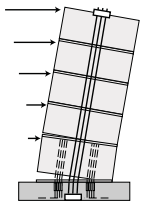
HYBRID PRECAST WALL SYSTEMS
FOR SEISMIC REGIONS



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May 2, 2008

Industry Meeting Minutes

Meeting Date: April 25, 2008
Meeting Venue: PCI Committee Days, Chicago, Illinois
In Attendance: Walt Korkosz, Ken Baur, Gino Kurama, Brian Smith

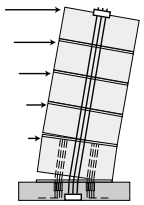
Test Specimens

- Instead of placing the dead-end (bottom) PT anchors inside a pocket at the bottom of the foundation block, it may be easier and more practical to curve the PT strands through the foundation block such that the PT anchors are placed above the block adjacent to the base-panel-to-foundation joint. The PT strands inside the wall panels from the top to the bottom of the wall would be kept straight to minimize friction losses. (Baur)
- A curved electrical duct would be cast inside the foundation block to bend the PT strands into the desired shape. Based on a similar previous application by High Concrete, a 3-ft minimum radius of the curved duct is needed to be able to feed the PT strands through the duct. The curved PT duct would have to fit in between the other ducts and reinforcement inside the foundation block. (Baur)
- In practice, the curved PT ducts inside the foundation block can be filled with grease or grout to prevent corrosion. The dead-end PT anchors would be above the ground resulting in less corrosion attack. (Baur)

Upper Floor Horizontal Joint Details

- The upper floor joints above the termination of the longitudinal mild steel reinforcement inside the wall panels need to be detailed to prevent/limit gap opening. The following possible methods were discussed:
  - Relatively short mild steel bars embedded near the extreme edges of the wall panels can be used to provide continuity across the upper floor horizontal joints. Plastic splice sleeves produced by High Concrete would be cast inside the top of each wall panel. Then, steel bars embedded inside the bottom of the upper panel would be lowered into the plastic sleeves and grouted in-place. These plastic sleeves are more cost effective than metal splice sleeves (which will be used to splice the energy dissipating bars across the lower floor joints), but they are not designed for high strength, post-yield, cyclic applications. Thus, they can only be used to provide continuity across the upper floor joints where the stresses remain small. The plastic sleeves available from High Concrete can accommodate bar sizes up to #7 with a maximum bar length of 26-inches.

This project is funded by the Charles Pankow Foundation and the Precast/Prestressed Concrete Institute. Any opinions, findings, conclusions, and/or recommendations expressed in this material are those of the researchers and do not necessarily represent the views of the sponsors.



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The plastic sleeves would be hidden within the wall panels, resulting in an aesthetically pleasing detail. (Baur)

- Alternatively, steel angle sections can be embedded inside the bottom of the upper wall panel with welded rebar for adequate anchorage to the wall concrete. These angles would then be welded to steel plates embedded inside the top of the lower wall panel to provide continuity across the horizontal joint. After welding, the angles can be grouted to hide the connection, resulting in an aesthetically pleasing detail. (Korkosz)
- Both of these upper floor joint details can be tested to investigate any significant differences in their performance. (Korkosz)

Test Specimen Details

- Test wall thickness of 6-inches is sufficient.
- It may be more practical to use a series of U-shaped bars to provide concrete confinement at the wall base (as opposed to spirals, circular hoops, or square/rectangular hoops). U-shaped bars would be easier to install than spirals and would create a larger confined concrete area that circular shapes.
- Design unconfined concrete compressive strength will be f'c = 6-ksi.
- Design confined concrete strength will be f'cc = 9-ksi.
- Design grout compressive strength for the horizontal joints will be f'g = 5-ksi.
- The grout for the horizontal joints will include fibers and will have dry-pack consistency. The fibers will be added to the dry grout mix, and then, water will be added.
- The toes of the bottom wall panel will be beveled to limit damage due to rocking/crushing. There should not be any need to put an external armor plate on the beveled wall panel corners.

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