

ASCC Laser Scanning Study Completed in San Francisco

Test results being processed now

A laser scanning study was conducted on two, post-tensioned concrete floor slabs over the October 6 and 7 weekend in Walnut Creek, CA. The study was to evaluate the repeatability and reproducibility of locating target coordinates and measuring F-numbers. Two concrete slabs, one at the ground level and one at the podium level, each about 6,000 sf, were used as study sites.

Laser Study Parameters

Target Coordinates: The X, Y, and Z coordinates of four targets were provided to provide reference control for the laser and each participant provided the X, Y and Z coordinates of ten targets on horizontal and vertical surfaces. Laser scanning was done on targets located on ground level and podium level slabs and repeated on separate days. A robotic total station was used to determine the coordinates of all fourteen targets and was repeated three times to establish reference control.

F-number Repeatability: Parallel and perpendicular sample measurement lines were provided in accordance with ASTM E1155. The lines were marked on the concrete surface. Laser scanning for repeatability was done on the podium slab and repeated on separate days. A robotic total station was used to determine the coordinates of the start and end of each line and this was provided to the participants.

F-number Reproducibility: Laser scanning operators collected surface data to evaluate in accordance with ASTM E1155. Laser scanning was done on the ground level on two separate days. If parallel and perpendicular sample measurement lines were chosen on the first test day, then diagonal sample measurement lines were chosen for the second test day.

Laser Scanning

Eight separate laser scans took place on each of two days. Equipment included Faro, Leica and Trimble lasers. The laser scans included multiple set-ups and took about one hour to complete the scanning for each area. The data is being processed this week with results due by October 19. Stay tuned for the evaluation of the test results!

Participants

Planning—Bruce Suprenant, ASCC, Will Paul, BKF Engineers, Jim Klinger, Conco

- ✓ Owner/GC—Tony Joyce, Avalon Bay Communities
- ✓ Concrete Contractor—Tom Sprague, Don Thornburg, Jim Klinger, Conco
- ✓ Testing Agency—Jose Jacob, Hector Campos-Diaz, Anil Nethisinghe, CEL
- ✓ Observation: Eric Peterson, Webcor

Laser Scanning

- ✓ Andy Huntley, TAS Commercial Concrete Construction
- ✓ Aniruddha Anjana, Baker Concrete Construction
- ✓ Cutter Shea, Faro
- ✓ Leo Castillo and Leeroy Duarte, VEC
- ✓ Nathan Culver and Gustav Choto, Trimble Solutions USA
- ✓ Kevin Stein, Steve Smith, Heather White, BKF Engineers
- ✓ Josh Engelbrecht, DPR Construction
- ✓ Brandon Kovarick, CECO
- ✓ Leo Zhang, Conco



Targets were placed on vertical and horizontal concrete elements to compare results from the eight participating laser scanning companies.



Representatives from Baker Concrete Construction and TAS Commercial Concrete Construction set up to laser scan the ground level.