



*Florida Department of Transportation*

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GOVERNOR

605 Suwannee Street  
Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.  
SECRETARY

August 27, 2024

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

Re: State Specifications Office  
Section: 407  
Proposed Specification: **4070100 Three-Sided Precast Concrete Culvert**

Dear Ms. Kendall:

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

The changes are proposed by Oliver Chung to update formatting consistent with BABA compliance and correct reference to QC Managers stamp.

Please review and transmit your comments, if any, within two weeks (10 business days). Comments should be sent via email [daniel.strickland@dot.state.fl.us](mailto:daniel.strickland@dot.state.fl.us).

If you have any questions relating to this specification change, please call me at (850) 414-4130.

Sincerely,

Signature on File

Daniel Strickland, P.E.  
State Specifications Engineer

DS/jb

Attachment

cc: Florida Transportation Builders' Assoc.  
State Construction Engineer

**THREE-SIDED PRECAST CONCRETE CULVERT  
(REV 8-23-24)**

ARTICLE 407-1 is deleted and the following substituted:

**407-1 Description.**

Design and construct a three-sided precast concrete culvert for the three-sided concrete culvert structure shown in the Contract Documents. Three-sided precast concrete culverts are defined as monolithic arched segments, frame segments with vertical walls and either horizontal or arched top slabs, or three-sided proprietary precast concrete bridge systems.

~~Meet the requirements of 449-1.~~

ARTICLE 407-2 is deleted and the following substituted:

**407-2 Materials.**

Ensure that the materials used for the construction of precast culverts have certification statements from each source, showing that they meet the applicable requirements of the following:

<u>Structural</u> Portland Cement Concrete .....	Section 346
Reinforcing for Concrete .....	Section 415
Precast Concrete Drainage Products .....	Section 449
Riprap.....	Section 530
Coarse Aggregate**.....	Section 901
Fine Aggregate**.....	Section 902
Curing Materials .....	Section 925
<u>Epoxy Compounds</u> .....	<u>Section 926</u>
Materials for Concrete Repair.....	Section 930
Non-Shrink Grout .....	Section 934
<del>Geotextile</del> <u>Geosynthetic Fabrics</u> <u>Materials</u> * .....	Section 985
Mechanical Connection Steel* .....	Section 460
External Sealing Band Wrap.....	ASTM C877

\*Use products listed on the Department’s Approved Product List (APL).

\*\*The gradation requirements of aggregates are not applicable when using dry-cast concrete.

ARTICLE 407-9 is deleted and the following substituted:

**407-9 Handling, Storage, and Shipping.**

Handle, store, and ship precast culverts in a manner that prevents chipping, cracks, fractures, and excessive bending stress. Do not ship precast culverts to the project site prior to the completion of the 72-hour curing period and attainment of the required 28-day compressive strength.

The manufacturer is permitted to verify the shipping strength test, before 28 days, by testing compressive strength cylinders that are cured under conditions similar to the product or

by testing temperature match cured cylinders. The manufacturer may use the maturity method, ASTM C1074, pulse velocity method in accordance with ASTM C597, or any other approved nondestructive test method to estimate the strength of concrete for determining form removal and handling strengths or before verification of shipping strength by test cylinders.

Curing temperature and cycle must be monitored on a minimum of one precast culvert curing cell from each day of production when nondestructive test methods or temperature match cured cylinders are used to determine concrete strengths.

The shipping strength test is the average compressive strength of two test cylinders. Do not ship any products until the ~~QC Manager's stamp~~ Production Facility Quality Control Stamp is affixed to the product.

ARTICLE 407-12 is deleted and the following substituted:

#### **407-12 Construction Requirements.**

Prior to constructing the footing, prepare the bearing soil in accordance with Section 455 for spread footings. If a precast concrete footing is used, prepare a 4-inch-thick layer of compacted granular bedding material to a minimum width of 12 inches outside the footing width and meet the density requirements of 125-9.2. Provide bedding material in accordance with Standard Plans, Index 120-001 select material, with not more than 15% fines passing the No. 200 U.S. Standard sieve, or other granular material approved by the Engineer.

Accomplish all footing construction in dry or dewatered excavations, as defined in 455-29. When coarse aggregate is approved for use as an alternate bedding or foundation backfill material, fully wrap the coarse aggregate with a layer of Type D-4 geotextile filter fabric, as specified in Section ~~514985~~. At each end of any concrete slab channel lining, substitute the coarse aggregate with select material within four feet of toe walls.

Form a 3 inches deep key in the top surface of the footing 4 inches wider than the wall thickness. Ensure that footings reach a compressive strength of 3,000 psi before placing precast units.

Place the units as shown in the shop drawings. Carefully set the structure to the true line and grade. Set the units in a bed of mortar placed in the keyway in the top of the footing. Fill the keyway with mortar, and float the mortar flush with the top of the footing or use shims between the footer and culvert during setting, then inject non-shrink grout under the culvert walls. Seal blockouts and holes provided for lifting or joint restraint by using an epoxy mortar or non-shrink grout in accordance with Sections 926 or 934.

Carefully place backfill against the filter fabric and joint seal to avoid damage to the material. Use mechanical tampers or approved compacting equipment to compact all backfill and embankment immediately adjacent to each side of the structure. Place the backfill within 4 feet of each side of the structure in lifts of 8 inches or less (loose depth). Do not operate heavy compaction equipment within 4 feet of the structure. Ensure that the backfill elevation differential between both sides of the structure does not exceed 24 inches. Backfill behind wingwalls in accordance with Section 125. Carry backfill in front of wingwalls to the finished grade surface shown in the Plans.

**THREE-SIDED PRECAST CONCRETE CULVERT  
(REV 8-23-24)**

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**407-1 Description.**

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Reinforcing for Concrete .....	Section 415
Precast Concrete Drainage Products .....	Section 449
Riprap.....	Section 530
Coarse Aggregate** .....	Section 901
Fine Aggregate** .....	Section 902
Curing Materials .....	Section 925
Epoxy Compounds.....	Section 926
Materials for Concrete Repair.....	Section 930
Non-Shrink Grout .....	Section 934
Geosynthetic Materials* .....	Section 985
Mechanical Connection Steel* .....	Section 460
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The manufacturer is permitted to verify the shipping strength test, before 28 days, by testing compressive strength cylinders that are cured under conditions similar to the product or by testing temperature match cured cylinders. The manufacturer may use the maturity method, ASTM C1074, pulse velocity method in accordance with ASTM C597, or any other approved

nondestructive test method to estimate the strength of concrete for determining form removal and handling strengths or before verification of shipping strength by test cylinders.

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Form a 3 inches deep key in the top surface of the footing 4 inches wider than the wall thickness. Ensure that footings reach a compressive strength of 3,000 psi before placing precast units.

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