



## HO STRUCTURE KIT **BLUE STAR** **READY MIX** **933-3086**

Thanks for purchasing this Cornerstone Series® kit. All parts are styrene, so use compatible paint and glue. Please read the instructions and study the drawings before starting.

Since ancient times, concrete has been one of the most widely used building materials. Offering superb flexibility, strength and durability, it has been used to build everything from roads, to ships, to works of art. Since it consists of mostly natural materials, it can be recycled. It can be treated and/or reinforced to make it incredibly strong, with a tensile strength of 50,000 pounds per square inch. And if properly mixed and applied, it can last 50,000 years!

One of the earliest uses of concrete-like material was found in ancient Egypt and Greece, where builders created smooth surfaces on brick and stone using calcinated gypsum or limestone. The Romans later built concrete aqueducts and roads, as well as stone and concrete structures, using a mixture of materials not unlike today's concrete.

Modern concrete is created by mixing water, portland cement (named for its resemblance to building stone quarried near Portland, England), coarse aggregates (gravel), fine aggregate (sand) and air. Inside a ready-mix plant, these ingredients are machine-mixed to insure a uniform consistency between batches, which improves the performance of the finished concrete.

All of the aggregates must be clean and free from grass or weeds. Sand is typically screened through 1/4" 6.3mm openings to remove large particles, but depending on what's being built, gravel as large as 6" 15cm can be specified for especially thick sections.

The ready-mix process starts by blending dry portland cement with aggregates to a customer's specifications. This is ordered as a dry-volume mix, indicating how many parts of cement, sand and gravel will be used. For small projects, a typical mix of 1:2:3 is used. This indicates a mix of 1 cubic foot of cement, 2 cubic feet of sand and 3 cubic feet of gravel. For added strength and durability, this mixture can be adjusted by adding more gravel. (Additional materials, such as synthetic fibers, can also be added to strengthen the finished concrete.)

The next step is to add clean water, usually one to one-and-one-half times the volume of the cement. In our sample 1:2:3 mix, six gallons are needed, but five could be used if the sand is wet. The amount of water can also be reduced to make high-strength concrete. Water and cement react to form a cementing medium, which coats the particles of sand and gravel, binding them into a plastic mixture. While this traps some air, more can be added to strengthen the finished concrete. Water is also needed to harden concrete, through a chemical reaction

called cement hydration. This causes tiny crystals to form, which interlock to create a hard structure as the concrete dries. Since it takes time for the crystals to form, admixtures, such as sodium chloride, can be added to increase or slow the drying time, which varies with the needs of the project.

When thoroughly mixed, the concrete is ready to be delivered in specially equipped "cement mixer" trucks. These self-propelled units carry a powered, rotating drum that keeps the cement properly mixed while in transit. On the job-site, a variety of forms can be assembled in position (This allows concrete to be molded in to almost any shape and in varying degrees of thickness.) and the concrete poured in place from the mixer truck. When the truck can't be moved directly to its pouring point, such as the upper floors of a new skyscraper, contractors may choose to lift the material using cranes equipped with special buckets or call in a specialized concrete pumping trucks.

### ON YOUR LAYOUT

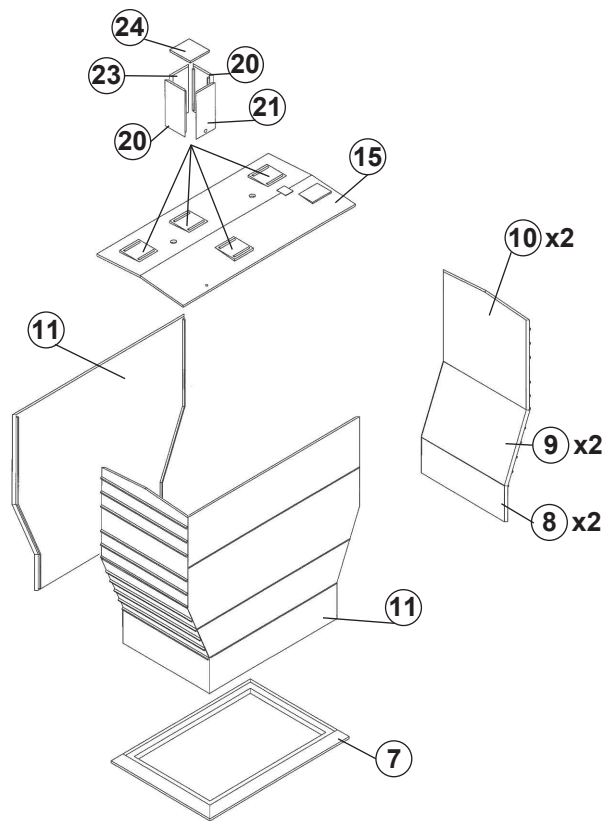
Consuming many tons of raw materials each day, ready-mix plants are major customers for the railroads that serve them. And since concrete is the most widely used of all building materials, they can be found in or near most American cities and towns.

Aggregates don't need to be protected from the weather, so virtually any open hopper can be used for this service. But since large quantities are needed, availability of cars, bulk costs of materials and the time needed to unload must be considered. As a result, many plants have found Ortner 100-Ton 3-Bay Aggregate Cars an ideal choice for sand and gravel service.

Given the volume of business, most wayfreights will have cars to set-off or pick-up here and will do switching chores. But many plants like having their own small switcher. Some use locomotive cranes in dual role, handling raw materials and moving loaded or empty cars as needed.

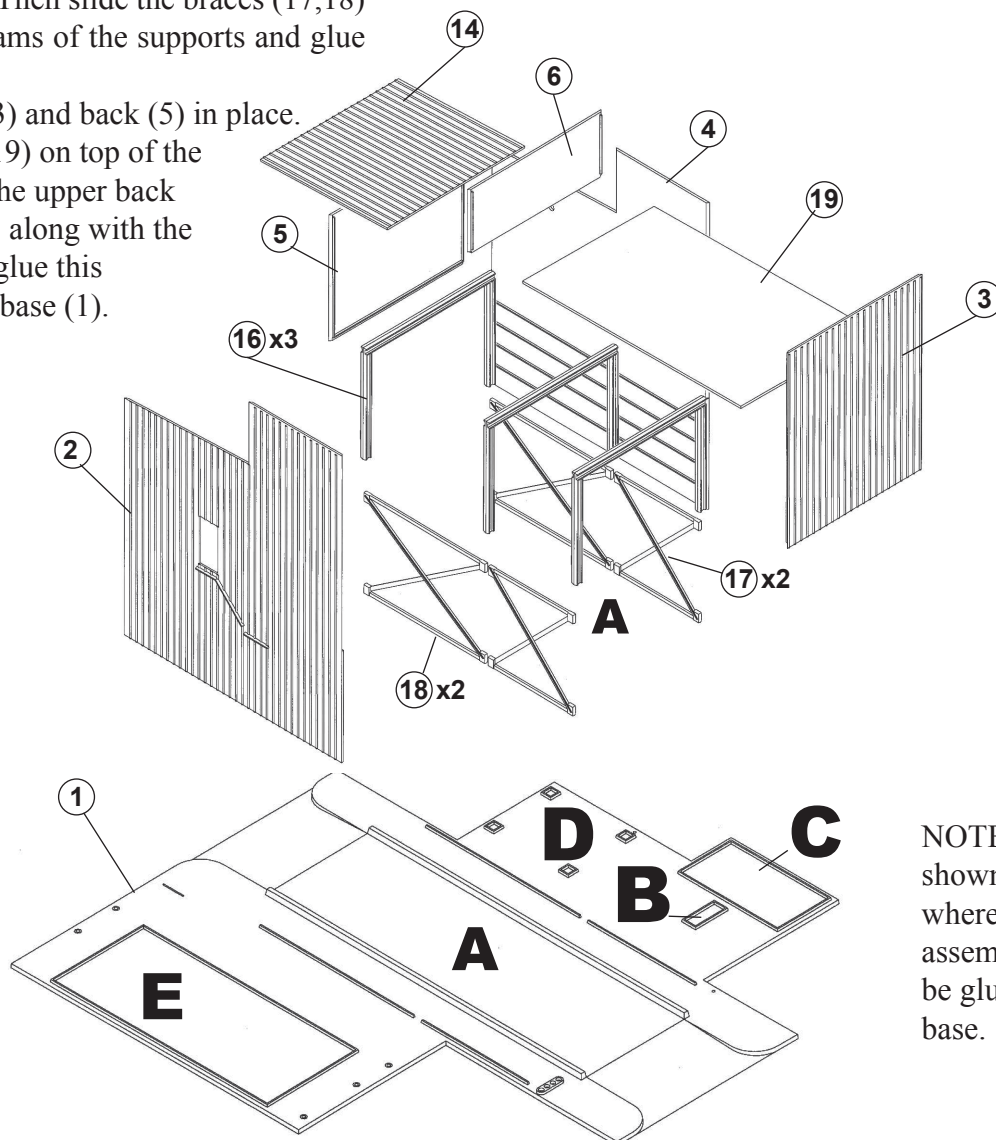
Be sure to check out your local hobby shop, or Walther's Web site at [www.waltherscornerstone.com](http://www.waltherscornerstone.com), for a scale house (used to weigh incoming loaded cars and departing empties), cement mixer trucks, figures and other accessories to complete your new industry.

1. Glue the end walls (8,9,10) together and to the side walls (11). Then glue the roof (15) in place. Glue the collectors (20,21,23,24) together and glue them to the pads on the roof. Make sure the holes are facing inwards. Next glue this assembly to part #7 and set aside.



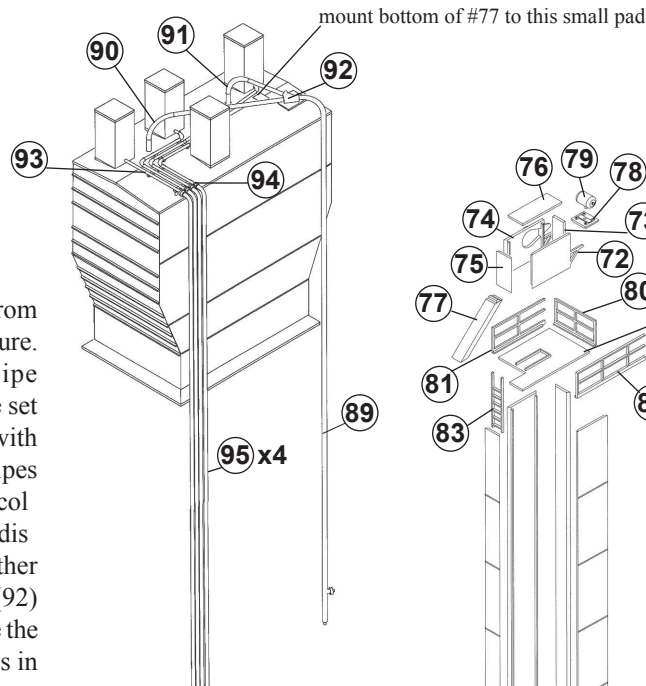
2. Glue the supports (16) to the inside of side wall #4 making sure they are flush with the bottom edge. Next glue the other side wall (2) to the supports. Then slide the braces (17,18) up into the I-beams of the supports and glue in place.

Glue the front (3) and back (5) in place. Glue the floor (19) on top of the supports. Glue the upper back wall (6) in place along with the roof (14). Now glue this assembly to the base (1).

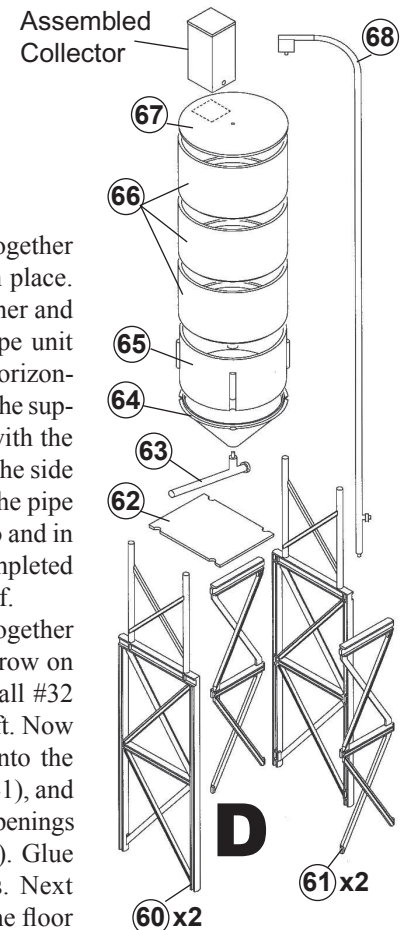
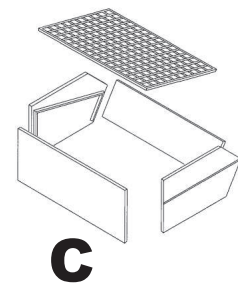
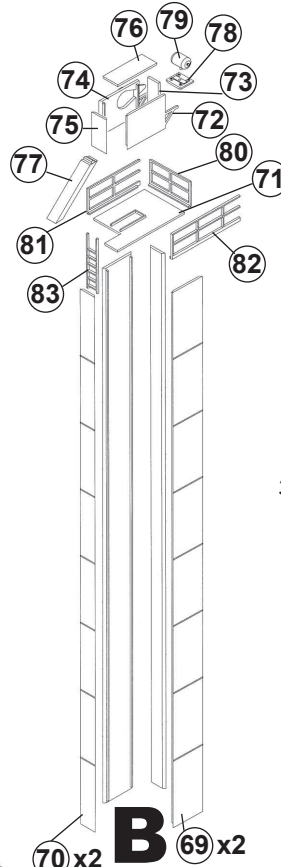


NOTE: the letters shown here refer to where the different assemblies should be glued on the base.

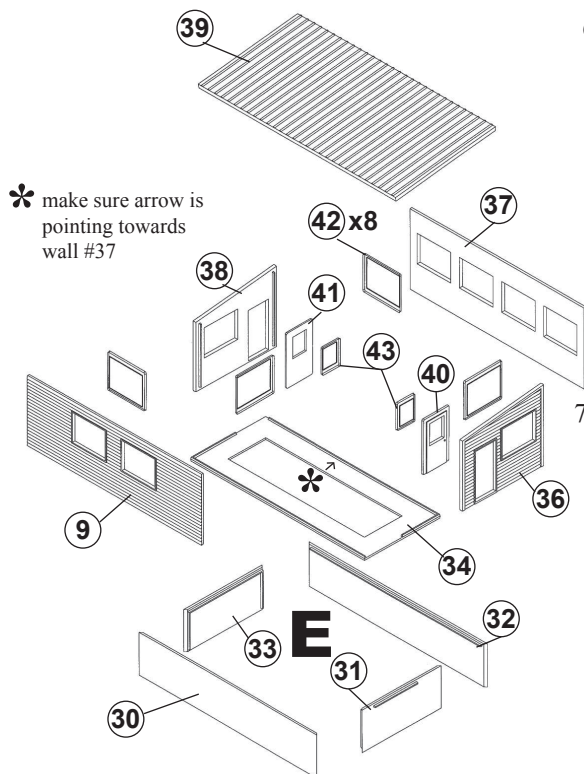
3. First, glue the top section, from step 1, onto the bottom structure. Now glue the multiple pipe joiner (94) to the end of pipe set (93). Glue this to the roof with the ends of the individual pipes going into the holes in the collector walls. Next glue the discharge pipe (89,90,91) together using the small pipe joiner (92) to join all three together. Glue the completed pipe into the holes in the roof and the hole in the base. Glue the four pipes (95) into the multiple joiner and in the holes in the base.



4. Glue the conveyor sides (69,70) sides together and glue the platform (71) on top, using the ridges to position. Glue the conveyor top section (72,73,74,75,76) together and to the platform. Glue the motor (79) to its mount (78) and then the mount in place as shown. Glue the handrails (80,81,82) onto the platform. Now glue the pipe (77) under the top section that overhangs the platform. Then glue this completed assembly to the base with the bottom of the pipe being glued to the small pad on the roof. Glue the ladder (83) to the edge of the platform and to the large pad on the roof.
5. Glue the dump bin (84,85,86,87,88) together and to the base in front of the conveyor.

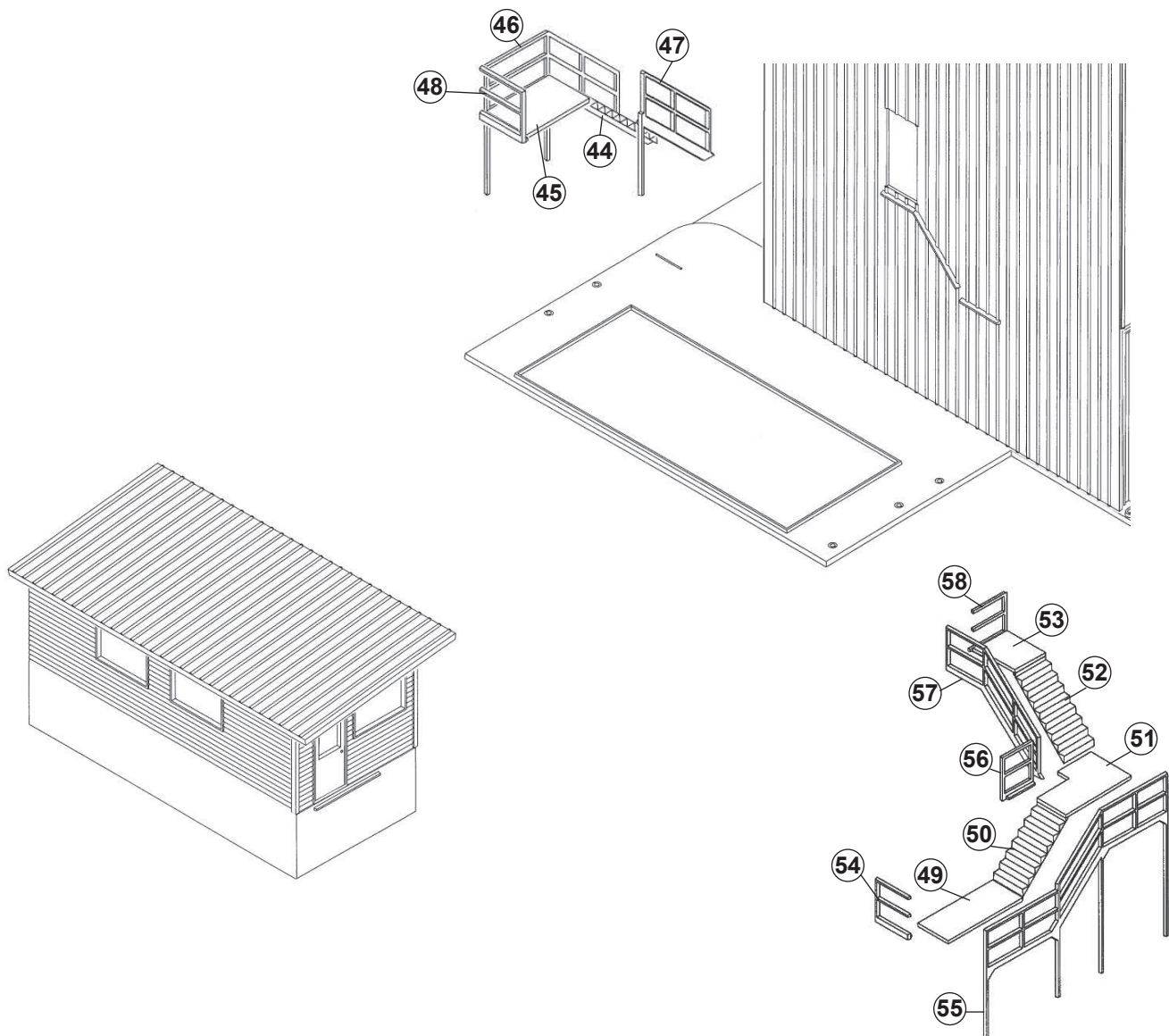


6. First, glue the silo supports (60,61) together and then glue the top platform (62) in place. Next glue the silo (64,65,66,67) together and in place on the supports. Glue the pipe unit (63) to the bottom of the silo with the horizontal pipe exiting under the "X" brace of the support. Glue this assembly to the base with the horizontal pipe fitting into the hole in the side of the main structure (wall #4). Glue the pipe (68) into the hole in the roof of the silo and in the hole in the base. Then glue a completed collector (20,21,23,24) on the silo roof.
7. Glue the basement walls (30,31,32,33) together along with the floor (34). Note: the arrow on the floor must be pointing towards wall #32 with #31 to the right and #33 to the left. Now glue the door window "glass" (43) into the openings in the back of the doors (40,41), and the wall window "glass" (42) into the openings in the back of the walls (35,36,37,38). Glue the doors in place on the side walls. Next glue the office walls together and to the floor as illustrated. Glue the roof (39) in place. Set finished office aside.



\* make sure arrow is pointing towards wall #37





8. Glue small stairway (44,45,46,47,48) together and set aside.
9. Begin construction of the large stairway by gluing the stairs (52), platform (53) and railings (57,58) together. Glue this sub-assembly to the wall (2) of the large structure, positioning it above the ridges located beneath the door opening. Now glue the completed office from step 7 onto the base. Then glue together the rest of the large stairway (49,50,51,54,55,56) and glue it to the base, the bottom of stairs (52) and the ridge on the side of the office. Now glue the small stairway, from the previous step, in place on the base and to the other side of the office.

### 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 on Micro Sol® on top. This will soften the decal allowing it to conform to irregular surfaces. DO NOT TOUCH DECAL while wet!
3. When the 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®.