



## SHORING SECTION

# SSFI TECHNICAL BULLETIN

## Shoring, Reshoring, Preshoring (Backshoring)

Concrete structures need temporary support until the concrete becomes hard and achieves the desired strength to support loads. This support is generally known as shoring and formwork. (Formwork is the material used to give the required shape and support of poured concrete. It is typically plywood, joists and stringers.) Shoring, sometimes also referred to as falsework, is a system of vertical supports that is designed and placed to safely support the load of fresh concrete and construction loads. The shoring directly supports the formwork and transfers the load of the concrete to a firm support below, such as a completed floor in a building, or to the ground, as would be the case in a concrete bridge.

When shoring is used in a multistory building, such as an office building, it is expected that the partially completed building will support the construction loads. Since the floor directly below the one being constructed usually has insufficient strength to support the construction load, it is often necessary to *transfer* some of the construction loads to additional lower floors. Reshoring is used for this purpose. Consisting of either single posts or towers, the legs are strategically located to transfer construction loads to as many lower floors as required to ensure the partially completed building is not overloaded or overstressed.

Preshoring, also known as backshoring, is used when the formwork is removed from the freshly placed concrete before the concrete has achieved sufficient strength to support itself. Vertical supports are installed through the formwork while the formwork is carefully removed. (Certain proprietary systems allow for the formwork to be removed without disturbing the vertical supports.) These vertical supports should not be confused with reshoring. Preshoring is used to directly support freshly placed concrete that has not achieved its strength. Reshoring is used to *transfer* loads from shoring and/or preshoring to the structure under construction.

Since the same equipment is used for shoring, reshoring, and preshoring, there is no simple method for recognizing the different purposes on a particular job. Remember, it is the *use* of the equipment that identifies its function. A common, and unwise, practice on jobsites is to arbitrarily remove posts without thought as to function or purpose. Vertical posts should **never** be removed without proper authorization. If the post obstructs the work in progress, obtain permission from the designer before touching the post!

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This Technical Bulletin was prepared by members of the SSFI Shoring Section.

SSFI is a trade association comprising manufacturers of shoring, scaffolding, forming, and suspended scaffolding. The institute focuses on engineering and safety aspects of scope products.

This bulletin does not purport to be all-inclusive nor to supplant or replace other additional safety and precautionary measures to cover usual or unusual conditions. If this bulletin conflicts in any way with a state, local, federal or other government statute or regulation, said statute or regulation shall supersede this bulletin and it shall be the responsibility of each user to comply therewith. This bulletin has been developed as an aid to users of shoring equipment. SSFI is not responsible for the use of this bulletin.

Reshoring can be installed in two ways, either on a “leg for leg basis” or through a rigorous analysis and application of reshoring in specific locations. The most direct, and conservative approach, is “leg for leg.” This method requires reshoring supports to be installed directly under each shoring leg all the way down to the ground or to install reshoring supports below the shoring legs for a sufficient number of floors in the building to assure complete and safe load transfer. A rigorous reshoring analysis requires the skills of a qualified person who can analyze the structure and the shoring to determine the loads and ability of the structure to transfer the construction loads.

Another use of shoring equipment is for the support of existing buildings. One example of this type of application is the support of beams and floors in a building while a column or wall is removed. In this situation vertical supports are used as a temporary replacement for the building columns or walls. It is not uncommon for shoring and reshoring to be used to transfer the loads to the ground or other suitable foundation. (When shoring equipment is used for the support of existing structures, it is sometimes referred to as reshoring since it is “reshoring” an existing structure. This should not be confused with reshoring for new construction, as described above.)

For further information on shoring, reshoring and preshoring consult the American Concrete Institute’s “Formwork for Concrete” handbook (SP-4). The following documents also contain information regarding shoring, reshoring and preshoring:

- ❖ SSFI/SIA Code of Safe Practice for Erecting and Dismantling of Vertical Shoring
- ❖ ANSI A10.9-1997
- ❖ FEDERAL OSHA 29 CFR1926, Subpart Q (Concrete and Masonry Construction)
- ❖ California OSHA, Title 8
- ❖ American Concrete Institute, ACI-347

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