



Fred J. Cooper Memorial Organ Facts

The pipe organ for Verizon Hall is one of the largest of a new generation of mechanical-action pipe organs in concert halls in the world today. It is the culmination of more than six years and 52,000 man-hours of planning, construction, and voicing.*

The new organ contains **6,938 pipes**, which are constructed of wood or metal depending on the type of sound desired. The largest pipes are made of wood and are about two feet square and 32 feet tall. The smallest pipes are similar in size to a slender drinking straw.

The entire instrument is placed above and to the rear of the stage where it can speak unhindered into the hall. The organ's **main console** is located on a platform below the *façade* at the upper level of choir seats and operates the organ mechanically. This mechanical-action or *tracker* system remains unchanged in principle from organs built centuries ago and is preferred by discerning musicians worldwide. When the situation calls for it, a **moveable console** has been provided that can play the organ electrically from the stage.

The new organ has **four keyboards** for the hands, called *manuals*, and one keyboard for the feet, called the *pedalboard*. These five keyboards control five major groups of pipes, or *divisions*. These five divisions are: Positive (bottom manual), Great (second manual), Swell (third manual), Solo (upper manual), and Pedal (pedalboard). The pipes of the Swell, Positive and Solo divisions are located in enclosures which are "expressive." This means the organist can control the volume of sound from this division by opening or closing a set of louvers called *swell shades*. These louvers are operated by special controls called *expression shoes*, located immediately above the pedalboard at the console.

Each *stop* in the organ contributes a different tonal color to the ensemble. In general, each stop contains at least one *rank* of pipes. A rank is a set of pipes of uniform tone, usually containing one pipe for each key on its respective keyboard. Some stops have more than one pipe per key, such as the Mixture on the Great division, which has seven pipes for each key.

Four blowers totaling 25 horsepower supply the organ with air ranging in pressure from 4" to 20" measured on a water column. These blowers are placed in the basement for sound isolation, and the pressurized air is carried to the organ through large insulated ducts. As wind is used by the pipes during playing, air pressure is properly maintained by the organ's 15 *reservoirs*.

**words in italics are defined in Glossary of Terms on the back of this page*

Glossary of Terms

- Blowers:** An electrically powered rotary fan that provides the necessary wind for the organ. This equipment is the modern equivalent to the hand-pumped bellows, used before the advent of electricity.
- Console:** Houses all the controls an organist uses while playing the organ.
- Divisions:** A group of stops controlled by a single manual or the pedalboard.
- Expression Shoes:** Located immediately above the pedalboard at the console, these hinged foot levers or “shoes” enable the organist to control the position of the swell shades. Typically, there is one expression shoe per enclosed division.
- Façade:** The collective appearance of the organ’s case and façade pipes.
- Manuals:** A keyboard for the hands that normally contains 61 individual keys. A four manual organ has four keyboards.
- Pedalboard:** A keyboard played by the organist’s feet. The pedalboard consists of 32 keys and plays the pipes of the Pedal division.
- Rank:** A uniformly voiced set of pipes, generally one pipe for each key of its respective keyboard, although some stops, such as Mixtures, contain more than one rank of pipes.
- Reservoirs:** A device that regulates and maintains the wind pressure in the organ as air is used while the organ is being played. Generally, each division has its own reservoir.
- Stop:** One or more ranks of pipes that are uniformly voiced to produce the same tone, thus contributing a singular voice to the organ.
- Swell Shades:** A set of louvers fitted over the front of the sound proof enclosure containing the pipes to certain division in the organ. These louvers or shades can be opened and closed by the organist seated at the console via a foot lever or expression shoe that is located immediately above the pedalboard. This enables a degree of volume control or “expression” during musical performance.
- Tracker:** A thin strip of wood that forms the mechanical connection between a key and the pallet. Pipe organs utilizing this type of key action are most commonly referred to as “tracker” organs.
- Voicing:** The process of producing specific tones by manipulating the speech of organ pipes. This is fundamentally different than tuning the pipes, although pitch accuracy is important to the voicer’s art.