

Holding Up History



Author: Dale Lindemer, P.E.

Restoring an historic building can be a difficult task. The goal of a restoration is to make a building appear as it did during a particular time in history. The features and materials from the restoration period must be identified. Then a determination is made as to what can be maintained, protected, repaired and replaced or recreated if necessary.

Many types of buildings are restored every year. Typically, these buildings are at least 50 years old, with many much older. They can be single family homes of historic significance or old churches, theaters, courthouses, city halls, or state capitols across North America. Even the U.S. Capitol has undergone several restorations, both inside and outside (including the Statue of Freedom atop the dome).

The one common challenge on just about every restoration project is getting the craftsmen to where they need to be to perform their work. Most projects will require scaffolds to provide safe and efficient access.

If access to the work areas will be a major challenge, then preparing a detailed scaffold plan is a good idea during the bidding process. Scaffolds can be designed to support multiple work levels allowing more workers and materials on the project. Being "Erector sets," scaffolds (particularly system scaffolds) can be configured to follow unusual contours, providing easy access for the workers.

Many things need to be considered that will affect the design, cost and user friendliness of the scaffold.

How many work levels will I need at one time?

Every work level must have a load rating – typically 25 pounds per square foot for light duty work. Each additional work level will add weight that the scaffold must be designed to support and add plank and guardrail components that will increase the rental cost. Planks and guardrails can be moved as the work progresses, but this limits the number of work levels at any given time and could create disruptions while the plank and guardrail are moved to a new level.

What type of work will I be doing from the scaffold?

If the work will involve only the weight of the workers and some light tools and materials, such as painting, then a light duty work deck rated for 25 psf is adequate. If masonry work is required, then the scaffold should be designed for a medium duty load at 50 psf.

How high does the scaffold need to be?

Taller scaffolds are required by OSHA regulations to be tied into a structure for stability. Ties will require holes to be drilled into the building, which must be patched as the scaffold is dismantled. If this is not possible, then the scaffold will need to be guyed or the base (footprint) widened to maintain stability.

If the scaffold will be on the exterior, will it need to be enclosed to contain dust or to allow work to continue during inclement weather?

An enclosure will act as a large sail catching wind. This will impose large wind forces on the scaffold which must be taken into account during the design. Typically the number of ties for an enclosed scaffold is considerably more than for an unenclosed scaffold.

On what type of surface will the scaffold be erected?

Erecting a scaffold on a concrete slab that is on grade should not be an issue in most cases. However, if there is a basement under the floor, then the floor must be checked to verify that it can safely support the loads from the scaffold. If not, then the level(s) below will need to be reshored. The same holds true of scaffolds built on roofs or vaulted sidewalks. Scaffolds will impose concentrated loads on floors or roof that have been designed to support uniform loads. Loads may need to be distributed to a larger area, particularly in buildings with wood construction. Wood floor joists may not be conveniently located directly under a scaffold leg. Hiring an engineer to investigate the structure to determine if it will support the loads and/or installing reshoring must be figured into the bid.

What type of access will I need to get to the work levels?

Attachable scaffold ladders are one option. However, workers cannot carry anything when they climb ladders. Scaffold stairs allow workers to carry small objects with one hand (allowing the other free to grab

the handrail) and are less physically challenging to climb. They are more costly to rent and erect, but these costs could be offset by increased productivity because of the easier access they provide.

Will the building remain occupied and open to the public during restoration?

If yes, then a plan must be developed to ensure the safety and ability to enter, exit and move about the building. For exterior work, a protection canopy, also called a sidewalk shed, can be installed to cover sidewalks and building entrances. On the interior, catch platforms can be erected to protect the public. These canopies along with the number of exits required to remain open will be governed by local building and/or fire codes, not Federal OSHA regulations.

And last but not least, are you aware of local, state and federal scaffold regulations?

Federal OSHA requires that scaffold be erected, dismantled and modified only by trained erectors working under the direct supervision of a competent person. A competent person is also required to inspect the scaffold prior to each work shift. The workers who use the scaffold must also be trained before they step onto the scaffold.

This list of considerations is by no means complete and may vary from project to project. It is best to get a scaffold professional involved on your next project during the bid process, one who can answer all your questions and recommend solutions to meet your particular needs—safely and efficiently.

About the Author

Dale Lindemer, P.E., is the National Engineering Manager for Safway Services, LLC. Contact Dale at 262.523.6560 or by email at dale.lindemer@safway.com. Safway Services has been a leader in scaffolding services and access solutions in North America since 1936. Learn more by visiting www.safway.com.