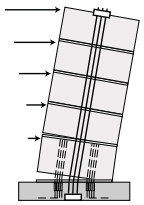
HYBRID PRECAST WALL SYSTEMS
FOR SEISMIC REGIONS



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July 11, 2008

Draft Industry Meeting Resolutions

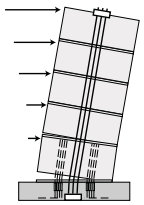
Meeting Date: July 2, 2008
Meeting Venue: Phone-Conference
In Attendance: W. Korkosz, K. Baur, D. Dieter, Y. Kurama, B. Smith

The following resolutions have been made based on the recommendations of the industry panel during the meeting:

Test Specimen Details

- The test specimen geometry was reviewed and tentatively approved (pending checks of final design calculations by Walt Korkosz).
- The confinement reinforcement details at the wall base and the wall welded wire mesh reinforcement details were reviewed and tentatively approved (pending checks of final design calculations by Walt Korkosz).
- The designed PT duct taper as well as the designed center-to-center spacing of the PT ducts and mild steel reinforcement were reviewed and tentatively approved (pending checks of final design calculations by Walt Korkosz).
- The bottom (dead end) PT anchors will be located at the bottom of the foundation block. This will allow the PT strands to remain straight within the foundation block so that the PT load cells can be placed at the dead end anchors below the foundation. In a previous meeting, it was decided to curve the PT strands within the foundation and anchor them at the top of the foundation. However, curving the PT strands within the foundation would require the PT load cells to be placed at the live end anchors at the top of the wall, which is not a desirable location since the prestressing operation may distort the load cell readings. It should be noted that this is a testing limitation. Placing the bottom anchors above the foundation may ultimately be the location of choice in practice since the anchors would be more accessible for placement and inspection above the foundation and would be less susceptible to corrosion.
- The material used to achieve the unbonded length for the energy dissipating mild steel reinforcement at the wall base will be finalized at a later date. Unbonding can be achieved by wrapping the energy dissipating bars with duct tape, mastic tape, and/or placing the bars within a plastic sleeve. Adequate lateral support will be kept around the energy dissipating bars (by using a thin wrapping material) to prevent the bars from buckling over the unbonded length.

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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Test Specimen Design

- The applied lateral load during the test will be located at two-thirds of the full-height of the wall. This location is lower than the resultant lateral load location as calculated by the equivalent lateral force procedure (approximately three-fourths of the wall height). By applying the lateral load at two-thirds of the wall height, the shear demand on the wall will be greater. Furthermore, the resultant lateral load location from the equivalent lateral force procedure includes only first mode effects. The lower lateral force location will account for some higher mode effects.
- The applied gravity load during the test will be equal to the full design dead load plus 25% of the design live load.
- When calculating the design drifts for the wall, foundation flexibility will not be considered.
- The wall will be designed for the maximum drift angle as required by ACI ITG 5.2 (considered to be the MCE-level drift angle), with only limited additional lateral displacement capacity incorporated into the design.
- Gap opening at the joint above the base panel will be allowed at both the design and the maximum (MCE-level) drift angles. An adequate amount of bonded mild steel reinforcement will be placed across this joint near the two ends of the wall. Yielding of this reinforcement will be prevented.
- The design of the development length of the energy dissipating reinforcement at the wall base will be conservative to avoid undesirable pull-out failures. The development length will be designed as 1.7 times the ACI-318 required length.
- The design of the unbonded length of the energy dissipating reinforcement will be slightly conservative to ensure that the bars will not fracture prior to the MCE-level drift angle. The unbonded length will also be designed to ensure that the bars will be sufficiently yielded at the DBE-level drift angle.

Action Items

- Brian Smith will send final test specimen design details and calculations to Walt Korkosz.
- Walt Korkosz will check these design calculations and prepare the specimen production drawings to be used by High Concrete.
- It was also recommended that Ken Baur and Walt Korkosz conduct a cost comparison between the hybrid wall system details and a conventional CIP wall system designed for the same seismic demands and building properties.

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