

Project Special Provisions
Structures

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PROJECT SPECIAL PROVISIONS
STRUCTURES

PROJECT B-3926

WATAUGA COUNTY

STEEL PILE POINTS

(10-12-01)

Provide steel pile points in accordance with the plans, applicable parts of the Standard Specifications, and this provision.

The following is a list of approved pile points:

Brand Name	Manufacturer	Pile Size
PAR 12T Super-Bite Point	Piling Accessories, Inc.	HP 12x53 (HP 310x79)
HPH-12-RB-1	International Construction Equipment, Inc.	HP 12x53 (HP 310x79)
PAR 14T Super-Bite Point	Piling Accessories, Inc.	HP 14x73 (HP 360x108)

For pile points not on the approved list, as a condition of approval, submit seven copies of the proposed pile point and attachment details for acceptance prior to use as stated in Subarticle 450-8(D) of the Standard Specifications.

When approved pile points are used, the submission procedure as stated in Subarticle 450-8(D) of the Standard Specifications is waived.

Provide the Engineer with the manufacturer’s welding and attachment details. Weld pile points to the pile in accordance with the manufacturer’s details as approved. The minimum weld length is twice the width of the flange.

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
- Permagine 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 ft²/gal (2.5 and 5 m²/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 ² (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

6-7-05

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.

In order to facilitate in-plant inspection by NCDOT and approval of working drawings, the Contractor shall provide the name, address, and telephone number of the facility where fabrication will actually be done, if different than shown on the title block of the submitted working drawings. This includes, but is not limited to, precast concrete items, prestressed concrete items, and fabricated steel or aluminum items.

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

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

Western Regional Geotechnical Contact (Divisions 8-14):

John Pilipchuk
(704) 455 – 8902
(704) 455 – 8912 facsimile
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:

Working Drawing Submittal	Copies Required by Structure Design Unit	Copies Required by Geotechnical Engineering Unit	Contract Reference Requiring Submittal¹
Arch Culvert Falsework	5	0	Plan Note & SN Sheet
Box Culvert Falsework ²	5	0	Plan Note & SN Sheet
Cofferdams ⁴	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 ² (substructure)	8	0	Article 420-3
Mechanically Stabilized Earth Retaining Walls ⁴	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 ^{5,6}	7	0	Article 1072-10
Miscellaneous Metalwork ^{5,6}	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 ⁵	8	0	“Pot Bearings”
Prestressed Concrete Deck Panels	6 and 1 reproducible	0	Article 420-3
Proprietary retaining walls ⁴	9	0	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) ³	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 ⁴	4	1	Applicable Project Special Provision
Sound Barrier Wall Steel Fabrication Plans ⁶	7	0	Article 1072-10 & “Sound Barrier Wall”
Sound Barrier Wall Casting Plans	10	0	Article 1077-2 & “Sound Barrier Wall”
Structural Steel ⁵	2, then 7	0	Article 1072-10
TFE Expansion Bearings ⁵	8	0	Article 1072-10
Temporary Detour Structures ⁴	10	1	Article 400-3 & “Construction, Maintenance and Removal of Temporary Structure at Station ____”
Temporary Shoring ⁴	6	1	Article 410-4 & “Temporary Shoring for Maintenance of Traffic”

Temporary Fabric or Wire Walls ⁸	0	2	Applicable Project Special Provision
Permanent Anchored Tieback Retaining Walls ⁴	4	1	Applicable Project Special Provision
Evazote Joint Seals ⁷	9	0	Applicable Project Special Provision
Optional Disc Bearings ⁵	8	0	“Optional Disc Bearings”
Removal of Existing Structure over Railroad	5	0	Railroad Special Provisions
Drilled Pier Construction Sequence Plans ⁸	0	1	“Drilled Piers”
Pile Hammers ⁸	0	1	Article 450-6
Crosshole Sonic Logging (CSL) Reports ⁸	0	1	“Crosshole Sonic Logging”
Pile Driving Analyzer (PDA) Reports ⁸	0	1	“Pile Driving Analyzer”

FOOTNOTES

- 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.
- Submittals for these items are necessary only when plan notes require them.
- 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.
- 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.
- The fabricator may submit these items directly to the Structure Design Unit.
- The two sets of preliminary submittals required by Article 1072-10 of the Standard Specifications are not required for these items.
- 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.
- 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.

ELASTOMERIC BEARINGS

(10-03-02)

Use elastomeric bearings in accordance with Article 1079-2 of the Standard Specifications except as follows:

**TABLE 1079-2
NATURAL RUBBER ELASTOMER REQUIREMENTS**

Grade (durometer)	50	60
PHYSICAL PROPERTIES		
Hardness ASTM D2240	50 +5 -5	60 +5 -5

UNCLASSIFIED STRUCTURE EXCAVATION AT STATIONS 23+59.50 -L1- AND 32+85.50 -L2-

(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 MEMBERS

3-04-05

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 or box beam 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.”

CRANE SAFETY

08-15-05

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).

Submit all items listed below to the Engineer prior to beginning crane operations involving critical lifts. A critical lift is defined as any lift that exceeds 75 percent of the manufacturer’s crane chart capacity for the radius at which the load will be lifted or requires the use of more than one crane. 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.

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 and experience of the persons responsible for rigging operations. Qualifications and experience should include, but not be limited to, weight calculations, center of gravity determinations, selection and inspection of sling and rigging equipment, and safe rigging practices.
- C. **Crane Inspections:** Inspection records for all cranes shall be current and readily accessible for review upon request.

- D. **Certifications:** By July 1, 2006, crane operators performing critical lifts 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. All crane operators shall also have a current CDL medical card. Submit a list of anticipated critical lifts and corresponding crane operator(s). Include current certification for the type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

PILE EXCAVATION

(6-7-05)

1.0 GENERAL

This special provision governs installing piles using pile excavation in accordance with the plans and as directed by the Engineer. Pile excavation is necessary when piles can not be installed to the required bearing capacity and tip elevation with conventional driving equipment due to vibration concerns or the presence of rock, boulders, debris or very dense soils. Install piles in accordance with Section 450 of the Standard Specifications and this special provision.

2.0 PILE EXCAVATION

Perform pile excavation to the required elevation shown on the plans or otherwise required by the Engineer. Excavate a hole with a diameter that will result in at least 4 inches (100 mm) of clearance around the entire pile. Use equipment of adequate capacity and capable of drilling through soil and non-soil including rock, boulders, debris, man-made objects and any other materials encountered. Blasting is not permitted to advance the excavation. Blasting for core removal is only permitted when approved by the Engineer. Dispose of drilling spoils in accordance with Section 802 of the Standard Specifications and as directed by the Engineer. Drilling spoils consist of all excavated material including water removed from the excavation either by pumping or drilling tools.

If unstable, caving or sloughing soils are anticipated or encountered, the Engineer may require the Contractor to stabilize the excavation with steel casing. Steel casing may be either the sectional type or one continuous corrugated or non-corrugated piece. Steel casings should consist of clean watertight steel of ample strength to withstand handling and driving stresses and the pressures imposed by concrete, earth or backfill. Use steel casings with an outside diameter equal to the hole size and a minimum wall thickness of 1/4 inches (7 mm).

3.0 CONCRETE PLACEMENT

Before placing concrete, center the pile in the excavation and drive to the required minimum bearing capacity or tip no higher than elevation, whichever is lower, as shown on the plans. Check the water inflow rate in the excavation after any pumps have been removed. If the inflow rate is less than 6 inches (150 mm) per half hour, remove any water and free fall the concrete into the excavation. Ensure that concrete flows completely around the pile. If the water inflow rate is greater than 6 inches (150 mm) per half hour, propose a concrete placement procedure to the Engineer. The Engineer must approve the concrete placement procedure before placing concrete.

Fill the excavation with Class A concrete in accordance with Section 1000 of the Standard Specifications except as modified herein. Provide concrete with a slump of 6 to 8 inches (150 to 200 mm). Use an approved high-range water reducer to achieve this slump. Place concrete in a continuous manner and remove all casings.

4.0 MEASUREMENT AND PAYMENT

A. Method of Measurement

1. Pile Excavation in Soil

The quantity of "Pile Excavation in Soil" to be paid for will be the linear feet (meters) of pile excavation exclusive of the linear feet (meters) of "Pile Excavation Not in Soil" computed from elevations and dimensions as shown on the plans or from revised dimensions authorized by the Engineer.

2. Pile Excavation Not in Soil

The quantity of "Pile Excavation Not in Soil" to be paid for will be the linear feet (meters) of pile excavation in non-soil as determined by the Engineer. Non-soil is defined as material that can not be cut with a rock auger and requires excavation by coring, air tools, hand removal or other acceptable methods. Top of non-soil elevation is that elevation where the rock auger penetration rate is less than 2 inches (50 mm) per 5 minutes of drilling at full crowd force and coring, air tools, etc. are used to advance the excavation. For pay purposes, after non-soil is encountered, earth seams, rock fragments and voids in the excavation less than 3 feet (0.9 m) in total length will be considered "Pile Excavation Not in Soil". If the non-soil is discontinuous, payment will revert to "Pile Excavation in Soil" at the elevation where non-soil is no longer encountered.

B. Basis of Payment**1. Pile Excavation in Soil**

Payment will be made at the contract unit price per linear foot (meter) for “Pile Excavation in Soil”. Such payment will include, but is not limited to, furnishing all labor, tools, equipment, materials including concrete complete and in place and all incidentals necessary to excavate and complete the work as described in this special provision. The cost for the pile will be paid for separately in accordance with the Standard Specifications and will not be part of the unit bid price for “Pile Excavation in Soil”.

2. Pile Excavation Not in Soil

Payment will be made at the contract unit price per linear foot (meter) for “Pile Excavation Not in Soil”. Such payment will include, but is not limited to, furnishing all labor, tools, equipment, materials including concrete complete and in place and all incidentals necessary to excavate and complete the work as described in this special provision. The cost for the pile will be paid for separately in accordance with the Standard Specifications and will not be part of the unit bid price for “Pile Excavation Not in Soil”.

STEEL H PILES**8-15-05**

In Section 1084-3 “Steel Bearing Piles” of the Standard Specifications, revise the first sentence as follows:

Steel bearing piles must meet the requirements of ASTM A572 or ASTM A588 and have a grade of 50 [345].