

Structural Design Delegation

By David J. Hatem, PC and Matthew P. Tuller, Esq.

Design delegation refers to the determination of which professional or party to a construction project will have the ultimate responsibility for the design of a specific component. The focus is on whether the principal design professional's basic scope of services includes every component in the design under either a contract or a national standard, or delegates certain portions of the completed design to the contractor. This shift in responsibility generally flows from the design professional to the contractor or sub-contractor who will construct the specific component. Examples of these secondary components in structural design are elevator support rails and beams, stairs, and retaining walls independent of the primary building.

By delegating certain components of the design under the contract, the principal engineer can shift component design to a specialty structural engineer, manufacturers, or contractors who focus on design of specific components, leading to greater expertise and depth of knowledge with the design element. The use of a specialty structural engineer should lead to an efficient design, standardized design criteria, and lower building costs.

Then the question is: how can a structural engineer properly delegate portions of the design to a third party? The answer: a proper delegation of design responsibility begins with the initial engagement on the project and the determination of the scope of services on the project, continues with the drafting of specifications, and ends with the review of shop drawings.

The scope of services to be provided by the structural engineer should be set forth in the contract between the prime (architect) and the sub-consultant. A contractual agreement that properly identifies the scope of services, incorporating the requirements called for in the owner-architect agreement, will provide the structural engineer some protection from future claims. The scope of services incorporated into the standard AIA contracts for both the prime and the sub-consultant agreements sets forth a general definition of the normal and usual structural design services. This terminology does not provide the parties with a full appreciation for the services that will be performed by the structural engineer on the project. The ambiguous nature of this termi-

nology would require later interpretation by a court or other fact finder to determine what each party believed the scope of services was on the project.

Over the last decade, national groups representing structural engineers have provided guidelines for developing appropriate contract language to outline the design services included in a "normal" structural design, and those that are delegated to third-parties. These guidelines are modeled to apply further amplification to the AIA contract language. If incorporated into the structural engineer's contract, the

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guidelines can be used to define the structural engineer's scope of services. One such guideline is the Council of American Structural Engineers (CASE) National Guidelines which has developed recommended definitions for the primary structural design, and those items that are part of the secondary structural design not included in the basic services provided by the structural engineer of record. CASE recommends that these definitions, or reference to the guidelines, be included in all structural design contracts.

Under these guidelines, the primary structural system is defined as: "The completed combination of elements which serve to support the Building's self weight, the applicable live load which is based upon the occupancy and use of the spaces, the environmental loads such as wind, seismic, and thermal. Curtain wall members, non-load-bearing walls or exterior facade, to name a few items, are not part of the Primary Structural system." This primary structural system does not include such secondary items as stairs or elevator support rails. CASE recommends that the secondary structural design should either be included as an additional service under the contract, or are delegated to others to complete.

The delegation should be accomplished with express language in the contract and specifications to effectively shift the design criteria from the structural engineer to the specialty structural engineer. The specifications should expressly state that the contractor will need to

utilize a specialty structural engineer to provide the design services necessary for the delegated component. For example, the inclusion of a specified pre-caster's connection system in the specifications, or a specification section which states that the elevator equipment design, including bearing loads, will be provided by the selected manufacturer or contractor. Utilizing specific examples in the contract documents, with the caveat that similar type products or designs will be acceptable, alerts the contractor that a specialty structural engineer will be required to developing the final design of the delegated component. The principal design engineer will provide such guidance by stating as an example that retaining walls built with stone or CMU of certain lengths, widths, and heights will be designed by the contractor's specialty engineer. The specialty retaining wall contractor or secondary designer then develops the appropriate design to meet those general requirements. The specifications provide the basic guidelines to direct the specialty contractor and demonstrate that the final design has been delegated by the principal designer.

The most common example of design delegation involves the stairs in a structure. Under the CASE guidelines, the stairs are a secondary element not part of the primary structural design. The structural engineer of record is required to provide the primary structural support for the stairs, but is not required to design the connections attaching the stairs to the structure. This design, along with the overall design of the stairs, is delegated to the contractor's stair manufacturer or fabricator. The principal structural engineer remains involved in the design process through the review of shop drawings. As such, the specialty structural engineer will still need to obtain final approval for the final design. In the area of stair design, that review normally focuses on the load calculations in relation to the primary support structure. This final review provides the specialty design professional an opportunity to confirm the accuracy of its design.

The specialty structural engineer benefits from design delegation because his/her scope of work is limited to the specific component. In most instances, the specialty design professional will also be the fabricator or contractor who will construct the component. This dual role allows the speciality design professional

to develop a niche in the industry that can be marketed as leading to more efficient project development. This expertise will allow for greater marketability of the speciality engineer's services.

As demonstrated above, the delegation of responsibility is limited to the requirement that the principal design professional review shop drawings prior to construction of the component. This limited or qualified delegation raises the question of what entity or person will be responsible should the ultimate design fail or cause delay on the project. The resolution of this answer will revolve around three issues: 1) the contractual scope of services, 2) the review of shop drawings, and 3) the language included in the specifications.

As detailed above, a properly drafted contract that limits the scope of services should specifically identify secondary items as not included within the scope of work. This contractual design delegation would diminish, if not extinguish, structural engineer's duties for design of secondary components. Of course, if the principal design engineer's criteria submitted to the secondary engineer is flawed or in error, the principal design professional would face potential liability for those errors. For example, if the principal design professional sets an inappropriate stair width for the building and the stairs get fabricated with the errant width, that error could lead to exposure.

Similarly, the structural engineer's review of shop drawings from the stair fabricator can affect its overall design duties. While conflicts with heights or beams that are discovered may not be part of the structural engineer's delegated duties, the structural engineer remains responsible for the primary structure and must ensure the stairs will not adversely affect the superstructure. The engineer's failure to document conflicts could limit the effectiveness of the design delegation.

Properly drafted specifications which detail the responsibility of the contractor to have a structural engineer prepare the stair drawings and the associated structural calculations can relieve the principal structural engineer of responsibility, and demonstrate that the stair design was delegated to another party. This is the so-called "performance specification." To ensure that the duty for secondary items was properly delegated, the principal structural engineer should review the specifications, if he did not draft them, to ensure that they are consistent with the overall design delegation. A specification that provides details for connections or additional stair information could limit the effective delegation of the design. Similarly, a design delegation that states that the stair contractor is responsible for the final

design of the stairs in a manner consistent with XYZ stair manufacturer's base design would be an effective delegation of the design.

The ability to delegate design elements may also be limited by local building codes, regulations, and professional licensure requirements. When developing standard language for inclusion in contracts, the structural engineer should review these requirements before attempting to delegate design responsibilities. A local jurisdiction may have specific code requiring the structural engineer of record to have designed items not included in the normal services. In those occasions, the structural engineer should address those secondary items that are not normally included in the basic services in the contractual language.

The proper delegation of design services from the structural engineer of record to specialty design professionals or to contractors requires an express statement of the intent of the parties to delegate these components. The delegation of design components must be done through the contractual language, specifications, and in compliance with local regulations. When such a delegation has been accomplished, it can remove certain aspects of potential liability from the structural engineer. (See the online version of this article, www.STRUCTUREmag.org, for a resource on design delegation.)

In addition, the expanding use, and statutory requirement, of peer reviews for life safety issues in the structural design can cloud the issue of ultimate responsibility should the system fail. The peer reviewer's determination that a life safety issue exists will lead to some alteration of the structural design. If the peer reviewer is later discovered to have erred in its determination, the structural engineer of record might want to assert that the portions of the design changed as a result of the peer review were delegated to the peer reviewer by statute. Unfortunately, the structural engineer of record will not be able to utilize design delegation in responding to such a problem, as the structural engineer of record remains primarily responsible. ■

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