IT9 – Diaphragm Issues

Update December 5, 2018

nehrp

FEMA

Building Seismic Safety Council
a council of the National Institute of Building Sciences

Scope 1 - RWFD

- **Scope 1 - Rigid Wall/ Flexible Diaphragm:** Determine next steps required to progress the rigid wall - flexible diaphragm seismic design methodology of the FEMA P-1026 guideline document to a Part 1 proposal ready for incorporation into ASCE 7. This will include consideration of technical gaps as well as mandatory language. If possible with IT resources, begin next steps.(road maps)
- Part 1 Proposal - RWFD with wood diaphragm ***- Done***
- Part 1 Proposal - Incorporating steel deck diaphragms – ***Ongoing, scope goes beyond RWFD, intent is February 22 PUC ballot***
- Part 1 Proposal – Drift due to diaphragm deflection – ***Discussed in commentary, Rafael is attempting change proposal - IT9 role?***

Scope 2 – Development of R_s

- **Scope 2 – Diaphragm Alternative Design Method - Deriving R_s Factors:** Determine next steps required to fully develop and document the methodology for deriving Rs diaphragm design force reduction factors for the alternative provisions for diaphragm seismic design developed by PUC last cycle. If possible with IT resources, begin next steps.(more likely Part III document,)

- Part 3 Proposal – Recommendations for development of diaphragm design force reduction factor, R_s ***- Ongoing, intent is draft for February 22 PUC ballot***

Steel Research Collaboration

1. SDII – Steel Diaphragm Innovation Initiative (Eatherton, Hajjar, Easterling, Sabelli)

   Advance the seismic performance of steel floor and roof diaphragms utilized in steel buildings through:

   – better understanding of diaphragm-structure interaction,
   – new design approaches, and
   – new three-dimensional modeling tools that provided enhanced capabilities to designers utilizing steel diaphragms in their building systems.

   SDII primarily focuses on the seismic design of diaphragms commonly used in steel mid-rise buildings.

Steel Research Collaboration

2. RWFD: Advancing Seismic Provisions for Steel Diaphragms in Rigid Wall-Flexible Diaphragm (RWFD) Buildings, with NBM Technologies, Inc. (Meimand, Torabian, Eatherton, and Schafer)

   Objective:
   Validate alternative provisions for conventionally designed steel diaphragms in RWFD buildings.

   Scope:
   Small-scale testing and related efforts to develop an accurate and validated building scale model for NLRH analysis of steel diaphragms in typical RWFD buildings.

Voting Members

Kelly Cobeen	Wiss, Janney, Elstner Associates	Emeryville, CA
John Lawson	Cal Poly San Luis Obispo	San Luis Obispo, CA
S.K. Ghosh	S. K. Ghosh Associates	Palatine, IL
Ben Schafer (1)	Johns Hopkins University	Baltimore, MD
Tom Sabol	Engelkirk & Sabol	Los Angeles, CA
Ron La Plante	California Division of the State Architect	San Diego, CA

(1) Ben Schafer is primary contact and voting member for steel industry research projects. Matt Eatherton or Jerome Hajjar may attend meetings in Ben's place.

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Corresponding Members

Andre Filiatrault	SUNY University at Buffalo	Buffalo, NY
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