

MAY 10, 2017

5:00 to 6:30 P.M. (1.0 PDH)

TECHNICAL PROGRAM

Design, Construction and Application of Segmental Concrete Walls

Speaker: David Hasness, P.E., Region Engineer, Pavestone, LLC. Tel: 512-787-1247

David Hasness joined Pavestone in 2000 and is a Region Engineer providing technical product support to Central Texas, South Texas, and Houston. He routinely presents design methodologies and current standards of practice for Interlocking Concrete Pavers, Permeable Paver systems, Segmental Retaining Walls, and Articulated Concrete Blocks to engineers and architects. Prior to joining Pavestone he worked for two consulting engineering firms in Houston before moving into construction product sales.



David is a graduate of the University of Houston with a B.S. in Civil Engineering and an MBA.

PRESENTATION SUMMARY

To an audience of approximately 55 people, David presented on the components of multiple types of Segmental Retaining Walls (SRW) including design options and installations of the following walls:

- Gravity Walls
- Reinforced Walls
- Structural Backfill Walls

David began his presentation with an overview of the Pavestone family of products including permeable pavers. Although not a topic of the evening's presentation, multiple questions about pavers were asked by the audience members. Questions included load capacity (heavy), permeability (pavers can absorb 700 inches per hour), and installation. David answered all questions and pointed out that all data for paver selection and design is available from Pavestone including technical support.

Reasons for specifying segmental retaining walls include design versatility, use of local crews and equipment, economics, service life (75 years), aesthetics, and reduced damage to landscaping and area features.

The basics of gravity wall components were discussed including leveling pads or footings, drainage, SRW unit types, installation parameters and limitations. Failure mechanisms were discussed. Most gravity wall failures occur due to excessive height (limit is 3x the block height), and poor installation. Installation defects include poor leveling pad, and lack of drainage or drainage aggregate.

Reinforced walls can be much taller than gravity walls by using tie backs during installation. A very common tie back product is a geosynthetic material. Multiple geosynthetic products have been tested for strength and compatibility by Pavestone. Connection strength between geosynthetic reinforcement and segmental concrete units is determined through ASTM D66638. Results are specific to each combination of SRW unit and geosynthetic reinforcement. Tiebacks typically extend back to 60% of the wall height. Global stability should always be checked by a geotechnical engineer for reinforced walls. Software is available for the design of reinforced segmental retaining walls through Pavestone. A number of failure cases were presented along with the mechanisms of failure. Installation methods were also presented.

David also spent some time reviewing structural backfill retaining wall systems. These systems are useful backfill widths are limited such that geosynthetic tie backs are not feasible. Structural backfill retaining walls reduce excavation by approximately 60%. This allows for taller wall heights with shallower backfill cuts. Typical backfill is a self-compacting structural backfill designed and specified by an engineer. Design methodology includes calculation of lateral earth pressures, weight of backfill system, safety factors, etc.

To download a copy of David Hasness's slide presentation, click [here](#)

PAST FPA PRESENTATIONS

To read summaries of previous FPA Presentations by David Harsness, please click:

[January 09, 2013](#) - Permeable Unit Paving