Reclamation Building Seismic Safety Program

Guideline No. 8

Minimizing Assumptions of Existing Conditions

Date: May 2, 2001 (Editorially Revised March 19, 2007)

Background: In inspecting buildings where drawings, soils reports, etc., are not available, the evaluator (inspector) will frequently encounter a building that is almost entirely finished, thereby concealing structural components and details. Trying to verify existing materials and structural connections of lateral-force-resisting (LFR) components behind the finished walls, ceilings, etc., makes it very difficult for the inspector to determine the building's primary LFR system. In some buildings there may be little or no access to areas where existing conditions can actually be verified. Due to limited access and/or safety issues, non-destructive examinations may not be sufficient to complete the evaluation and, therefore, a material testing program or a Finish Removal and Repair (FR&R) Plan may need to be implemented.

Policy: In order to avoid performing re-inspections and to improve the usefulness of a completed evaluation, assumptions on building construction materials and existing conditions shall be minimized. The number of acceptable assumptions made during an evaluation should be kept to a minimum, and consideration should be given to the anticipated level of risk of the building. For instance, a few non-critical assumptions for a low risk, low occupancy building may be acceptable. In contrast, minimal assumptions for a high profile building with high occupancy and risk may not be acceptable. To help accomplish this, the evaluator shall:

- Become familiar with the building to be evaluated by reviewing available building data (drawings, specifications, and soils and geotechnical reports) before going to the site.

- Before going to the site, discuss with other engineers, if necessary, the building's structural systems, expected behavior, or how the building should be analyzed.

- Perform the evaluation inspection with another engineer, usually the checker, which will help both the evaluator and the checker become familiar with the building and consequently make the evaluation and checking processes smoother—this joint effort also results in a safer, more thorough and efficient inspection.

- Make a concerted effort to verify materials and structural connections of LFR components during the site visit.

- Perform a detailed inspection of attics, crawl spaces, and plenums to investigate structural components and connections.

- Use available tools such as a rebar locator and/or borescope to verify existing conditions behind finished walls, ceilings, etc., to determine the building's primary LFR system.

- Remove utility plates or peer into holes/pipe wall penetrations using a borescope to help identify construction materials.

- Review and scrutinize the accuracy of the Rapid Visual Screening (RVS) data and not rely solely on these data to verify existing conditions.

Prior to the evaluation inspection, the inspector shall contact facilities and safety personnel to determine the building height and any necessary ladder and access requirements. The inspector shall inquire about all possible hazards at the site and shall prepare a job hazard analysis, with information provided by safety personnel. Under no circumstances shall the inspector be exposed to areas or situations that might jeopardize his/her life or health.

When the evaluator determines that existing conditions cannot be verified with non-destructive examination and assumptions may be required, the inspector shall, prior to leaving the site, notify the Evaluation Team Leader and/or Program Manager of the existing conditions encountered. The evaluator and Evaluation Team Leader will discuss options to minimize assumptions of building materials and/or LFR components. After consultation, and while on site, if conditions cannot be verified sufficiently to eliminate assumptions, then assumptions of existing conditions will be made and included in the evaluation report.

As determined by the Team Leader, some destructive testing may be necessary to determine material properties and strengths. For certain types of buildings, such as unreinforced masonry (URM) buildings, if during the onsite inspection it is evident that the masonry is in poor condition and that the strength of the masonry is questionable, a destructive and non-destructive testing program should be implemented. This will be determined by the Team Leader. For URM buildings, the guidelines outlined in Guideline No. 3 should be followed if a Tier 2 Special Procedures investigation is required. The BSSP may, in some cases, implement an FR&R Plan to reduce the number of assumptions.

For non-Reclamation clients, the evaluator shall contact the client in writing or, at the discretion of the Team Leader, via a telephone call to inform the client of the assumptions and their impact on the evaluation results, and to recommend a course of action. The client will then have the option of ending the evaluation and modifying the contract to include an FR&R Plan, or request that the evaluation continue with the resulting assumptions.