5480500 RETAINING WALL SYSTEMS
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

Ken Morgan
407-264-3335

Comments: (5-25-12)
548-9.6.1 should be edited to reflect the options added in 548-9.4.1.

Response:

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John Mauthner, P.E
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Comments: (5-25-12) I had a chance to review the proposed Specification revision 5480500 and found a conflict with either the specification or the verbiage we included for our revised Developmental Index 410. You and I reviewed this issue in great detail prior to our revision of Index 410, Note 4. For the Design Standards, Revised Developmental Index 410, Note 4 reads as follows:"4. When the barrier is installed adjacent to the pavement, the top 12" of the subgrade shall be compacted to at least 98% of the maximum density determined by FM 1-T 180, Method D."
The revised specification reads as follows:

*"**548**-**9.2 General Requirements:** Determine the QC density to be 100% of the maximum density in accordance with FM 1 T-180.

My conflicts are as follows:

- "100% of the maximum density" or "98% of the maximum density,"
- "in accordance with" or "determined by"
- "FM 1 T-180." Or "FM 1-T 180, Method D."

Since this is a Soils issue, my preference is for you to address any conflicts with the revised specification. My main concern is consistency between and among the specifications and our Design Standards. With that said, however, if I need to revise our Note 4, then I need you to provide that verbiage as well. Call me if you have additional concerns or questions.

Response:

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Henry D. Smith, P.E.
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Comments: (5-29-12) In reviewing the proposed specification I find Section 548-9.2 is not consistent with Section 548-9.4.
548-9.2 Maximum Density Determination: Determine the QC density to be 100% of the maximum density in accordance with FM 1 T-180.
548-9.4 Acceptance Criteria: Obtain a minimum density of 90% of the maximum dry density as determined by FM 1 T-180 within 3 feet behind the wall face and obtain a minimum density

of 95% of the maximum dry density as determined by FM 1 T-180 from beyond 3 feet behind the wall face.
I believe the intention is to require 95% of the maximum dry density as determined by FM 1 T-180 or 100% of the maximum dry density as determined by AASHTO T-99.Thank you,

Response:

Daniel Henriques
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Comment: (6-12-12) Was it the Department's intent to remove the specific pH requirements for MSE walls using non-metallic soil reinforcements? FDOT has successfully allowed the use of a backfill with a pH range 3-10 for years (for non-metallic walls). Did something specifically happen to cause this change? Are there similar pH limitation on other concrete structures?
There has always been one requirement for metallic soil reinforcements (pH=5-9) and one for non-metallic (pH=3-10).
I don't see the two different requirements in the latest revision. Was this overlooked or intentional? If it was intentional, what is the justification for not allowing a broader pH range for non-metallic soil reinforcement that are not affected by a pH range of 3-10?

Response: According to our records, there has never been an MSE wall constructed in Florida with backfill having a pH of less than 5. The increase in the range was specifically requested by the State Materials Office (SMO) a couple of years ago in an effort to protect the concrete from degradation, and that Specification change was processed without any comments being received during the industry review period.
The current AASHTO LRFD Bridge Design Specification (which includes requirements for MSE walls) requires backfill for permanent MSE walls with geosynthetic reinforcements to be considered aggressive when the pH is below 4.5 or above 9. For temporary walls, (design life generally less than 3 years) the pH range for backfill is expanded to the 3 to 9 we used to have in our specification. I suspect the old text was originally included in our specification because at that time, only temporary walls utilized geosynthetic reinforcement; the use of this range may have been permitted for permanent walls when they were proposed to utilize geosynthetic reinforcement. When the SMO alerted us to the issue, we examined our records and found that although we had been allowing the pH to be lower, the actual pH of the sampled backfill had always been in the 5 to 9 range they were recommending.
I have discussed this issue with the SMO further, and propose to widen the pH range to 4.5 to 9 (to protect the reinforcement). However, the SMO requires that when the backfill pH is below 5 the concrete cover on the panel is not less than 3 inches on the inside face.
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