



Technical #2 Discussion





Discussion

- Breakdown of teams?
 - Need a scenario to do lifeline work
 - Lifelines and Transportation: ASCE took a lead role in Seattle working with public works and municipalities and DOT.
 - Political topic so engaged with Professor at UW
- Building side: local SEAW (like SEAOSD)
 - Put their own spin on fragility curves
 - Make sure the Hazus runs were appropriate
- Essential facilities (small spinoff of building side)
- Need to engage right group to take the lead
 - Did not have a lot of cross pollination between different groups
- To what extent did you do updates to Hazus database?
 - Tweaked fragility curves (Hazus expert) to let the output match engineering judgment more
 - Iterative process (span of a few months)



Discussion

- Biggest debates came around fragility curves not the building inventory
 - Retrofitted buildings source of debates
 - Could never decide if a building was fully retrofitted. City maintains list of buildings that were retrofitted. All of them have had a minimum retrofit (URM buildings)
 - Could introduce another building type (retrofitted URM) in analysis and create own fragility curve
 - Non-ductile concrete buildings are also a huge hazard (SEAOSD could help better identify these buildings)
 - Soft story buildings as well
 - Would love to see an inventory of hazardous buildings in SD: Call upon engineers associations
 - Historic buildings that need help
- Tony's presentation: good body of work is a great starting point to take advantage of
- How do you treat utilities (the electrical aspects)? Structural may be fine but utilities may not (Seattle study)
 - Once PGA maps were produced and overlay liquefaction maps on top, and overlay distribution systems could see nodes where large transmission lines came into (could have been a high liquefaction zone)



Discussion

- Utilities were not drilled down to the level of detail of buildings in Seattle
 - 2 years ago Utility in Arizona dropped and made SD power drop.
 - A failure in SD will impact a much broader area (Arizona, LA, etc.)
 - Might want to involve electrical engineers to see how ramifications outside region will impact San Diego (engage the professional body of electrical engineers, gas transmission engineers... IEEE, ASCE has a lifelines subdivision (civil, structural and electrical members))
- Zero idea of status of SDGE grid from a response spectrum, is there a good resilient system in place?
 - Facilities from early 1900s to present (infrastructure is being updated)
 - Larger facilities get most scrutiny (with regard to ground accelerations and surface rupture and strong shaking). 500kV substation with very large transformers, some sensitive equipment (bushings and insulators). Primary structure is ok.
 - 2010 event: SDGE saw damage to Imperial Valley 500kV substation due to bushings, but had a stockpile of materials at the substation (inventory of extra parts that were more fragile). Could get those replaced quickly (spare parts).
 - Need to bring in concept of getting Electrical engineers involved.



Discussion

- What about Mexico? What info do you have on the building stock? Vulnerabilities?
 - Risk map available
 - 1999 Radius joined with CICESE to do a study (inventory); but a lot of changes since then politically.
 - One electrical utility (one federal company) to work with
 - TJ has Rosarito plant 6-8 hours
 - Political tug of war (electrical company is federal but reluctant to give information to city and state government)
 - National Water Commission that decentralized to a state agency
 - Two dams within city limits
 - Large network of water
 - Policy of border authority (what is going to happen when we have a seismic event, will border remain open)
 - Bridges in TJ are very old: Do not have an exact technical understanding of how structurally sound they are and how they will perform



Discussion

- What about the basic building stock? Is it just infrastructure?
 - Supposed to have information about both.
 - Need real structural assessments (only have some small areas assessed like downtown Tijuana... damage and loss of life; based on some info like year and occupancy)
- What is the status, and can we integrate data into a Hazus type study?
- Risk atlas assessment: how far out is this data? Is this something we could leverage?
 - Last one was 2002. Have been trying to upgrade. This year has hired CICESE to update the atlas.
 - Will become a binding document that designers will have to use
- Lifelines: pipes that bring water in, natural gas pipelines (we are a little island here in SD)
 - Location of fault rupture impacts location of pipes.
- Natural gas pipeline (SEMPRA) from Ensenada to TJ
 - Stakeholders Inegi & Implan
 - SEMPRA in Rosarito? Feeds into these pipelines.
- FIRE damage following earthquake



Discussion

- FIRE damage following earthquake
 - Know there will be fires/gas line breaks
 - Water is a concern (getting water to fight fires)
 - Hydraulic pumps from bay to affected areas
 - Huge trouble in terms of getting water to put out fires
- Fred Turner: Seismic Safety commission memorandum of understanding on risk prevention and emergency response