

SYLVAN BRICK COMPANY (face brick)      Multnomah County

Operators: Mr. H. R. Kreitzer, president; Mr. Charles E. Jensen, vice-president and general manager, Sylvan.

Location: Just east of Sylvan and north of State Highway 8 (Canyon Road) on the west boundary of Portland, in the center of the S $\frac{1}{2}$  sec. 6, T. 1 S., R. 1 E., at an elevation of about 750 feet.

Area and development: 13 acres. The clay pit has been mined back from the plant a distance of over 100 yards, and now has a face at least 50 feet high and 800 feet long. Thirty-six men are employed.

History and record of production: The clay pit at this locality was first opened up by Randles and Kinsey in 1893. It has been known by many names, among them "Standard Brick and Tile Company." It was taken over in 1933 by the Columbia Brick Works, and in August 1948 became the Sylvan Brick Works. Production during the war years has been restricted to face brick, although the plant is equipped to turn out a large variety of tile. Production since 1945 is given as follows:

Brick

1945 ..... 4,500,000  
1946 ..... 7,000,000  
1947 ..... 7,000,000.

Geology: The top of the clay lies at about 50 feet above the plant. A well drilled near the plant to a depth of 187 feet was still in clay; whereas basalt outcrops in the walls of the canyon below the plant and over the ridge to the west. The elevation is higher than most known deposits of transported clay in the Portland area. Several isolated, irregularly shaped pebbles of basalt and three or four water-worn pebbles of exotic rocks were found on the surface in the pit; they are reported to have been found in place in the clay. No lenses of pebbles or sandy material were seen or have been reported. At the east end of the pit the clay has a definite vertical structure caused by minute vertical holes, a typical loessal structure which is interpreted to have been caused by grass which was buried by the material. The origin of the thick clay section at Sylvan and of the clays and silts lying upon a weathered surface of Columbia River basalts in the Portland Hills and farther north has been a subject of discussion since it was first described. Diller (96:485)

believed that even the deposits as high as 660 feet in elevations were "evidently laid down in water." Darton (09:11) described it as a loess; and Treasher (42:14) states that it is in part water and in part wind laid. Libbey, Lowry, and Mason (45:10) believe that the presence of quartzite pebbles in the clay at Sylvan is conclusive evidence that it was water laid.

Equipment and processes: The clay is excavated with a bulldozer which moves it into a dry storage shed 100 by 300 feet in size holding several thousand yards. A belt conveyor runs beneath the storage shed, and the raw clay is fed to it by the bulldozer and by hand. It is lifted and dropped through a disintegrator and an 18-inch roll. From there it is carried by a short belt to an American pug mill and auger machine. Power is supplied by a 150-hp. electric motor. A dry pan crushes dried clay and green for a dry clay source which is carried by bucket elevator to a bin above the pug mill.

The auger machine has a capacity of 40,000 brick per day; the brick pass through a semi-automatic wire cutter. Brick are stacked on steel cars; then enter a 2-story tunnel drier by way of narrow gauge track and elevator. They remain in the drier about 3 days. The drying house contains

15 tracks, and is 100 feet long. It is heated by warm air from the cooling kilns, forced into the kilns by 2 small portable electric blowers.

From the drier house the brick is loaded from both sides into a double row of down-draft kilns, consisting of 11 units (5 on each side and 1 at the end) each unit being 11 by 40 feet in size and 12 feet high, with a capacity of 25,000 brick. The dimensions of the row of kilns are 40 by 230 feet. They are individually fired through 3 ports at each end of each kiln by six electric motor-driven "enterprise" crude oil burners. There are two electric driven oil pumps which supply oil from the large storage tank, and maintain a closed circuit movement of the oil while the burners are not in operation. About 35 barrels of oil (\$1.52 to \$1.88 per barrel) are required to fire each kiln, and almost every day one kiln is finished firing (25 kilns during November 1946). The periodic kilns operate on a 12-day cycle as follows:

Stacking and unstacking	3 days
Drying and heating	2 days
Firing	2 days
Cooling	4 days
Final cooling with blower	1 day

The heat from the down draft kilns is carried from the duct beneath the kilns into and up through the next kiln where the brick are given preliminary water-smoking, drying, and heating, and is then pulled through a duct by the exhaust fan and stack. Another duct parallel and below this exhaust duct carries the heat from the cooling kilns to the drier house, thus transferring and using much of the waste heat. A round down-draft or beehive kiln 32 feet in diameter is used as an auxiliary for special work.

Brick from the kilns are stacked on pallets which are loaded directly upon trucks by means of 3-wheeled fork-trucks. There is a large amount of storage space for finished bricks. Other buildings contain a lunch room, small office, and show room, a wash room, and a machine shop.

Report by: J.E.A., 1946 (revised)

References: Diller, 96:485  
Darton, 09:11  
Treasler, 42:14  
Libbey, Lowry, and Mason, 45:10

COLUMBIA BRICK WORKS (face brick)  
(Sylvan Plant)

Multnomah County  
~~1320 SE Water St.~~  
Portland

Operator: Mr. Charles Jensen, general manager, Sylvan.

Location: Just east of Sylvan, and north of State Highway 8 (Canyon Road)  
on the west boundary of Portland, in the center of the S<sub>2</sub> sec. 6,  
T. 1 S., R. 1 E., Multnomah County, at an elevation of about 750 feet.

Area: 13 acres.

History and record of production: The clay pit at this locality was first  
opened up in 1883 (1887?). It was known  
by many names, among them "Standard Brick and Tile Company". It was taken  
over in 1933 by the Columbia Brick Works. Production during the war years  
has been restricted to face brick, although the plant is equipped to turn  
out a large variety of tile. Production since 1941 is given as follows:

	<u>Brick</u>
1941	
1942	
1943	
1944	
1945	4,500,000
1946	7,000,000

Development: The clay pit has been mined back from the plant a distance  
of over 100 yards, and now has a face at least 50 feet high  
and 800 feet long. Thirty-six men are employed.

Geology: The top of the clay lies at about 50 feet above the plant. A well  
drilled near the plant to a depth of 187 feet was still in clay;  
whereas basalt outcrops in the walls of the canyon below the plant and over  
the ridge to the west. The elevation is higher than most known deposits of  
transported clay in the Portland area. Several isolated irregularly shaped  
pebbles of basalt and three or four water-worn pebbles of exotic rocks were

found on the surface in the pit; they are reported to have been found in place in the clay. No lenses of pebbles or sandy material were seen or have been reported. At the east end of the pit the clay has a definite vertical structure caused by minute vertical holes, a typical loessal structure which is interpreted to have been caused by grass which was buried by the material. The origin of the thick clay section at Sylvan and of the clays and silts lying upon a weathered surface of Columbia River basalts in the Portland Hills and farther north has been a subject of discussion since it was first described by Diller in 1896 (Diller, J. S., A geological reconnaissance in northwestern Oregon: U. S. Geol. Survey, 17th Ann. Rept., pt. 1, p. 485) who believed that even the deposits as high as 660 feet in elevation were "evidently laid down in water". Darton later (Darton, N. H., Structural materials in parts of Oregon and Washington: U. S. Geol. Survey Bull. 387, 1909) described it as a loess; and Treasher (Treasher, R. C., Geology of the Portland Area: Oreg. Dept. Geol. & Mineral Ind. Short Paper no. 7, 1942) states that it is in part water and in part wind laid. Libbey and others (Libbey, F. W., Lowry, W. D., and Mason, R. S., Ferruginous bauxite deposits in northwestern Oregon: Oreg. Dept. Geol. and Mineral Industries Bull. 29, 1945) believe that the presence of quartzite pebbles in the clay at Sylvan is conclusive evidence that it was water laid.

Equipment and processes: The clay is mined with a small bulldozer, which shoves it into a dry storage shed 100 x 300 feet in size holding several thousand yards. A larger D-4 Caterpillar with scraper attachment has been ordered.

A belt conveyor runs beneath the storage shed, and the raw clay is fed to it by the bulldozer and by hand. It is lifted and carried to a large bin

and thence passed through a disintegrator and an 18-inch roll. From there it is carried by a short belt to the American pug mill and auger machine. Power is supplied by a 150 hp electric motor. A dry pan crushes dried clay and spoil brick for grog, which is lifted by an elevator to a bin above the pug mill.

The auger machine has a capacity of 40,000 brick per day; the bricks pass through a semi-automatic wire cutter, ~~which is in part hand and part power operated~~. Bricks are stacked on steel drier cars, and enter a 2-story tunnel dry shed by way of narrow gauge track and elevator. They remain in the drier about 3 days. The drying house contains 15 tracks, and is 100 feet long. It is heated by warm air from the cooling kilns, forced into the kilns by 2 small portable electric blowers and into the shed by 2 larger electric powered blowers.

From the drier house the brick is loaded from both sides into a double continuous row of down-draft kilns, consisting of 11 units (5 on each side and one at the end) each unit being 10 x 30 feet in size, with a capacity of 25,000 brick. The dimensions of the row of kilns is 40 x 230 feet. They are individually fired through 3 <sup>openings</sup> ~~tuyeres~~ at each end of each kiln by six electric motor driven "Enterprise" crude oil burners. There are two electric driven oil pumps which supply oil from the large storage tank, and maintain a closed circuit movement of the oil while the burners are not in operation. About 25 barrels of oil (\$1.52 to 1.88 per barrel) is required to fire each kiln, and one kiln is fired per day (25 kilns during November, 1946).

The continuous kilns operate on a 14-day cycle, as follows:

Unloading and loading	3 days
Drying and heating	3 days
Firing	3 days
Cooling	4 days
Final cooling with blower	1 day



The heat from the down draft kilns is carried from the duct beneath the kilns into and up through the next kiln, where the bricks are given preliminary water-smoking, drying and heating, and is then pulled through a duct to the exhaust fan and stack. Another duct parallel and below this exhaust duct carries the heat from the cooling kilns to the drier house, thus transferring and using much of the exhaust heat.

A round down-draft or beehive kiln 30 feet in diameter is used as an auxiliary for special work.

Brick from the kilns are stacked on pallets which are loaded directly upon trucks by means of motor lift-trucks. There is a large amount of storage space for finished brick. Other buildings contain a lunch room, small office and show room, a wash room, and a machine shop.

*John E. Allen, 2/2/46*

John Elliot Allen

December 2, 1946