

## **Structural Assessment Guidelines for Historic Buildings or Structures**

### ***What is a Structural Assessment Report?***

A Structural Assessment Report, which might also be referred to as an Engineer's Report, is a planning tool used to determine a historic building or structure's structural condition by analyzing and evaluating foundation, framing, other construction systems, and their associated construction details and providing recommendations for corrective treatments, as applicable. Structural Assessment Reports may be commissioned for several reasons, including determining existing load capacity and identification of structural deficiencies that need to be addressed for an adaptive use, determining causes and the extent of existing or potential structural failures, and as documentation and justification of the need for demolition. The size and degree of detail in a Structural Assessment Report is dependent on the condition and complexity of the resource examined, and the amount of information available or attainable, and the resource's current or proposed use. A Structural Assessment Report may be a stand-alone document or it may be a component of a larger planning document, such as a Conditions Assessment Report, Historic Structures Report, or Preservation Plan.

However, a Structural Assessment Report should not be perceived as *structural design*, although one can provide associated preliminary information; specific engineering solutions to identified structural deficiencies are the purpose of structural plans and specifications created by a registered Professional Engineer (PE).

As with other preservation planning documents, a Structural Assessment Report should be organized so that it provides necessary information in a manner understandable by the end user, who may not be an expert in the field.

### ***Considerations in Commissioning a Structural Assessment Report***

A Structural Assessment Report should an unbiased evaluation of existing conditions. It should include analysis of all structural systems in order to determine the condition of the entire building or structure, not just selective analysis of areas with obvious structural deficiencies. However, sections of buildings or structures that are structurally independent can also be evaluated as such.

Engineers and/or construction specialists conducting the structural assessment should be knowledgeable of the construction methods, materials, load capacities, and design details of the historic building or structure type being analyzed, as modern structural design approaches will likely not be directly applicable.

While a Structural Assessment Report is primarily inspection and analysis of readily accessed and visible conditions, investigation of some structural systems may require selective demolition to access hidden details in order to understand conditions that cannot be otherwise evaluated. If such demolition is necessary, it should be kept to a minimum and accomplished in a manner that allows for unobtrusive repair of removed finish material. Investigation of structural systems and other assessment work may require clean-up, temporary stabilization work, such as shoring and bracing, or equipment, such as scaffolding, ladders, and lifts that is the responsibility of the building/structure owner to provide.

*Lack of access or omission of information for other reasons about critical conditions resulting in an incomplete investigation should not be considered as evidence corroborating justification for demolition of a historic building or structure.*

*A site visit report by an engineer containing general observations and comments is not the equivalent of a Structural Assessment Report.*

A Structural Assessment Report for Historic Buildings or Structures should include:

1. Introductory information, including a table of contents, property identification information, including address, ownership, listing in historic registries, building/structure type, etc., and an executive summary, including acknowledgements, why the report is being done, and the property's current and proposed use, etc.
2. General description of the various structural systems in the building/structure and applicable nonstructural components, including terminology and definitions of technical information cited in the detailed description sections of the report.
3. Descriptions of the existing condition of the various structural systems, including foundations, bearing walls, framing, columns and beams, floor systems, roof systems, and their connection and construction details. Descriptions should include identification and location of deficiencies, questionable construction details, failed details, and attempted corrective measures, etc.; **AND** also documentation of effective structural systems.
4. Descriptions of the existing condition of non-structural components and their connection details attached to structural or other building systems whose connections failure could be hazardous or cause significant damage, such as signs, rooftop towers, parapet walls, cornices, etc., as applicable. Descriptions should include identification and location of deficiencies, questionable construction/connection details, failed details, and attempted corrective measures, etc.; **AND** also documentation of effective component connection systems.
5. Analysis of deficiencies, damage, and failures to determine/identify their evident, probable, or possible causes.
6. Recommendations for corrective measures, including conceptual level design solutions for stabilization and/or repair, **and** project prioritization or necessary sequencing.
7. Analysis of structural systems and components existing load capacity.
8. Existing conditions ("as built") drawings of the building/structure, its structural systems, and a site plan.

9. Photo-documentation, including contextual exterior views of the building/structure in its existing setting, views of elevations, interior views of significant rooms/spaces, representative views of structural systems, and representative views of deficiencies, questionable construction details, failed details, and attempted corrective measures, etc. Photos should be keyed to a plan or otherwise location-identified.
10. Supplemental information, as applicable, including reference materials/publications regarding historic construction methods and materials, technical information, and cost estimates.\*

*\* If cost analysis or estimates are provided that compare repair/stabilization of the existing building/structure to new construction, they should be for equivalent, rather than standard, new construction.*