



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

September 18, 2017

**Addendum No. 4**

RE: Contract # C204039

WBS # 34243.3.2

STATE FUNDED

**Polk County (I-4729A)**

I-26/US-74/NC-108 Interchange Modifications in the Town Of Columbus

**September 19, 2017 Letting**

To Whom It May Concern:

Reference is made to the plans and proposal form furnished to you on this project.

The following revisions have been made to the Structure plans:

Sheet No.	Revisions
C-1	Note added to allow Precast option

Please void existing Sheet C-1 in your plans and staple the revised Sheet C-1 thereto.

The following revisions have been made to the proposal:

Page No.	Revisions
Proposal Cover	Note added that reads "Includes Addendum No. 4 Dated 09-18-2017".
Table of Contents	Revised to add "NOTE TO CONTRACTOR" special provision
G-31	Added special provision "NOTE TO CONTRACTOR"
ST-29 thru ST-36	Added special provision "OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT AT STATION 16+47.10 -RP F-"

Please void the Proposal Cover, Table of Contents and Page G-31 listed in your proposal and staple the revised pages thereto. Please staple New Page Nos. ST-29 thru ST-36 after Page No. ST-28.

Mailing Address:  
NC DEPARTMENT OF TRANSPORTATION  
CONTRACT STANDARDS AND DEVELOPMENT  
1591 MAIL SERVICE CENTER  
RALEIGH, NC 27699-1591

Telephone: (919) 707-6900  
Fax: (919) 250-4127  
Customer Service: 1-877-368-4968

Location:  
1020 BIRCH RIDGE DR.  
RALEIGH, NC 27610

Website: [www.ncdot.gov](http://www.ncdot.gov)

The contract will be prepared accordingly.

Sincerely,

DocuSigned by:  
*Ronald E. Davenport, Jr.*  
F81B6038A47A442...

Ronald. E. Davenport, Jr., PE  
State Contract Officer

RED/jjr  
Attachments

cc: Mr. Lamar Sylvester, PE  
Mr. Brian Burch, PE  
Mr. Chris Werner, PE  
Mr. Ken Kennedy, PE  
Mr. Jon Weathersby, PE  
Ms. Jaci Kincaid  
Project File (2)

Mr. Ray Arnold, PE  
Ms. Theresa Canales, PE  
Mr. Brian Hanks, PE  
Mr. Mike Gwyn  
Ms. Penny Higgins  
Mr. Mitchell Dixon  
Ms. Lori Strickland

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH, N.C.

PROPOSAL

**INCLUDES ADDENDUM No. 1 DATED 08-31-2017**  
**INCLUDES ADDENDUM No. 2 DATED 09-14-2017**  
**INCLUDES ADDENDUM No. 3 DATED 09-15-2017**  
**INCLUDES ADDENDUM No. 4 DATED 09-18-2017**

DATE AND TIME OF BID OPENING: **SEPTEMBER 19, 2017 AT 2:00 PM**

CONTRACT ID      C204039  
WBS                      34243.3.2

FEDERAL-AID NO.    STATE FUNDED

COUNTY                POLK

T.I.P. NO.            I-4729A

MILES                 0.679

ROUTE NO.            I 26

LOCATION                I-26/US-74/NC-108 INTERCHANGE MODIFICATION IN THE TOWN  
OF COLUMBUS.

TYPE OF WORK        GRADING, DRAINAGE, PAVING, SIGNING, AND STRUCTURES.

**NOTICE:**

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

**BIDS WILL BE RECEIVED AS SHOWN BELOW:**

**THIS IS A ROADWAY PROPOSAL**

**5% BID BOND OR BID DEPOSIT REQUIRED**

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ITEM SHEET(S) (TAN SHEETS)

**Page 1-65, Article 108-5 Character of Workmen, Methods, and Equipment, line 32**, delete all of line 32, the first sentence of the second paragraph and the first word of the second sentence of the second paragraph.

**STATE HIGHWAY ADMINISTRATOR TITLE CHANGE:**

(9-18-12)

SP1 G185

Revise the *2012 Standard Specifications* as follows:

Replace all references to “State Highway Administrator” with “Chief Engineer”.

**SUBLETTING OF CONTRACT:**

(11-18-2014)

108-6

SP1 G186

Revise the *2012 Standard Specifications* as follows:

**Page 1-66, Article 108-6 Subletting of Contract, line 37**, add the following as the second sentence of the first paragraph:

All requests to sublet work shall be submitted within 30 days of the date of availability or prior to expiration of 20% of the contract time, whichever date is later, unless otherwise approved by the Engineer.

**Page 1-67, Article 108-6 Subletting of Contract, line 7**, add the following as the second sentence of the fourth paragraph:

Purchasing materials for subcontractors is not included in the percentage of work required to be performed by the Contractor. If the Contractor sublets items of work but elects to purchase material for the subcontractor, the value of the material purchased will be included in the total dollar amount considered to have been sublet.

**NOTE TO CONTRACTOR:**

In every instance where the notes for a wall indicates that the wall contractor shall verify that an architectural finish is or is not required, that wall **SHALL** receive a finish meeting the requirements of the project special provision entitled “SIMULATED STONE FORM LINER FINISH” found elsewhere in the contract documents.

No architectural finish will be required for the concrete barrier rail.

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## OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT AT STATION 16+47.10 -RP F-

(12-12-13)

### 1.0 GENERAL

This Special Provision covers the design, fabrication and construction of precast reinforced concrete box culverts intended for the conveyance of storm water.

If the option is indicated on the plans, the submittal for a precast reinforced box culvert in lieu of a cast-in-place culvert is permitted. Design the precast culvert sections in accordance with ASTM C1577 or the current edition of the AASHTO LRFD Bridge Design Specifications. Rate all sizes of precast reinforced concrete box culverts in accordance with the current edition of the AASHTO Manual for Bridge Evaluation. Ensure the culvert rates for the AASHTO design loads and North Carolina's legal loads (see Section 2.0 for North Carolina's legal loads). Provide the size and number of barrels as indicated on the plans. Detail the culvert with cast-in-place wings walls and footings. Precast wing walls and footings will not be allowed. Provide a precast box culvert that meets the requirements of Section 1077 and any other applicable parts of the Standard Specifications.

The design and rating of the precast and cast-in-place members is the responsibility of the Contractor and is subject to review, comments and approval. Submit two sets of detailed plans and rating sheets for review. Include all details in the plans, including the size and spacing of the required reinforcement necessary to build the precast box and cast-in-place members. Have a North Carolina Registered Professional Engineer check and seal the plans, rating sheets and design calculations. After the plans, rating sheets and design calculations are reviewed and, if necessary, the corrections made, submit one set of plans and rating sheets on 22" x 34" sheets to become part of the contract plans.

If the span, rise and design earth cover for the precast reinforced concrete box culvert are identical to a previously approved submittal, the Contractor may request the previously approved design calculations and plans be considered as the submittal for review and approval. However, a set of plans and rating sheets will need to be submitted to become part of the contract plans.

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## 2.0 NORTH CAROLINA'S LEGAL LOADS

Apply the following legal loads to all structures carrying interstate traffic:

SINGLE VEHICLE(SV)			TRUCK TRACTOR SEMI-TRAILER(TTST)		
REF. #	SCHEMATIC		REF. #	SCHEMATIC	
<b>SH</b>		25K 12.5 TON	<b>T4A</b>		56.5K 28.25 TON
<b>S3A</b>		45.5K 22.75 TON	<b>T5B</b>		64K 32 TON
<b>S3C</b>		43K 21.5 TON	<b>T6A</b>		72K 36 TON
<b>S4A</b>		53.5K 26.75 TON	<b>T7A</b>		80K 40 TON
<b>S5A</b>		61K 30.5 TON	<b>T7B</b>		80K 40 TON
<b>S6A</b>		69K 34.5 TON			
<b>S7A</b>		80K 40 TON			
<b>S7B</b>		77K 38.5 TON			



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Apply the following legal loads to all structures carrying non-interstate traffic:

SINGLE VEHICLE (SV)			TRUCK TRACTOR SEMI-TRAILER (TTST)		
REF. #	SCHEMATIC		REF. #	SCHEMATIC	
<b>SNSH</b>	5K ○	22K ○ 14'	27K 13.5 TON	<b>TNAGRIT3</b>	22K 22K 22K 66K ○ ○ ○ 9' 9' 18' 33 Ton
<b>SNGARBS2</b>	23.5K ○	16.5K ○ 14'	40K 20 TON	<b>TNT4A</b>	12.1K 12.05K 21K 21K ○ ○ ○ ○ 9' 9' 4' 22' 66.15K 33.075 TON
<b>SNAGRIS2</b>	22K ○	22K ○ 14'	44K 22 Ton	<b>TNAGRIT4</b>	22K 22K 21K 21K ○ ○ ○ ○ 9' 9' 4' 22' 86K 43 TON
<b>SNCOTTS3</b>	4.5K ○	25K 25K ○ ○ 11' 4' 15'	54.5K 27.25 TON	<b>TNAGT5A</b>	22K 21K 21K 13K 13K ○ ○ ○ ○ ○ 9' 4' 9' 4' 26' 90K 45 TON
<b>SNAGGRS4</b>	16K ○	15.85K 19K 19K ○ ○ ○ 9' 4' 4' 17'	69.85K 34.925 TON	<b>TNAGT5B</b>	6K 21K 21K 21K 21K ○ ○ ○ ○ ○ 9' 4' 9' 4' 26' 90K 45 TON
<b>SNS5A</b>	12.1K ○	8.5K 21K 21K 8.5K ○ ○ ○ ○ 9' 4' 4' 4' 21'	71.1K 35.55 TON	<b>TNT6A</b>	12.1K 8.2K 21K 21K 10.45K 10.45K ○ ○ ○ ○ ○ ○ 9' 4' 4' 9' 4' 30' 83.2K 41.6 TON
<b>SNS6A</b>	12.1K ○	8.6K 8.6K 21K 21K 8.6K ○ ○ ○ ○ ○ 9' 4' 4' 4' 4' 25'	79.9K 39.95 TON	<b>TNT7A</b>	4.1K 4K 21K 21K 11.3K 11.3K 11.3K ○ ○ ○ ○ ○ ○ ○ 9' 4' 4' 9' 4' 4' 34' 84K 42 TON
<b>SNS7B</b>	7.6K ○	8.6K 8.6K 21K 21K 8.6K 8.6K ○ ○ ○ ○ ○ ○ ○ 9' 4' 4' 4' 4' 4' 29'	84K 42 TON	<b>TNT7B</b>	4.1K 10.5K 10.5K 8.45K 8.45K 21K 21K ○ ○ ○ ○ ○ ○ ○ 9' 4' 9' 4' 4' 4' 34' 84K 42 TON

**3.0 PRECAST REINFORCED CONCRETE BOX SECTIONS**

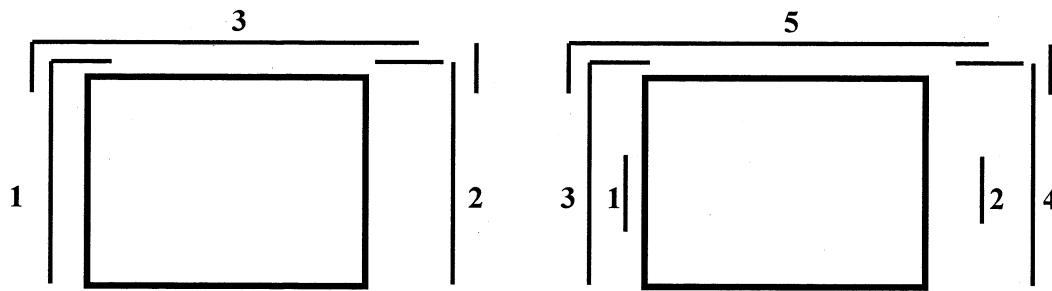
The precast reinforced concrete box culvert sections shall match the size and hydraulic opening indicated in the contract plans.

**A. Design**

1. Design Fill – The design earth cover is reported on the plans as the elevation difference between the point of maximum fill and the bottom of the top slab.
2. Placement of Reinforcement – Provide a 1 inch concrete cover over the reinforcement subject to the provisions of Section F. Extend the inside reinforcement into the tongue portion of the joint and the outside reinforcement into the groove portion of the joint. Detail the clear distance of the end wires so it is not less than 1/2 inch or more than 2 inches from the ends of the box section. Assemble reinforcement per the requirements of ASTM C1577 or the approved design. The exposure of the ends of the wires used to position the reinforcement is not a cause for rejection.
3. Laps and Spacing – Use lap splices for the transverse reinforcement. Detail the transverse wires so that the center to center spacing is not less than 2 inches or more than 4 inches. Do not detail the longitudinal wires with a center to center spacing of more than 8 inches.

**B. Joints**

1. Produce the precast reinforced concrete box section with tongue and groove ends. Design and form these ends of the box section so, when the sections are laid together, they make a continuous line of box sections with a smooth interior free of appreciable irregularities in the flowline, all compatible with the permissible variations given in Section F. The internal joint formed at the tongue and groove ends of the precast units shall be sealed with either bitumen/butyl sealant or closed-cell neoprene material. The internal joint material shall be installed in accordance with the manufacturer's recommendations. The material shall be shown on the shop drawings when they are submitted for review.
2. Seal the external joint with an outside sealer wrap conforming to ASTM C877 that is at least 12 inches wide and covers the joint on both the sides and the top of the box section. Use ConWrap CS-212 from Concrete Sealants, Inc., EZ-Wrap from Press-Seal Gasket Corporation, Seal Wrap from Mar-Mac Manufacturing Co., Inc., Cadilloc External Pipe Joint from Cadilloc, or an approved equal for the outside sealer wrap. If the outside sealer wrap is not applied in a continuous strip along the entire joint, a 12 inch minimum lap of the outside sealer wrap is permitted. Before placing the outside sealer wrap, clean and prime the area receiving the outside sealer wrap in accordance with the sealer wrap manufacturer recommendations. The joint wrap manufacturer installation recommendations shall be included with shop drawings submitted for review. The external joint wrap shall be installed in pieces, as indicated on Figure 1 below:



**Figure 1**

Cover the external joint sealer with a 3 foot strip of filter fabric conforming to Type 4 requirements in Section 1056 of the Standard Specifications.

Place multiple lines of a precast reinforced concrete box culvert such that the longitudinal joint between the sections has a minimum width of 3 inches. Fill the joint between multiple lines of precast box sections with Class A concrete. Use Class A concrete that meets the requirements listed in the Standard Specifications except that Field Compressive Strength Specimens are not required.

#### C. Manufacture

Manufacture precast reinforced concrete box culvert sections by either the wet cast method or dry cast method.

1. Mixture – In addition to the requirements of Section 1077 of the Standard Specifications, do not proportion the mix with less than 564 lb/yd<sup>3</sup> of portland cement.
2. Strength – Concrete shall develop a minimum 28-day compressive strength of 5000 psi. Movement of the precast sections should be minimized during the initial curing period. Any damage caused by moving or handling during the initial curing phase will be grounds for rejection of that precast section.
3. Air Entrainment – Air entrain the concrete in accordance with Section 1077 - 5(A) of the Standard Specifications. For dry cast manufacturing, air entrainment is not required.
4. Testing – Test the concrete in accordance with the requirements of Section 1077 - 5(B).
5. Handling – Handling devices or holes are permitted in each box section for the purpose of handling and placing. Submit details of handling devices or holes for approval and do not cast any concrete until approval is granted. Remove all

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handling devices flush with concrete surfaces as directed. Fill holes in a neat and workmanlike manner with an approved non-metallic non-shrink grout, concrete, or hole plug.

## D. Physical Requirements

Acceptability of precast culvert sections is based on concrete cylinders made and tested in accordance with ASTM C31 and ASTM C39.

## E. Permissible Variations

1. Flatness – All external surfaces shall be flat, true, and plumb. Irregularities, depressions, or high spots on all external surfaces shall not exceed 1/2 inch in 8 feet.
2. Internal Dimensions – Produce sections so that the internal and haunch dimensions do not vary more than 1/4 inch from the plan dimensions.
3. Adjacent Sections - Internal, external, and haunch dimensions for connecting sections shall not vary more than 1/2 inch.
4. Length of Tongue and Groove – The minimum length of the tongue shall be 4 inches. The minimum length of the groove shall be 4 inches. The dimensions of the tongue and groove shall not vary more than 1/4 inch from the plan dimensions.
5. Slab and Wall Thickness – Produce sections so that the slab and wall thickness are not less than that shown on the plans by more than 5% or 3/16 inch, whichever is greater. A thickness more than that required on the plans is not a cause for rejection.
6. Length of Opposite Surfaces – Produce sections so that variations in laying lengths of two opposite surfaces of the box section meet the requirements of ASTM C1577, Section 11.3.
7. Length of Section – Produce sections so that the underrun in length of a section is not more than 1/2 inch in any box section.
8. Position of Reinforcement – Produce sections so that the maximum variation in the position of the reinforcement is  $\pm 3/8$  inch for slab and wall thicknesses of 5 inches or less and  $\pm 1/2$  inch for slab and wall thicknesses greater than 5 inches. Produce sections so that the concrete cover is never less than 5/8 inch as measured to the internal surface or the external surface. The preceding minimum cover limitations do not apply at the mating surfaces of the joint.
9. Area of Reinforcement – Use the design steel shown on the plans for the steel reinforcement. Steel areas greater than those required are not cause for rejection. The permissible variation in diameter of any wire in finished fabric is prescribed for the wire before fabrication by either AASHTO M32 or M225.

**F. Marking**

1. Each section shall be match-marked in order of intended installation as indicated on the approved shop drawings. Ensure that pieces fit together neatly and in a workmanlike manner. In order to ensure a good, neat field fit, the Department will verify assembly of the first five adjacent sections or 20% of the total culvert length, whichever is greater, at the producer's facility and match-mark the pieces. This will require that a minimum of three adjacent sections of the culvert be fitted at the production yard at a time and then match-marked. Once three sections have been match-marked, the first section may be removed for shipment and a fourth section set for marking. Continue in a progressive manner until all sections have been properly match-marked. The producer shall document the GO-NO-GO dimensional measurements of each box culvert section produced through the post-pour inspection process.
2. Clearly mark each section of the box culvert in accordance with ASTM C1577, Section 15. The information requirements of Section 15.1 shall be clearly marked on the inner surface of each section.

**G. Construction**

1. Pre-installation Meeting – A pre-installation meeting is required prior to installation. Representatives from the Contractor, the precast box manufacturer, and the Department should attend this meeting. The precast box manufacturer representative shall be on site during installation.
2. Foundation – Foundation for precast box culvert shall meet the requirements of Section 414 of the Standard Specifications. In addition, Type VI foundation material shall be encapsulated in filter fabric conforming to Type 4 requirements in Section 1056 of the Standard Specifications. The filter fabric shall be placed perpendicular to the culvert barrel. Provide sufficient overhang beyond the excavation to allow a minimum lap of 3 feet when the foundation material is placed and fabric wrapped on top. Perpendicular sections of fabric shall be continuous. A minimum lap of 2 feet shall be provided between sections of fabric.
3. Installation – Sections shall be placed at the beginning of the outlet end of the culvert with the groove end being laid upgrade. Tongue sections shall be laid into the groove sections. Positive means shall be provided to pull each section firmly into the previously placed section so that the joints are tightly homed. Use a "come-along", box pullers or other approved methods to create a positive means of joining box sections. Construction equipment shall not have direct contact with the box section. The load of the box shall be suspended by lifting device during joining procedure.
4. Backfill – Complete backfill in accordance with Section 414 of the Standard Specifications.

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## 4.0 BASIS OF PAYMENT

Any additional cost of redesigning will be paid for by the Contractor if Precast Reinforced Concrete Culvert is used in lieu of the cast-in-place culvert shown on the plans. Except for Foundation Conditioning Material and Culvert Excavation, payment for the Precast Box Culvert will be a lump sum amount equal to the payment that would be allowed for construction of a Cast-in-Place Box Culvert. Plan quantities and unit bid prices will be used to compute the lump sum amount. Such price and payment will be full compensation for all work covered by this Special Provision, the plans and applicable parts of the Standard Specifications and will include, but not be limited to, furnishing all labor, materials (including all filter fabric), equipment and other incidentals necessary to complete this work. Such price and payment will also be full compensation for concrete, reinforcing steel, labor, equipment and all other related materials necessary for the completion of the barrel section, and the construction of the headwalls, leveling pad, end curtain walls, wings and wing footings.



9/18/2017

DocuSigned by:

*David Stutts*  
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