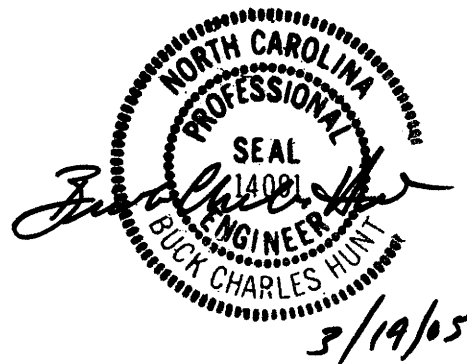


**Project Special Provisions  
Structure**

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**PROJECT SPECIAL PROVISIONS**  
**STRUCTURE**

**PROJECT B-3445****CURRITUCK COUNTY****SECURING OF VESSELS****(10-12-01)**

Secure vessels in accordance with Section 107 of the Standard Specifications and the following provision.

When utilizing barges, tugboats or other vessels, take all necessary precautions to ensure that such vessels are securely anchored or moored when not in active operation. Take all necessary measures to ensure that the vessels are operated in a manner that avoids damage to or unnecessary contact with bridges and other highway structures and attachments. If severe weather conditions are anticipated, or should be anticipated through reasonable monitoring of weather forecasts, take additional measures to protect bridges and other highway structures and attachments from extreme conditions. The Contractor is strictly liable for damages to any bridge or other highway structure or attachment caused by a vessel owned or controlled by the Contractor. The Contractor is also liable to third parties for property damages and loss of revenue caused by vessels under the Contractor's control.

**CALCIUM NITRITE CORROSION INHIBITOR****(2-14-04)**

Add an approved calcium nitrite corrosion inhibitor (30% solids) to the concrete mix at the batch plant for the members identified by the plan notes. Clearly mark the prestressed concrete members that contain calcium nitrite.

Use the inhibitor at a minimum rate of 3.0 gal/yd<sup>3</sup> (14.9 liters/m<sup>3</sup>). Ensure that the hardened concrete contains at least 5.1 lbs/yd<sup>3</sup> (3.0 kg/m<sup>3</sup>) Nitrite (NO<sub>2</sub>) when tested in accordance with N.C. Department of Transportation, Materials and Tests Method Chem.C-20.0 with the exception of concrete used in prestressed members. Test prestressed members as follows:

The Inspector will perform the complete C-21.0 "Field Test Procedure for the Nitrite Ion in Plastic Concrete" on plastic concrete samples obtained randomly from a truck used to pour concrete near each end (live end and dead end) of a prestressed concrete casting. Powder samples will be taken from hardened cylinders made at the time C-21.0 is run for any concrete that fails the C-21.0 (plastic test) method. The Chemical Testing Laboratory will test the powder using method C-20.0 "Determination of Nitrite in Hardened Concrete." Acceptance of the concrete is dependent in the results of method C-20.0 (hardened test) when any sample fails the C-21.0 (plastic test method).

The Inspector will perform a qualitative nitrite ion check by method C-22.0 (Field Spot Test) on each load of concrete batched for a prestressed concrete casting bed. Acceptance of the concrete

is dependent on the results of method C-20.0 (hardened test) when any sample fails the C-22.0 (Field Spot Test). The producer may elect to not incorporate concrete that fails Method C-22.0 (Field Spot Test) in lieu of waiting for C-20.0 (hardened test) test results to determine the acceptability of the member. Once per each week's production of prestressed concrete with corrosion inhibitor, random samples of hardened concrete powder will be taken from cylinders used for method C-21.0 (plastic test). These samples will be submitted to the Chemical Testing Laboratory for analysis using method C-20.0 (hardened test).

Units with calcium nitrite in a quantity less than specified are subject to rejection.

Furnish concrete cylinders to the Engineer, in a quantity to be specified, to verify the concentrations of calcium nitrite in hardened concrete. Concrete failing to contain calcium nitrite at the required concentrations as tested is subject to rejection.

Use only air-entraining, water-reducing, and/or set-controlling admixtures in the production of concrete mixtures that are compatible with calcium nitrite solutions.

Strictly adhere to the manufacturer's written recommendations regarding the use of admixtures including storage, transportation and method of mixing. If preferred, use calcium nitrite, which acts as an accelerator, in conjunction with a retarder to control the set of concrete, as per the manufacturer's recommendation.

No separate payment will be made for furnishing and incorporating the calcium nitrite solution into the concrete mixture. The cost of furnishing and incorporating the admixture is considered a part of the work of fabricating and furnishing the prestressed concrete units or supplying Class AA concrete.

## **MECHANICAL BUTT SPLICING FOR REINFORCING STEEL**

**(10-12-01)**

### **1.0 GENERAL**

When mechanically butt splicing reinforcing steel, use a standard metal filled sleeve, cement mortar filled sleeve, threaded steel couplings, forged steel sleeve, cold-forged sleeve or an exothermic process whereby molten filler metal, contained by a high strength steel sleeve of larger inside diameter than the bars, is introduced into the annular space between the bars and the sleeve and also between the ends of the bars. Provide a splice that is capable of transferring at least 125% of the yield strength of the bars from one bar to the other by the mechanical strengths of the splice components.

The following is a list of approved connectors:

Brand Name	Approved Size
Bar-Lock Couplers	#4 - #11 (#13 - #36)
Barsplice Products	
Bar-Grip System	#4 - #18 (#13 - #57)
Grip-Twist System	#4 - #18 (#13 - #57)
Threaded Dowel Bar Coupler	#4 - #8 (#13 - #25)
Erico	
Lenton Interlok Grout-Filled Coupler	#6 - #11 (#19 - #36)
Lenton Position Coupler	#4 - #18 (#13 - #57)
Lenton Standard Coupler	#4 - #18 (#13 - #57)
Quick-Wedge Coupler	#4 - #6 (#13 - #19)
Richmond DB-SAE Dowel Bar Splicer	#4 - #11 (#13 - #36)
Williams Form Engineering Flange Coupler	#4 - #14 (#13 - #43)
Zap Screwlok	#4 - #11 (#13 - #36)

For splices not on the approved list, as a condition of approval, assemble three test splices in the presence of the Engineer for each of the bar materials identical to that which is proposed for use in the structure and forward the test splices to N. C. Department of Transportation Materials and Tests Unit in Raleigh, N.C.

When an exothermic connector is used, do not let the splice depend upon fusion of the filler metal with the bars. Select a temperature for heating the bars that is below the melting point of the bars and is sufficiently low so as not to significantly affect the original hardness nor decrease the structural properties of the bars. Visual inspection of the finished splices is sufficient; the splice is acceptable if sound filler metal is present at both ends of the splice sleeve and at the sleeve entry port.

Splice the bars in accordance with the manufacturer's recommendations using the manufacturer's required accessories as approved by the Engineer. Use mechanical butt splices only where specified on the plans. Any additional splices require approval.

If bars are epoxy coated, strip the epoxy coating within the limits of the sleeve prior to splicing. After making the splice, paint any unprotected areas of the reinforcing bar and the coupling sleeve with epoxy paint as described in the Standard Specifications.

## 2.0 BASIS OF PAYMENT

No separate measurement or payment will be made for this work. The following pay items will be full compensation for the above work as follows:

- The unit contract price bid for “Reinforced Concrete Deck Slab” will be full compensation for mechanical butt splices in concrete decks.
- The unit contract price bid for “Reinforcing Steel” or “Epoxy Coated Reinforcing Steel” will be full compensation for mechanical butt splices in bridge substructures and cast-in-place culverts.

## **ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS**

**(10-12-01)**

### 1.0 DESCRIPTION

The work covered by this Special Provision consists of furnishing all necessary labor, equipment, and materials and performing all operations necessary for installing anchor bolts/dowels in concrete using an adhesive bonding system in accordance with the details shown on the plans and with the requirements of this specification unless otherwise directed.

Submit a description of the proposed adhesive bonding system to the Engineer for review, comments and acceptance. Include in the description the bolt type and its deformations, equipment, manufacturer’s recommended hole diameter, embedment depth, material specifications, and any other material, equipment or procedure not covered by the plans or these specifications. List the properties of the adhesive, including density, minimum and maximum temperature application, setting time, shelf life, pot life, shear strength and compressive strength. If bars/dowels containing a corrosion protective coating are required, provide an adhesive that does not contain any chemical elements that are detrimental to the coating and include a statement to this effect in the submittal.

### 2.0 MATERIALS

Use an adhesive bonding system that has been tested for a tensile strength of 125% of the specified anchor bolt/dowel yield load. Provide certification that, for the particular bolt grade, diameter and embedment depth required, the anchor system will not fail by adhesive failure and that the anchor bolt/dowel will not move. The minimum concrete compressive strength is 3000 psi (20.7 MPa) for certification and anchorage selection.

Package components of the adhesive so that one whole container of each component mixes to form one batch of adhesive. Use containers designed so that all of the contents may be removed easily and sealed tightly to prevent leakage. Furnish adhesive material requiring hand mixing in two separate containers designated as Component A and Component B. Provide a self contained cartridge or capsule consisting of two components which are automatically mixed as they are dispensed, as in the case of a cartridge, or drilled into, as in the case of a capsule.

Clearly label each container with the manufacturer's name, date of manufacture, batch number, batch expiration date, direction for use, and warnings and precautions concerning the contents as required by State or Federal Laws and Regulations.

### 3.0 PROCEDURE

#### A. Drilling of Holes into Concrete

When directed, use a jig or fixture to ensure the holes are positioned and aligned correctly during the drilling process. Upon approval, adjusting hole locations to avoid reinforcing steel is permitted.

Drill the holes with a pneumatic drill unless another drilling method is approved. Follow the manufacturer's recommendations regarding the diameter of the drilled hole.

Immediately after completion of drilling, blow all dust and debris out of the holes with oil-free compressed air using a wand extending to the bottom of the hole. Remove all dust from the sides of the holes by brushing the holes with a stiff-bristled brush of a sufficient size and then blow the hole free of dust. Repeat this procedure until the hole is completely clean. Check each hole with a depth gauge to ensure proper embedment depth.

Repair spalled or otherwise damaged concrete using approved methods.

#### B. Inspection of Holes

Inspect each hole immediately prior to placing the adhesive and the anchor bolts/dowels. Ensure all holes are dry and free of dust, dirt, oil, and grease. Rework any hole that does not meet the requirements of this Special Provision.

#### C. Mixing of Adhesive

Mix the adhesive in strict conformance with the manufacturer's instructions.

#### D. Embedment of Anchor Bolt/Dowel

Clean each anchor bolt/dowel so that it is free of all rust, grease, oil, and other contaminants.

Unless otherwise shown on the plans, the minimum anchor bolt/dowel embedment depth is such that the adhesive develops at least 125% of the anchor bolt/dowel yield load as determined by the manufacturer.

Insert the anchor bolt/dowel the specified depth into the hole and slightly agitate it to ensure wetting and complete encapsulation. After insertion of the anchor bolt/dowel, strike off any excessive adhesive flush with the concrete face. Should the adhesive fail to fill the hole, add additional adhesive to the hole to allow a flush strike-off.

Do not disturb the anchor bolts/dowels while adhesive is hardening.

#### **4.0 FIELD TESTING**

When specified on the plans, test the installed anchor bolts/dowels for adequate adhesive as specified below. Inform the Engineer when the tests will be performed at least 2 days prior to testing. Conduct the tests in the presence of the Engineer.

Use a calibrated hydraulic centerhole jack system for testing. Place the jack on a plate washer that has a hole at least 1/8 inch (3 mm) larger than the hole drilled into the concrete. Position the plate washer on center to allow an unobstructed pull. Position the anchor bolts/dowels and the jack on the same axis. Have an approved testing agency calibrate the jack within 6 months prior to testing. Supply the Engineer with a certificate of calibration.

In the presence of the Engineer, field test 10% of the first 50 anchor bolts/dowels prior to installing any additional anchors. For testing, apply and hold briefly 90% of the anchor bolt/dowel yield load shown on the plans. No visible signs of movement of the anchor bolts/dowels is permitted under this load. Upon receiving satisfactory results from these tests, install the remaining anchors. Test a minimum of 2% of the remaining anchors as previously described.

Record data for each anchor bolt/dowel tested on the report form entitled "Installation Test Report of Adhesively Anchored Anchor Bolts or Dowels". Obtain this form from the North Carolina Department of Transportation Materials and Tests Engineer. Submit a copy of the completed report forms to the Engineer.

Final acceptance of the adhesively anchored system is based on the conformance of the pull test to the requirements of this specification. Failure to meet the criteria of this specification is grounds for rejection.

#### **5.0 BASIS OF PAYMENT**

No separate measurement or payment will be made for furnishing, installing, and testing anchor bolts/dowels.

Payment at the contract unit prices for the various pay items will be full compensation for all materials, equipment, tools, labor, and incidentals necessary to complete the above work.

### **EPOXY PROTECTIVE COATING**

**(10-12-01)**

#### **1.0 DESCRIPTION**

This work consists of preparing the concrete surface and furnishing and applying an epoxy protective coating to the surfaces described in this Special Provision. When epoxy protective coating is required, cure the top surfaces of the bent or end bent caps in

accordance with the Standard Specifications, but do not use the Membrane Curing Compound method.

## 2.0 MATERIALS

Use an epoxy coating that meets the most recently published NCDOT Specification on the date of advertisement. Use the epoxy coating that meets NCDOT-Type 4A Flexible, epoxy coating, moisture insensitive.

Provide a certification for the proposed epoxy showing that it meets NCDOT-Type 4A.

The following companies have epoxies that meet Type 4A Specifications:

- E-Bond Epoxy, Inc.  
Fort Lauderdale, Florida 33307
- Permagile Industries  
Plainview, NY 11803
- Poly-Carb  
Cleveland, OH 44139
- Tamms, Inc.  
Mentor, OH 44060
- Adhesive Engineering  
Cleveland, OH 44122-5554
- Kaufman Products  
Baltimore, MD 21226-1131
- Prime Resins  
Lithonia, GA 30058
- Sika Corporation  
Lyndhurst, N. J. 07071

A copy of the specifications for Epoxy Resin Systems is available from the Materials and Tests Unit.

## 3.0 SURFACES

With the exception of cored slab bridges, apply the epoxy protective coating to the top surface area, including chamfer area, of bent caps under expansion joints and of end bent caps, excluding areas under elastomeric bearings. For cored slab bridges, do not apply the epoxy protective coating to the bent or end bent caps. Also, apply epoxy protective coating to the ends of prestressed concrete members as noted on the plans.

Use extreme care to keep the area under the elastomeric bearings free of the epoxy protective coating. Do not apply the epoxy protective coating in the notch at the ends of the prestressed concrete girders.



Thoroughly clean all dust, dirt, grease, oil, laitance, and other objectionable material from the concrete surfaces to be coated. Air-blast all surfaces immediately prior to applying the protective coating.

Only use cleaning agents pre-approved by the Engineer.

#### 4.0 APPLICATION

Apply epoxy protective coating only when the air temperature is at least 40°F (4°C) and rising, but less than 95°F (35°C) and the surface temperature of the area to be coated is at least 40°F (4°C). Remove any excess or free standing water from the surfaces before applying the coating. Apply one coat of epoxy protective coating at a rate such that it covers between 100 and 200 ft<sup>2</sup>/gal (2.5 and 5 m<sup>2</sup>/liter).

Note: Under certain combinations of circumstances, the cured epoxy protective coating may develop “oily” condition on the surface due to amine blush. This condition is not detrimental to the applied system.

Apply the coating so that the entire designated surface of the concrete is covered and all pores filled. To provide a uniform appearance, use the exact same material on all visible surfaces.

#### 5.0 BASIS OF PAYMENT

No separate measurement or payment will be made for preparing, furnishing and applying the epoxy protective coating to the concrete surfaces.

Payment at the contract unit prices for the various pay items will be full compensation for the above work including all materials, equipment, tools, labor, and incidentals necessary to complete the work.

### **FALSEWORK AND FORMWORK**

(10-12-01)

#### 1.0 DESCRIPTION

Use this Special Provision as a guide to develop temporary works submittals required by the Standard Specifications or other provisions; no additional submittals are required herein. Such temporary works include, but are not limited to, falsework and formwork.

Falsework is any temporary construction used to support the permanent structure until it becomes self-supporting. Formwork is the temporary structure or mold used to retain plastic or fluid concrete in its designated shape until it hardens. Access scaffolding is a temporary structure that functions as a work platform that supports construction personnel, materials, and tools, but is not intended to support the structure. Scaffolding systems that are used to temporarily support permanent structures (as opposed to functioning as work platforms) are considered to be falsework under the definitions given. Shoring is a component of falsework such as horizontal, vertical, or inclined support members. Where

the term “temporary works” is used, it includes all of the temporary facilities used in bridge construction that do not become part of the permanent structure.

Design and construct safe and adequate temporary works that will support all loads imposed and provide the necessary rigidity to achieve the lines and grades shown on the plans in the final structure.

## **2.0 MATERIALS**

Select materials suitable for temporary works; however, select materials that also ensure the safety and quality required by the design assumptions. The Engineer has authority to reject material on the basis of its condition, inappropriate use, safety, or nonconformance with the plans. Clearly identify allowable loads or stresses for all materials or manufactured devices on the plans. Revise the plan and notify the Engineer if any change to materials or material strengths is required.

## **3.0 DESIGN REQUIREMENTS**

### **A. Working Drawings**

Provide working drawings for items as specified in the contract, or as required by the Engineer, with design calculations and supporting data in sufficient detail to permit a structural and safety review of the proposed design of the temporary work.

When concrete placement is involved, include data such as the drawings of proposed sequence, rate of placement, direction of placement, and location of all construction joints. Submit the number of copies as called for by the contract.

When required, have the drawings and calculations prepared under the guidance of, and sealed by, a North Carolina Registered Professional Engineer who is knowledgeable in temporary works design.

Design falsework and formwork requiring submittals in accordance with the 1995 AASHTO *Guide Design Specifications for Bridge Temporary Works* except as noted herein.

1. Wind Loads

Table 2.2 of Article 2.2.5.1 is modified to include wind velocities up to 110 mph (177 km/hr). In addition, Table 2.2A is included to provide the maximum wind speeds by county in North Carolina.

**Table 2.2 - Wind Pressure Values**

Height Zone feet (m) above ground	Pressure, lb/ft <sup>2</sup> (kPa) for Indicated Wind Velocity, mph (km/hr)				
	70 (112.7)	80 (128.7)	90 (144.8)	100 (160.9)	110 (177.0)
0 to 30 (0 to 9.1)	15 (0.72)	20 (0.96)	25 (1.20)	30 (1.44)	35 (1.68)
30 to 50 (9.1 to 15.2)	20 (0.96)	25 (1.20)	30 (1.44)	35 (1.68)	40 (1.92)
50 to 100 (15.2 to 30.5)	25 (1.20)	30 (1.44)	35 (1.68)	40 (1.92)	45 (2.15)
over 100 (30.5)	30 (1.44)	35 (1.68)	40 (1.92)	45 (2.15)	50 (2.39)

2. Time of Removal

The following requirements replace those of Article 3.4.8.2.

Do not remove forms until the concrete has attained strengths required in Article 420-17 of the Standard Specifications and these Special Provisions.

Do not remove forms until the concrete has sufficient strength to prevent damage to the surface.

**Table 2.2A - Steady State Maximum Wind Speeds by Counties in North Carolina**

COUNTY	25 YR (mph) (km/hr)	COUNTY	25 YR (mph) (km/hr)	COUNTY	25 YR (mph) (km/hr)
Alamance	70 (112.7)	Franklin	70 (112.7)	Pamlico	100 (160.9)
Alexander	70 (112.7)	Gaston	70 (112.7)	Pasquotank	100 (160.9)
Alleghany	70 (112.7)	Gates	90 (144.8)	Pender	100 (160.9)
Anson	70 (112.7)	Graham	80 (128.7)	Perquimans	100 (160.9)
Ashe	70 (112.7)	Granville	70 (112.7)	Person	70 (112.7)
Avery	70 (112.7)	Greene	80 (128.7)	Pitt	90 (144.8)
Beaufort	100 (160.9)	Guilford	70 (112.7)	Polk	80 (128.7)
Bertie	90 (144.8)	Halifax	80 (128.7)	Randolph	70 (112.7)
Bladen	90 (144.8)	Harnett	70 (112.7)	Richmond	70 (112.7)
Brunswick	100 (160.9)	Haywood	80 (128.7)	Robeson	80 (128.7)
Buncombe	80 (128.7)	Henderson	80 (128.7)	Rockingham	70 (112.7)
Burke	70 (112.7)	Hertford	90 (144.8)	Rowan	70 (112.7)
Cabarrus	70 (112.7)	Hoke	70 (112.7)	Rutherford	70 (112.7)
Caldwell	70 (112.7)	Hyde	110 (177.0)	Sampson	90 (144.8)
Camden	100 (160.9)	Iredell	70 (112.7)	Scotland	70 (112.7)
Carteret	110 (177.0)	Jackson	80 (128.7)	Stanley	70 (112.7)
Caswell	70 (112.7)	Johnston	80 (128.7)	Stokes	70 (112.7)
Catawba	70 (112.7)	Jones	100 (160.9)	Surry	70 (112.7)
Cherokee	80 (128.7)	Lee	70 (112.7)	Swain	80 (128.7)
Chatham	70 (112.7)	Lenoir	90 (144.8)	Transylvania	80 (128.7)
Chowan	90 (144.8)	Lincoln	70 (112.7)	Tyrell	100 (160.9)
Clay	80 (128.7)	Macon	80 (128.7)	Union	70 (112.7)
Cleveland	70 (112.7)	Madison	80 (128.7)	Vance	70 (112.7)
Columbus	90 (144.8)	Martin	90 (144.8)	Wake	70 (112.7)
Craven	100 (160.9)	McDowell	70 (112.7)	Warren	70 (112.7)
Cumberland	80 (128.7)	Mecklenburg	70 (112.7)	Washington	100 (160.9)
Currituck	100 (160.9)	Mitchell	70 (112.7)	Watauga	70 (112.7)
Dare	110 (177.0)	Montgomery	70(112.7)	Wayne	80 (128.7)
Davidson	70 (112.7)	Moore	70 (112.7)	Wilkes	70 (112.7)
Davie	70 (112.7)	Nash	80 (128.7)	Wilson	80 (128.7)
Duplin	90 (144.8)	New Hanover	100 (160.9)	Yadkin	70 (112.7)
Durham	70 (112.7)	Northampton	80 (128.7)	Yancey	70 (112.7)
Edgecombe	80 (128.7)	Onslow	100 (160.9)		
Forsyth	70 (112.7)	Orange	70 (112.7)		

Note on the working drawings any anchorages, connectors, inserts, steel sleeves or other such devices used as part of the falsework or formwork that remains in the permanent structure. If the plan notes indicate that the structure contains the necessary corrosion protection required for a Corrosive Site, epoxy coat, galvanize, metallize or otherwise protect these devices as directed by the Engineer. Any coating required by the Engineer will be considered incidental to the various pay items requiring temporary works.

#### B. Review and Approval

The Engineer is responsible for the review and approval of temporary works' drawings.

Submit the working drawings sufficiently in advance of proposed use to allow for their review, revision (if needed), and approval without delay to the work.

Do not start construction of any temporary work for which working drawings are required until the drawings have been approved. Such approval does not relieve the Contractor of the responsibility for the accuracy and adequacy of the working drawings.

The time period for review of the working drawings does not begin until complete drawings and design calculations, when required, are received by the Engineer.

On the drawings, show all information necessary to allow the design of any component to be checked independently as determined by the Engineer.

If requested by the Engineer, submit with the working drawings manufacturer's catalog data listing the weight of all construction equipment that will be supported on the temporary work. Show anticipated total settlements and/or deflections of falsework and forms on the working drawings. Include falsework footing settlements, joint take-up, and deflection of beams or girders. Design the falsework and forms supporting deck slabs and overhangs on girder bridges so that there will be no differential settlement between the girders and the deck forms during placement of deck concrete.

#### 4.0 CONSTRUCTION REQUIREMENTS

All requirements of Section 420 of the Standard Specifications apply.

Construct temporary works in conformance with the approved working drawings. Ensure that the quality of materials and workmanship employed is consistent with that assumed in the design of the temporary works. Do not weld falsework members to any portion of the permanent structure unless approved. Show any welding to the permanent structure on the approved construction drawings.

Provide tell-tales attached to the forms and extending to the ground, or other means, for accurate measurement of falsework settlement. Make sure that the anticipated compressive settlement and/or deflection of falsework does not exceed 1 inch (25 mm). For cast-in-place concrete structures, make sure that the calculated deflection of falsework

flexural members does not exceed  $1/240$  of their span regardless of whether or not the deflection is compensated by camber strips.

#### A. Maintenance and Inspection

Inspect and maintain the temporary work in an acceptable condition throughout the period of its use. Certify that the manufactured devices have been maintained in a condition to allow them to safely carry their rated loads. Clearly mark each piece so that its capacity can be readily determined at the job site.

Perform an in-depth inspection of an applicable portion(s) of the temporary works, in the presence of the Engineer, not more than 24 hours prior to the beginning of each concrete placement. Inspect other temporary works at least once a month to ensure that they are functioning properly. Have a North Carolina Registered Professional Engineer inspect the cofferdams, shoring, sheathing, support of excavation structures, and support systems for load tests prior to loading.

#### B. Foundations

Determine the safe bearing capacity of the foundation material on which the supports for temporary works rest. If required by the Engineer, conduct load tests to verify proposed bearing capacity values that are marginal or in other high-risk situations.

The use of the foundation support values shown on the contract plans of the permanent structure is permitted if the foundations are on the same level and on the same soil as those of the permanent structure.

Allow for adequate site drainage or soil protection to prevent soil saturation and washout of the soil supporting the temporary works supports.

If piles are used, the estimation of capacities and later confirmation during construction using standard procedures based on the driving characteristics of the pile is permitted. If preferred, use load tests to confirm the estimated capacities; or, if required by the Engineer conduct load tests to verify bearing capacity values that are marginal or in other high risk situations.

The Engineer reviews and approves the proposed pile and soil bearing capacities.

### 5.0 REMOVAL

Unless otherwise permitted, remove and keep all temporary works upon completion of the work. Do not disturb or otherwise damage the finished work.

Remove temporary works in conformance with the contract documents. Remove them in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight.

**6.0 METHOD OF MEASUREMENT**

Unless otherwise specified, temporary works will not be directly measured.

**7.0 BASIS OF PAYMENT**

Payment at the contract unit prices for the various pay items requiring temporary works will be full compensation for the above falsework and formwork.

**SUBMITTAL OF WORKING DRAWINGS****(8-13-04)****1.0 GENERAL**

Submit working drawings in accordance with Article 105-2 of the Standard Specifications and the requirements of this Special Provision. The list of submittals contained herein does not represent a list of required submittals for this project. Submittals are only necessary for those items as required by the Standard Specifications, other Special Provisions, or contract plans. Make submittals that are not specifically noted in this Special Provision directly to the Resident Engineer.

If submittals contain variations from plan details or specifications, significantly affect project cost, or significantly affect field construction or operations, discuss them with, and submit them through, the Resident Engineer. State the reason for the proposed variation in the submittals. To minimize overall review time, make sure all working drawing submittals are complete when first submitted. Provide a contact name and phone number with each submittal. Direct any questions regarding working drawing submittal requirements to the Resident Engineer, Structure Design Unit contacts or the Geotechnical Engineering Unit contacts noted below.

**2.0 WORKING DRAWINGS SUBMITTAL CONTACTS**

All submittals noted herein are reviewed by the Structure Design Unit and/or the Geotechnical Engineering Unit.

For submittals to the Structure Design Unit, use the following addresses:

Via US mail:

Mr. G. R. Perfetti, P. E.  
State Bridge Design Engineer  
North Carolina Department  
of Transportation  
Structure Design Unit  
1581 Mail Service Center  
Raleigh, NC 27699-1581

Attention: Mr. P. D. Lambert, P. E.

Via other delivery service:

Mr. G. R. Perfetti, P. E.  
State Bridge Design Engineer  
North Carolina Department  
of Transportation  
Structure Design Unit  
1000 Birch Ridge Drive  
Raleigh, NC 27610

Attention: Mr. P. D. Lambert, P. E.

For submittals to the Geotechnical Engineering Unit, use the following addresses:

For projects in Divisions 1-7, use the following Eastern Regional Office address:

Via US mail:

Mr. K. J. Kim, Ph. D., P. E.  
Eastern Regional Geotechnical  
Manager  
North Carolina Department  
of Transportation  
Geotechnical Engineering Unit  
Eastern Regional Office  
1570 Mail Service Center  
Raleigh, NC 27699-1570

Via other delivery service:

Mr. K. J. Kim, Ph. D., P. E.  
Eastern Regional Geotechnical  
Manager  
North Carolina Department  
of Transportation  
Geotechnical Engineering Unit  
Eastern Regional Office  
3301 Jones Sausage Road, Suite 100  
Garner, NC 27529

For projects in Divisions 8-14, use the following Western Regional Office address:

Via US mail:

Mr. John Pilipchuk, L. G., P. E.  
Western Regional Geotechnical  
Manager  
North Carolina Department  
of Transportation  
Geotechnical Engineering Unit  
Western Regional Office  
5253 Z Max Boulevard  
Harrisburg, NC 28075

Via other delivery service:

Mr. John Pilipchuk, L. G., P. E.  
Western Region Geotechnical  
Manager  
North Carolina Department  
of Transportation  
Geotechnical Engineering Unit  
Western Regional Office  
5253 Z Max Boulevard  
Harrisburg, NC 28075

Direct any questions concerning submittal review status, review comments, or drawing markups to the following contacts:

Primary Structures Contact:

Paul Lambert  
(919) 250 – 4041  
(919) 250 – 4082 facsimile  
[plambert@dot.state.nc.us](mailto:plambert@dot.state.nc.us)

Secondary Structures Contacts:

James Gaither (919) 250 – 4042  
Man-Pan Hui (919) 250 – 4044

Eastern Regional Geotechnical Contact (Divisions 1-7):

K. J. Kim  
(919) 662 – 4710  
(919) 662 – 3095 facsimile  
[kkim@dot.state.nc.us](mailto:kkim@dot.state.nc.us)



Western Regional Geotechnical Contact (Divisions 8-14):

John Pilipchuk  
(704) 455 – 8902  
(704) 455 – 8912 facsimile  
[jpilipchuk@dot.state.nc.us](mailto:jpilipchuk@dot.state.nc.us)

**3.0 SUBMITTAL COPIES**

The quantities provided in this Special Provision act as a guide in the submittal process.

Unless otherwise required by the contract, submit two sets of supporting calculations to the Structure Design Unit.

Furnish one complete copy of the submittal, including all attachments, to the Resident Engineer. If requested, provide additional copies of any submittal. At the same time, submit the following number of copies directly to the Structure Design Unit and/or the Geotechnical Engineering Unit:

<b>Working Drawing Submittal</b>	<b>Copies Required by Structure Design Unit</b>	<b>Copies Required by Geotechnical Engineering Unit</b>	<b>Contract Reference Requiring Submittal <sup>1</sup></b>
Arch Culvert Falsework	5	0	Plan Note & SN Sheet
Box Culvert Falsework <sup>2</sup>	5	0	Plan Note & SN Sheet
Cofferdams <sup>4</sup>	6	1	Articles 410-5 and 420-8
Expansion Joint Seals (hold down plate type with base angle)	9	0	“Expansion Joint Seals”
Expansion Joint Seals (modular)	2, then 9	0	“Modular Expansion Joint Seals”
Expansion Joint Seals (strip seals)	9	0	“Strip Seals”
Falsework & Forms (superstructure)	8	0	Article 420-3
Falsework & Forms <sup>2</sup> (substructure)	8	0	Article 420-3
Mechanically Stabilized Earth Retaining Walls <sup>4</sup>	7	1	“MSE Retaining Walls”
Metal Bridge Railing	8	0	Plan Note
Metal Stay-in-Place Forms	8	0	Article 420-3
Metalwork for Elastomeric Bearings <sup>5,6</sup>	7	0	Article 1072-10
Miscellaneous Metalwork <sup>5,6</sup>	7	0	Article 1072-10
Overhead Sign Assemblies	13	0	Article 903-3(C)
Pile Points	7	1	Article 450-8(D) & “Steel Pile Points”
Placement of Equipment on Structures (cranes, etc.)	7	0	Article 420-20

Precast Concrete Box Culverts	2, then 1 reproducible	0	“(Optional) Precast Reinforced Concrete Box Culvert at Station ____”
Precast Retaining Wall Panels	10	0	Article 1077-2
Pot bearings <sup>5</sup>	8	0	“Pot Bearings”
Prestressed Concrete Deck Panels	6 and 1 reproducible	0	Article 420-3
Proprietary retaining walls <sup>4</sup>	9	1	Applicable Project Special Provision
Prestressed Concrete Girder (strand elongation and detensioning sequences)	6	0	Articles 1078-8 and 1078-11
Prestressed Concrete Cored Slab (detensioning sequences) <sup>3</sup>	6	0	Article 1078-11
Revised Bridge Deck Plans (adaptation to metal stay-in-place forms)	2, then 1 reproducible	0	Article 420-3
Revised Bridge Deck Plans (adaptation to modular expansion joint seals)	2, then 1 reproducible	0	“Modular Expansion Joint Seals”
Soil Nail Retaining Walls <sup>4</sup>	4	1	Applicable Project Special Provision
Sound Barrier Wall Steel Fabrication Plans <sup>6</sup>	7	0	Article 1072-10 & “Sound Barrier Wall”
Sound Barrier Wall Casting Plans	10	0	Article 1077-2 & “Sound Barrier Wall”
Structural Steel <sup>5</sup>	2, then 7	0	Article 1072-10
TFE Expansion Bearings <sup>5</sup>	8	0	Article 1072-10
Temporary Detour Structures <sup>4</sup>	10	1	Article 400-3 & “Construction, Maintenance and Removal of Temporary Structure at Station ____”
Temporary Shoring <sup>4</sup>	6	1	Article 410-4 & “Temporary Shoring for Maintenance of Traffic”

Temporary Fabric or Wire Walls <sup>8</sup>	0	2	Applicable Project Special Provision
Permanent Anchored Tieback Retaining Walls <sup>4</sup>	4	1	Applicable Project Special Provision
Evazote Joint Seals <sup>7</sup>	9	0	Applicable Project Special Provision
Optional Disc Bearings <sup>5</sup>	8	0	“Optional Disc Bearings”
Removal of Existing Structure over Railroad	5	0	Railroad Special Provisions
Drilled Pier Construction Sequence Plans <sup>8</sup>	0	2	“Drilled Piers”
Pile Hammers <sup>8</sup>	0	2	Article 450-6

#### FOOTNOTES

1. References are provided to help locate the part of the contract where the working drawing submittals are required. References in quotes refer to the Project Special Provision by that name. Articles refer to the Standard Specifications.
2. Submittals for these items are necessary only when plan notes require them.
3. Submittals for these items may not be required. A list of pre-approved sequences is available from the producer or the Materials and Tests Unit.
4. These submittals are reviewed by the Structure Design Unit and the Geotechnical Engineering Unit. If NCDOT Shoring Standards are used, working drawings need not be submitted, but the Shoring Selection Form should be forwarded to the Geotechnical Engineering Unit.
5. The fabricator may submit these items directly to the Structure Design Unit.
6. The two sets of preliminary submittals required by Article 1072-10 of the Standard Specifications are not required for these items.
7. Submittals for Fabrication Drawings are not required. Submission of Catalogue Cuts of Proposed Material is required. See Section 5.A of the Project Special Provision.
8. Submittals for these items are reviewed by the Geotechnical Engineering Unit only and correspondence regarding these items should be directed to and will come from the Geotechnical Engineering Unit.

**REMOVAL OF EXISTING STRUCTURE AT 24+18.00 -L-:****(SPECIAL)**

The existing bridge shall be removed in accordance with Standard Specifications with the following exceptions:

1. The existing beams shall be removed and salvaged for the Division of Highways as directed by the Engineer. The material to be salvaged consists of approximately 22 rolled beams varying from 20 to 50 feet in length and varying from 14 to 16 inches in depth. The salvaged material shall be neatly stored on the right of way at locations selected by the Engineer. The remaining structure shall be removed in accordance with the plans and Standard Specifications.
2. The Contractor shall not use any of the items, either temporarily or permanently, which have been removed and are to be salvaged.
3. The Contractor shall notify the NCDOT Bridge Maintenance Yard at (252) 491-2635 two days prior to removal of the beams.
4. The beams shall be separated from the diaphragms, separated at any field splices, any concrete and asphalt removed, and any guardrail support members removed.
5. No separate measurement will be made for this work and the entire cost of this work shall be included in the lump sum contract price bid for

“Removal of Existing Structure.....Lump Sum”

**RAILING SYSTEM:****(SPECIAL)**Description

The work covered by this special provision consists of furnishing all materials, labor, equipment, and incidentals necessary to place the temporary guardrail beams, rail posts, and wooden railing as shown on the plans.

Materials

1. The temporary guardrail beams shall be type “W” and conform to the standard specifications.
2. The rail post, base plate, subbase plate, and bolt material shall be as specified on the plans.

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- 3. Lumber shall meet the Southern Pine Inspection Bureau requirement of “Grade No. 2” or better.

All lumber shall be treated with Chromated Copper Arsenate (CCA) in accordance with American Wood Preservers Association (AWPA) requirements and shall have a minimum CCA of 0.4 lbs. Per Cu. Ft.. An equivalent preservative system may be used with the approval of the Engineer and any cost increase is the responsibility of the contractor.

Lumber shall be dressed on all four sides.

American Institute of Timber Construction (AITC) standards for “Softwood Lumber and Timber Sizes” shall be used. Unless other noted on the plans, nominal sizes are shown.

Basis of Payment

Payment for the Railing System will be the Lump Sum price for “Railing System”. Such price and payment will be full compensation for all work, materials, equipment, tools, and incidentals necessary to complete the work covered by this special provision.

**EPOXY SAND SURFACE:**

**(SPECIAL)**

**DESCRIPTION**

The work covered by this special provision consists of furnishing all materials, labor, equipment, and incidentals necessary to place the epoxy and sand on the pedestrian walkways as shown on the plans. The epoxy shall be Type 2 in accordance with Section 1081-1 of the Standard Specifications.

**APPLICATION**

Type 2 epoxy shall be applied in two coats by either long nap roller or squeegee with the surface of the plate in a horizontal position. The first coat of epoxy shall be applied after the surface is clean, dry, and free of oil and other deleterious materials. Immediately after application of the epoxy, sand shall be applied to the surface from a vertical direction. The application of sand shall be continued until there are no visible moist spots.

The first coat shall be allowed to cure as recommended by the epoxy manufacturer, excess sand swept off, and the second coat of epoxy and sand applied in the same manner as the first coating. Excess sand is to be swept off after the second coat has cured.

**SAND**

Sand shall be dry, clean, white silica sand and meet the following Gradation Requirements.

STANDARD SIZE NO.	4	8	16	20	40	100	200
1.0 PERCENTAGE OF TOTAL	100	100	80-100	45-90	0-10	0-2	0
2.0 BY WEIGHT PASSING							

**BASIS OF PAYMENT**

Payment at the contract price for “Epoxy Sand Surface.....Lump Sum” will be full compensation for all work, materials, equipment, tools, and incidentals necessary for the work covered by this special provision.

**PILE DRIVING ANALYZER (PDA)**

**(SPECIAL)**

**A) PILE DRIVING ANALYZER**

**1.0 General:**

The work consists of driving a 16” square P/S concrete pile and a 24” square P/S concrete pile with the Pile Driving Analyzer (ASTM D 4945-89) attached. Piles to be monitored are production piles as noted on the plans or as directed by the Engineer.

Install the PDA instrumentation after the hammer and leads have been placed on the composite pile.

The Contractor is responsible for notifying the Engineer of his pile driving schedule not less than seven (7) working days prior to the beginning of pile driving.

Dynamic measurements will be taken by the Engineer during initial driving of the piles, and restrike, if necessary. Measurements taken during driving will include, but not be limited to: hammer performance, driving system performance, skin friction, bearing capacity, driving stress levels, and pile integrity.

A detailed and accurate record will be kept by the Engineer during the driving of piles. Forwarded pile logs to Soils and Foundation Design Section, Design Services Unit.

Order lengths, if applicable per the plans and pile driving criteria for the production piles will be furnished to the Contractor within ten (10) working days after test piles for Dynamic Testing are completed. Variation of the pile tip elevation may be required in order to allow for variations in the location and/or strength of the stratum from which the pile obtains its primary capacity.

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The acceptability of production piles with the pile lengths determined by the Contractor or the Engineer will be determined by the Engineer if absolute refusal above the specified plan minimum tip elevation occurs. Piles not achieving the specified resistance within these limits must be driven to penetrations established by the Engineer.

### 2.0 Equipment:

Dynamic measuring instruments will be furnished by the Engineer. The transducers will be attached approximately four (4±) feet from the head of the concrete piles with bolts placed in holes that the Engineer has pre-drilled. Materials and equipment necessary for installation of the transducers will be furnished by the Engineer. The Contractor has the option of either installing the transducers or having the Engineer install the transducers.

If the Contractor chooses to install the transducers, it must be done in accordance with instructions provided by the Engineer. In this case, the Contractor will accept responsibility in terms of both actual expense and time delays for transducers that are either damaged during installation or are installed incorrectly. The Engineer may require the Contractor to readjust the transducers during driving if the dynamic records are inconclusive.

The Engineer will attach the transducers if the Contractor chooses not to. In this case the Contractor must provide the Engineer an OSHA approved two-man working platform (minimum size of 4 feet x 4 feet) capable of being raised and lowered separately from the leads. The working platform will be used to attach the transducers near the head of the pile after the hammer and leads have been placed on the pile.

It is the Contractor's responsibility to supply a suitable test enclosure (shelter) to protect the computer and the Test Equipment Operator from conditions of sun, wet, wind, and cold. The shelter should have a minimum floor size of 6 feet x 6 feet and minimum roof height of seven (7) feet. The inside temperature of the shelter should be maintained between 50 to 85 F. Supply heat or cooling system, if required, to maintain the above mentioned temperature. The test enclosure must be sufficiently near the pile location (within 75 feet of test pile) to be reached by electrical cables.

Damage to the Pile Driving Analyzer and supporting equipment due to the fault or negligence on the part of the Contractor must be replaced by the Contractor at no additional cost to the department.

### 3.0 Construction:

Make available to the Engineer the piles to be dynamically monitored not less than one (1) working day prior to driving. Place the pile horizontally on blocks or in such a manner as to allow the Engineer access to the entire length and circumference of the piles. The piles must not be placed in contact with other piles. Support the steel H piles on the flanges. The Engineer will measure the wave speed on each monitor pile and drill the holes necessary for the attachment of the instrumentation transducers. The Contractor should rotate the piles as directed by the Engineer to facilitate this work. Lift, align and rotate the piles to be monitored in the driving leads. Install the instrumentation after the hammer and leads have been placed on the pile. It is



estimated that it will take approximately one (1) hour per pile to install the dynamic instruments near the head of the pile.

It is the Contractor's responsibility to situate the pile in the leads and template so as to ensure that the dynamic instruments and their accompanying wires will not be damaged during the driving operation.

The piles will be driven to the depth at which the Pile Driving Analyzer indicates that the capacity as noted in the plans has been achieved or as directed by the Engineer. When the level of the gages is within approximately one (1) foot of the ground surface, water surface, or a pile template, driving must be halted to remove the gages from the pile. If additional driving is required, the pile may be required to be spliced and the gages reattached to the head of the next segment prior to the resumption of driving.

The Engineer may require that the Contractor reduce the energy transmitted to the pile by using additional cushions or reducing the energy of the hammer during driving of the specified piles.

When directed by the Engineer, for piles on which re-driving is required, the Contractor must wait a minimum 24 hours (freeze period) or as determined by the Engineer and then after the instruments are reattached by the Engineer, retap the pile with a warm hammer. A cold hammer must not be used for restrike. Warm up the hammer before restrike begins, such as applying at least 30 blows to another pile. The Engineer will determine the amount of penetration required during restrike.

Notify the Engineer of his re-driving schedule not less than one (1) working day prior to beginning re-drive.

Cut off any portion of the test piles above the pile cutoff elevation in the plans after completion of the test.

## B) DYNAMIC PILE LOAD TEST - TEST PILES ARE PRODUCTION PILES

### 1.0 General:

Complete dynamic pile load testing at the location noted on the plans and notification from the Engineer prior to ordering and installing the bridge production piles.

The dynamic pile load test piles must conform to the requirements of the production piles and be driven with the same type and capacity of equipment that will be used for driving the production piles called for on the plans. Procedures for driving the piles will be approved by the Engineer.

These piles will be incorporated in the structure.

2.0 Criteria:

Test the piles vertically in accordance with Section B., “Pile Driving Analyzer” of this Special Provision.

Evaluation of the results of the dynamic testing may require that additional dynamic testing be performed at other locations as required by the Engineer.

The Engineer will determine when the dynamic testing has been satisfactorily completed.

Procedures for installing piles may be subject to modification if dynamic testing indicates it to be necessary.

During pile driving operations, use the approved system. No variations in the driving system will be permitted without the Engineer's written approval. Any change in the driving system will only be considered after the Contractor has submitted the necessary information for a revised wave equation analysis. The Contractor will be notified of the acceptance or rejection of the driving system changes within 14 calendar days of the Engineer's receipt of the requested change.

3.0 Basis of Payment:

Dynamic Load testing will be paid for at the contract unit price per each, "Dynamic Load Test", which price will be full compensation for all materials, labor, tools, equipment, mobilization, and incidentals necessary to complete the work for each test, excluding the pile to be tested, which will be paid for as a production pile.

**PRESTRESSED CONCRETE MEMBERS**

(2-14-04)

In Section 1078-12 of the Standard Specifications after the first sentence of “5,” place the following:

“Conduit may be rigid one-piece or rigid two-piece (split sheathed). Do not use flexible conduit.”

In Section 1078-13 of the Standard Specifications, after the fourth paragraph add the following paragraph:

“When handling the prestressed concrete members, a temporary stress of  $5\sqrt{f_{ci}}$  is permitted, where  $f_{ci}$  is the strength of concrete at release, in psi.”

In Section 1078-5 of the Standard Specifications, place the following two sentences after the first paragraph:

“When casting holes through the top flange of Bulb Tee Girders for overhang or interior bay falsework hanger rods use rigid PVC conduits with a wall thickness of approximately 1/8

inch. Do not use thin wall material. Secure conduits in the forms so that they do not migrate out of the proper location. Other methods of forming holes may be proposed but are subject to the Engineer's approval."

"When casting dowel rod holes in cored slab members use material that creates round, vertical holes of the specified diameter and in the correct location. Do not use material that deforms, collapses or shifts position during casting of the member."

### **SCOUR PROTECTION STONE:**

**(SPECIAL)**

#### 1.0 General

Scour Protection Stone shall consist of field stone or rough hewn quarry stone. The stone must be sound, tough, dense, resistant to the action of air and water, and suitable in all other respects for the purpose intended.

All stone must meet the approval of the Engineer. The size of each individual stone shall weigh between 200 and 700 pounds with at least 50 percent of the stones being greater than 400 pounds. The stones shall be placed as directed by the Engineer.

#### 2.0 Testing

Test Scour Protection Stone material in accordance with Article 1042-3 of the Standard Specification.

#### 3.0 Measurement

The quantity to be paid for under this item shall be the actual number of tons of "Scour Protection Stone", complete in place and accepted.

#### 4.0 Payment

The quantity, measured as described above, will be paid for at the contract unit price per ton bid for "Scour Protection Stone", which price and payment shall be full compensation for all materials, placement, labor, equipment and incidentals necessary to complete the item.

### **STEEL PILE TIPS**

**(10-03-02)**

Use steel pile tips in accordance with the plans, applicable parts of the Standard Specifications, and this Special Provision.

The steel pile tip is not included in determining the length of pile for payment. The contract unit price bid per each for "Steel Pile Tips" will be full compensation for adding the steel pile tips including, but not limited to, any Pile Splicers, swedge bolts, plates, hex nuts, welds, and HP steel piles required along with all labor, tools, and equipment.

Payment will be made under:

Steel Pile Tips ..... Each

**UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 24+18.00 -L-**

(12-12-02)

The 2002 Standard Specifications shall be revised as follows:

Unclassified structure excavation shall be in accordance with Section 412 of the Standard Specifications with the following exception:

Payment will be made under:

Unclassified Structure Excavation at Station ..... Lump Sum

**PRESTRESSED CONCRETE PILES**

(8-13-04)

In Section 450-11, "Basis of Payment" of the Standard Specifications. When the plans indicate the Engineer is determining the length of piles revise "(B) Cutting off Piles" as follows:

Change the sentence in the second paragraph to read:

"...payment for cutting off each pile will be made at an amount equal to the contract unit price per linear foot (per 0.3 meter) for furnishing and driving the pile which has been cut off."

**CRANE SAFETY**

(11-09-04)

Submit all items listed below to the Engineer prior to beginning crane operations. . Changes in personnel or equipment must be reported to the Engineer and all applicable items listed below must be updated and submitted prior to continuing with crane operations.

Comply with the manufacturer specifications and limitations applicable to the operation of any and all cranes and derricks. Prime contractors, sub-contractors, and fully operated rental companies shall comply with the current Occupational Safety and Health Administration regulations (OSHA).

**CRANE SAFETY SUBMITTAL LIST**

- A. **Competent Person:** Provide the name and qualifications of the "Competent Person" responsible for crane safety and lifting operations. The named competent person will have the responsibility and authority to stop any work activity due to safety concerns.

- B. **Riggers:** Provide the qualifications, experience and training of the persons responsible for rigging operations. Training should include, but not be limited to, weight calculations, center of gravity determinations, sling selection and capacities, sling and rigging equipment inspection, safe rigging practices, and determining load weights.
- C. **Crane Inspections:** Inspection records for all cranes shall be current and readily accessible for review upon request.
- D. **Crane Operators:** By January 1, 2006, all crane operators shall be certified by NC CCO (National Commission for the Certification of Crane Operators), or satisfactorily complete the Carolinas AGC's Professional Crane Operator's Proficiency Program. Other approved nationally accredited programs will be considered upon request. Submit current certification for the type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations, for each operator.

Medical evaluations shall meet or exceed the CCO medical evaluation requirements and must remain current within a 3-year expiration date. Utilize either the CCO Physical Examination Form or a current DOT Medical Examiner's Certificate.

**STEEL PILE SPLICER**

**(10-03-02)**

Use Pile splicers in accordance with the plans, applicable parts of the Standard Specifications, and this Special Provision.

Splice steel piles using a pile splicer such as Champion H-Pile splicers manufactured by Associated Pile and Fitting Corp. or PHS H-Pile Splicers manufactured by Piling Accessories, Inc. or approved equal. Submit the pile splicer specifications, along with the manufacturer's welding and attachment detail, to the Engineer for review and approval prior to installation.

Pile splicers are considered incidental to the cost of installation of steel pile tips. The price will be full compensation for furnishing and installing the Pile splicers including, but not limited to, any welds, labor, equipment, and materials.

Payment will be made under:

Steel Pile Tips.....Each