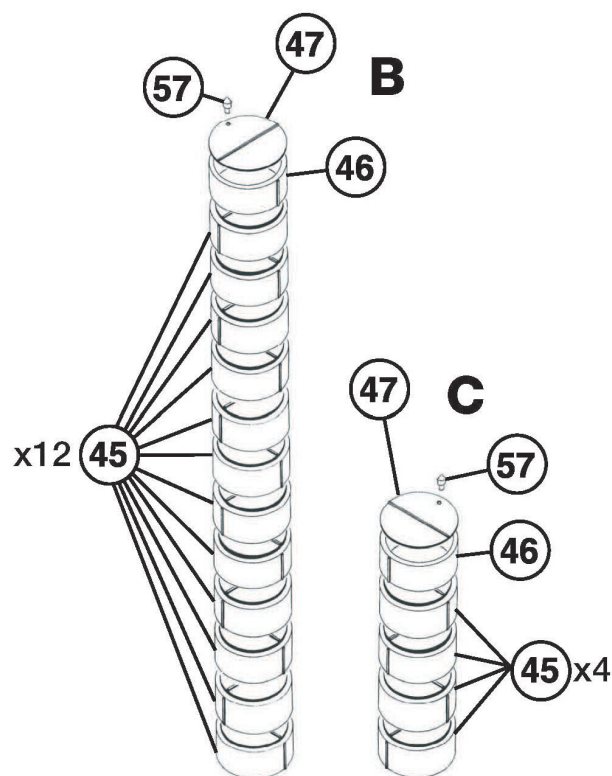
2. Glue the I-beams (5) to the inside of the walls as illustrated. Note: The I-beam placement on the side walls should be a mirror image of each other.



3. Glue the walls (4, 16, 17) together and to the base (1). After the glue has completely set, gently bend the side walls (4) out as you insert the interior wall (14) into the empty space between the I-beams. Glue it in place.

4. Glue the trusses (15) to the sides of the walls, over the I-beams.

5. Glue the roof halves (19) in place. Next glue the vents (18) together and then to the pads on the roof.

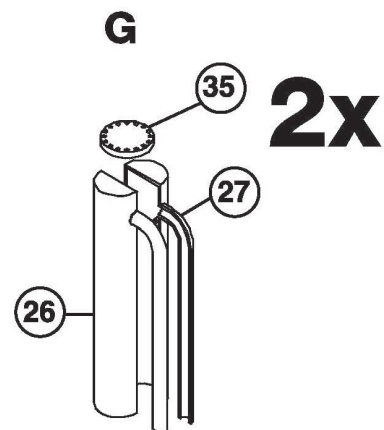
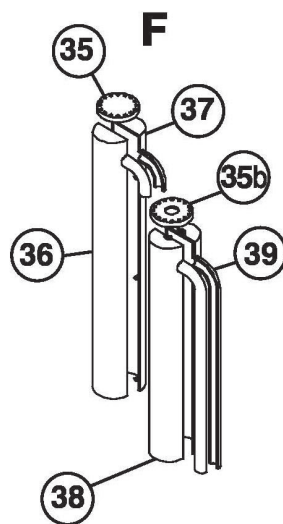
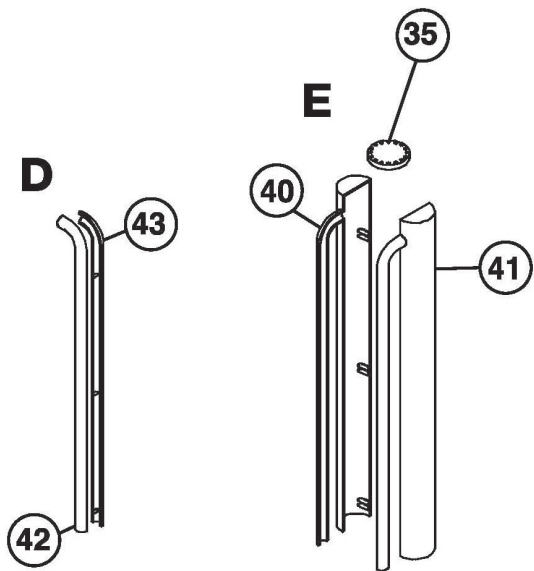


6. Glue the horizontal tank sections (45, 46, 47) together as illustrated. Note: Glue sections together so that the raised lines are 90° from one another. The end sections (45, 46) should have a raised line at the very top. Also, on one end, the end piece #47 should have the pipe hole at the top and the other end piece, the hole at the bottom.

7. Glue the short pipe (55) into the hole located in the bottom of end piece #47. Glue the long pipe (56) into the hole located in the top of the other end piece.

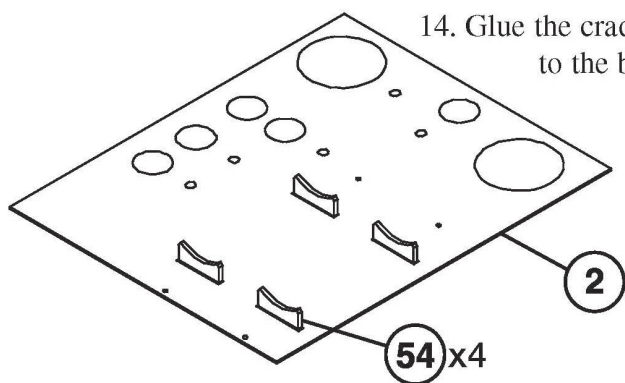
8. Glue the short vertical tank sections (45, 46, 47) together, the raised lines at 90° from one another. Glue the vent (57) into the hole on the top of part #47.

9. Glue the tall vertical tank sections (45, 46, 47) together, the raised lines at 90° from one another. Glue the vent (57) into the hole on top of part #47.

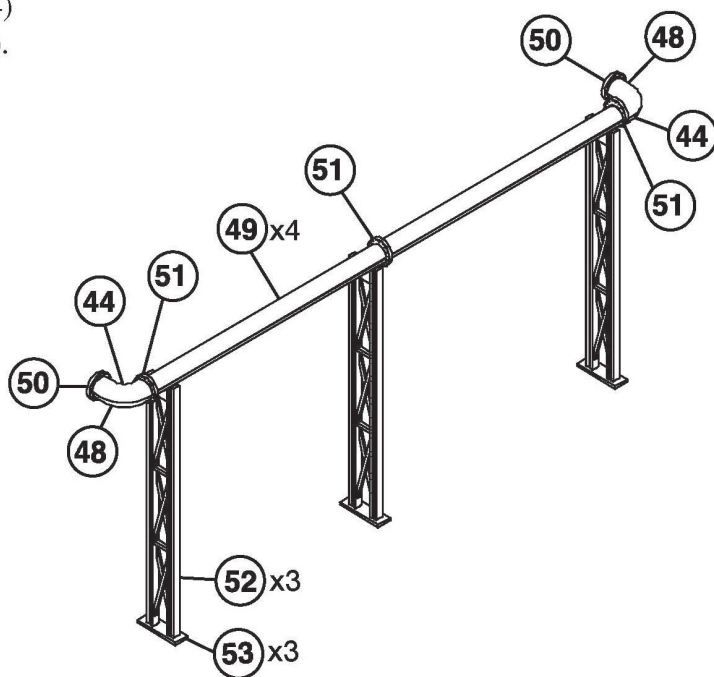
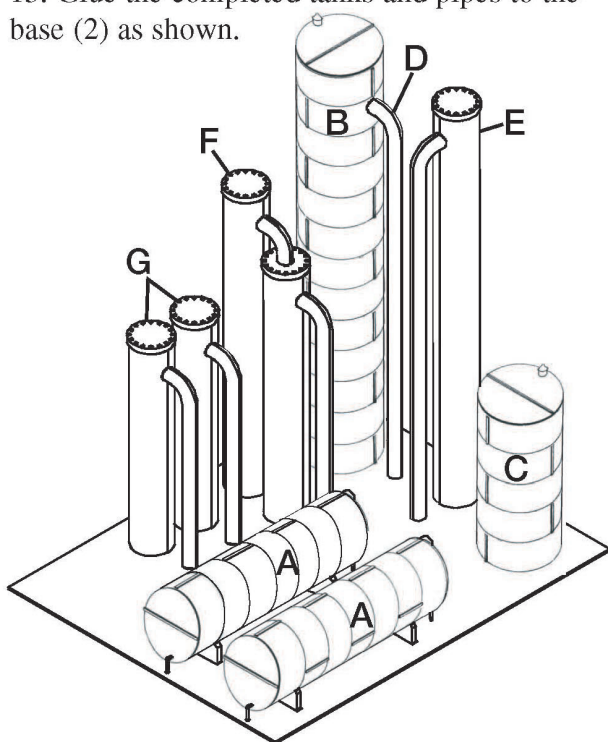


10. Glue the pipe halves (42, 43) together.
11. Glue the tall pipe assembly (35, 40, 41) together.

12. Glue the double pipe assembly (35, 35b, 36, 37, 38, 39) together.
13. Glue the two short pipes (26, 27, 35) together.



15. Glue the completed tanks and pipes to the base (2) as shown.



16. Glue the pipe supports (52) to the bases (53).
17. Glue pipe halves (49) together. Glue the pipe elbows (44, 48) together. Glue the end flange (50) to the end of the elbow or straight pipe that will attach to the side of a building. Flanges (51) are to be glued between elbows and pipes to join them together. You may arrange pipes/elbows to connect this building to the Coke Retort (933-2910).

### SIGNS

To mount signs, simply cut the desired name and, using a small drop of white glue on the back, glue it in place.