Discussion

Effects of Anchor Wedge Dimensional Parameters on Posttensioning Strand Performance

My congratulations to the authors of the article "Effects of Anchor Wedge Dimensional Parameters on Posttensioning Strand Performance," published in the May–June 2015 issue of *PCI Journal*.[1] As a practicing engineer, a more practical and yet somewhat technical article is really welcomed and appreciated. Have the authors contacted American Concrete Institute (ACI) committees regarding possible inclusion in *Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14)*?[2] Thanks again for an excellent presentation.

Larry G. Mrazek
Owner, LGM Engineers LLC
Chesterfield, Mo.

References

1. Walsh, Kevin, Randy Draginis, Richard Estes, and Yahya Kurama. 2015. "Effects of Anchor Wedge Dimensional Parameters on Posttensioning Strand Performance." *PCI Journal* 60 (3): 63–83.
2. ACI (American Concrete Institute) Committee 318. 2014. *Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14)*. Farmington Hills, MI: ACI.

Authors' response

The authors wish to thank Larry G. Mrazek for his thoughtful comments. Our research on posttensioning anchorage systems has been motivated by the desire to see the application of unbonded posttensioning technology expanded by ensuring that such modern systems have the capacity to withstand extreme demands not fully considered previously on a wide scale. We are very pleased thus far with the testing results of anchorage wedges with modified geometries as reported in "Effects of Anchor Wedge Dimensional Parameters on Posttensioning Strand Performance."[1] In addition to testing the geometric changes to the wedges, we also hope to test the performance changes resulting from modifying the surface and internal hardnesses of the wedges. In addition, we would like to modify the wedges to have slightly longer lengths than the shortest wedges we have tested to date so as to optimize the ratio of structural benefit to increased manufacturing cost.

We have not yet directly presented the findings and recommendations of "Effects of Anchor Wedge Dimensional Parameters on Posttensioning Strand Performance"[1] to an American Concrete Institute (ACI) committee. These findings are specific enough to the manufacturing of posttensioning components that, at least initially, we feel that the best platform for effecting changes is in industry-specific standards, namely those published by PCI and the Post-Tensioning Institute (PTI). We have therefore presented our results at the 2014 PTI conference, in addition to publishing the referenced article in *PCI Journal*. Once it is established that the posttensioning industry can accommodate the recommended improvements to anchorages

in terms of both quality control and economic feasibility, it is our intention to seek to incorporate these recommendations into the relevant engineering design specifications in standards such as *Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14)*,[2] as well as those published by PCI, PTI, and the American Segmental Bridge Institute.

With regard to the design requirements specified by ACI 318[2] for industry-standard posttensioning anchorage systems, two articles previously published in *PCI Journal*[3,4] may be more pertinent and were presented at American Society of Civil Engineers, ACI, and PCI conferences from 2007 to 2009, as well as to the PCI Seismic Committee in 2009. In these articles, we recommended that the allowable strand strains used in the design of structures with industry-standard unbonded posttensioning anchorage systems be reduced.

Thank you for your response to our work and, more important, for providing us with a platform to promote future advancements in the posttensioning manufacturing and design industries.

References

1. Walsh, Kevin, Randy Draginis, Richard Estes, and Yahya Kurama. 2015. "Effects of Anchor Wedge Dimensional Parameters on Posttensioning Strand Performance." *PCI Journal* 60 (3): 63–83.
2. ACI (American Concrete Institute) Committee 318. 2014. *Building Code Requirements for Structural Concrete (ACI 318-14) and Commentary (ACI 318R-14)*. Farmington Hills, MI: ACI.
3. Walsh, Kevin Q., and Yahya C. Kurama. 2010. "Behavior of Unbonded Posttensioning Monostrand Anchorage Systems under Monotonic Tensile Loading." *PCI Journal* 55 (1): 97–117.
4. Walsh, Kevin Q., and Yahya C. Kurama. 2012. "Effects of Loading Conditions on the Behavior of Unbonded Post-Tensioning Strand-Anchorage Systems." *PCI Journal* 57 (1): 76–96.

Kevin Walsh
Senior structural engineer, Frost Engineering and Consulting
Mishawaka, Ind.

Randy Draginis
Manager, Precision-Hayes International
Sugar Land, Tex.

Richard Estes
Engineer I, City of South Bend Department of Public Works Division of Engineering
South Bend, Ind.

Yahya Kurama
Professor, University of Notre Dame Department of Civil and Environmental Engineering and Earth Sciences
Notre Dame, Ind.

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