



Florida Department of Transportation

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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: 410
Proposed Specification: **4100100 Precast Concrete Box 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.

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

**PRECAST CONCRETE BOX CULVERT
(REV 8-23-24)**

ARTICLE 410-1 is deleted and the following substituted:

410-1 Description.

Provide precast four-sided concrete box culverts as an alternative to the structure shown in the Contract Documents. Only monolithic segments, or two-piece segments with three-sided bottom sections and a simple support top slab section, are permitted. Two-piece segments are limited to installations with a minimum of two feet fill height above the top slab.

Construct headwalls, wingwalls and other special features using cast-in-place concrete. Precast wingwalls, cut-off walls or headwalls are not permitted unless otherwise noted in the Contract Documents.

~~—————Meet the requirements in 449-1.~~

ARTICLE 410-2 is deleted and the following substituted:

410-2 Materials.

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

Structural Portland Cement Concrete	Section 346
Reinforcing for Concrete	Section 415
Precast Concrete Drainage Products.....	Section 449
Wire for Site Cage Machines.....	Section 931
Coarse Aggregate * **	Section 901
Fine Aggregate * **	Section 902
Curing Materials for Concrete	Section 925
Materials For Concrete Repair * **	Section 930
Non-Shrink Grout * **	Section 934
Liner Repair Systems	Section 948
Joint Materials.....	ASTM C443, ASTM C877
.....	or ASTM C990
Geos ynthetic textile Fabrics Materials *	Section 985

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

~~** 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 410-7 is deleted and the following substituted:

410-7 Handling, Storage, and Shipping.

Handle, store, and ship precast box culverts in a manner that prevents chipping, cracks, fractures, and excessive bending stress. Do not ship precast box culverts before the concrete attains the required 28-day strength.

The manufacturer is permitted to verify the shipping strength test, before 28 days, by testing compressive strength cylinders that are cured under the conditions similar to the product or by testing temperature match cured cylinders. The manufacturer may use the maturity method, ASTM C 1074, pulse velocity method in accordance with ASTM C 597, 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 box 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.

SUBARTICLE 410-11.1 is deleted and the following substituted:

410-11.1 General: Make field joints for precast concrete box culvert sections with either profile rubber gaskets or preformed joint sealants, unless otherwise detailed in the Plans or approved shop drawings. Joint openings at the outside face must not exceed 1-1/2 inches in the assembled position at any location along the joint perimeter. Ensure a minimum 50% overlap of the joint tongue and groove around the entire perimeter of the box in the assembled position.

Completely wrap the outside of each joint with Type D-3 geotextile filter fabric as specified in Section ~~514985~~. Provide fabric with a minimum width of 2 feet and a length sufficient to ensure a minimum overlap of 24 inches. The filter fabric must extend a minimum of 12 inches beyond each side of the joint. Secure the fabric tightly against the box culvert sections with metal or plastic strapping. Other methods which will hold the fabric securely against the wall of the culvert until the backfill is placed and compacted, may be used when approved by the Engineer. When specified in the Plans, secure the joint by a suitable device capable of holding the sections to line and grade as well as fully home. Remove these devices and repair locations as necessary if intrusive into the concrete after placing and compacting sufficient backfill to secure the sections.

**PRECAST CONCRETE BOX CULVERT
(REV 8-23-24)**

ARTICLE 410-1 is deleted and the following substituted:

410-1 Description.

Provide precast four-sided concrete box culverts as an alternative to the structure shown in the Contract Documents. Only monolithic segments, or two-piece segments with three-sided bottom sections and a simple support top slab section, are permitted. Two-piece segments are limited to installations with a minimum of two feet fill height above the top slab.

Construct headwalls, wingwalls and other special features using cast-in-place concrete. Precast wingwalls, cut-off walls or headwalls are not permitted unless otherwise noted in the Contract Documents.

ARTICLE 410-2 is deleted and the following substituted:

410-2 Materials.

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

Structural Portland Cement Concrete	Section 346
Reinforcing for Concrete	Section 415
Precast Concrete Drainage Products.....	Section 449
Wire for Site Cage Machines.....	Section 931
Coarse Aggregate**	Section 901
Fine Aggregate**	Section 902
Curing Materials for Concrete	Section 925
Materials For Concrete Repair*	Section 930
Non-Shrink Grout*	Section 934
Liner Repair Systems.....	Section 948
Joint Materials.....	ASTM C443, ASTM C877
.....	or ASTM C990
Geosynthetic Materials*	Section 985

* 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 410-7 is deleted and the following substituted:

410-7 Handling, Storage, and Shipping.

Handle, store, and ship precast box culverts in a manner that prevents chipping, cracks, fractures, and excessive bending stress. Do not ship precast box culverts before the concrete attains the required 28-day strength.

The manufacturer is permitted to verify the shipping strength test, before 28 days, by testing compressive strength cylinders that are cured under the conditions similar to the product or by testing temperature match cured cylinders. The manufacturer may use the maturity method, ASTM C 1074, pulse velocity method in accordance with ASTM C 597, 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 box 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 Production Facility Quality Control Stamp is affixed to the product.

SUBARTICLE 410-11.1 is deleted and the following substituted:

410-11.1 General: Make field joints for precast concrete box culvert sections with either profile rubber gaskets or preformed joint sealants, unless otherwise detailed in the Plans or approved shop drawings. Joint openings at the outside face must not exceed 1-1/2 inches in the assembled position at any location along the joint perimeter. Ensure a minimum 50% overlap of the joint tongue and groove around the entire perimeter of the box in the assembled position.

Completely wrap the outside of each joint with Type D-3 geotextile filter fabric as specified in Section 514. Provide fabric with a minimum width of 2 feet and a length sufficient to ensure a minimum overlap of 24 inches. The filter fabric must extend a minimum of 12 inches beyond each side of the joint. Secure the fabric tightly against the box culvert sections with metal or plastic strapping. Other methods which will hold the fabric securely against the wall of the culvert until the backfill is placed and compacted, may be used when approved by the Engineer. When specified in the Plans, secure the joint by a suitable device capable of holding the sections to line and grade as well as fully home. Remove these devices and repair locations as necessary if intrusive into the concrete after placing and compacting sufficient backfill to secure the sections.