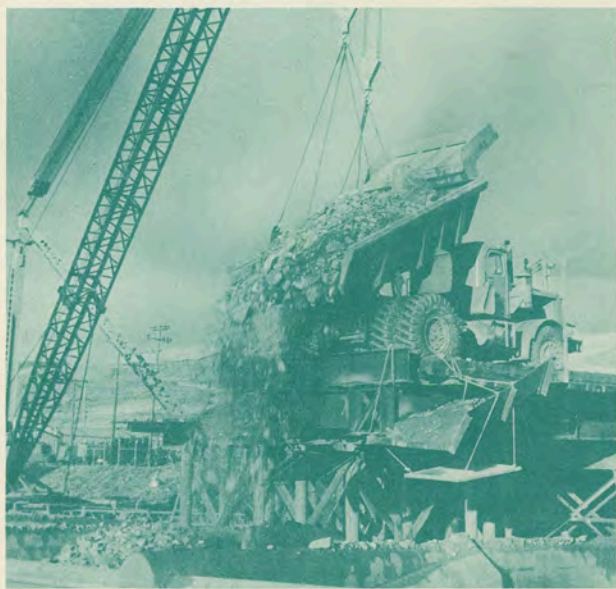


**T**HIS BOOKLET is designed to tell you about one of Southern Pacific's newest engineering projects. We call it Operation Fill—a 13-mile solid rock fill to replace the trestle portion of the Lucin Cutoff that carries passengers and freight straight across Great Salt Lake. You'll see this big job in its early stages from your car window on your trip over S.P.'s Overland Route.

When the original Central Pacific (now Southern Pacific) track was laid for the pioneer transcontinental railroad, Great Salt Lake was a natural obstacle. So the tracks circled north, climbed 1,500 feet and met the rails from the east at Promontory Point on May 10, 1869.

Years later, in 1904, the Lucin Cutoff was completed. Part fill, part trestle, it eliminated 43 rugged miles from the Overland Route. At the time it was a major engineering achievement and it has served us well. But S.P. has now decided to fill in the 13-mile trestle section too and make it a solid rock roadbed all the way. This is Operation Fill!



● Dump trucks unload rock fill into waiting barges while "skip" crane stands by to remove oversize boulders.

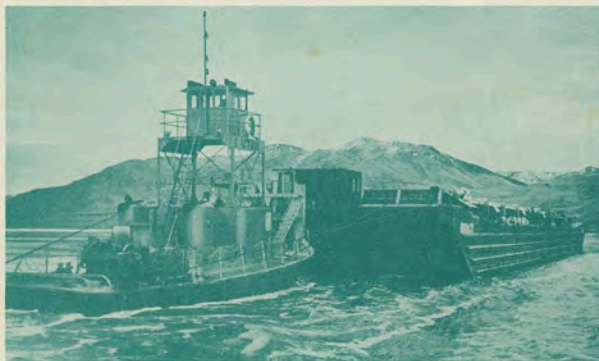
Built by Hewitt-Robins, Inc., the conveyor system is nearly two miles long and generates its own power.

The conveyors, 54 inches wide, follow a downhill course from a nearby gravel hill to the lake and coast down like an automobile with its engine shut off.

Motors function as a braking system to regulate the speed of descent. The energy created by the gravitational glide is converted into electrical power by the motors.

The wiring system is arranged to capture this surplus power and feed it to three electric shovels that dig the gravel out of the hill.

Cost of the conveyor system is over \$1,700,000.



● Pusher tugs provide shuttle service for six giant drop-bottom barges between the loading dock and the fill area.

## LITTLE VALLEY, UTAH

Utah's bustling new community is a blend of city convenience and rugged Pacific Island army camps. But to some 600 Morrison-Knudsen workmen and their families it's home. Population may soon reach 2,000.

Little Valley at the end of a roundabout, 90-mile road from Ogden, is located on the western side of Promontory Point, only a short distance from the busy barge harbor and center of construction operations.

# Southern Pacific

The West's Largest Transportation System

(3-57-50M)

# OPERATION FILL

A guide for "sidewalk  
superintendents" on S.P.'s  
13 mile SALT LAKE FILL



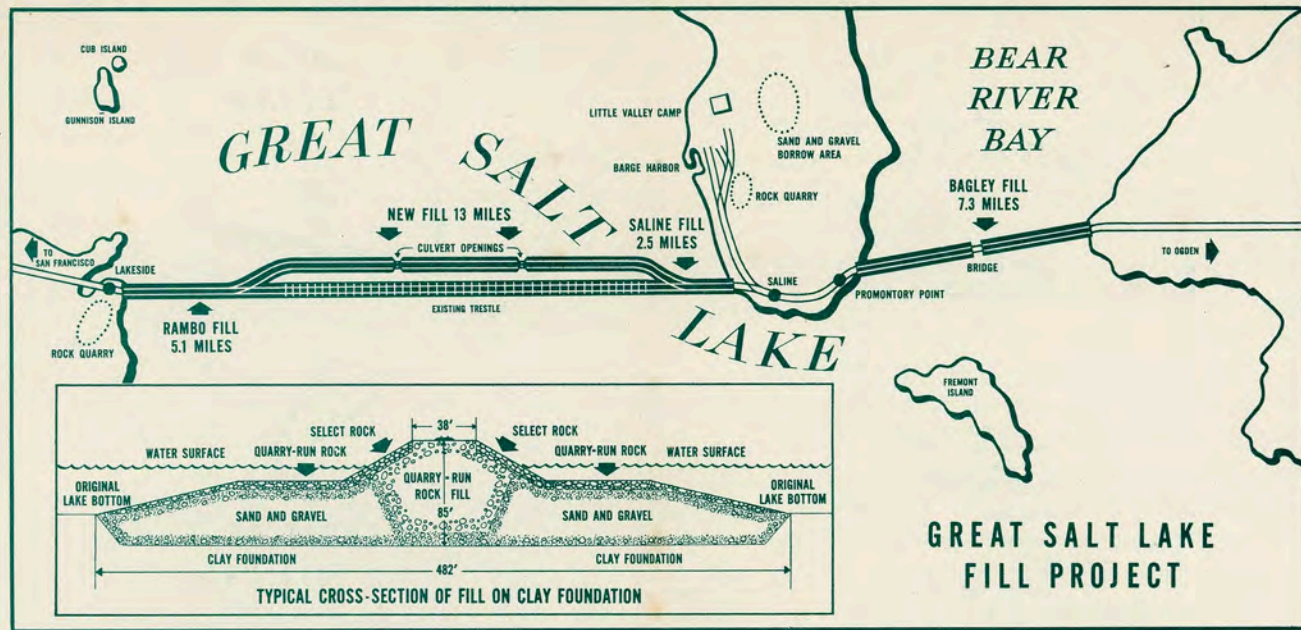
## THE STORY OF S.P.'s SALT LAKE FILL

It is taking a combination of men, machines and money during the next few years to move more than 47 million cubic yards of material (including 16 million yards of dredging) in the construction of Southern Pacific's 13-mile, deepwater fill on the Great Salt Lake.

Specifically, the \$49 million project will take 600 men and more than \$15 million worth of equipment.

But work could never have begun had it not been for extensive scientific tests dating back to 1953.

Borings and analyses performed by International Engineering Co., Inc., were double-checked by the leading engineering consultants on soil materials research.



The master plan calls for dredging some 16 million cubic yards of lake bottom. This has created a trench 175 to 480 feet wide and 20 to 35 feet deep, reaching down through the soft mud layer to hard clay or salt rock.

Now, rock and gravel from sites around the lake are being barged and dumped into the trench.

Filling began at both ends and is proceeding toward the middle. The barges, with special devices, are dumping material on the fill to a height of 5 feet above the surface. Then the remainder of material will be handled by rail car and dump trucks.



● At the end of the conveyor system a cascade of gravel pours onto the storage pile near the barge loading dock.

After the end sections have been filled, they will be allowed to settle on their clay base while the middle section is completed on its stable salt rock bedding.

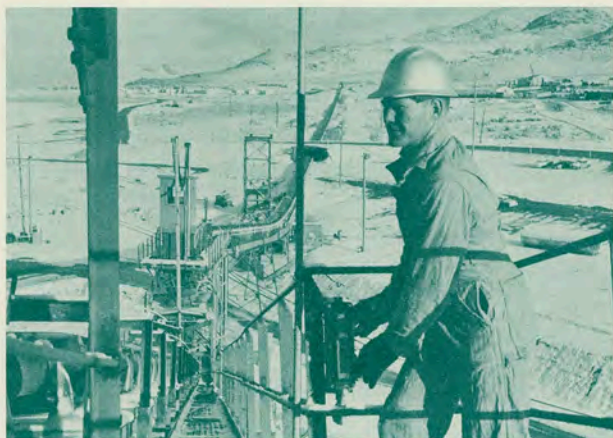
When the embankment is 17 feet above the surface it will be widened and strengthened with heavy rock to protect it against storms which toss eight-foot waves on the 2,000 square mile lake.

A total of six giant drop-bottom barges, 250 feet long and 48 feet wide, together with seven smaller deck barges are being used in the fill project.

Built first at the Kaiser steel fabricating plant at Napa, California, the giant barges were dismantled and shipped in 32 ten to thirty-ton sections over Southern Pacific rails to the launching site.

Three dredges also were shipped overland by rail to the Great Salt Lake. At a point three miles north of Promontory Point, where the rail line heads out over the main portion of the lake, the dredges scooped out of the shallow, mud-lined shore a large harbor for barge launching and loading docks. A 3.2-mile-long channel connects the harbor with deep water.

The barges travel four to fifteen miles to reach the fill area and receive gravel from a giant conveyor system that is setting new speed records for material handling—an average of 75,000 tons a day.



● Workman with push-button controls dumps 75,000 tons of gravel daily from the two-mile conveyor system.

In the study of nine basic plans for replacing or improving the present trestle, it was found that the relatively new science of soil mechanics made possible the course finally determined.

To permit continued use of the present trestle during construction, it was decided to build the new fill 1,500 feet to the north.

First construction was started by Southern Pacific forces in June, 1955. In March, 1956 work was stepped up with the awarding of a \$45 million contract to the Morrison-Knudsen Company, Inc., contractors.