



*Florida Department of Transportation*

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GOVERNOR

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Tallahassee, FL 32399-0450

KEVIN J. THIBAUT  
SECRETARY

June 6, 2019

Khoa Nguyen  
Director, Office of Technical Services  
Federal Highway Administration  
3500 Financial Plaza, Suite 400  
Tallahassee, Florida 32312

Re: State Specifications Office  
Section: **548**  
Proposed Specification: **5480206 Retaining Wall Systems.**

Dear Mr. Nguyen:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Jose Armenteros of the State Materials Office (SMO) to modify the language.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to [stefanie.maxwell@dot.state.fl.us](mailto:stefanie.maxwell@dot.state.fl.us).

If you have any questions relating to this specification change, please call me at 414-4140.

Sincerely,

Signature on file

Stefanie Maxwell, P.E.  
Manager, Program Management Office

SM/dt

Attachment

cc: Florida Transportation Builders' Assoc.  
State Construction Engineer

**RETAINING WALL SYSTEMS.**  
**(REV 4-15-19)**

SUBARTICLE 548-2.6.2 is deleted and the following substituted:

**548-2.6.2 Compacted Select Backfill:** Meet the requirements of Sections 105 and 120 except as noted within this Section. Have the backfill material tested for every soil type for pH, resistivity, sulfate and chloride content by a Department approved independent testing laboratory prior to placement. Submit a certification, signed and sealed by a Professional Engineer registered in the State of Florida, that the results have met the requirements of this Section.

The pH, as determined by FM 5-550, shall not be lower than 5.0 and not higher than 9.0 when metallic elements or pipes are placed within the backfill. Sources of select backfill material having a pH between 4.5 and 5.0 for walls utilizing metallic reinforcement and between 3.0 and 5.0 for walls utilizing geosynthetic, may be used provided the interior face of the MSE wall panels have three inches of concrete cover over the reinforcement and the concrete used in the panels contains the following ingredients and proportions:

1. The quantity of cement replaced with Type F fly ash is 10% to 20% by weight.
2. The quantity of cement replaced with slag is 50% to 60% by weight.
3. Portland cement is 30% by weight of total cementitious material.
4. The total weight of the Type F fly ash and slag does not exceed 70% of total cementitious material.

In lieu of the mix design described above, a mix design with a ~~fasthighly reactive pozzolanic material~~ meeting the requirements of 346-2.3(6) ~~silica fume, metakaolin and ultrafine fly ash,~~ can be substituted. Examples of mix designs meeting this requirement are:

1. 8% silica fume plus 20% fly ash
2. 10% metakaolin plus 20% fly ash.

Provide proper curing for these materials to prevent surface cracking.

Do not place metallic pipe in backfill materials having a pH less than 5.0.

In addition, for permanent walls utilizing metallic soil reinforcement, use backfill that meets the following electro-chemical test criteria for determining corrosiveness:

Criteria	Test Method
Resistivity: > 3000 ohm --cm	FM 5-551
Soluble sulfate content: < 200 PPM	FM 5-553
Soluble chloride content < 100 PPM	FM 5-552

For constructing the retaining wall volume, do not use backfill material containing more than 2.0% by weight of organic material, as determined by FM 1-T267 and by averaging the test results for three randomly selected samples from each stratum or stockpile of a particular material. If an individual test value of the three samples exceeds 3%, the stratum or stockpile will not be suitable for constructing the retaining wall volume.

Ensure that the material is non-plastic as determined by AASHTO T90 and the liquid limit as determined by AASHTO T89 is less than 15.

For walls using soil reinforcement, use backfill that meets the following gradation limits determined in accordance with AASHTO T27 and FM 1-T011:

Sieve Size	Percent Passing
3-1/2 inches	100
3/4 inch	70-100
No. 4	30-100
No. 40	15-100
No. 100	0-65
No. 200	0-12

For walls not using soil reinforcement, use backfill that meets the following gradation limits determined in accordance with AASHTO T27 and FM 1-T 011:

Sieve Size	Percent Passing
3-1/2 inches	100
No. 200	0-12

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The pH, as determined by FM 5-550, shall not be lower than 5.0 and not higher than 9.0 when metallic elements or pipes are placed within the backfill. Sources of select backfill material having a pH between 4.5 and 5.0 for walls utilizing metallic reinforcement and between 3.0 and 5.0 for walls utilizing geosynthetic, may be used provided the interior face of the MSE wall panels have three inches of concrete cover over the reinforcement and the concrete used in the panels contains the following ingredients and proportions:

1. The quantity of cement replaced with Type F fly ash is 10% to 20% by weight.
2. The quantity of cement replaced with slag is 50% to 60% by weight.
3. Portland cement is 30% by weight of total cementitious material.
4. The total weight of the Type F fly ash and slag does not exceed 70% of total cementitious material.

In lieu of the mix design described above, a mix design with a highly reactive pozzolan meeting the requirements of 346-2.3 can be substituted. Examples of mix designs meeting this requirement are:

1. 8% silica fume plus 20% fly ash
2. 10% metakaolin plus 20% fly ash.

Provide proper curing for these materials to prevent surface cracking.

Do not place metallic pipe in backfill materials having a pH less than 5.0.

In addition, for permanent walls utilizing metallic soil reinforcement, use backfill that meets the following electro-chemical test criteria for determining corrosiveness:

Criteria	Test Method
Resistivity: > 3000 ohm --cm	FM 5-551
Soluble sulfate content: < 200 PPM	FM 5-553
Soluble chloride content < 100 PPM	FM 5-552

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