



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

June 2, 2015

Addendum No. 1

RE: Contract ID C203592

WBS # 34442.3.S6

State Funded

Craven, Jones Counties (R-2514D) (Proposal #2)

US-17 From South of NC-58 To The US-17 New Bern Bypass

June 16, 2015 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 |
|---|---|
| S01-1 and S02-1 | Revised berm elevations |
| S01-5 and S02-5 | Increased build-ups, overhang dimensions and beam bolster heights |
| S01-6 and S02-6 | Added "End of Girder Plan" |
| S01-12 and S02-12 | Revised beam bolster heights |
| S01-15, S01-16, S01-18, S01-19, S02-15, S02-16, S02-18, S02-19 | Revised elevations |
| S03-4 and S04-4 | Revised rating sheet |
| S03-8 and S04-8 | Revised deflections |
| S03-9 and S04-9 | Revised strand pattern, concrete strength and stirrup spacing |
| S03-10 and S04-10 | Updated beveled plate details and note. Revised concrete release strength |
| S05-1 | Removed note "Bottom of steel pipe piles" @ Bt.1 in section view |
| S05-2 and S06-2 | Revised dimensions to wing brace piles |
| S05-3 and S06-3 | Revised "Class A Concrete" and "Reinforcing Steel" quantities |
| S05-4 and S06-4 | Revised rating sheet |
| S05-10 and S06-10 | Revised deflections |

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
CONTRACT STANDARDS AND DEVELOPMENT UNIT
1591 MAIL SERVICE CENTER
RALEIGH NC 27699-1591

TELEPHONE: 919-707-6900
FAX: 919-250-4119
WEBSITE: www.ncdot.gov

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

| Sheet No. | Revisions |
|--|--|
| S05-12, S05-13 and S06-12, S06-13 | Revised strand pattern, debonding legend and concrete strength |
| S05-14 and S06-14 | Revised concrete release strength |
| S05-22 and S06-22 | Revised wing lengths and end of wing elevations |
| S05-23 and S06-23 | Revised wing lengths, end of wing elevations and reinforcing steel |
| S05-24 and S06-24 | Revised "Class A Concrete" and "Reinforcing Steel" quantities |
| S05-27 and S06-27 | Revised wing lengths and end of wing elevations |
| S05-28 and S06-28 | Revised wing lengths, end of wing elevations and reinforcing steel |
| S05-29 and S06-29 | Revised "Class A Concrete" and "Reinforcing Steel" quantities |
| S07-6 and S08-6 | Revised rating sheet |
| S07-16 thru S07-18 and S08-16 thru S08-18 | Revised strand pattern and concrete strength |
| S07-19 and S08-19 | Updated beveled plate details and note. Revised concrete release strength |
| S07-22 and S08-22 | Revised deflections |
| S09-4 and S10-4 | Revised rating sheet |
| S09-7 and S10-7 | Deleted the term "deflection joint" |
| S09-10 and S10-10 | Revised deflections |
| S09-11 and S10-11 | Revised strand pattern |
| S09-16 and S10-16 | Deleted the term "deflection joint" |
| S11-11 and S12-11 | Revised strand pattern and concrete strength. Added note regarding flange clip |
| S11-12 and S12-12 | Revised dimensions of draped strands |
| S11-17 and S12-17 | Added note regarding barrier rail chamfer |

Please void the above listed sheets in your plans and staple the revised sheets thereto.

The following revisions have been made to the proposal:

| Page No. | Revisions |
|------------------|--|
| Proposal Cover | Note added that reads "Includes Addendum No. 1 Dated 06-02-15" |
| P-1 | Revised to include "USACE 404" in list of Permits |
| P-141 thru P-151 | New pages to include USACE "404" permit |

Please void the existing Proposal Cover and Page P-1 in your proposal and replace with the attached revised Proposal Cover and Page P-1. Please add new Pages No. P-141 thru P-151 after existing Page No. P-140 in your proposal.

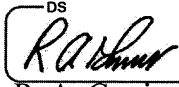
On the item sheets the following pay item quantities have been revised:

| <u>Item</u> | <u>Description</u> | <u>Old Quantity</u> | <u>New Quantity</u> |
|---------------------|----------------------------|---------------------|---------------------|
| 240-818200000-E-420 | Class A Concrete (Bridge) | 3,204.5 CY | 3,217.3 CY |
| 259-821700000-E-425 | Reinforcing Steel (Bridge) | 495,831 LB | 497,359 LB |

The Contractor's bid must be based on these revised pay item quantities. The contract will be prepared accordingly.

The Expedite File has been updated to reflect this revision. Please download the Expedite Addendum File and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

Sincerely,


R. A. Garris, PE
Contract Officer

RAG/jag
Attachments

cc: Mr. Ron Hancock, PE
Mr. John Rouse, PE
Ms. D. M. Barbour, PE
Mr. Rodger Rochelle, PE
Mr. R.E. Davenport, PE
Mr. Tom Koch, PE
Ms. Lori Strickland
Project File (2)

Mr. Ray Arnold, PE
Ms. Terry Canales, PE
Mr. Ronnie Higgins
Mr. Mike Gwyn
Ms. Marsha Sample
Ms. Jaci Kincaid
Ms. Penny Higgins

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

PROPOSAL

INCLUDES ADDENDUM No. 1 DATED 06-02-15

DATE AND TIME OF BID OPENING: **JUNE 16, 2015 AT 2:00 PM**

CONTRACT ID C203592
WBS 34442.3.S6

FEDERAL-AID NO. STATE FUNDED
COUNTY CRAVEN, JONES
T.I.P. NO. R-2514D
MILES 6.383
ROUTE NO. US 17
LOCATION US-17 FROM SOUTH OF NC-58 TO THE US-17 NEW BERN BYPASS.

TYPE OF WORK GRADING, DRAINAGE, PAVING, 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 & STRUCTURE PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

PROJECT SPECIAL PROVISION

(10-18-95) (Rev. 10-15-13)

Z-1

PERMITS

The Contractor's attention is directed to the following permits, which have been issued to the Department of Transportation by the authority granting the permit.

| <u>PERMIT</u> | <u>AUTHORITY GRANTING THE PERMIT</u> |
|---|---|
| Dredge and Fill and/or Work in Navigable Waters (404) | U. S. Army Corps of Engineers |
| Water Quality (401) | Division of Environmental Management, DENR State of North Carolina |
| Buffer Certification | Division of Environmental Management, DENR State of North Carolina |
| State Dredge and Fill and/or CAMA | Division of Coastal Management, DENR State of North Carolina |
| Navigation | U. S. Coast Guard |
| CCPCUA | Division of Water Resources, DENR State of North Carolina |

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the Department and the Contractor has no responsibility in accomplishing those conditions.

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-13 of the *2012 Standard Specifications* and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the waters or wetlands provided that activities outside those areas is done in such a manner as to not affect the waters or wetlands.

P-141



IN REPLY REFER TO

**DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS**

Washington Regulatory Field Office
2407 W 5th Street
Washington, North Carolina 27889

May 18, 2015

Regulatory Division

Action ID. SAW- 2008-00528

Mr. Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Hancock:

In accordance with your written request of February 11, 2015 and the ensuing administrative record, enclosed are two copies of a permit to impact approximately 46.86 acres of Department of the Army (DA) jurisdictional wetlands and 4281 linear feet of surface waters associated with 16 miles of highway improvements near or within the US Highway 17 corridor beginning at the intersection of SR 1330 (Deppe Loop Road) and SR 1439 (Springhill Road) in Onslow County near Belgrade and ending at the southern terminus of the New Bern Bypass, near the Jones/Craven County line, south of New Bern, North Carolina.

You should acknowledge that you accept the terms and conditions of the enclosed permit by signing and dating each copy in the spaces provided ("Permittee" on page 3). Your signature, as permittee, indicates that, as consideration for the issuance of this permit, you voluntarily accept and agree to comply with all of the terms and conditions of this permit. All pages of both copies of the signed permit with drawings should then be returned to this office for final authorization. A self-addressed envelope is enclosed for your convenience.

This correspondence contains a proffered permit for the above described site. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the following address:

P-142

Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by July 18, 2015.

****It is not necessary to submit an RFA form to the Division Office if you do not object to the decision contained in this correspondence.****

After the permit is authorized in this office, the original copy will be returned to you; the duplicate copy will be permanently retained in this office. If you have questions, please contact Tom Steffens at the Washington Regulatory Field Office, telephone 910-251-4615.

Thank you in advance for completing our Customer Survey Form. This can be accomplished by visiting our web site at <http://per2.nwp.usace.army.mil/survey.html> and completing the survey on-line. We value your comments and appreciate your taking the time to complete a survey each time you interact with our office. If you have any questions, please call Tom Steffens at telephone 910-251-4615.

Sincerely



for

William J. Biddlecome
Chief, Washington Regulatory Field Office

Enclosures

P-143

DEPARTMENT OF THE ARMY PERMIT

Permittee Mr. Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Permit No. **SAW-2008-0528**

Issuing Office **CESAW-RG-Washington**

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: The applicant proposes to impact approximately 46.86 acres of Department of the Army (DA) jurisdictional wetlands and 4281 linear feet of surface waters associated with 16 miles of highway improvements near or within the US Highway 17 corridor.

Project Location: The project site location is located near or within the US 17 corridor beginning at the intersection of SR 1330 (Deppe Loop Road) and SR 1439 (Springhill Road) in Onslow County near Belgrade and ending at the southern terminus of the New Bern Bypass, near the Jones/Craven County line, south of New Bern, North Carolina.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2021**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

P-144

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit,

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - (X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
 - a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.

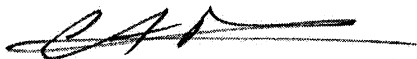
P-145

- e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
 5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
 - a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
 - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.


Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit, Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

for  5-19-2015
 Mr. Richard W. Hancock, P.E., Manager PDEA-NCDOT (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

for  21 May 2015
 Kevin P. Landers Sr., Colonel, US Army, District Commander (DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

 (TRANSFEEE) (DATE)

P-146

SPECIAL CONDITIONS

SAW-2008-00528

NCDOT TIP#: R-2514-B C D Improvements to the US Highway 17 corridor beginning at the intersection of SR 1330 (Deppe Loop Road) and SR 1439 (Springhill Road) in Onslow County near Belgrade and ending at the southern terminus of the New Bern Bypass, near the Jones/Craven County line, south of New Bern, North Carolina

WORK LIMITS

1. CONSTRUCTION PLANS: All work authorized by this permit must be performed in strict compliance with the attached plans dated February 11, 2015 which are a part of this permit. Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.

2. UNAUTHORIZED DREDGE OR FILL: Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

3. MAINTAIN CIRCULATION AND FLOW OF WATERS: Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

4. DEVIATION FROM PERMITTED PLANS: Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill, or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands, or shall any activities take place that cause the degradation of waters or wetlands. There shall be no excavation from, waste disposal into, or degradation of, jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and fill activities connected with this project. In addition, except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within, into, or out of waters or wetlands or to reduce the reach of waters or wetlands.

5. BORROW AND WASTE: To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent waters and wetlands, except as authorized by this permit, the permittee shall require its contractors and/or agents to identify all areas to be used to borrow material or to dispose of dredged, fill or waste material. The permittee shall

provide the Corps of Engineers with appropriate maps indicating the locations of proposed borrow or waste sites as soon as such information is available. The permittee will coordinate with the Corps of Engineers before approving any borrow or waste sites that are within 400 feet of any stream or wetland. All jurisdictional wetland delineations on borrow and waste areas shall be verified by the Corps of Engineers and shown on the approved reclamation plans. The permittee shall ensure that all such areas comply with Special Condition 4 of this permit and shall require and maintain documentation of the location and characteristics of all borrow and disposal sites associated with this project. This documentation will include data regarding soils, vegetation and hydrology sufficient to clearly demonstrate compliance with Special Condition 4. All information will be available to the Corps of Engineers upon request. The permittee shall require its contractors to complete and execute reclamation plans for each waste and borrow site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the Corps of Engineers within 30 days of the completion of the reclamation work.

6. PRECONSTRUCTION MEETING: The permittee shall schedule and attend a preconstruction meeting between its representatives, the contractors representatives, and the Corps of Engineers, Washington Regulatory Field Office, NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all the terms and conditions contained with this Department of Army Permit. The permittee shall provide the USACE, Washington Regulatory Field Office, NCDOT Project Manager, with a copy of the final permit plans at least two weeks prior to the preconstruction meeting along with a description of any changes that have been made to the project's design, construction methodology or construction timeframe. The permittee shall schedule the preconstruction meeting for a time frame when the Corps and NCDWR Project Managers can attend. The permittee shall provide the Corps and NCDWR Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedules and participate in the required meeting.

RELATED LAWS

7. SEDIMENTATION/EROSION CONTROL PLAN:

- a. During the clearing phase of the project, heavy equipment must not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.
- b. No fill or excavation impacts for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless the impacts are included on the plan drawings and specifically authorized by this permit.
- c. The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades on those areas, prior to project completion.
- d. The permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to assure compliance with the appropriate turbidity water quality standard. Erosion and sediment control practices must be in full compliance with all

P-148

specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to assure compliance with the appropriate turbidity water quality standards. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4). Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures must be inspected and maintained regularly, especially following rainfall events. All fill material must be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

8. WATER CONTAMINATION: All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the permittee shall immediately report it to the N.C. Division of Water Resources at (919) 707-8787 or (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

PROJECT MAINTENANCE

9. NOTIFICATION OF CONSTRUCTION COMMENCEMENT AND COMPLETION:

The permittee shall advise the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

a. Prior to construction within any jurisdictional areas, the permittee must correctly install silt fencing (with or without safety fencing) parallel with the construction corridor, on both sides of the jurisdictional crossing. This barrier is to serve both as an erosion control measure and a visual identifier of the limits of construction within any jurisdictional area. The permittee must maintain the fencing, at minimum, until the wetlands have re-vegetated and stabilized.

10. CLEAN FILL: Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act.

11. PERMIT DISTRIBUTION: The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, shall be available at the project site during construction and maintenance of this project.

12. SILT-FENCING: The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and

wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

13. PERMIT REVOCATION: The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

14. EROSION CONTROL MEASURES IN WETLANDS: The permittee shall remove all sediment and erosion control measures placed in wetlands or waters, and shall restore natural grades in those areas, prior to project completion.

15. TEMPORARY DISCHARGES: Temporary discharge of excavated or fill material into wetlands and waters of the United States will be for the absolute minimum period of time necessary to accomplish the work. All authorized temporary wetland, stream, and tributary impacts will be returned to pre-disturbance grade and contour, and re-vegetated.

ENFORCEMENT

16. REPORTING ADDRESS: All reports, documentation and correspondence required by the conditions of this permit shall be submitted to the following address: U.S. Army Corps of Engineers, Regulatory Division, Washington Regulatory Field Office, c/o Mr. Thomas Steffens 2407 West 5th Street, Washington, North Carolina 27889, and by telephone at: 910-251-4615. The Permittee shall reference the following permit number, SAW-2008-00528 on all submittals.

17. REPORTING VIOLATIONS OF THE CLEAN WATER ACT AND RIVERS AND HARBORS ACT: Violation of these conditions or violation of Section 404 of the Clean Water Act must be reported in writing to the Wilmington District U.S. Army Corps of Engineers within 24 hours of the discovery of the violation.

18. COMPLIANCE INSPECTION: A representative of the Corps of Engineers will periodically and randomly inspect the work for compliance with these conditions. Deviations from these procedures may result in an administrative financial penalty and/or directive to cease work until the problem is resolved to the satisfaction of the Corps.

COMPENSATORY MITIGATION

19. North Carolina Division of Mitigation Services:

In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit

authorization.

20. CONCRETE CONDITION: The permittee shall take measures to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with any water in or entering into waters of the United States. Water inside coffer dams or casings that has been in contact with concrete shall only be returned to waters of the United States when it no longer poses a threat to aquatic organisms (concrete is set and cured).

21. CULVERTS: For construction of culverts, measures will be included in the construction that will promote the safe passage of fish and other aquatic organisms. For all culvert construction activities, the dimension, pattern, and profile of the stream, (above and below a pipe or culvert), should not be modified by widening the stream channel or by reducing the depth of the stream. Culvert inverts will be buried at least one foot below the bed of the stream for culverts greater than 48 inches in diameter. For culverts 48 inches in diameter or smaller, culverts must be buried below the bed of the stream to a depth equal to or greater than 20 percent of the diameter of the culvert.

22. MORATORIA: To avoid adverse impacts to spawning populations of fish species at this project site; the following in-water work moratoria will be adhered to:

-No in-water work will be permitted in the Trent River between February 15 and June 15 of any year without prior approval from the Corps and the NMFS. The permittee shall follow the NCDOT policy entitled "Stream Crossing Guidelines for Anadromous Fish Passage" (May 12, 1997) at all times.

-No in-water work will be permitted in the White Oak River between February 15 and September 30 of any year due to an Inland Primary Nursery Area designation; without prior approval from the Corps and the NC Wildlife Resources Commission. For the purpose of this moratorium, "in-water" is defined as those waters within the Trent or White Oak Rivers and their associated perennial tributaries, and their adjacent wetlands that during periods of inundation have an active connection to these tributaries.

SECTION 10 AND NAVIGATION

23. The authorized structure and associated activity must not interfere with the public's right to free navigation on all navigable waters of the United States. No attempt will be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the authorized work for reasons other than safety.

24. The permittee must install and maintain, at his expense, any signal lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on authorized facilities. For further information, the permittee should contact the U.S. Coast Guard Marine Safety Office at (252) 247-4525.

25. This permit does not authorize the interference with any existing or proposed Federal project, and the Permittee will not be entitled to compensation for damage or injury to the authorized structure or work which may be caused from existing or future operations undertaken by the United States in the public interest.

P-151

26. Subaqueous Crossing Notification: For utility line crossings under navigable waters, the permittee shall provide 1) the Corps and 2) the National Ocean Service, Office of Coast Survey, N/CS261, 1315 East West Highway, Silver Spring, MD 20910-3282, accurate certified as-built location drawings, or other appropriate certification such as from Miss Utility (1-800-257-7777) showing the location and configuration of the utility line upon completion of the construction. The data collected should include the “centerline” data for the utility line location in waters of the United States crossings, as well as include the “toe” data showing where utility lines enter the water at the banks as this is where dredge anchors and spuds may be placed. This information must be provided within 30 days of completion of each underwater utility line crossing.

CULTURAL RESOURCES

27. Historic Resources: The permittee shall adhere to all of the stipulations contained in the Memorandum of Agreement (MOA) between the Corps, SHPO and NC DOT as developed to address the adverse effect of the proposed improvements to US 17. Archaeological Site 31JN128 will not be avoided by construction activities; as such, data recovery excavations will be required once right-of-way has been acquired and prior to construction.

CZMA

28. The permittee shall adhere to all of the conditions set forth in the NC Division of Coastal Management Major Development permit No. 43-15, dated March 24, 2015 and all subsequent letters of refinement or modifications therein.

UTILITIES

29. All utility work performed under a non-reporting Nationwide Permit 12 (NWP 12 - Utility Lines) associated with this project is subject to all applicable terms and conditions of the NWP 12 and Wilmington District Regional Conditions.

Failure to institute and carry out the details of Special Conditions 1-29, may result in a directive to cease all ongoing and permitted work within waters and/or wetlands associated with TIP No. R-2514 B, C D or such other remedy as the District Engineer or his authorized representatives may seek.

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|----------------------|--------------|-------|---|--------------|-----------|--------|
| ROADWAY ITEMS | | | | | | |
| 0001 | 0000100000-N | 800 | MOBILIZATION | Lump Sum | L.S. | |
| 0002 | 0000400000-N | 801 | CONSTRUCTION SURVEYING | Lump Sum | L.S. | |
| 0003 | 0000700000-N | SP | FIELD OFFICE | Lump Sum | L.S. | |
| 0004 | 0001000000-E | 200 | CLEARING & GRUBBING .. ACRE(S) | Lump Sum | L.S. | |
| 0005 | 0008000000-E | 200 | SUPPLEMENTARY CLEARING & GRUB- BING | 5 ACR | | |
| 0006 | 0015000000-N | 205 | SEALING ABANDONED WELLS | 2 EA | | |
| 0007 | 0022000000-E | 225 | UNCLASSIFIED EXCAVATION | 49,000 CY | | |
| 0008 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (19+43.00 -Y10- RPA) | Lump Sum | L.S. | |
| 0009 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (28+29.35 -Y10- LT) | Lump Sum | L.S. | |
| 0010 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (28+29.35 -Y10- RT) | Lump Sum | L.S. | |
| 0011 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (320+39.56 -L- LT) | Lump Sum | L.S. | |
| 0012 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (320+39.56 -L- RT) | Lump Sum | L.S. | |
| 0013 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (363+38.90 -L- LT) | Lump Sum | L.S. | |
| 0014 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (363+38.90 -L- RT) | Lump Sum | L.S. | |
| 0015 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (373+02.50 -L- LT) | Lump Sum | L.S. | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|---|-----------------|-----------|--------|
| 0016 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (373+02.50 -L- RT) | Lump Sum | L.S. | |
| 0017 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (389+47.50 -L- LT) | Lump Sum | L.S. | |
| 0018 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (389+47.50 -L- RT) | Lump Sum | L.S. | |
| 0019 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (428+53.58 -L- LT) | Lump Sum | L.S. | |
| 0020 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (428+53.58 -L- RT) | Lump Sum | L.S. | |
| 0021 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (526+71.12 -L- LT) | Lump Sum | L.S. | |
| 0022 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (526+71.12 -L- RT) | Lump Sum | L.S. | |
| 0023 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (561+15.20 -L- LT) | Lump Sum | L.S. | |
| 0024 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (561+15.20 -L- RT) | Lump Sum | L.S. | |
| 0025 | 0029000000-N | SP | REINFORCED BRIDGE APPROACH FILL, STATION ***** (625+23.47 -L- RT) | Lump Sum | L.S. | |
| 0026 | 0036000000-E | 225 | UNDERCUT EXCAVATION | 49,100 CY | | |
| 0027 | 0106000000-E | 230 | BORROW EXCAVATION | 2,925,000 CY | | |
| 0028 | 0127000000-N | SP | EMBANKMENT SETTLEMENT GAUGES | 22 EA | | |
| 0029 | 0134000000-E | 240 | DRAINAGE DITCH EXCAVATION | 21,000 CY | | |
| 0030 | 0156000000-E | 250 | REMOVAL OF EXISTING ASPHALT PAVEMENT | 1,810 SY | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|---|--------------|-----------|--------|
| 0031 | 0192000000-N | 260 | PROOF ROLLING | 70 HR | | |
| 0032 | 0195000000-E | 265 | SELECT GRANULAR MATERIAL | 95,765 CY | | |
| 0033 | 0196000000-E | 270 | GEOTEXTILE FOR SOIL STABILIZATION | 85,850 SY | | |
| 0034 | 0241000000-E | SP | GENERIC GRADING ITEM GEOTEXTILE FOR EMBANKMENT STABILIZATION | 26,165 SY | | |
| 0035 | 0248000000-N | SP | GENERIC GRADING ITEM TEMPORARY SHORING FOR UNDERCUT AT STA 395+18 -L- | Lump Sum | L.S. | |
| 0036 | 0318000000-E | 300 | FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES | 1,810 TON | | |
| 0037 | 0320000000-E | 300 | FOUNDATION CONDITIONING GEOTEXTILE | 5,690 SY | | |
| 0038 | 0342000000-E | 310 | *** SIDE DRAIN PIPE (30") | 32 LF | | |
| 0039 | 0343000000-E | 310 | 15" SIDE DRAIN PIPE | 2,340 LF | | |
| 0040 | 0344000000-E | 310 | 18" SIDE DRAIN PIPE | 276 LF | | |
| 0041 | 0345000000-E | 310 | 24" SIDE DRAIN PIPE | 112 LF | | |
| 0042 | 0348000000-E | 310 | *** SIDE DRAIN PIPE ELBOWS (15") | 66 EA | | |
| 0043 | 0348000000-E | 310 | *** SIDE DRAIN PIPE ELBOWS (18") | 6 EA | | |
| 0044 | 0348000000-E | 310 | *** SIDE DRAIN PIPE ELBOWS (24") | 2 EA | | |
| 0045 | 0448000000-E | 310 | ***** RC PIPE CULVERTS, CLASS IV (48") | 832 LF | | |
| 0046 | 0448000000-E | 310 | ***** RC PIPE CULVERTS, CLASS IV (54") | 180 LF | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|---|----------|-----------|--------|
| 0047 | 0448000000-E | 310 | ***** RC PIPE CULVERTS, CLASS IV (60") | 820 | LF | |
| 0048 | 0448000000-E | 310 | ***** RC PIPE CULVERTS, CLASS IV (78") | 280 | LF | |
| 0049 | 0448200000-E | 310 | 15" RC PIPE CULVERTS, CLASS IV | 3,940 | LF | |
| 0050 | 0448300000-E | 310 | 18" RC PIPE CULVERTS, CLASS IV | 1,368 | LF | |
| 0051 | 0448400000-E | 310 | 24" RC PIPE CULVERTS, CLASS IV | 716 | LF | |
| 0052 | 0448500000-E | 310 | 30" RC PIPE CULVERTS, CLASS IV | 1,464 | LF | |
| 0053 | 0448600000-E | 310 | 36" RC PIPE CULVERTS, CLASS IV | 4,042 | LF | |
| 0054 | 0448700000-E | 310 | 42" RC PIPE CULVERTS, CLASS IV | 572 | LF | |
| 0055 | 0582000000-E | 310 | 15" CS PIPE CULVERTS, 0.064" THICK | 108 | LF | |
| 0056 | 0995000000-E | 340 | PIPE REMOVAL | 1,060 | LF | |
| 0057 | 1011000000-N | 500 | FINE GRADING | Lump Sum | L.S. | |
| 0058 | 1099500000-E | 505 | SHALLOW UNDERCUT | 1,000 | CY | |
| 0059 | 1099700000-E | 505 | CLASS IV SUBGRADE STABILIZATION | 1,900 | TON | |
| 0060 | 1111000000-E | SP | CLASS IV AGGREGATE STABILIZATION | 56,300 | TON | |
| 0061 | 1121000000-E | 520 | AGGREGATE BASE COURSE | 171,700 | TON | |
| 0062 | 1220000000-E | 545 | INCIDENTAL STONE BASE | 1,000 | TON | |
| 0063 | 1275000000-E | 600 | PRIME COAT | 17,675 | GAL | |
| 0064 | 1308000000-E | 607 | MILLING ASPHALT PAVEMENT, ***** TO ***** (0" TO 3") | 3,300 | SY | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|---|---------------|-----------|--------|
| 0065 | 1330000000-E | 607 | INCIDENTAL MILLING | 3,300 SY | | |
| 0066 | 1489000000-E | 610 | ASPHALT CONC BASE COURSE, TYPE B25.0B | 800 TON | | |
| 0067 | 1498000000-E | 610 | ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B | 6,700 TON | | |
| 0068 | 1503000000-E | 610 | ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C | 63,800 TON | | |
| 0069 | 1519000000-E | 610 | ASPHALT CONC SURFACE COURSE, TYPE S9.5B | 12,000 TON | | |
| 0070 | 1523000000-E | 610 | ASPHALT CONC SURFACE COURSE, TYPE S9.5C | 51,300 TON | | |
| 0071 | 1575000000-E | 620 | ASPHALT BINDER FOR PLANT MIX | 7,170 TON | | |
| 0072 | 1693000000-E | 654 | ASPHALT PLANT MIX, PAVEMENT REPAIR | 100 TON | | |
| 0073 | 1840000000-E | 665 | MILLED RUMBLE STRIPS (ASPHALT CONCRETE) | 124,000 LF | | |
| 0074 | 2022000000-E | 815 | SUBDRAIN EXCAVATION | 224 CY | | |
| 0075 | 2026000000-E | 815 | GEOTEXTILE FOR SUBSURFACE DRAINS | 1,000 SY | | |
| 0076 | 2036000000-E | 815 | SUBDRAIN COARSE AGGREGATE | 168 CY | | |
| 0077 | 2044000000-E | 815 | 6" PERFORATED SUBDRAIN PIPE | 1,000 LF | | |
| 0078 | 2070000000-N | 815 | SUBDRAIN PIPE OUTLET | 2 EA | | |
| 0079 | 2077000000-E | 815 | 6" OUTLET PIPE | 12 LF | | |
| 0080 | 2209000000-E | 838 | ENDWALLS | 83 CY | | |
| 0081 | 2220000000-E | 838 | REINFORCED ENDWALLS | 30 CY | | |
| 0082 | 2253000000-E | 840 | PIPE COLLARS | 1.5 CY | | |
| 0083 | 2264000000-E | 840 | PIPE PLUGS | 0.5 CY | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|--|--------------|-----------|--------|
| 0084 | 2275000000-E | SP | FLOWABLE FILL | 50 CY | | |
| 0085 | 2286000000-N | 840 | MASONRY DRAINAGE STRUCTURES | 147 EA | | |
| 0086 | 2308000000-E | 840 | MASONRY DRAINAGE STRUCTURES | 31 LF | | |
| 0087 | 2354000000-N | 840 | FRAME WITH GRATE, STD 840.22 | 12 EA | | |
| 0088 | 2364000000-N | 840 | FRAME WITH TWO GRATES, STD 840.16 | 5 EA | | |
| 0089 | 2364200000-N | 840 | FRAME WITH TWO GRATES, STD 840.20 | 61 EA | | |
| 0090 | 2365000000-N | 840 | FRAME WITH TWO GRATES, STD 840.22 | 45 EA | | |
| 0091 | 2374000000-N | 840 | FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E) | 4 EA | | |
| 0092 | 2374000000-N | 840 | FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F) | 9 EA | | |
| 0093 | 2374000000-N | 840 | FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G) | 10 EA | | |
| 0094 | 2396000000-N | 840 | FRAME WITH COVER, STD 840.54 | 3 EA | | |
| 0095 | 2407000000-N | 840 | STEEL FRAME WITH TWO GRATES, STD 840.37 | 6 EA | | |
| 0096 | 2451000000-N | 852 | CONCRETE TRANSITIONAL SECTION FOR DROP INLET | 2 EA | | |
| 0097 | 2549000000-E | 846 | 2'-6" CONCRETE CURB & GUTTER | 4,200 LF | | |
| 0098 | 2556000000-E | 846 | SHOULDER BERM GUTTER | 15,700 LF | | |
| 0099 | 2591000000-E | 848 | 4" CONCRETE SIDEWALK | 570 SY | | |
| 0100 | 2605000000-N | 848 | CONCRETE CURB RAMP | 2 EA | | |
| 0101 | 2619000000-E | 850 | 4" CONCRETE PAVED DITCH | 31 SY | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|--|--------------|-----------|--------|
| 0102 | 2655000000-E | 852 | 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN) | 270 SY | | |
| 0103 | 2724000000-E | 857 | PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED | 720 LF | | |
| 0104 | 2905000000-N | 859 | CONVERT EXISTING DROP INLET TO JUNCTION BOX | 1 EA | | |
| 0105 | 3000000000-N | SP | IMPACT ATTENUATOR UNIT, TYPE 350 | 5 EA | | |
| 0106 | 3030000000-E | 862 | STEEL BM GUARDRAIL | 27,300 LF | | |
| 0107 | 3150000000-N | 862 | ADDITIONAL GUARDRAIL POSTS | 30 EA | | |
| 0108 | 3210000000-N | 862 | GUARDRAIL ANCHOR UNITS, TYPE CAT-1 | 13 EA | | |
| 0109 | 3270000000-N | SP | GUARDRAIL ANCHOR UNITS, TYPE 350 | 20 EA | | |
| 0110 | 3285000000-N | SP | GUARDRAIL ANCHOR UNITS, TYPE M-350 | 34 EA | | |
| 0111 | 3317000000-N | 862 | GUARDRAIL ANCHOR UNITS, TYPE B-77 | 74 EA | | |
| 0112 | 3360000000-E | 863 | REMOVE EXISTING GUARDRAIL | 2,450 LF | | |
| 0113 | 3365000000-E | 863 | REMOVE EXISTING GUIDERAIL | 1,600 LF | | |
| 0114 | 3389400000-E | 865 | DOUBLE FACED CABLE GUIDERAIL | 26,000 LF | | |
| 0115 | 3389500000-N | 865 | ADDITIONAL GUIDERAIL POSTS | 50 EA | | |
| 0116 | 3389600000-N | 865 | CABLE GUIDERAIL ANCHOR UNITS | 31 EA | | |
| 0117 | 3503000000-E | 866 | WOVEN WIRE FENCE, 47" FABRIC | 71,900 LF | | |
| 0118 | 3509000000-E | 866 | 4" TIMBER FENCE POSTS, 7'-6" LONG | 4,610 EA | | |
| 0119 | 3515000000-E | 866 | 5" TIMBER FENCE POSTS, 8'-0" LONG | 960 EA | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|---|--------------|-----------|--------|
| 0120 | 3628000000-E | 876 | RIP RAP, CLASS I | 281 TON | | |
| 0121 | 3649000000-E | 876 | RIP RAP, CLASS B | 446 TON | | |
| 0122 | 3656000000-E | 876 | GEOTEXTILE FOR DRAINAGE | 7,174 SY | | |
| 0123 | 4048000000-E | 902 | REINFORCED CONCRETE SIGN FOUNDATIONS | 37 CY | | |
| 0124 | 4054000000-E | 902 | PLAIN CONCRETE SIGN FOUNDATIONS | 2 CY | | |
| 0125 | 4057000000-E | SP | OVERHEAD FOOTING | 60 CY | | |
| 0126 | 4060000000-E | 903 | SUPPORTS, BREAKAWAY STEEL BEAM | 12,418 LB | | |
| 0127 | 4066000000-E | 903 | SUPPORTS, SIMPLE STEEL BEAM | 11,791 LB | | |
| 0128 | 4072000000-E | 903 | SUPPORTS, 3-LB STEEL U-CHANNEL | 576 LF | | |
| 0129 | 4082000000-E | 903 | SUPPORTS, WOOD | 3,487 LF | | |
| 0130 | 4082100000-N | SP | SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ***** (14+00 -Y10-) | Lump Sum | L.S. | |
| 0131 | 4082100000-N | SP | SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ***** (20+50 -Y10-) | Lump Sum | L.S. | |
| 0132 | 4082100000-N | SP | SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ***** (338+00 -L-) | Lump Sum | L.S. | |
| 0133 | 4096000000-N | 904 | SIGN ERECTION, TYPE D | 30 EA | | |
| 0134 | 4102000000-N | 904 | SIGN ERECTION, TYPE E | 128 EA | | |
| 0135 | 4108000000-N | 904 | SIGN ERECTION, TYPE F | 29 EA | | |
| 0136 | 4109000000-N | 904 | SIGN ERECTION, TYPE *** (OVERHEAD) (A) | 3 EA | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|--|----------|-----------|--------|
| 0137 | 4109000000-N | 904 | SIGN ERECTION, TYPE *** (OVER-HEAD) (B) | 3 | EA | |
| 0138 | 4110000000-N | 904 | SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A) | 20 | EA | |
| 0139 | 4110000000-N | 904 | SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B) | 11 | EA | |
| 0140 | 4114000000-N | 904 | SIGN ERECTION, MILEMARKERS | 46 | EA | |
| 0141 | 4115000000-N | 904 | SIGN ERECTION, OVERLAY (OVER-HEAD) | 1 | EA | |
| 0142 | 4152000000-N | 907 | DISPOSAL OF SIGN SYSTEM, STEEL BEAM | 2 | EA | |
| 0143 | 4155000000-N | 907 | DISPOSAL OF SIGN SYSTEM, U-CHANNEL | 22 | EA | |
| 0144 | 4158000000-N | 907 | DISPOSAL OF SIGN SYSTEM, WOOD | 35 | EA | |
| 0145 | 4234000000-N | 907 | DISPOSAL OF SIGN, A OR B (OVERHEAD) | 6 | EA | |
| 0146 | 4236000000-N | 907 | DISPOSAL OF SIGN, A, B OR C (GROUND MOUNTED) | 1 | EA | |
| 0147 | 4400000000-E | 1110 | WORK ZONE SIGNS (STATIONARY) | 763 | SF | |
| 0148 | 4405000000-E | 1110 | WORK ZONE SIGNS (PORTABLE) | 608 | SF | |
| 0149 | 4410000000-E | 1110 | WORK ZONE SIGNS (BARRICADE MOUNTED) | 256 | SF | |
| 0150 | 4415000000-N | 1115 | FLASHING ARROW BOARD | 2 | EA | |
| 0151 | 4420000000-N | 1120 | PORTABLE CHANGEABLE MESSAGE SIGN | 2 | EA | |
| 0152 | 4430000000-N | 1130 | DRUMS | 395 | EA | |
| 0153 | 4435000000-N | 1135 | CONES | 60 | EA | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|--|----------|-----------|--------|
| 0154 | 4445000000-E | 1145 | BARRICADES (TYPE III) | 464 | LF | |
| 0155 | 4455000000-N | 1150 | FLAGGER | 300 | DAY | |
| 0156 | 4465000000-N | 1160 | TEMPORARY CRASH CUSHIONS | 9 | EA | |
| 0157 | 4470000000-N | 1160 | RESET TEMPORARY CRASH CUSHION | 12 | EA | |
| 0158 | 4480000000-N | 1165 | TMA | 2 | EA | |
| 0159 | 4485000000-E | 1170 | PORTABLE CONCRETE BARRIER | 3,380 | LF | |
| 0160 | 4500000000-E | 1170 | RESET PORTABLE CONCRETE BARRIER | 2,140 | LF | |
| 0161 | 4510000000-N | SP | LAW ENFORCEMENT | 144 | HR | |
| 0162 | 4516000000-N | 1180 | SKINNY DRUM | 80 | EA | |
| 0163 | 4600000000-N | SP | GENERIC TRAFFIC CONTROL ITEM SIGNS, COVERING | 8 | EA | |
| 0164 | 4650000000-N | 1251 | TEMPORARY RAISED PAVEMENT MARKERS | 423 | EA | |
| 0165 | 4685000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS) | 15,100 | LF | |
| 0166 | 4686000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS) | 22,421 | LF | |
| 0167 | 4688000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS) | 147,331 | LF | |
| 0168 | 4690000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS) | 16,675 | LF | |
| 0169 | 4695000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS) | 534 | LF | |
| 0170 | 4700000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS) | 2,313 | LF | |
| 0171 | 4702000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (12", 120 MILS) | 695 | LF | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|--|---------------|-----------|--------|
| 0172 | 4710000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS) | 259 LF | | |
| 0173 | 4725000000-E | 1205 | THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS) | 36 EA | | |
| 0174 | 4770000000-E | 1205 | COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV) | 260 LF | | |
| 0175 | 4810000000-E | 1205 | PAINT PAVEMENT MARKING LINES (4") | 93,250 LF | | |
| 0176 | 4820000000-E | 1205 | PAINT PAVEMENT MARKING LINES (8") | 1,400 LF | | |
| 0177 | 4835000000-E | 1205 | PAINT PAVEMENT MARKING LINES (24") | 30 LF | | |
| 0178 | 4845000000-N | 1205 | PAINT PAVEMENT MARKING SYMBOL | 14 EA | | |
| 0179 | 4847100000-E | 1205 | POLYUREA PAVEMENT MARKING LINES (6", *****) (HIGHLY REFLECTIVE ELEMENTS) | 12,944 LF | | |
| 0180 | 4850000000-E | 1205 | REMOVAL OF PAVEMENT MARKING LINES (4") | 3,250 LF | | |
| 0181 | 4900000000-N | 1251 | PERMANENT RAISED PAVEMENT MARKERS | 76 EA | | |
| 0182 | 4905000000-N | 1253 | SNOWPLOWABLE PAVEMENT MARKERS | 911 EA | | |
| 0183 | 4915000000-E | 1264 | 7' U-CHANNEL POSTS | 9 EA | | |
| 0184 | 4955000000-N | 1264 | OBJECT MARKERS (END OF ROAD) | 9 EA | | |
| 0185 | 6000000000-E | 1605 | TEMPORARY SILT FENCE | 125,000 LF | | |
| 0186 | 6006000000-E | 1610 | STONE FOR EROSION CONTROL, CLASS A | 3,000 TON | | |
| 0187 | 6009000000-E | 1610 | STONE FOR EROSION CONTROL, CLASS B | 30,000 TON | | |
| 0188 | 6012000000-E | 1610 | SEDIMENT CONTROL STONE | 15,000 TON | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|------------------------------------|---------------|-----------|--------|
| 0189 | 6015000000-E | 1615 | TEMPORARY MULCHING | 400 ACR | | |
| 0190 | 6018000000-E | 1620 | SEED FOR TEMPORARY SEEDING | 23,000 LB | | |
| 0191 | 6021000000-E | 1620 | FERTILIZER FOR TEMPORARY SEEDING | 114.5 TON | | |
| 0192 | 6024000000-E | 1622 | TEMPORARY SLOPE DRAINS | 40,000 LF | | |
| 0193 | 6029000000-E | SP | SAFETY FENCE | 30,000 LF | | |
| 0194 | 6030000000-E | 1630 | SILT EXCAVATION | 77,340 CY | | |
| 0195 | 6036000000-E | 1631 | MATTING FOR EROSION CONTROL | 236,000 SY | | |
| 0196 | 6037000000-E | SP | COIR FIBER MAT | 650 SY | | |
| 0197 | 6038000000-E | SP | PERMANENT SOIL REINFORCEMENT MAT | 4,910 SY | | |
| 0198 | 6042000000-E | 1632 | 1/4" HARDWARE CLOTH | 6,500 LF | | |
| 0199 | 6043000000-E | SP | LOW PERMEABILITY GEOTEXTILE | 1,850 SY | | |
| 0200 | 6045000000-E | SP | *** TEMPORARY PIPE (15") | 100 LF | | |
| 0201 | 6046000000-E | 1636 | TEMPORARY PIPE FOR STREAM CROSSING | 150 LF | | |
| 0202 | 6048000000-E | SP | FLOATING TURBIDITY CURTAIN | 450 SY | | |
| 0203 | 6069000000-E | 1638 | STILLING BASINS | 257 CY | | |
| 0204 | 6070000000-N | 1639 | SPECIAL STILLING BASINS | 20 EA | | |
| 0205 | 6071012000-E | SP | COIR FIBER WATTLE | 25,000 LF | | |
| 0206 | 6071020000-E | SP | POLYACRYLAMIDE (PAM) | 12,650 LB | | |
| 0207 | 6071030000-E | 1640 | COIR FIBER BAFFLE | 37,600 LF | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|---|--------------|-----------|--------|
| 0208 | 6071050000-E | SP | *** SKIMMER (1-1/2") | 34 EA | | |
| 0209 | 6071050000-E | SP | *** SKIMMER (2") | 10 EA | | |
| 0210 | 6071050000-E | SP | *** SKIMMER (2-1/2") | 1 EA | | |
| 0211 | 6071050000-E | SP | *** SKIMMER (3") | 2 EA | | |
| 0212 | 6084000000-E | 1660 | SEEDING & MULCHING | 400 ACR | | |
| 0213 | 6087000000-E | 1660 | MOWING | 300 ACR | | |
| 0214 | 6090000000-E | 1661 | SEED FOR REPAIR SEEDING | 5,300 LB | | |
| 0215 | 6093000000-E | 1661 | FERTILIZER FOR REPAIR SEEDING | 22.75 TON | | |
| 0216 | 6096000000-E | 1662 | SEED FOR SUPPLEMENTAL SEEDING | 12,600 LB | | |
| 0217 | 6108000000-E | 1665 | FERTILIZER TOPDRESSING | 378 TON | | |
| 0218 | 6111000000-E | SP | IMPERVIOUS DIKE | 661 LF | | |
| 0219 | 6114500000-N | 1667 | SPECIALIZED HAND MOWING | 125 MHR | | |
| 0220 | 6117000000-N | SP | RESPONSE FOR EROSION CONTROL | 125 EA | | |
| 0221 | 6120000000-E | SP | CULVERT DIVERSION CHANNEL | 1,758 CY | | |
| 0222 | 6123000000-E | 1670 | REFORESTATION | 15 ACR | | |
| 0223 | 6135000000-E | SP | GENERIC EROSION CONTROL ITEM COMPOST BLANKET | 20 ACR | | |

CULVERT ITEMS

| | | | | | | |
|------|--------------|-----|--|----------|------|--|
| 0224 | 8126000000-N | 414 | CULVERT EXCAVATION, STA ***** (20+75.75 -DRV3-) | Lump Sum | L.S. | |
|------|--------------|-----|--|----------|------|--|

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|------------------------|--------------|-------|--|-------------|-----------|--------|
| 0225 | 8133000000-E | 414 | FOUNDATION CONDITIONING MATERIAL, BOX CULVERT | 48 TON | | |
| 0226 | 8196000000-E | 420 | CLASS A CONCRETE (CULVERT) | 90.5 CY | | |
| 0227 | 8245000000-E | 425 | REINFORCING STEEL (CULVERT) | 8,657 LB | | |
| STRUCTURE ITEMS | | | | | | |
| 0228 | 8017000000-N | SP | CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (19+43 -Y10RPA-) | Lump Sum | L.S. | |
| 0229 | 8017000000-N | SP | CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (373+02.50 -L- LT) | Lump Sum | L.S. | |
| 0230 | 8017000000-N | SP | CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (389+47.50 -L- LT) | Lump Sum | L.S. | |
| 0231 | 8017000000-N | SP | CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (625+23.28 -L-) | Lump Sum | L.S. | |
| 0232 | 8091000000-N | 410 | FOUNDATION EXCAVATION FOR BENT ** AT STATION ***** (1, 526+71.12 -L- LT) | Lump Sum | L.S. | |
| 0233 | 8091000000-N | 410 | FOUNDATION EXCAVATION FOR BENT ** AT STATION ***** (1, 526+71.12 -L- RT) | Lump Sum | L.S. | |
| 0234 | 8091000000-N | 410 | FOUNDATION EXCAVATION FOR BENT ** AT STATION ***** (2, 526+71.12 -L- LT) | Lump Sum | L.S. | |
| 0235 | 8091000000-N | 410 | FOUNDATION EXCAVATION FOR BENT ** AT STATION ***** (2, 526+71.12 -L- RT) | Lump Sum | L.S. | |
| 0236 | 8112730000-N | 450 | PDA TESTING | 38 EA | | |

County : Craven, Jones

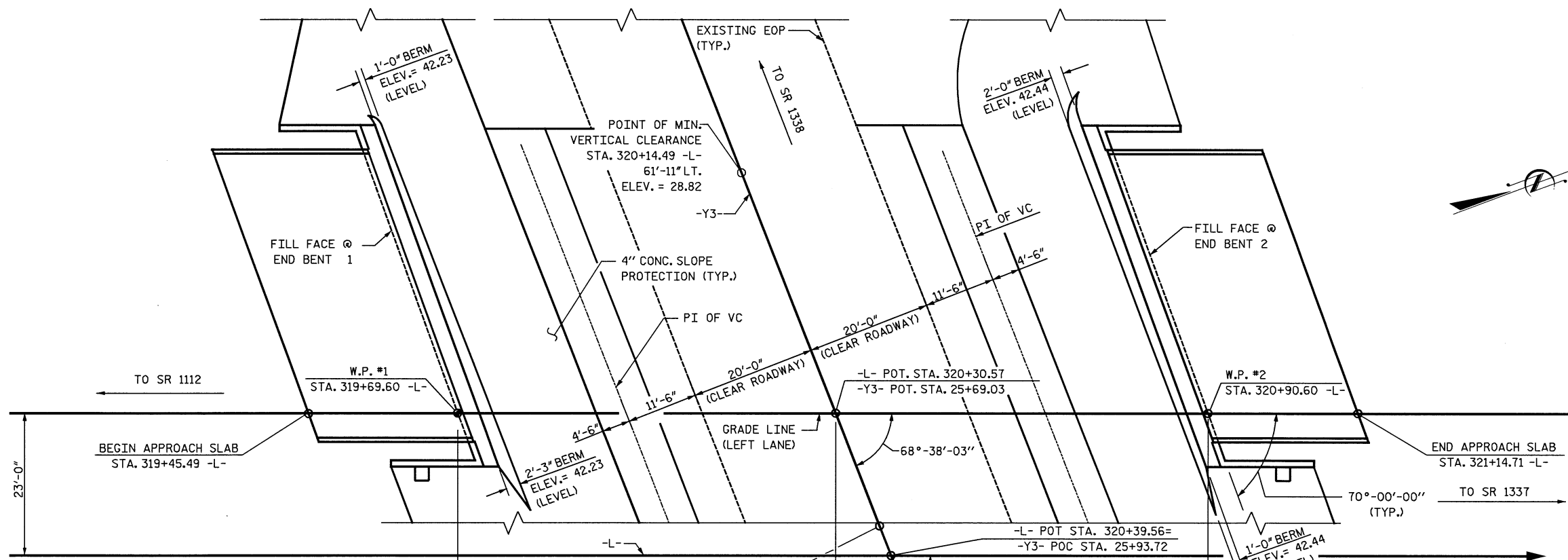
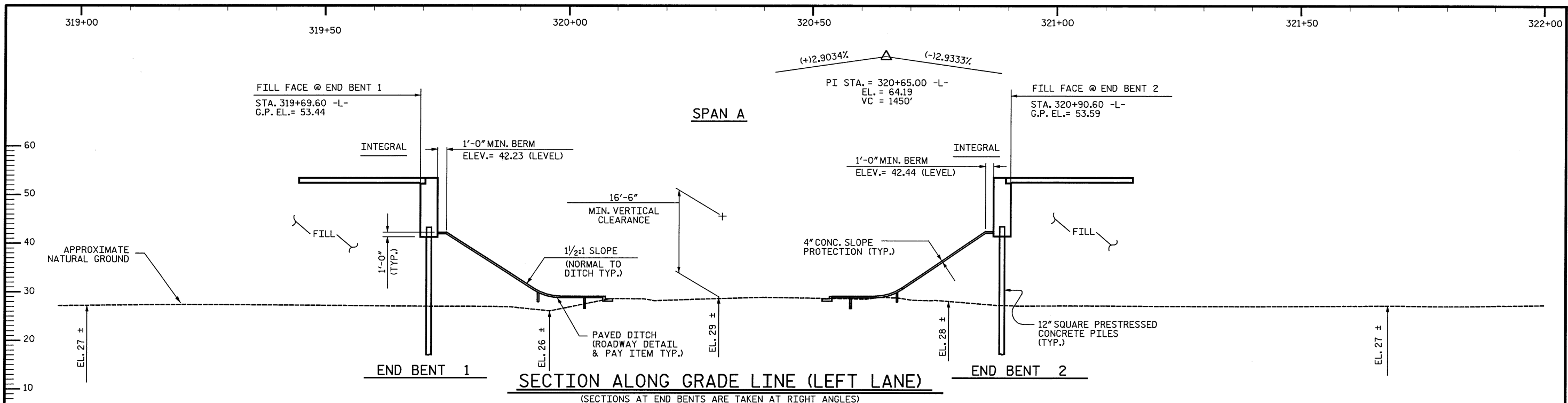
| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|--|---------------|-----------|--------|
| 0237 | 8121000000-N | 412 | UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ***** (19+43 -Y10RPA-) | Lump Sum | L.S. | |
| 0238 | 8147000000-E | 420 | REINFORCED CONCRETE DECK SLAB | 211,558 SF | | |
| 0239 | 8161000000-E | 420 | GROOVING BRIDGE FLOORS | 204,705 SF | | |
| 0240 | 8182000000-E | 420 | CLASS A CONCRETE (BRIDGE) | 3,217.3 CY | | |
| 0241 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (19+43.00 -Y10RPA-) | Lump Sum | L.S. | |
| 0242 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (320+39.56 -L- LT) | Lump Sum | L.S. | |
| 0243 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (320+39.56 -L- RT) | Lump Sum | L.S. | |
| 0244 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (363+38.90 -L- LT) | Lump Sum | L.S. | |
| 0245 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (363+38.90 -L- RT) | Lump Sum | L.S. | |
| 0246 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (373+02.50 -L- LT) | Lump Sum | L.S. | |
| 0247 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (373+02.50 -L- RT) | Lump Sum | L.S. | |
| 0248 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (389+47.50 -L- LT) | Lump Sum | L.S. | |
| 0249 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (389+47.50 -L- RT) | Lump Sum | L.S. | |
| 0250 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (428+53.58 -L- LT) | Lump Sum | L.S. | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|---|-----------------|-----------|--------|
| 0251 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (428+53.58 -L- RT) | Lump Sum | L.S. | |
| 0252 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (526+71.12 -L- LT) | Lump Sum | L.S. | |
| 0253 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (526+71.12 -L- RT) | Lump Sum | L.S. | |
| 0254 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (561+15.20 -L- LT) | Lump Sum | L.S. | |
| 0255 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (561+15.20 -L- RT) | Lump Sum | L.S. | |
| 0256 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (611+69.32 -L- LT) | Lump Sum | L.S. | |
| 0257 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (611+69.32 -L- RT) | Lump Sum | L.S. | |
| 0258 | 8210000000-N | 422 | BRIDGE APPROACH SLABS, STATION ***** (625+23.28 -L-) | Lump Sum | L.S. | |
| 0259 | 8217000000-E | 425 | REINFORCING STEEL (BRIDGE) | 497,359 LB | | |
| 0260 | 8238000000-E | 425 | SPIRAL COLUMN REINFORCING STEEL (BRIDGE) | 9,461 LB | | |
| 0261 | 8265000000-E | 430 | 54" PRESTRESSED CONCRETE GIR- DERS | 18,311.56 LF | | |
| 0262 | 8274000000-E | 430 | MODIFIED 63" PRESTRESSED CONC GIRDERS | 3,799.25 LF | | |
| 0263 | 8277000000-E | 430 | MODIFIED 72" PRESTRESSED CONC GIRDERS | 1,428.89 LF | | |
| 0264 | 8329000000-E | 450 | 12" PRESTRESSED CONCRETE PILES | 12,210 LF | | |
| 0265 | 8333000000-E | 450 | 16" PRESTRESSED CONCRETE PILES | 3,550 LF | | |

County : Craven, Jones

| Line # | Item Number | Sec # | Description | Quantity | Unit Cost | Amount |
|--------|--------------|-------|--|-----------------|-----------|--------|
| 0266 | 8364000000-E | 450 | HP12X53 STEEL PILES | 7,960 LF | | |
| 0267 | 8385000000-E | 450 | PP ** X **** STEEL PILES (14 X 0.5) | 1,200 LF | | |
| 0268 | 8385200000-E | 450 | PP ** X **** GALVANIZED STEEL PILES (24 X 0.50) | 7,680 LF | | |
| 0269 | 8385200000-E | 450 | PP ** X **** GALVANIZED STEEL PILES (30 X 0.50) | 1,560 LF | | |
| 0270 | 8385200000-E | 450 | PP ** X **** GALVANIZED STEEL PILES (30 X 0.625) | 4,080 LF | | |
| 0271 | 8387000000-E | 450 | PP 18 X 0.50 GALVANIZED STEEL PILES | 250 LF | | |
| 0272 | 8391000000-N | 450 | STEEL PILE POINTS | 116 EA | | |
| 0273 | 8392000000-N | 450 | PIPE PILE PLATES | 172 EA | | |
| 0274 | 8392500000-E | 450 | PREDRILLING FOR PILES | 7,180 LF | | |
| 0275 | 8393000000-N | 450 | PILE REDRIVES | 314 EA | | |
| 0276 | 8503000000-E | 460 | CONCRETE BARRIER RAIL | 10,929.48 LF | | |
| 0277 | 8531000000-E | 462 | 4" SLOPE PROTECTION | 9,357 SY | | |
| 0278 | 8608000000-E | 876 | RIP RAP CLASS II (2'-0" THICK) | 4,621 TON | | |
| 0279 | 8622000000-E | 876 | GEOTEXTILE FOR DRAINAGE | 5,127 SY | | |
| 0280 | 8657000000-N | 430 | ELASTOMERIC BEARINGS | Lump Sum | L.S. | |
| 0281 | 8706000000-N | SP | EXPANSION JOINT SEALS | Lump Sum | L.S. | |
| 0282 | 8860000000-N | SP | GENERIC STRUCTURE ITEM ARMORED FOAM JOINT SEALS | Lump Sum | L.S. | |



PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-
=25+93.72 -Y3-
 SHEET 1 OF 4 BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 1112 AND SR 1337
 LEFT LANE



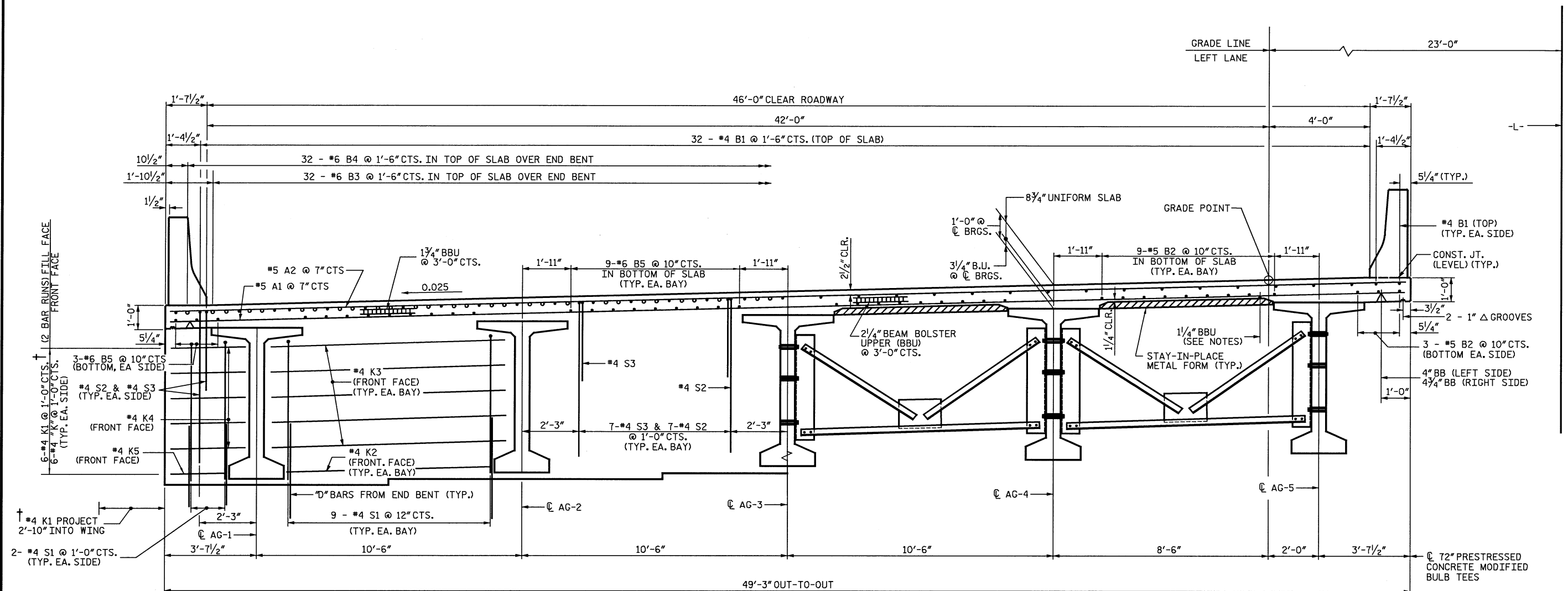
DESIGN ENGINEER OF RECORD: DATE: 4/10/2015
 DRAWN BY: R.J. FLORY DATE: 6/28/13
 CHECKED BY: R.C. LARSON DATE: 5/1/14

PLAN
 (PILES NOT SHOWN FOR CLARITY)

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | | | 3 | |
| 2 | | | 4 | |

TOTAL SHEETS: SOI-24

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 1 OF 24



TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SPAN.

THE SKEWED END CONDITIONS ARE SUCH THAT THE USE OF 4' WIDE PRESTRESSED CONCRETE DECK PANELS IS NOT POSSIBLE; USE OF 8' WIDE PRESTRESSED CONCRETE DECK PANELS IS NECESSARY.

SEE STD. NO. CBRI FOR ADDITIONAL REINFORCING STEEL EMBEDDED IN DECK.

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT END BENT

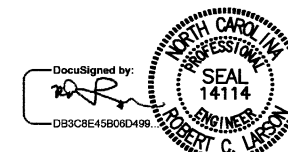
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

LEFT LANE



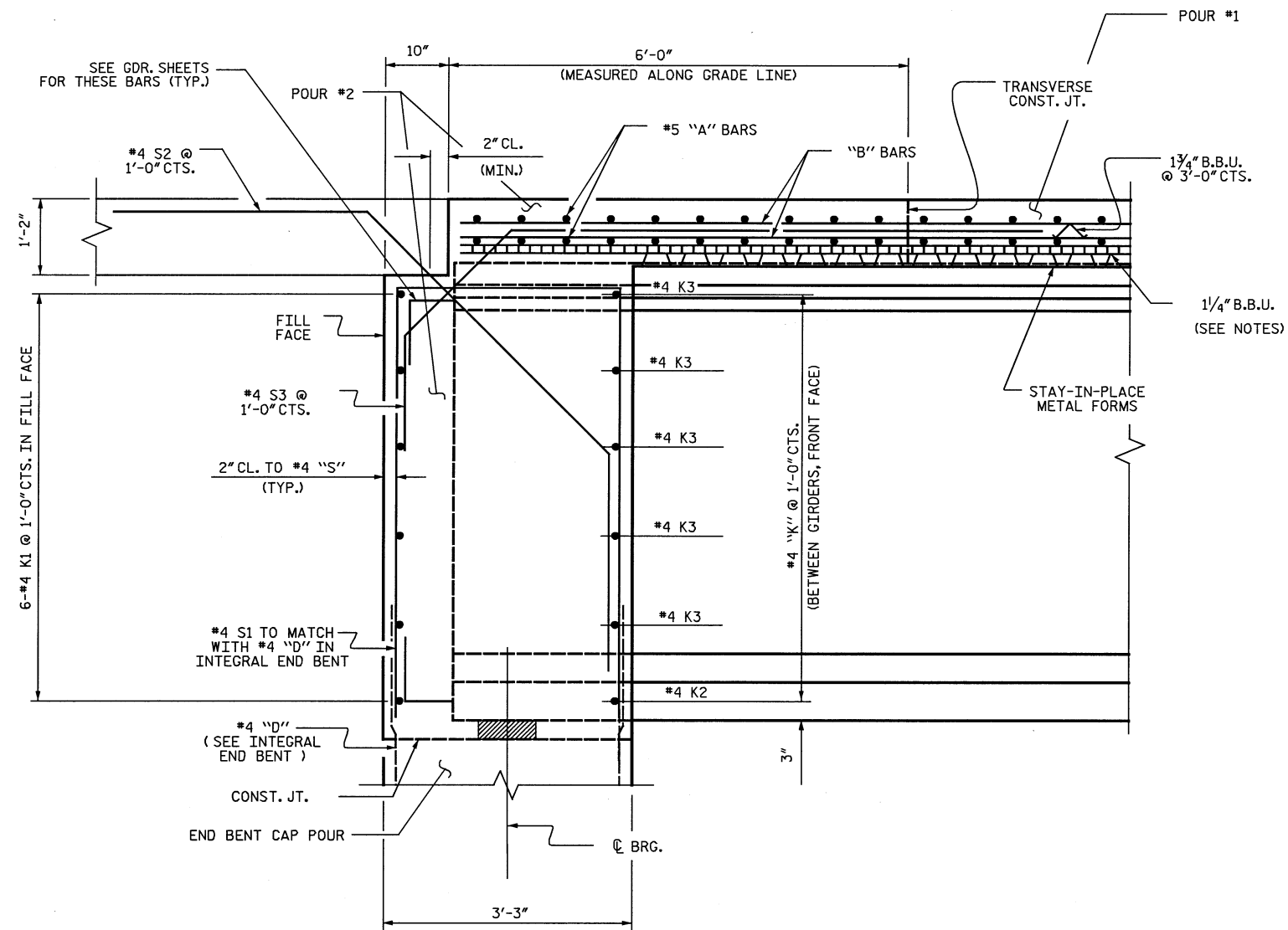
5/12/2015

| | | |
|----------------------------|-------|-----------|
| DESIGN ENGINEER OF RECORD: | DATE: | 5/12/2015 |
| DRAWN BY: E. C. DECOLA | DATE: | 7/12/13 |
| CHECKED BY: R. C. LARSON | DATE: | 8/15/13 |

| | | | | | |
|--|-----|-------|-----|-----|-------|
| KCI Associates of North Carolina, P.A. | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

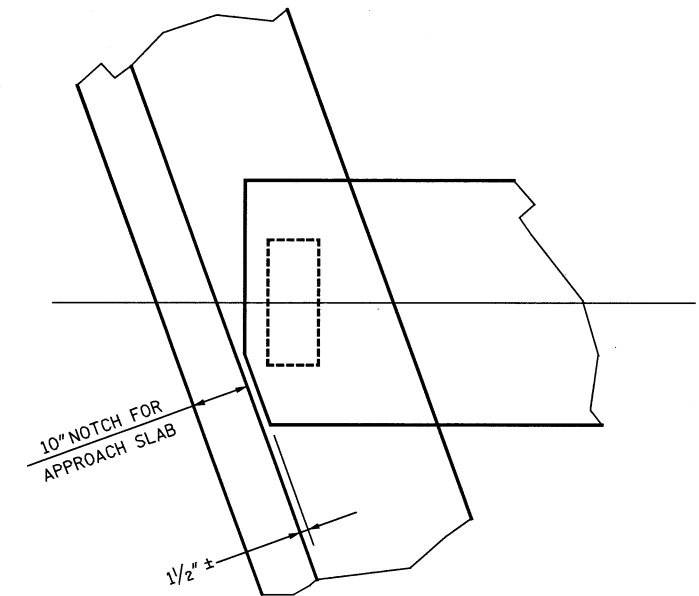
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| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS SOI-24 |
| 2 | | | 4 | | | |

STR-#1



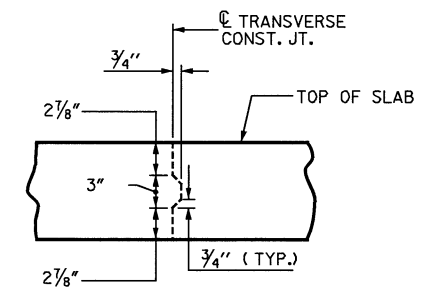
SECTION A-A

(SEE PLAN OF SPAN FOR LOCATION OF SECTION A-A)



END OF GIRDER PLAN

(SHOWING BLOCKOUT IN TOP FLANGE)



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

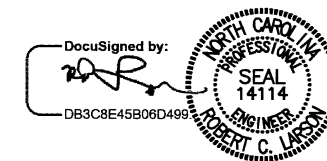
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

LEFT LANE



4/10/2015

| | | |
|----------------------------|-------|-----------|
| DESIGN ENGINEER OF RECORD: | DATE: | 4/10/2015 |
| DRAWN BY: E. C. DECOLA | DATE: | 7/12/13 |
| CHECKED BY: R. C. LARSON | DATE: | 8/15/13 |

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | SOI-6 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | SOI-24 |

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 6 OF 24

STR-#1

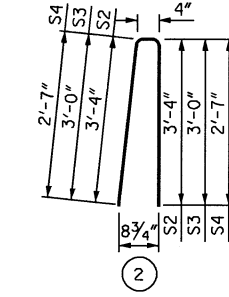
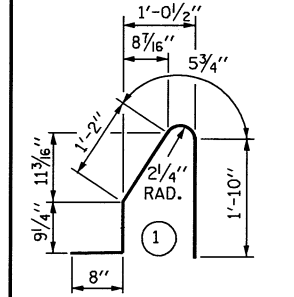
NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS, THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---------|--------|------|--------|--------|
| *S1 | 240 #5 | 1 | 4'-11" | 1231 |
| *S2 | 232 #5 | 2 | 7'-0" | 1694 |
| *S3 | 4 #5 | 2 | 6'-4" | 26 |
| *S4 | 4 #5 | 2 | 5'-6" | 23 |
| *B1 | 22 #5 | STR. | 29'-0" | 665 |
| *B2 | 22 #5 | STR. | 29'-3" | 671 |
| *B3 | 44 #5 | STR. | 29'-8" | 1361 |

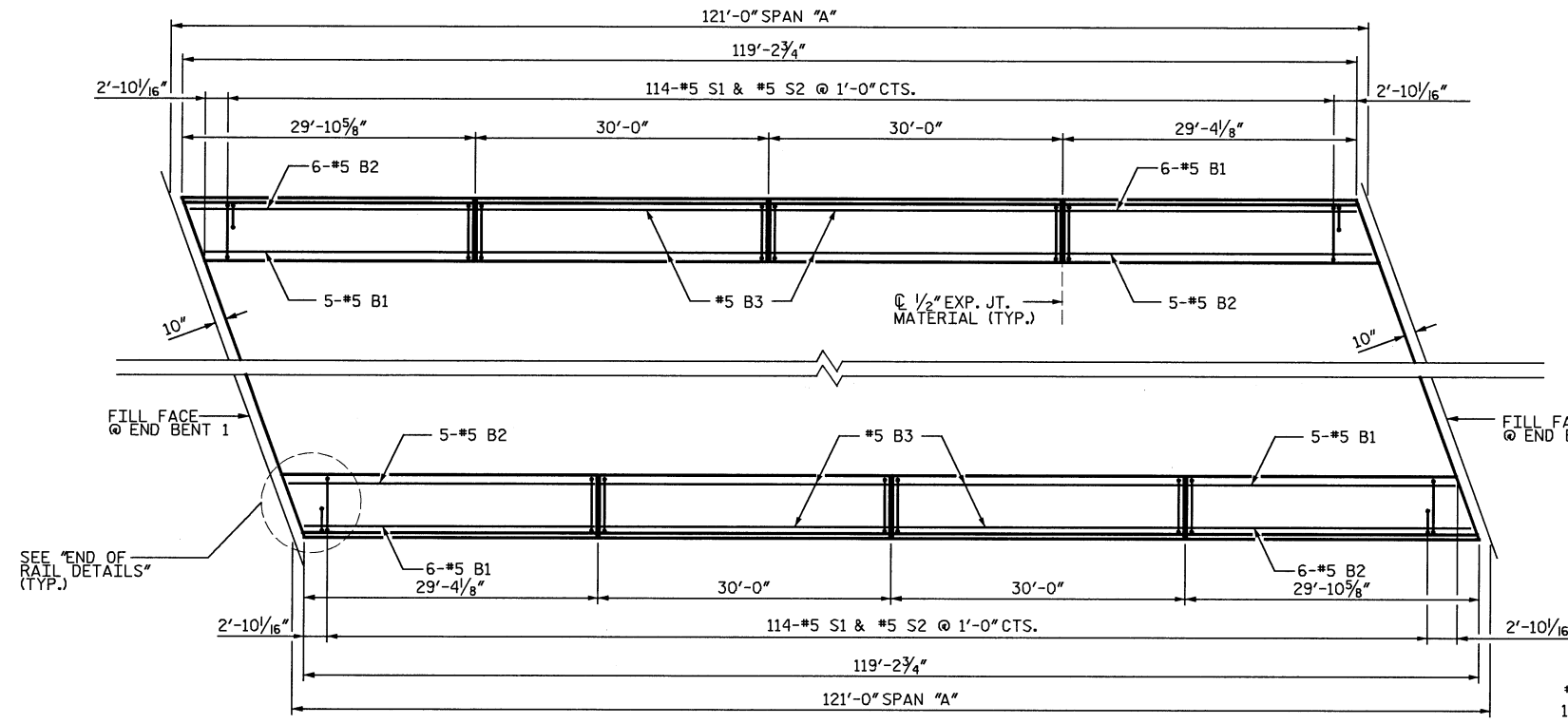
| | |
|----------------------------------|----------------|
| * EPOXY COATED REINFORCING STEEL | 5671 LBS. |
| CLASS AA CONCRETE | 32.3 CU. YDS. |
| CONCRETE BARRIER RAIL | 238.46 LTN.FT. |

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

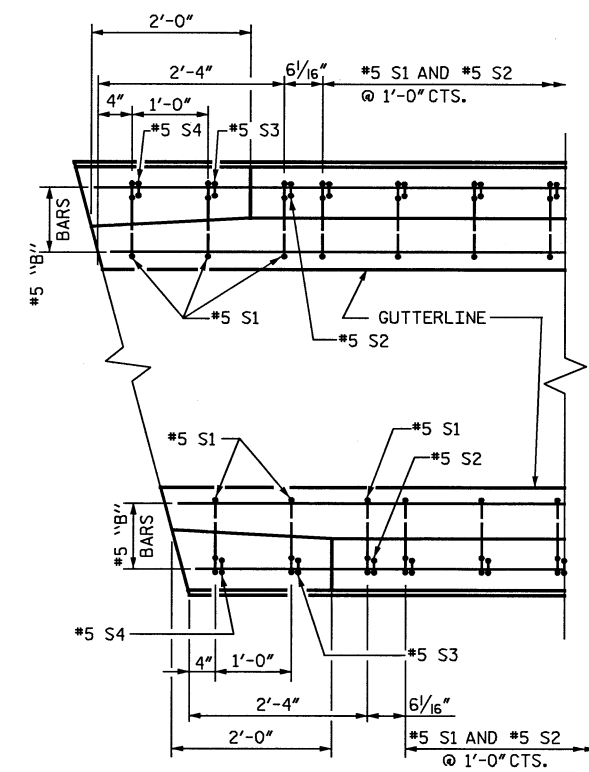
SHEET 1 OF 1

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
CONCRETE
BARRIER RAIL
 STD. NO. CBR1 LEFT LANE

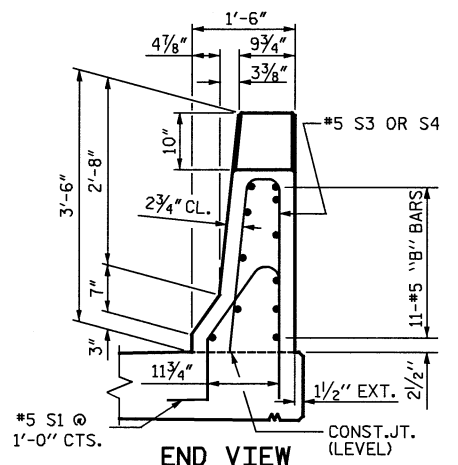
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|-----------|-----|-------|-----|--------------|
| NO. | BY: | DATE: | NO. | SOI-12 |
| 1 | | | 3 | TOTAL SHEETS |
| 2 | | | 4 | SOI-24 |



PLAN

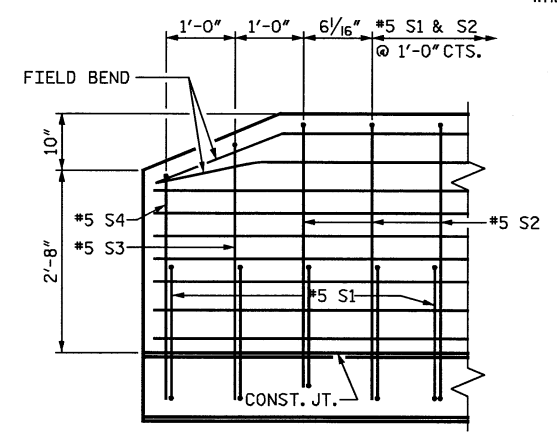


PLAN

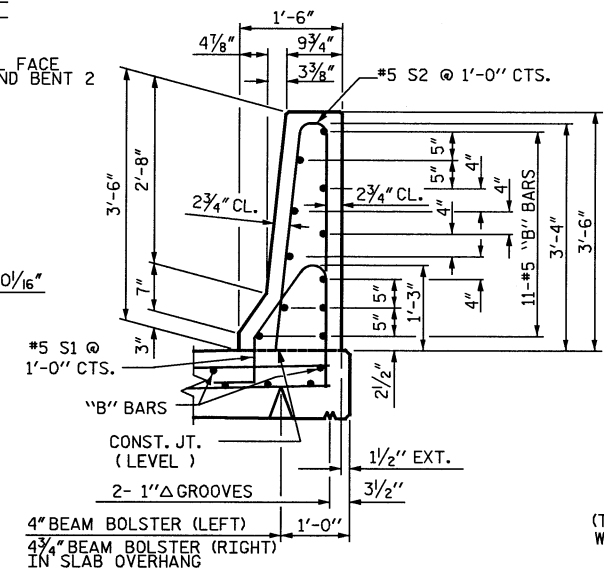


END VIEW

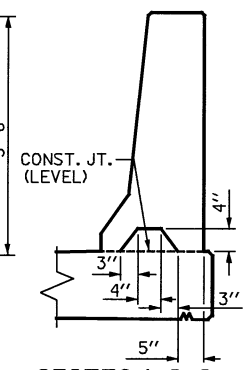
END OF RAIL DETAILS



SIDE VIEW



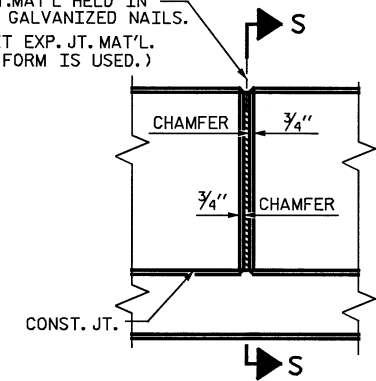
SECTION THRU RAIL



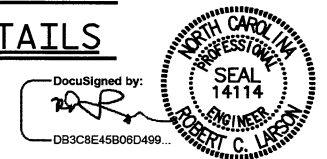
SECTION S-S

AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

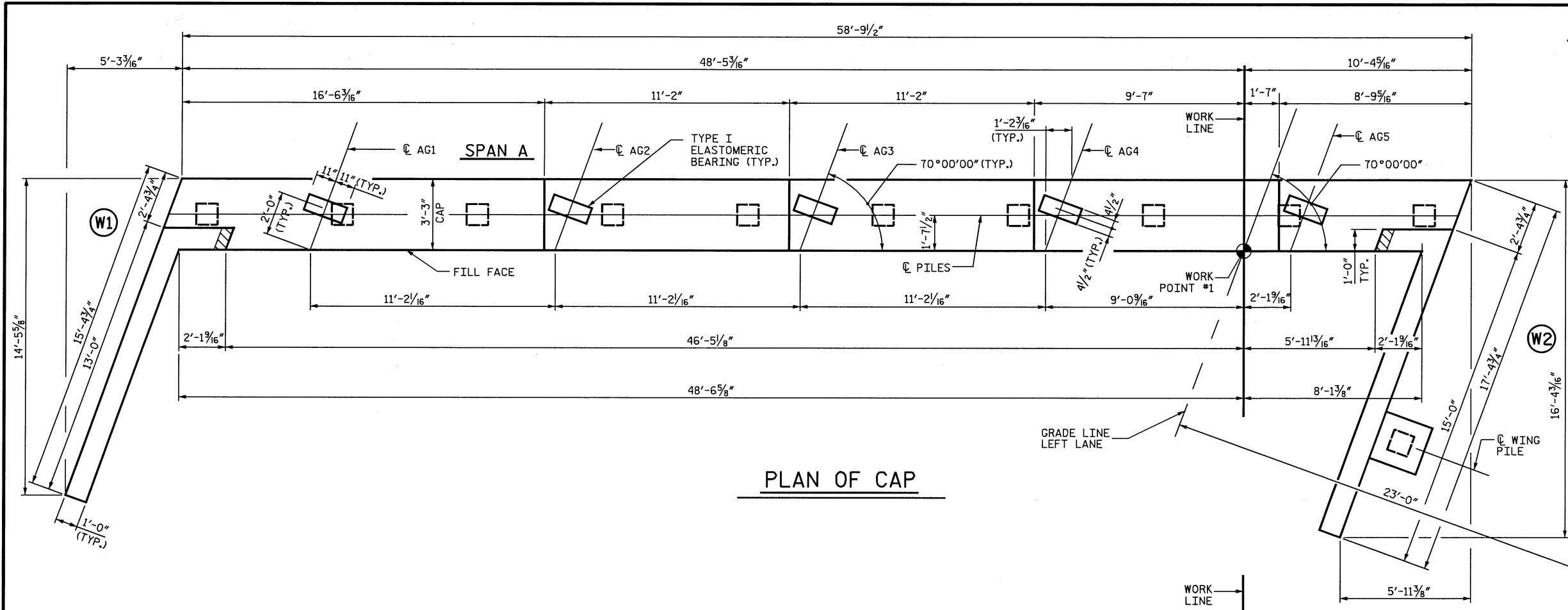


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5/12/2015

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 12 OF 24

| | | |
|----------------------------|--------------|-----------|
| DESIGN ENGINEER OF RECORD: | DATE: | 5/12/2015 |
| DRAWN BY: J. WEATHERBURNE | DATE: | 07/14/13 |
| CHECKED BY: R. C. LARSON | DATE: | 07/15/13 |
| DRAWN BY: ARB 5/87 | REV. 10/1/11 | MAA/GM |
| CHECKED BY: SJD 9/87 | REV. 7/12 | MAA/GM |
| | REV. 6/13 | MAA/GM |



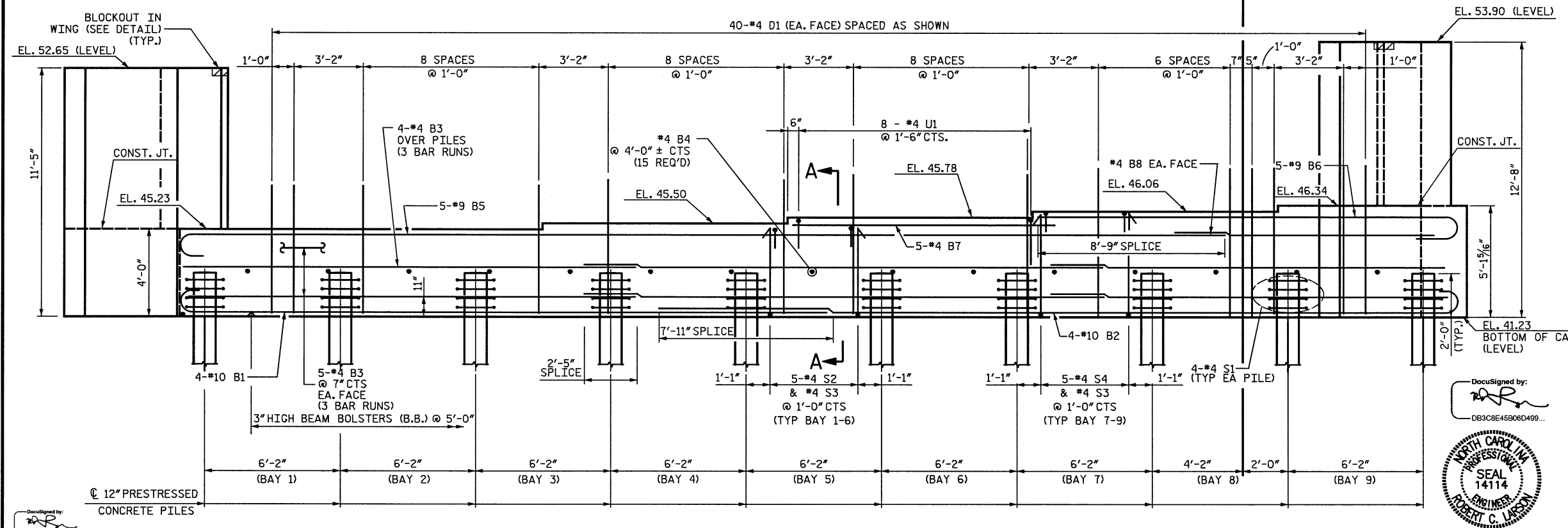
PLAN OF CAP

NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

FOR "BLOCKOUT IN WINGWALL", SEE END BENT 2.



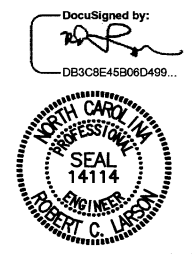
ELEVATION

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1
 LEFT LANE**



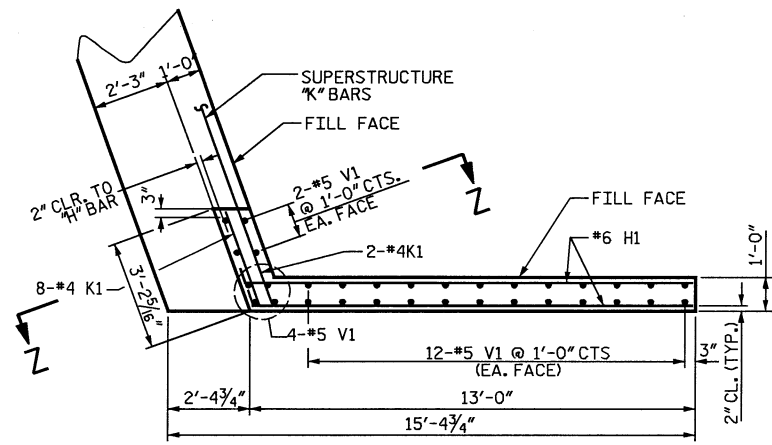
DESIGNED BY: R. J. FLORY DATE: 3/20/14
 CHECKED BY: R. C. LARSON DATE: 4/14/14

DESIGNED BY: R. J. FLORY DATE: 3/20/14
 CHECKED BY: R. C. LARSON DATE: 4/14/14

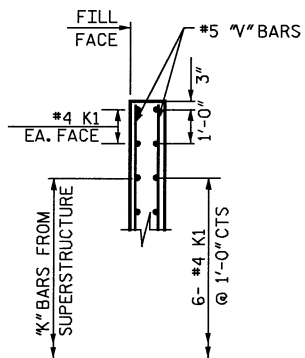
| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | | | 3 | |
| 2 | | | 4 | |

TOTAL SHEETS: SDI-24

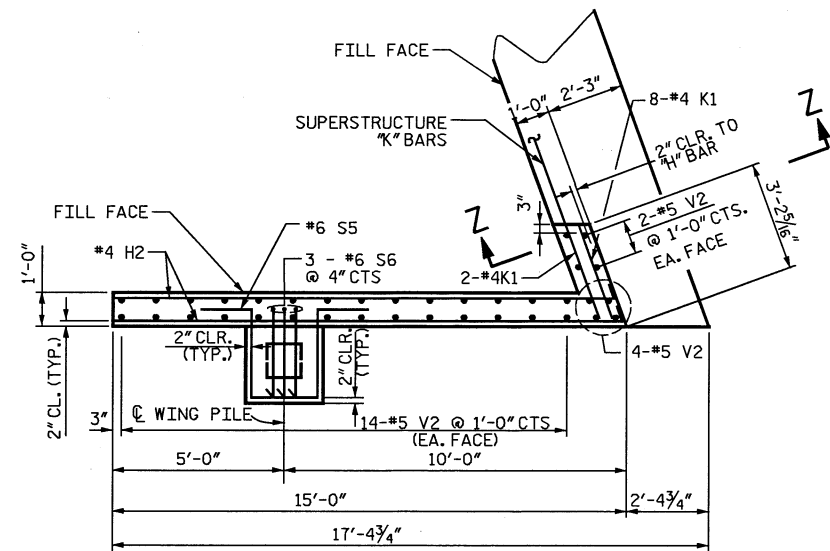
STR-#1



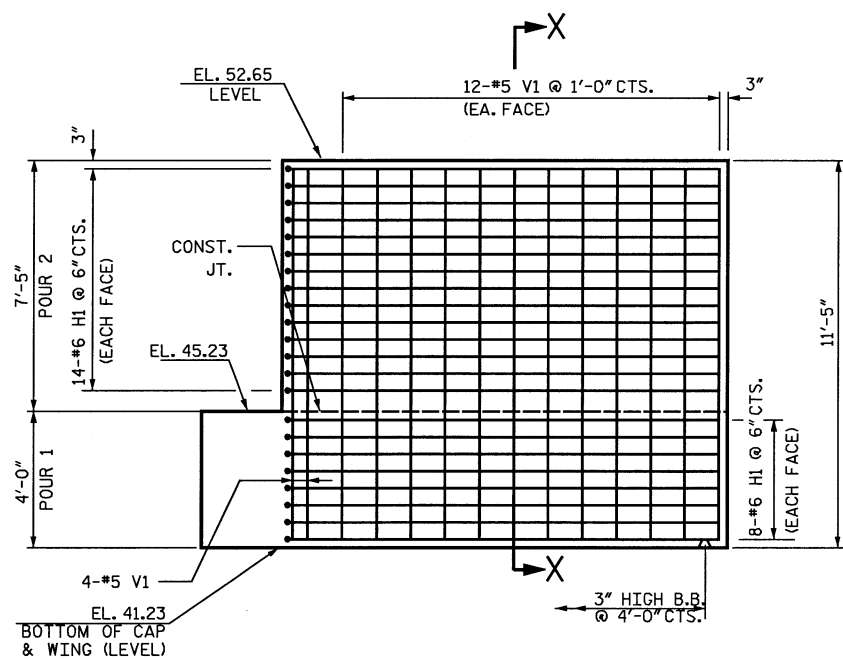
PLAN W1



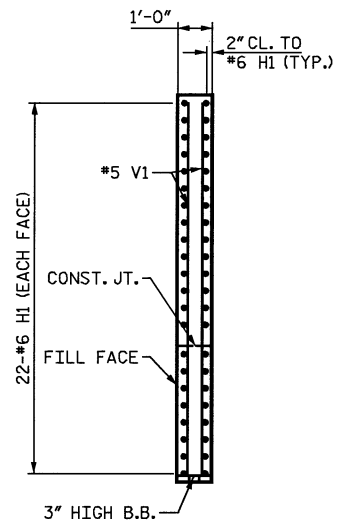
SECTION Z-Z



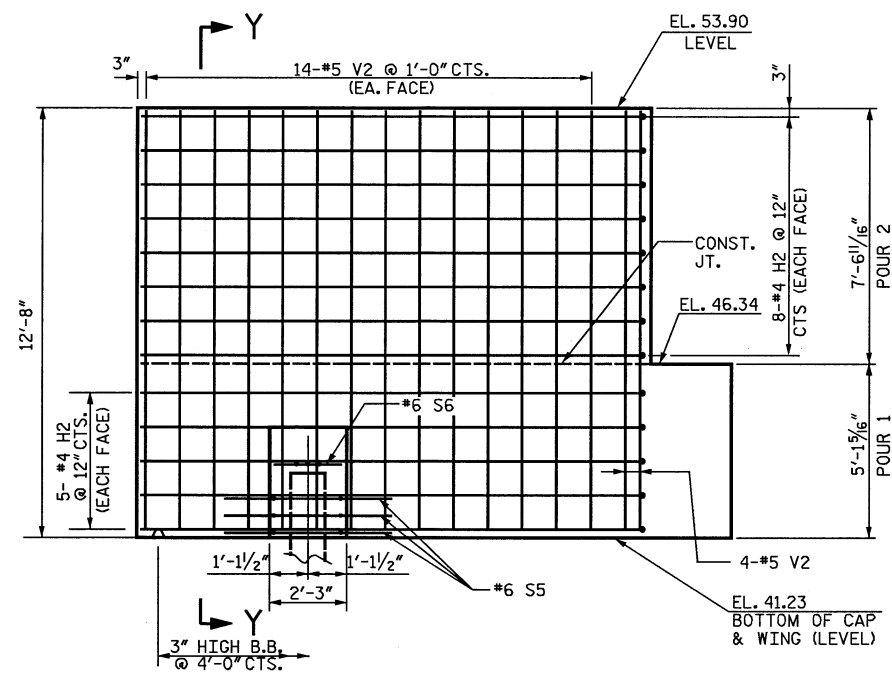
PLAN W2



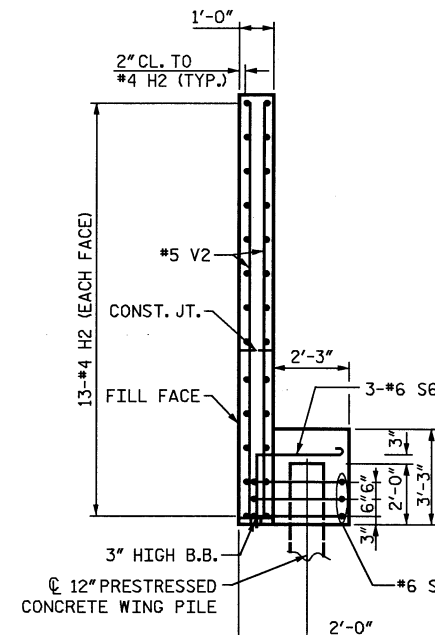
ELEVATION W1



SECTION X-X



ELEVATION W2



SECTION Y-Y

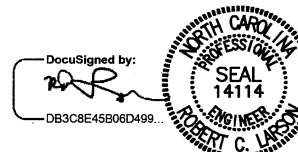
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

LEFT LANE



4/10/2015

| DESIGNED BY | | CHECKED BY | | DATE | | NO. | | BY: | | DATE: | | NO. | | BY: | | DATE: | | NO. | | BY: | | DATE: | |
|-------------------------|--|--------------|--|---------|--|-----|--|--------------|--|---------|--|-----|--|--------------|--|---------|--|-----|--|--------------|--|---------|--|
| KCI Associates | | R. J. FLORY | | 3/27/14 | | 1 | | R. J. FLORY | | 3/27/14 | | 3 | | R. J. FLORY | | 3/27/14 | | 1 | | R. J. FLORY | | 3/27/14 | |
| of North Carolina, P.A. | | R. C. LARSON | | 4/15/14 | | 2 | | R. C. LARSON | | 4/15/14 | | 4 | | R. C. LARSON | | 4/15/14 | | 2 | | R. C. LARSON | | 4/15/14 | |

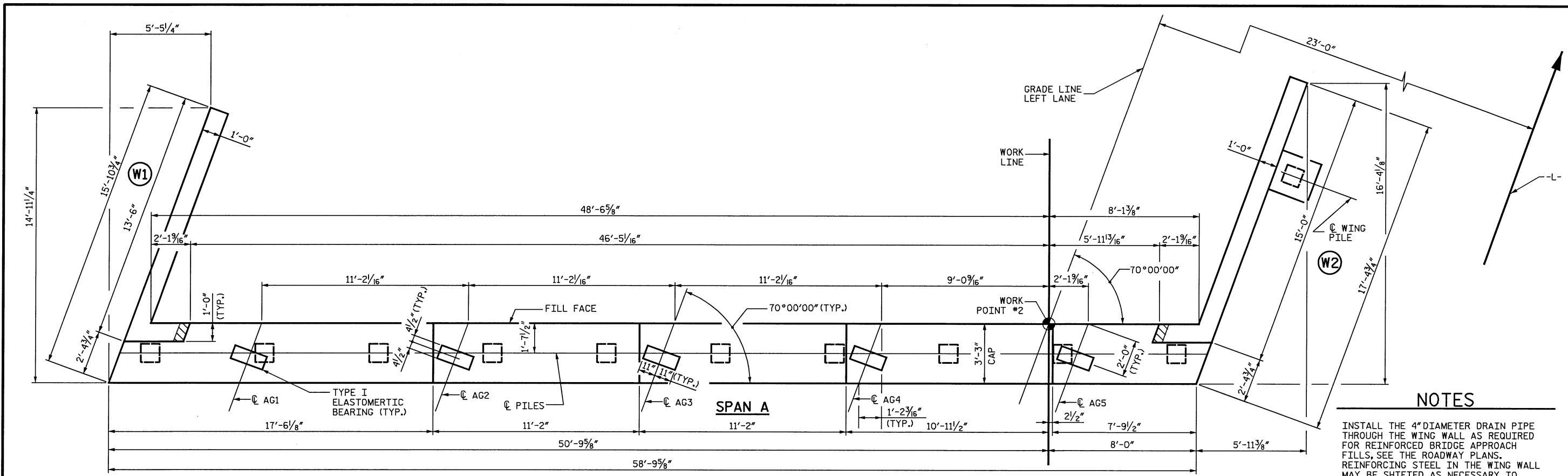
DWG. REF. NO. 16 OF 24

STR-#1

| | |
|---------------------------|----------------|
| DESIGNED BY | DATE |
| DRAWN BY : R. J. FLORY | DATE : 3/27/14 |
| CHECKED BY : R. C. LARSON | DATE : 4/15/14 |

DESIGN ENGINEER OF RECORD: DATE : 4/10/2015

SHEET NO.
 SOI-16
 TOTAL SHEETS
 SOI-24



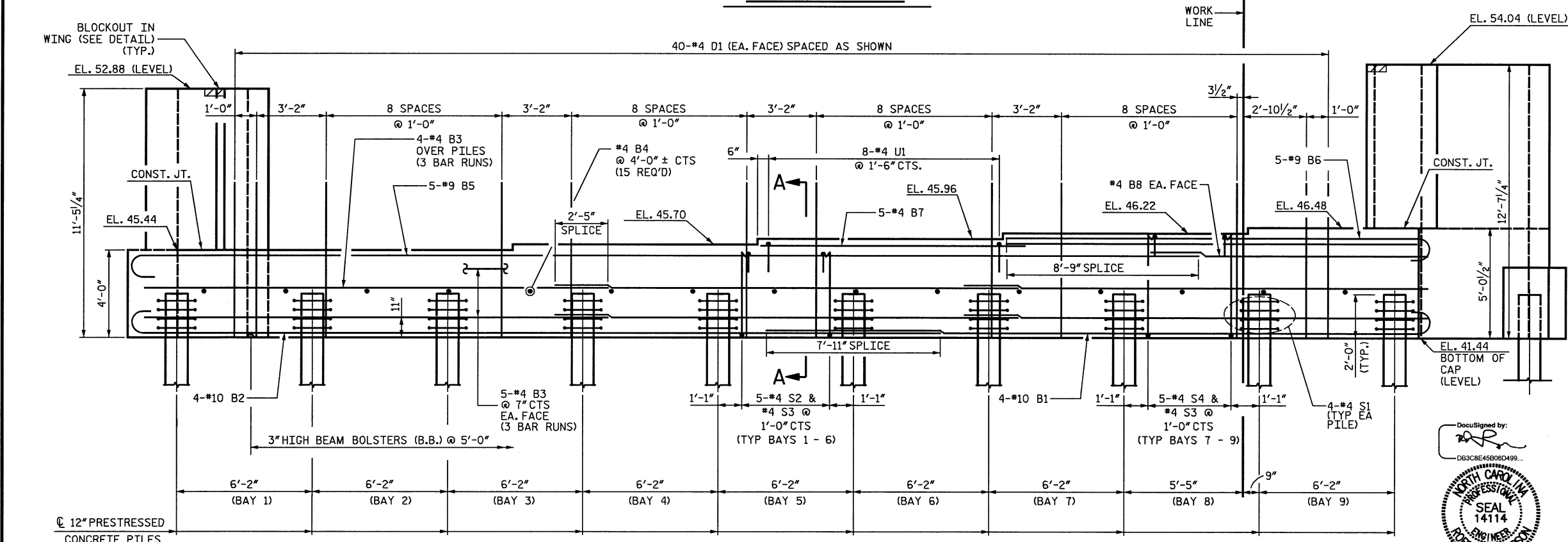
PLAN OF CAP

NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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FOR "TEMPORARY DRAINAGE AT END BENT", SEE END BENT 1.



ELEVATION

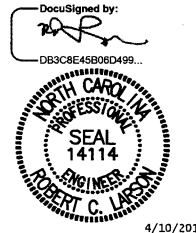
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

LEFT LANE



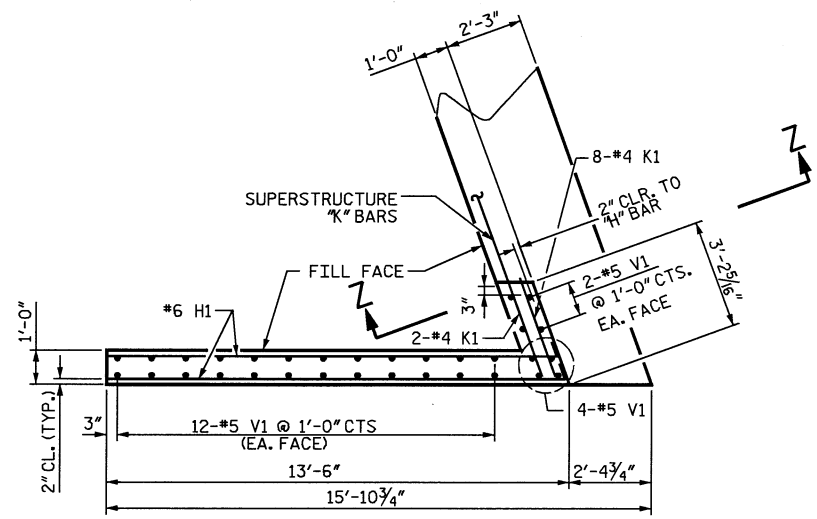
DESIGN ENGINEER OF RECORD: _____ DATE: 4/10/2015

DRAWN BY: R. J. FLORY DATE: 03/20/14

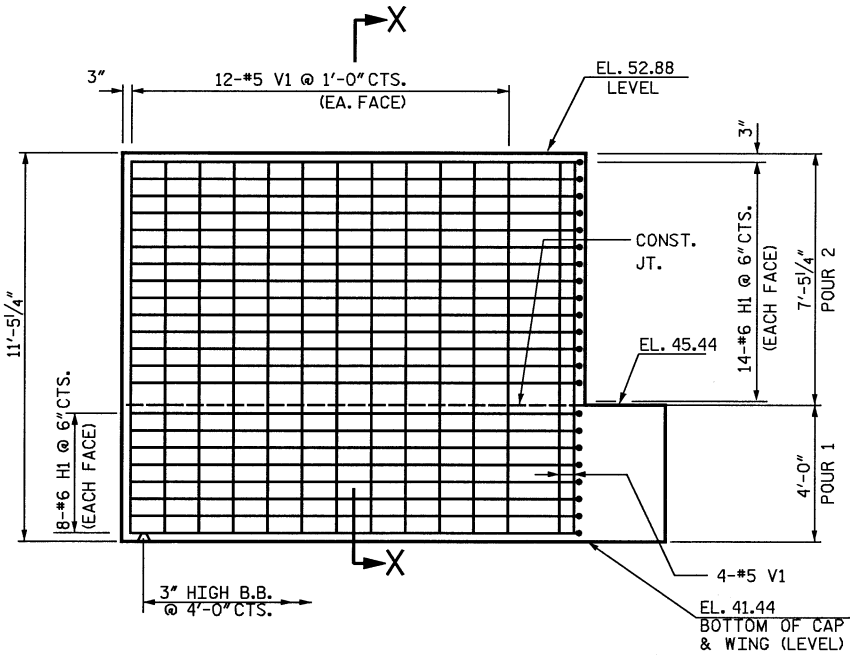
CHECKED BY: R. C. LARSON DATE: 04/15/14

| REVISIONS | | SHEET NO. |
|-----------|------|---------------------|
| NO. | DATE | |
| 1 | | 501-18 |
| 2 | | TOTAL SHEETS 501-24 |
| 3 | | |
| 4 | | |

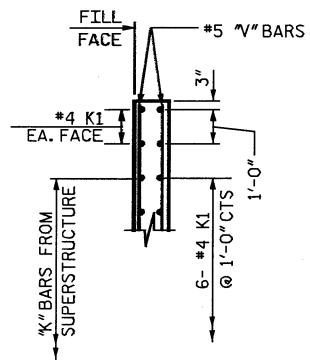
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 18 OF 24



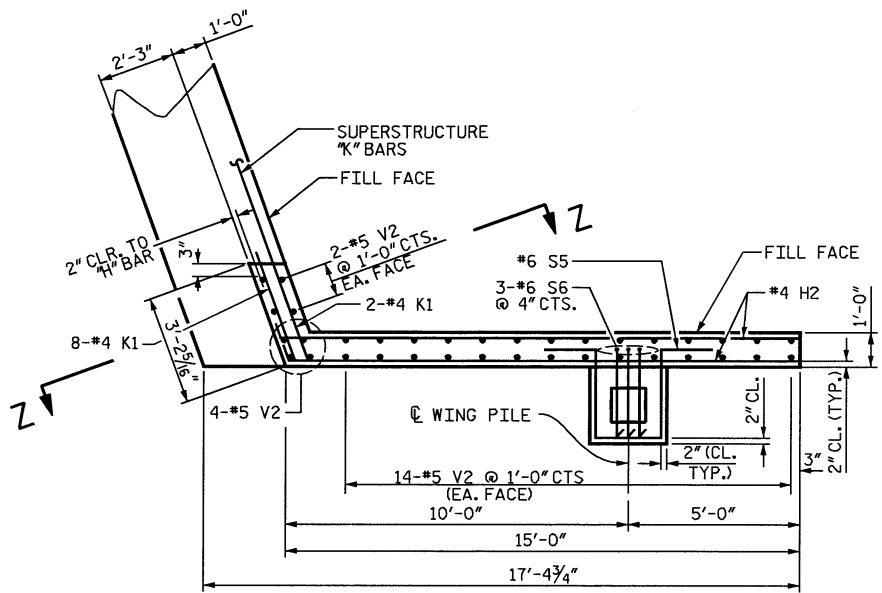
PLAN W1



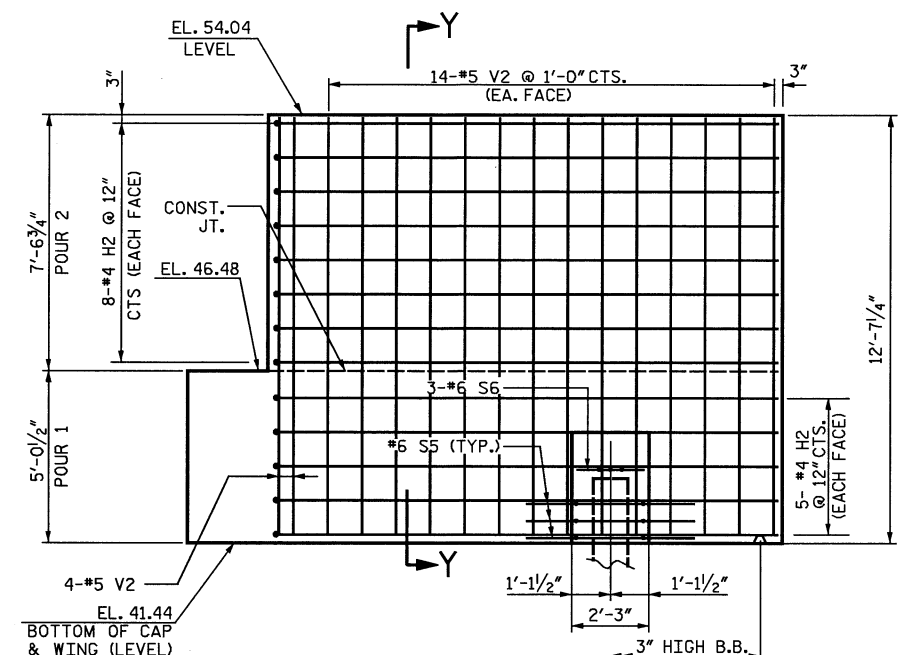
ELEVATION W1



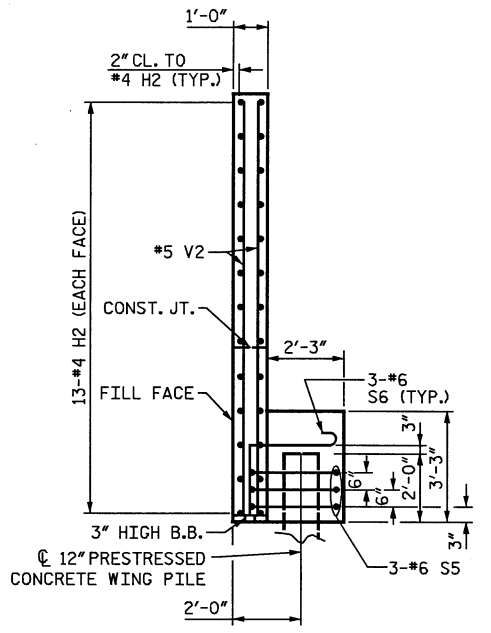
SECTION Z-Z



PLAN W2



ELEVATION W2

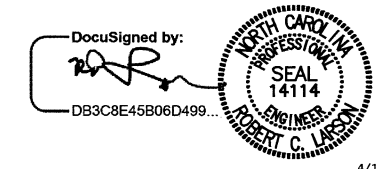


SECTION Y-Y

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 2**
 LEFT LANE

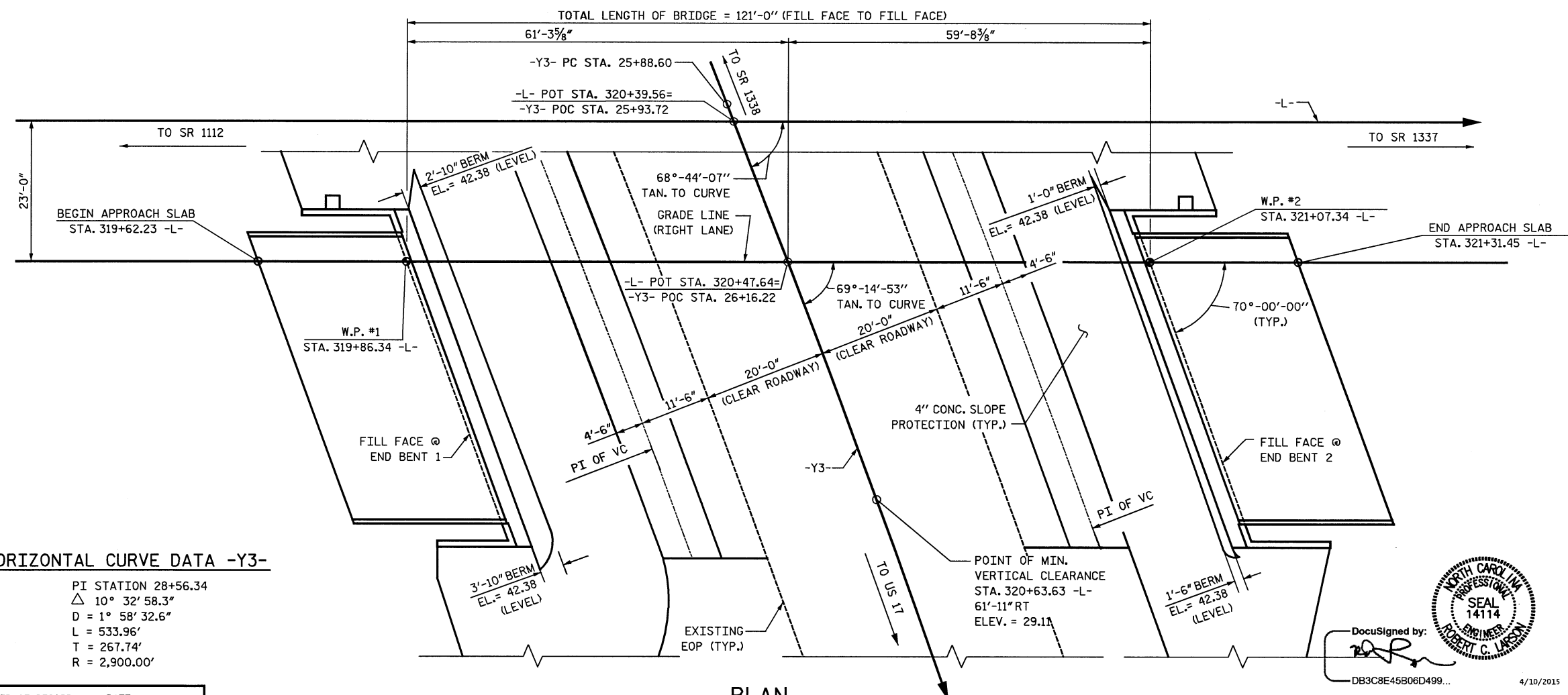
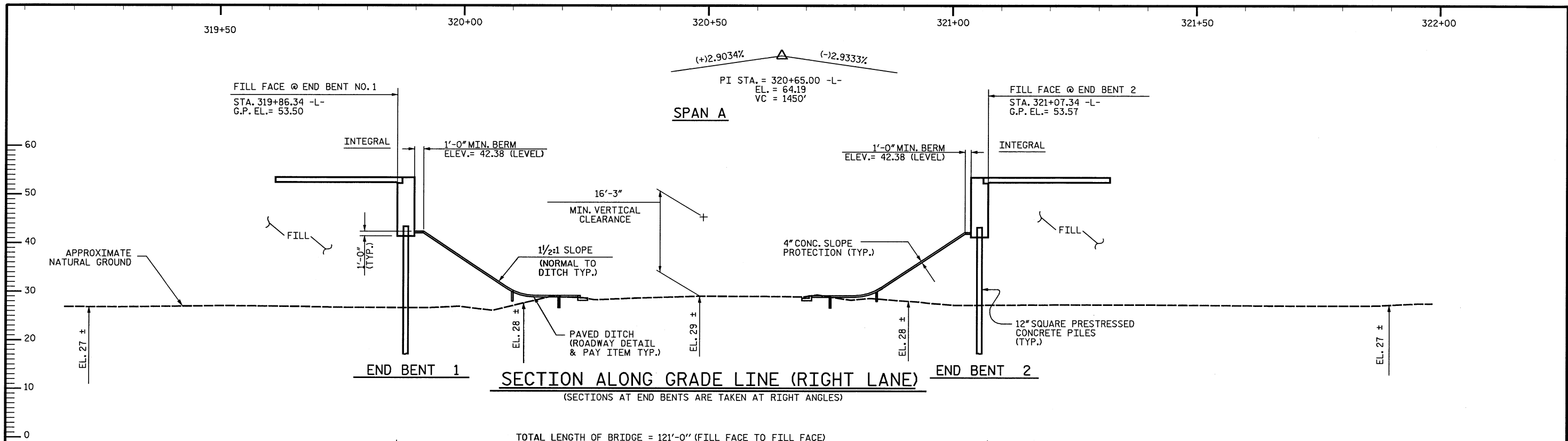


DESIGN ENGINEER OF RECORD: _____ DATE: 4/10/2015
 DRAWN BY: R. J. FLORY DATE: 02/19/14
 CHECKED BY: R. C. LARSON DATE: 04/15/14

DRIVERS • PLANNERS • ENGINEERS
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 19 OF 24

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | SOI-19 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | SOI-24 | |

STR-#1



PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-
=25+93.72 -Y3-
 SHEET 1 OF 4 BRIDGE NO. 96

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 1112 AND SR 1337
 RIGHT LANE

HORIZONTAL CURVE DATA -Y3-
 PI STATION 28+56.34
 Δ 10° 32' 58.3"
 D = 1° 58' 32.6"
 L = 533.96'
 T = 267.74'
 R = 2,900.00'

DESIGN ENGINEER OF RECORD: _____ DATE: 4/10/2015
 DRAWN BY: R.J. FLORY DATE: 6/30/13
 CHECKED BY: R.C. LARSON DATE: 5/1/14

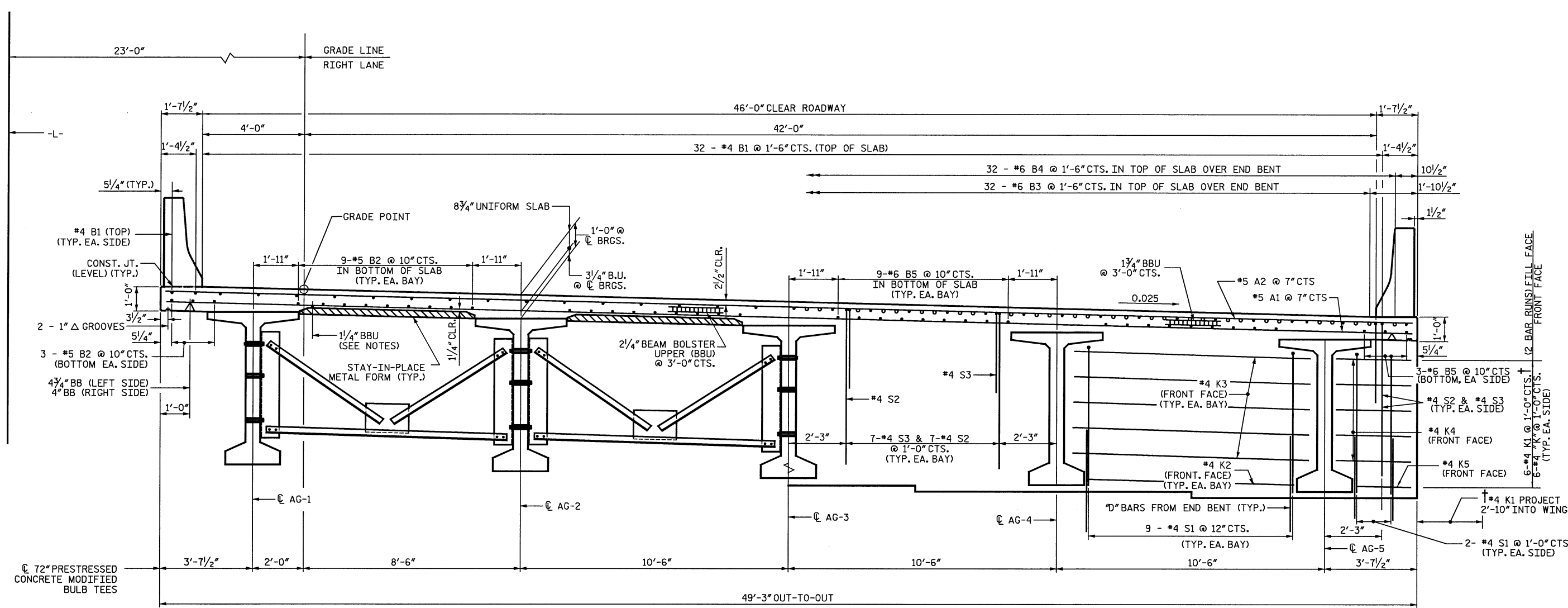
DocuSigned by:

 DB3C8E45B06D499... 4/10/2015

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 1 OF 24

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | NO. |
| 1 | | | 3 | | | 2 |
| 2 | | | 4 | | | 3 |

TOTAL SHEETS: 24
 SHEET NO.: S02-1
 SHEETS: S02-24



TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL SECTION

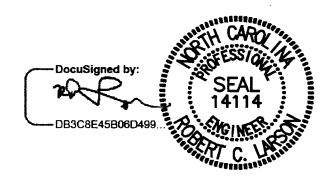
NOTES

- PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
- PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SPAN.
- THE SKEWED END CONDITIONS ARE SUCH THAT THE USE OF 4' WIDE PRESTRESSED CONCRETE DECK PANELS IS NOT POSSIBLE; USE OF 8' WIDE PRESTRESSED CONCRETE DECK PANELS IS NECESSARY.
- SEE STD. NO. CBRI FOR ADDITIONAL REINFORCING STEEL EMBEDDED IN DECK.

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT END BENT

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 2



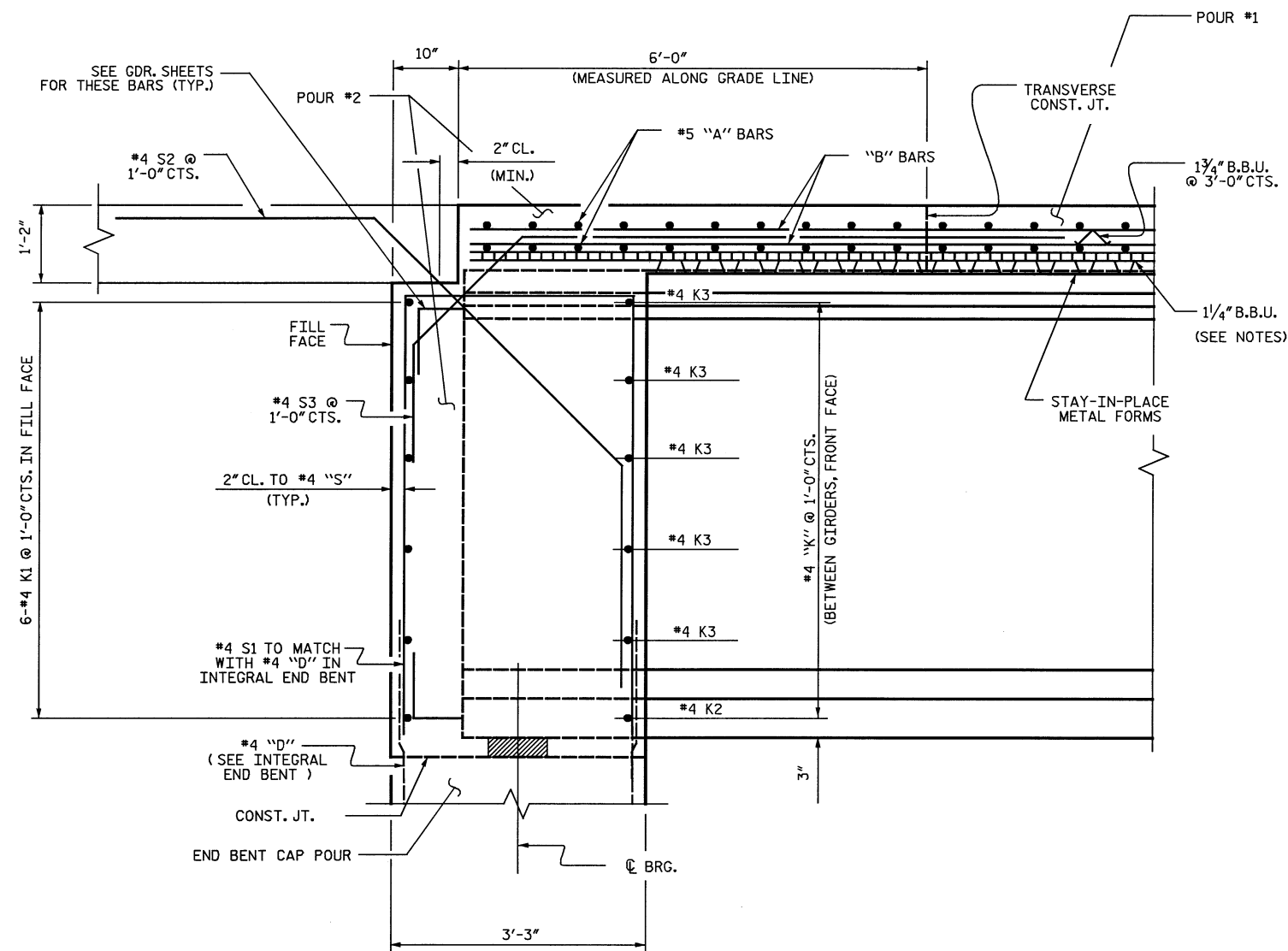
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUPERSTRUCTURE
 TYPICAL SECTION**
 RIGHT LANE

| | |
|----------------------------|-----------|
| DESIGN ENGINEER OF RECORD: | DATE: |
| <i>(Signature)</i> | 5/12/2015 |
| DRAWN BY: | DATE: |
| E. C. DECOLA | 7/12/13 |
| CHECKED BY: | DATE: |
| R. C. LARSON | 5/2/14 |

5/12/2015
 KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 5 OF 24

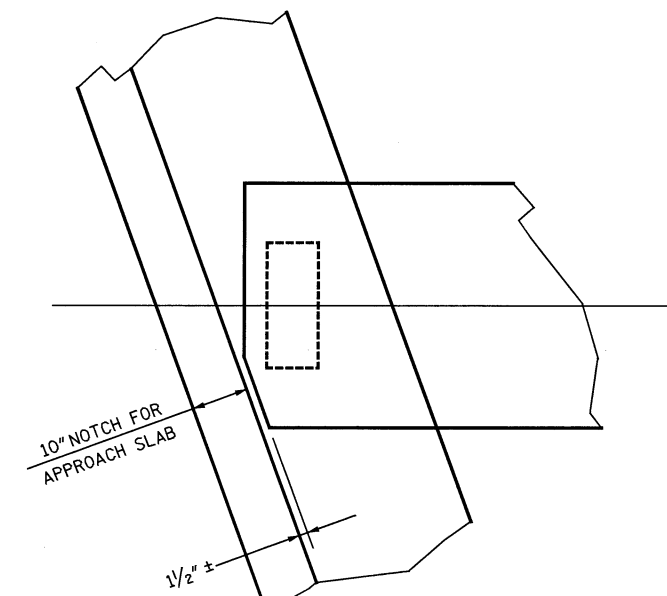
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|-----------|-----|-------|-----|-----|-------|------------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS S02-24 |
| 2 | | | 4 | | | |

STR-#2



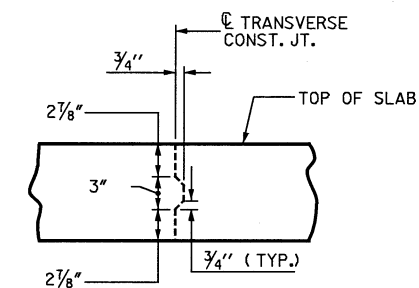
SECTION A-A

(SEE PLAN OF SPAN A FOR LOCATION OF SECTION A-A)



END OF GIRDER PLAN

(SHOWING BLOCKOUT IN TOP FLANGE)



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

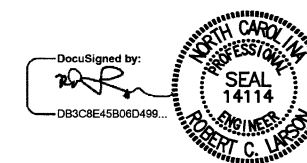
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

RIGHT LANE



4/10/2015

| | | |
|----------------------------|-------|-----------|
| DESIGN ENGINEER OF RECORD: | DATE: | 4/10/2015 |
| DRAWN BY: E. C. DECOLA | DATE: | 7/12/13 |
| CHECKED BY: R. C. LARSON | DATE: | 8/15/13 |

| REVISIONS | | SHEET NO. | |
|-----------|-----|-----------|-----|
| NO. | BY: | DATE: | NO. |
| 1 | | | 3 |
| 2 | | | 4 |

DWG. REF. NO. 6 OF 24

| | |
|--------------|--------|
| SHEET NO. | S02-6 |
| TOTAL SHEETS | S02-24 |

STR-#2

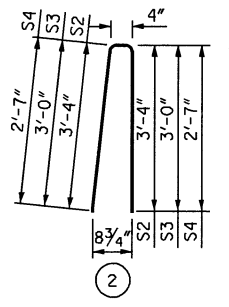
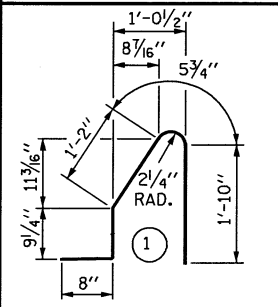
NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|------|-----|------|------|--------|--------|
| * S1 | 240 | #5 | 1 | 4'-11" | 1231 |
| * S2 | 232 | #5 | 2 | 7'-0" | 1694 |
| * S3 | 4 | #5 | 2 | 6'-4" | 26 |
| * S4 | 4 | #5 | 2 | 5'-6" | 23 |

| | | | | | |
|------|----|----|------|--------|------|
| * B1 | 22 | #5 | STR. | 29'-0" | 665 |
| * B2 | 22 | #5 | STR. | 29'-3" | 671 |
| * B3 | 44 | #5 | STR. | 29'-8" | 1361 |

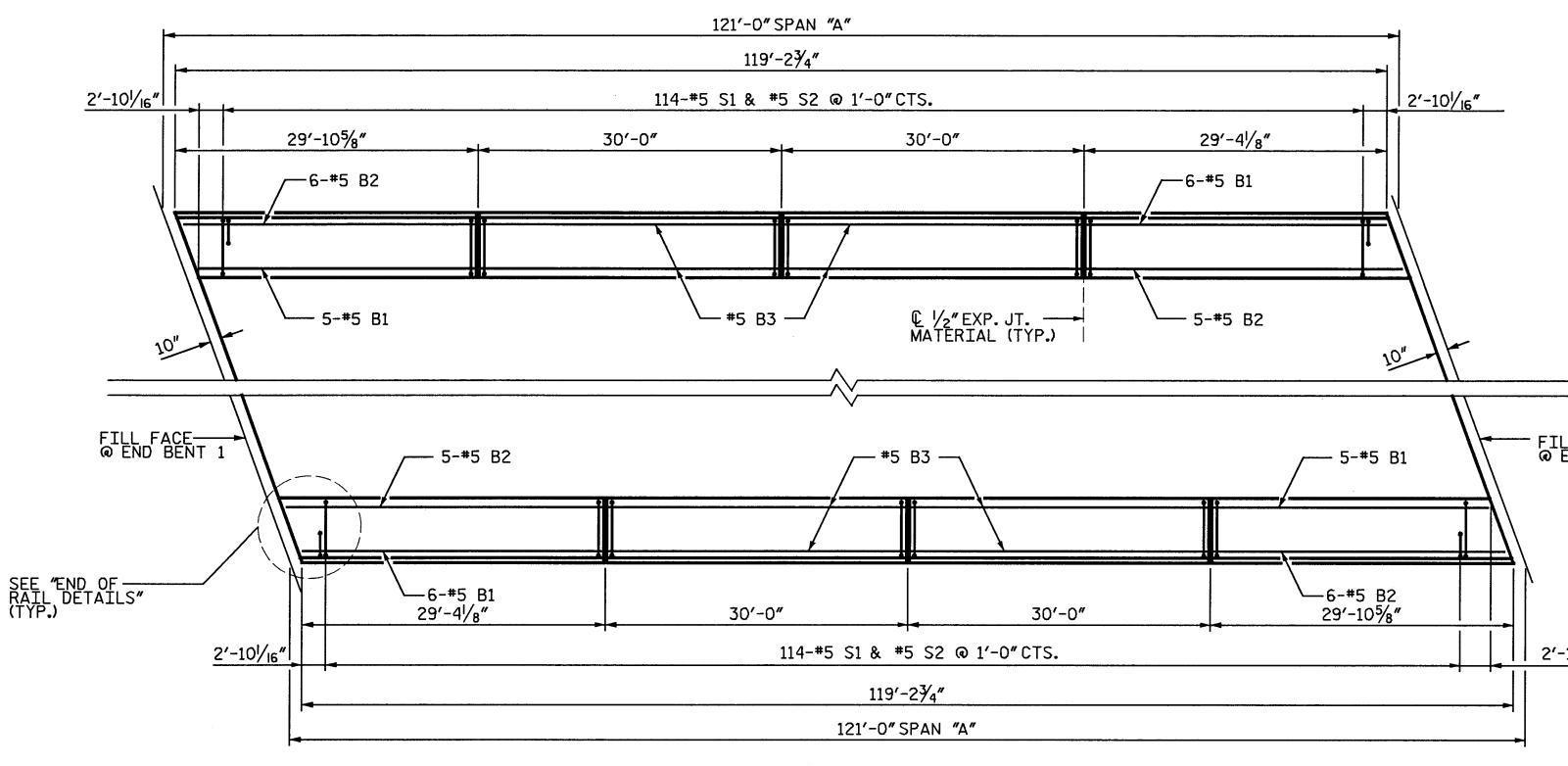
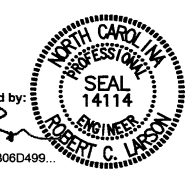
| | |
|----------------------------------|-----------------|
| * EPOXY COATED REINFORCING STEEL | 5671 LBS. |
| CLASS AA CONCRETE | 32.3 CU. YDS. |
| CONCRETE BARRIER RAIL | 238.46 L.TN.FT. |

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

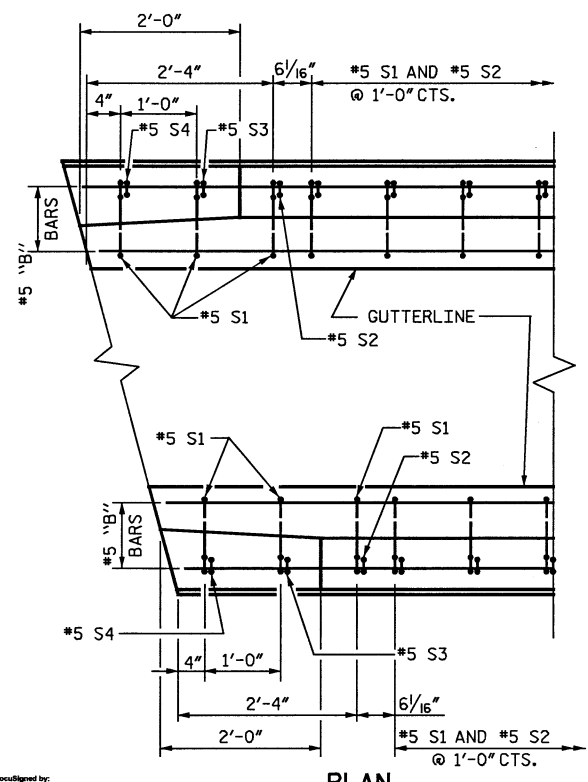
SHEET 1 OF 1

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 CONCRETE
 BARRIER RAIL

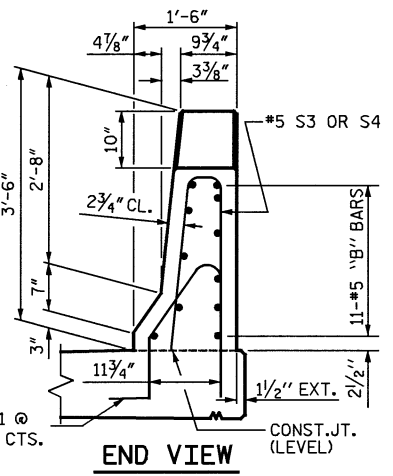
STD. NO. CBR1 RIGHT LANE



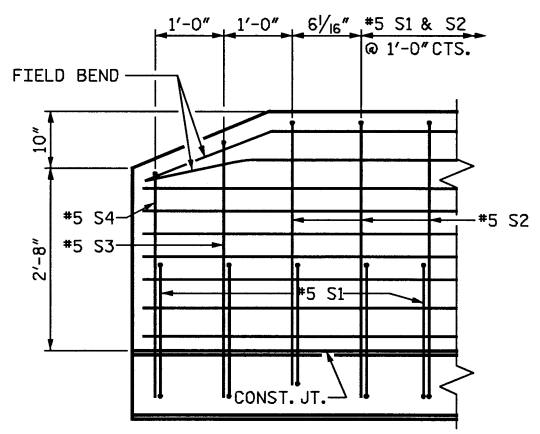
PLAN



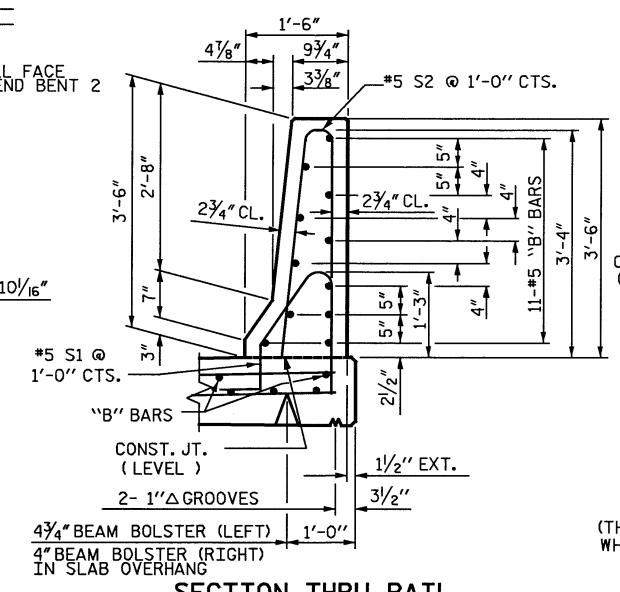
PLAN



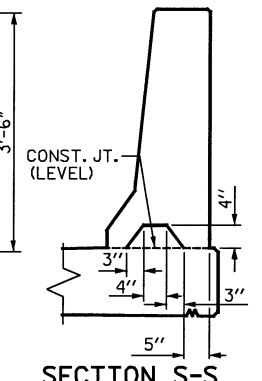
END VIEW



SIDE VIEW



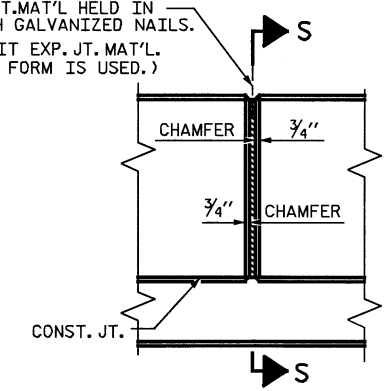
SECTION THRU RAIL



SECTION S-S

AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
 (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

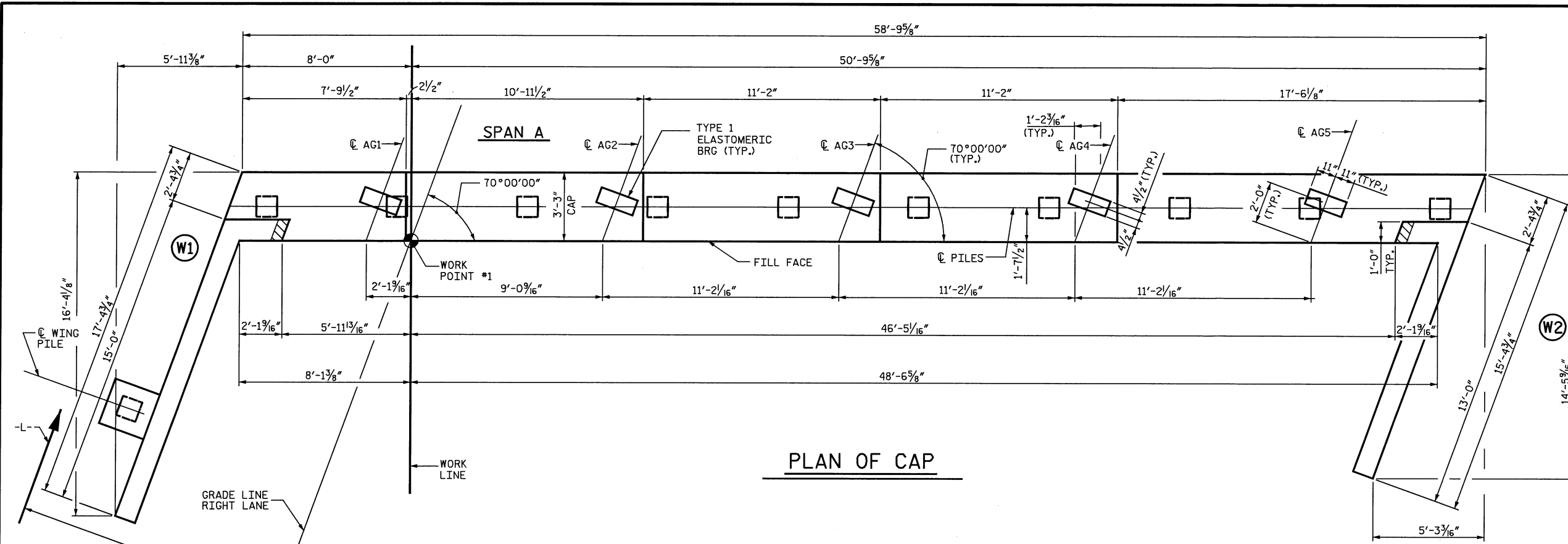
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| DESIGN ENGINEER OF RECORD: | DATE : | 5/12/2015 |
| DRAWN BY : J. WEATHERBURNE | DATE : | 07/14/13 |
| CHECKED BY : R. C. LARSON | DATE : | 07/15/13 |
| DRAWN BY : ARB 5/87 | REV. 10/1/11 | MAA/GM |
| CHECKED BY : SJD 9/87 | REV. 7/12 | MAA/GM |
| | REV. 6/13 | MAA/GM |

DRUMMOND #PLANNED # ECOLOGISTS LEISURE HARBOR C-0114
KCI Associates
 of North Carolina, P.A.
 CIVIL ENGINEERS ARCHITECTS PLANNERS AND DESIGNERS
 DWG. REF. NO. 12 OF 24

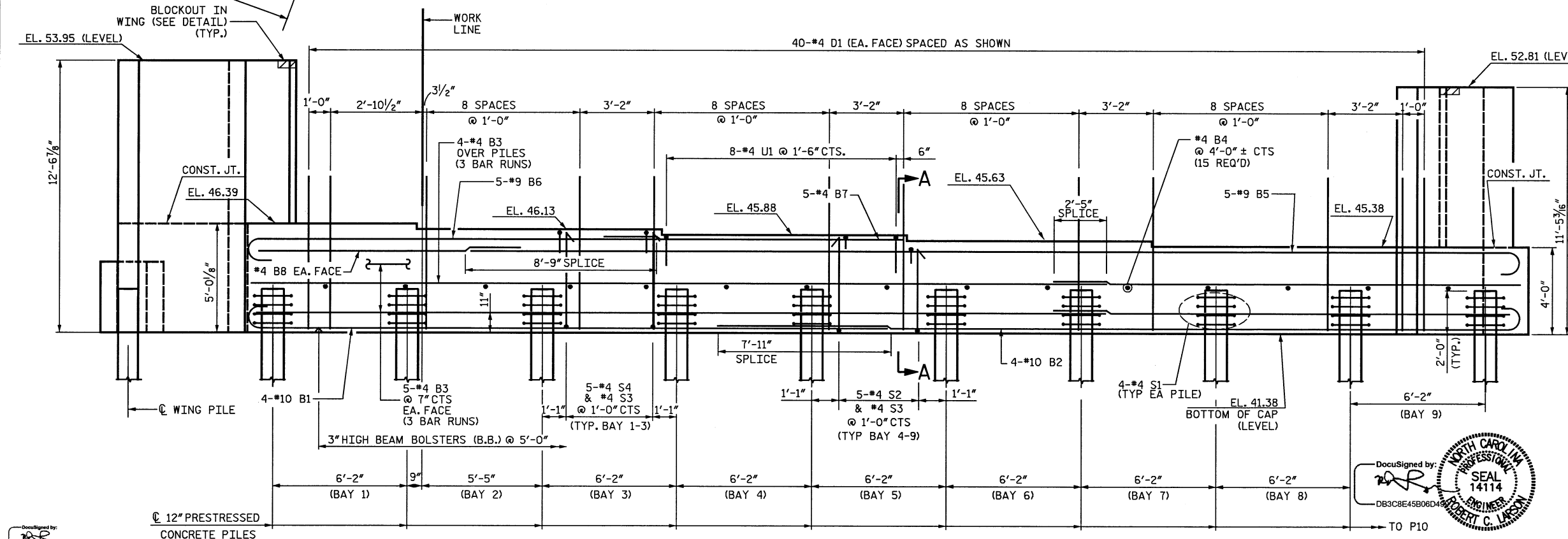
| REVISIONS | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----------|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

TOTAL SHEETS: 02-24

STR-#2



PLAN OF CAP



ELEVATION

NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTORS OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

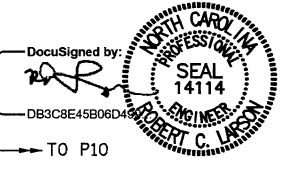
FOR "BLOCKOUT IN WING WALL", SEE END BENT 2.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

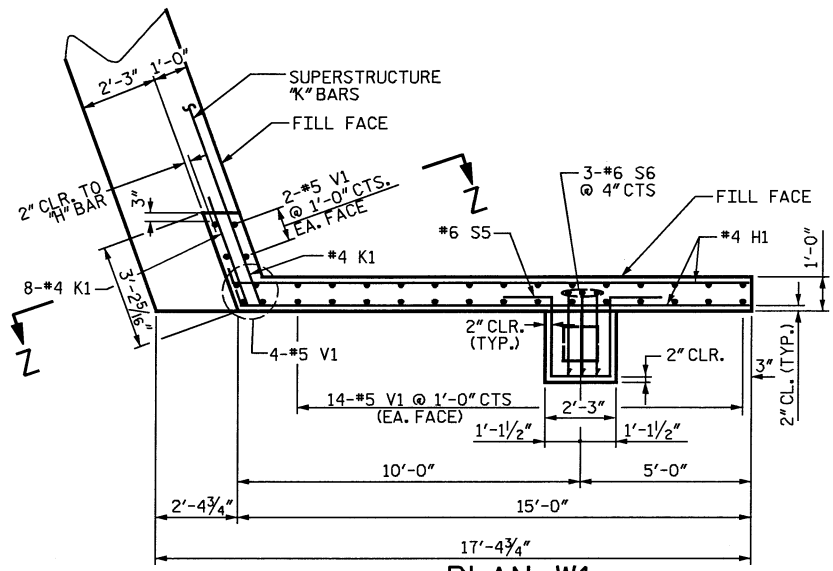
**SUBSTRUCTURE
 END BENT 1
 RIGHT LANE**



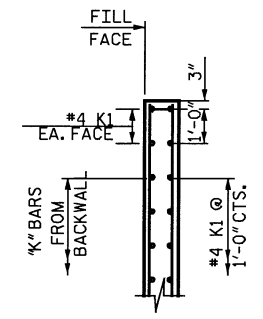
DESIGN ENGINEER OF RECORD: R. J. FLORY DATE: 4/10/2015
 DRAWN BY: R. J. FLORY DATE: 03/31/14
 CHECKED BY: R. C. LARSON DATE: 04/16/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 15 OF 24

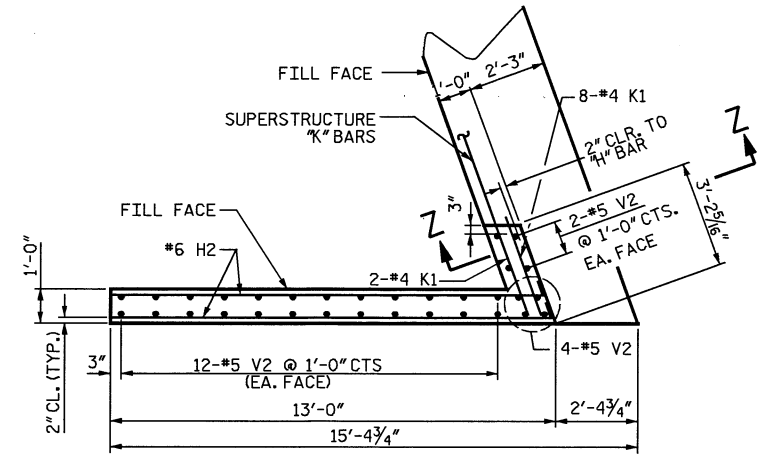
| REVISIONS | | | | | | SHEET NO. S02-15 |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS S02-24 |
| 2 | | | 4 | | | |



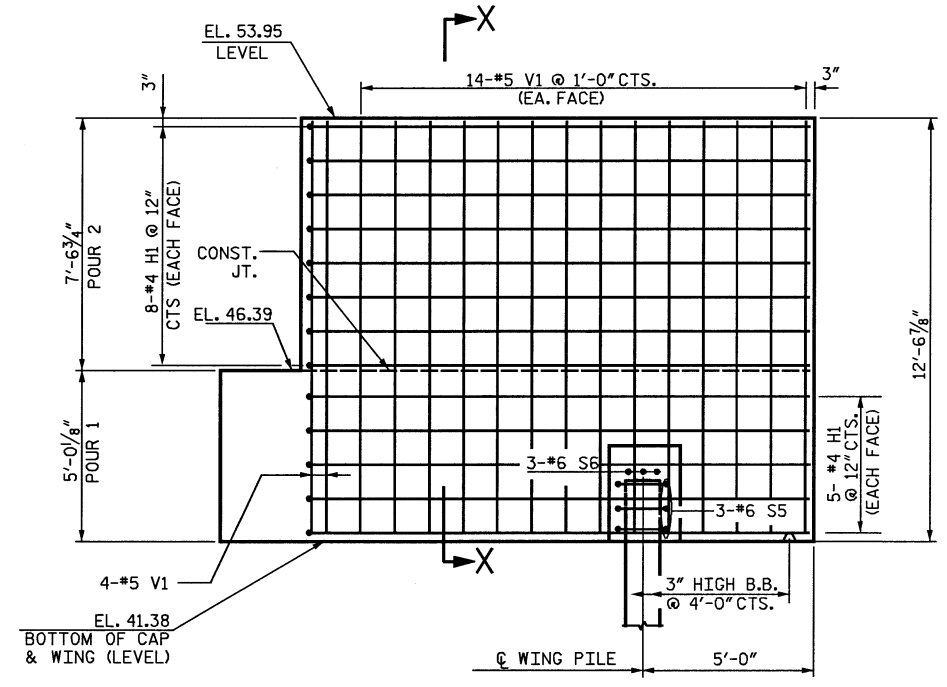
PLAN W1



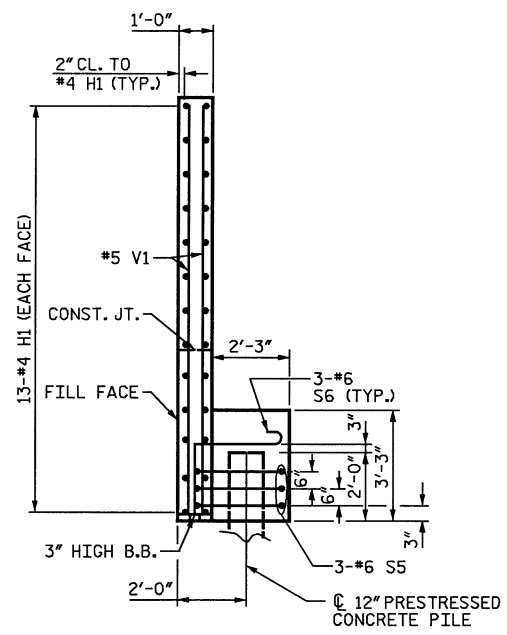
SECTION Z-Z



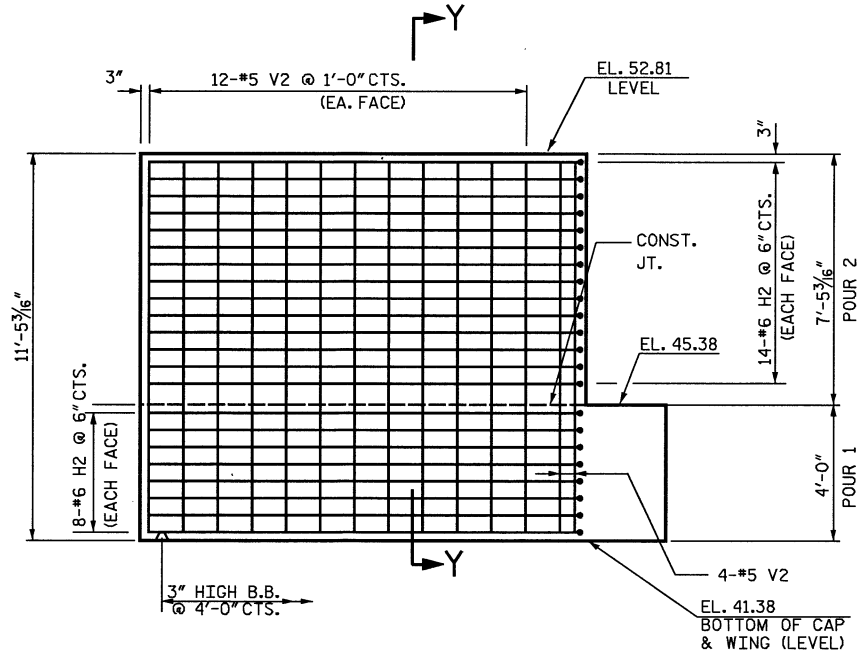
PLAN W2



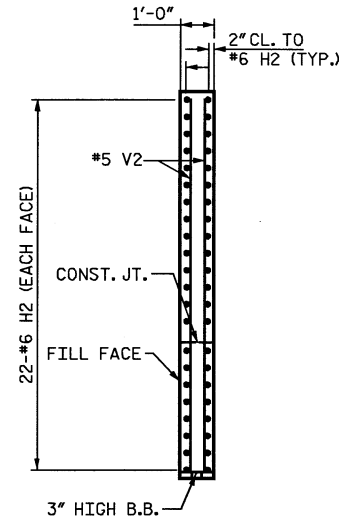
ELEVATION W1



SECTION X-X



ELEVATION W2

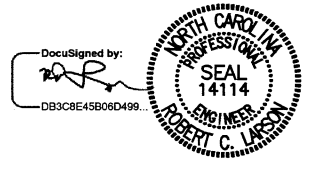


SECTION Y-Y

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 1**
 RIGHT LANE



4/10/2015

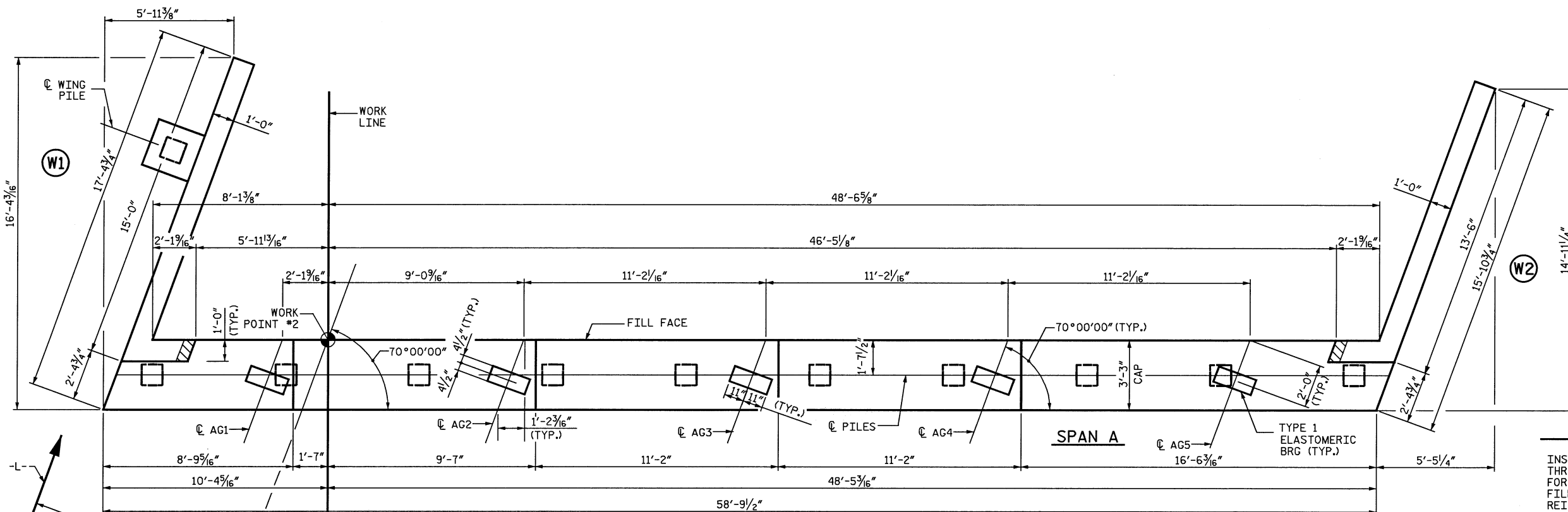
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| DESIGN ENGINEER OF RECORD: | DATE: |
| | 4/10/2015 |
| DRAWN BY: <u>R. J. FLORY</u> | DATE: <u>03/27/14</u> |
| CHECKED BY: <u>R. C. LARSON</u> | DATE: <u>04/16/14</u> |

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 16 OF 24

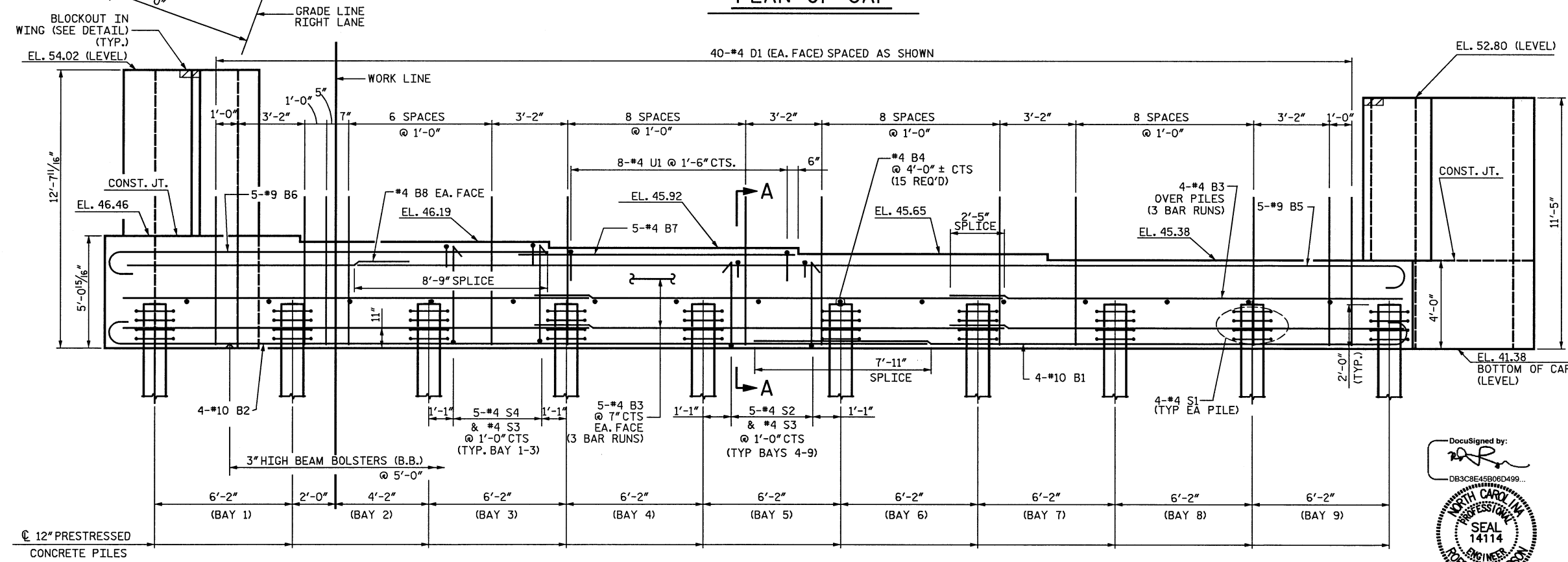
| REVISIONS | | | | | |
|-----------|-----|-------|-----|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

| | |
|--------------|--------|
| SHEET NO. | S02-16 |
| TOTAL SHEETS | S02-24 |

STR-#2



PLAN OF CAP



ELEVATION

NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

FOR "TEMPORARY DRAINAGE AT END BENT", SEE END BENT 1.

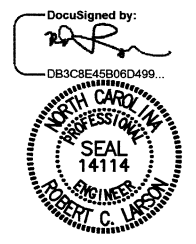
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

RIGHT LANE

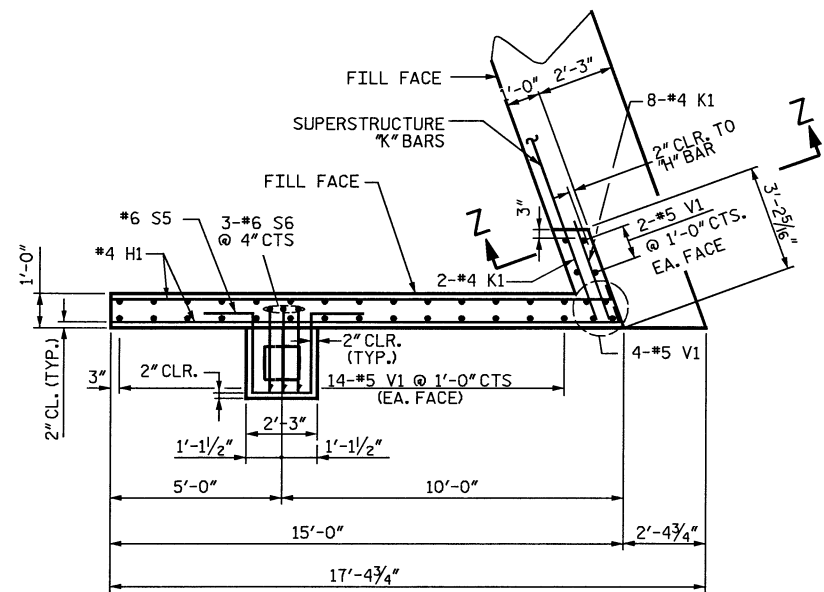


DESIGNED BY: [Signature]
 DESIGN ENGINEER OF RECORD: [Signature] DATE: 4/10/2015
 DRAWN BY: R. J. FLORY DATE: 3/20/14
 CHECKED BY: R. C. LARSON DATE: 4/16/14

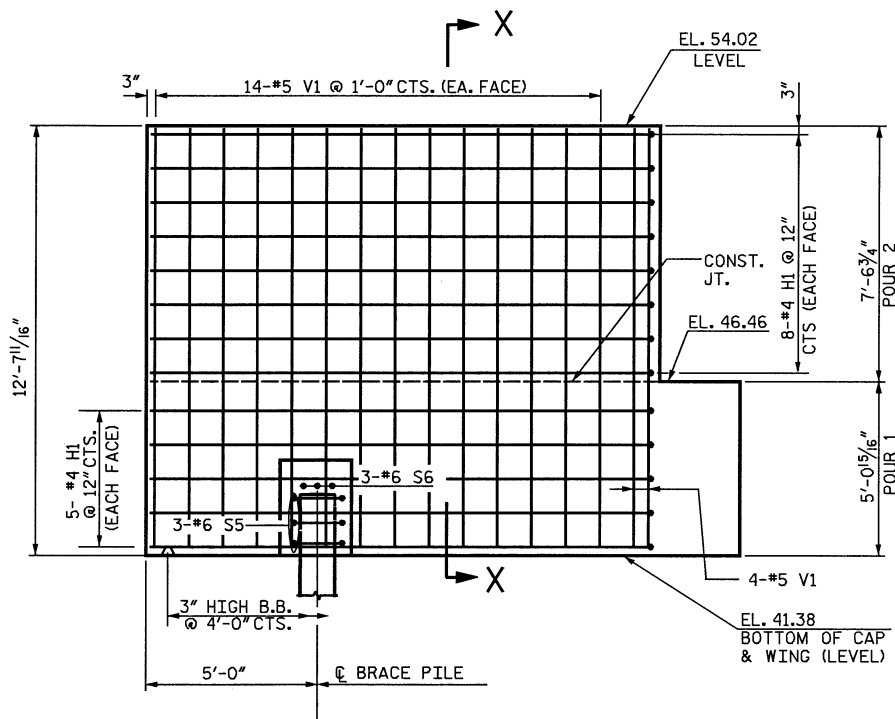
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 18 OF 24

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | | | 3 | |
| 2 | | | 4 | |

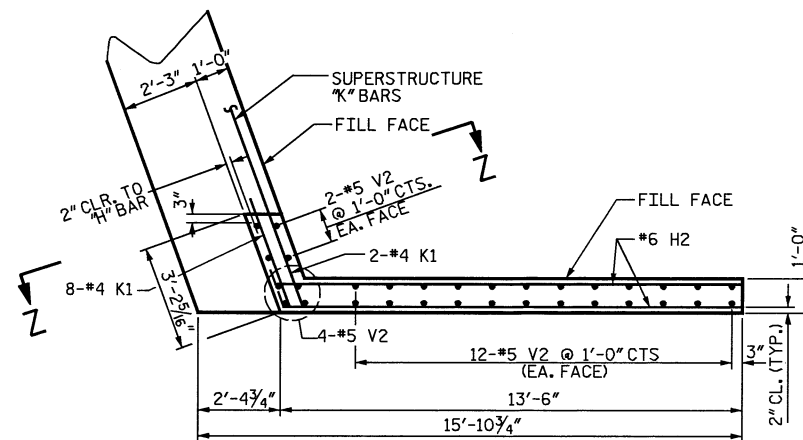
TOTAL SHEETS: 502-24



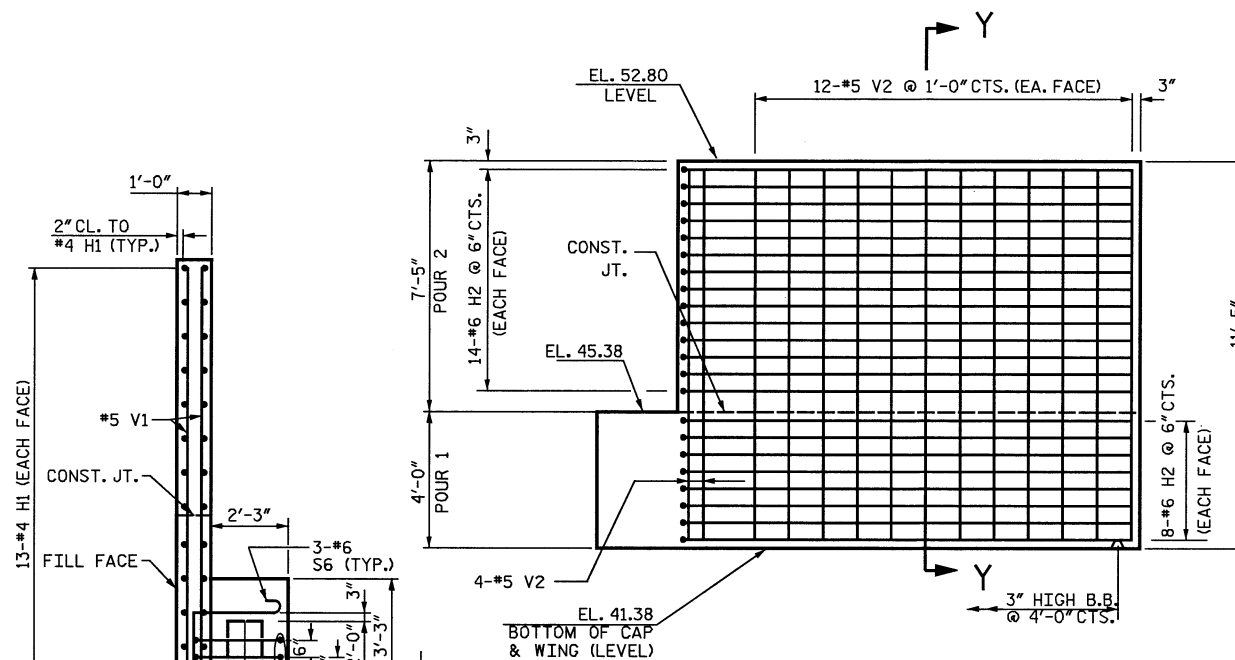
PLAN W1



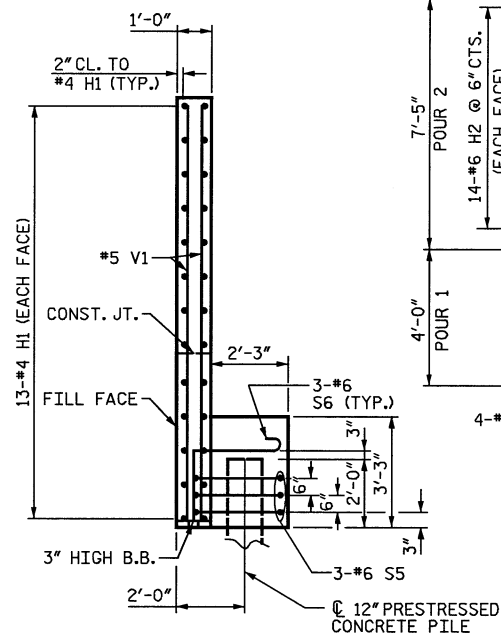
ELEVATION W1



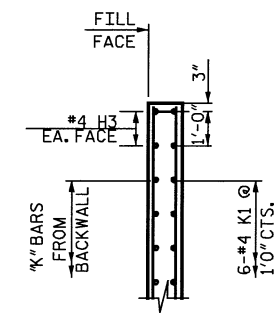
PLAN W2



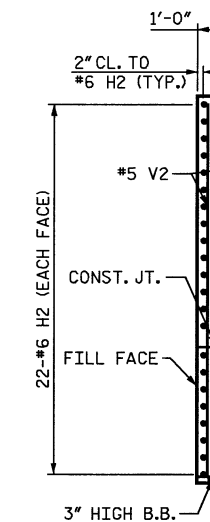
ELEVATION W2



SECTION X-X



SECTION Z-Z



SECTION Y-Y

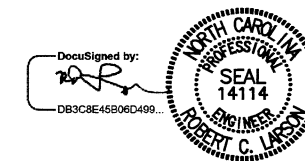
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

RIGHT LANE



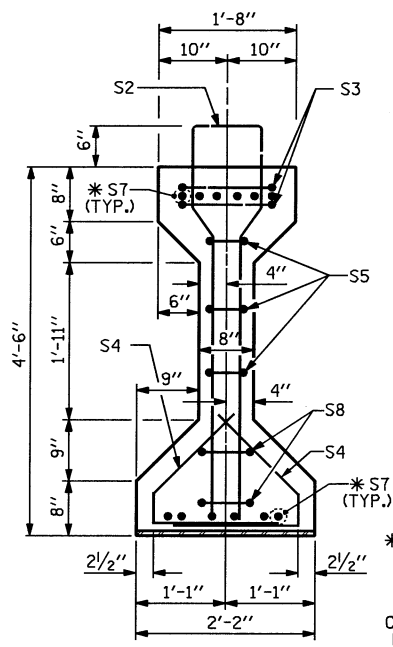
4/10/2015

| | |
|--------------------------|-----------------|
| DESIGNED BY: | DATE: 4/10/2015 |
| DRAWN BY: R. J. FLORY | DATE: 03/27/14 |
| CHECKED BY: R. C. LARSON | DATE: 04/16/14 |

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 19 OF 24

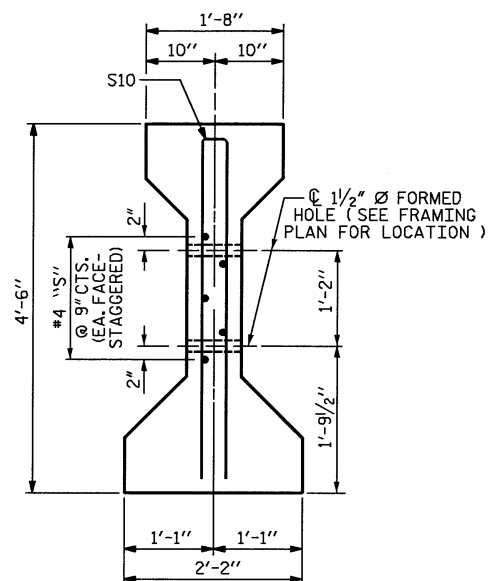
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|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 502-19 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 502-24 |

STR-#2



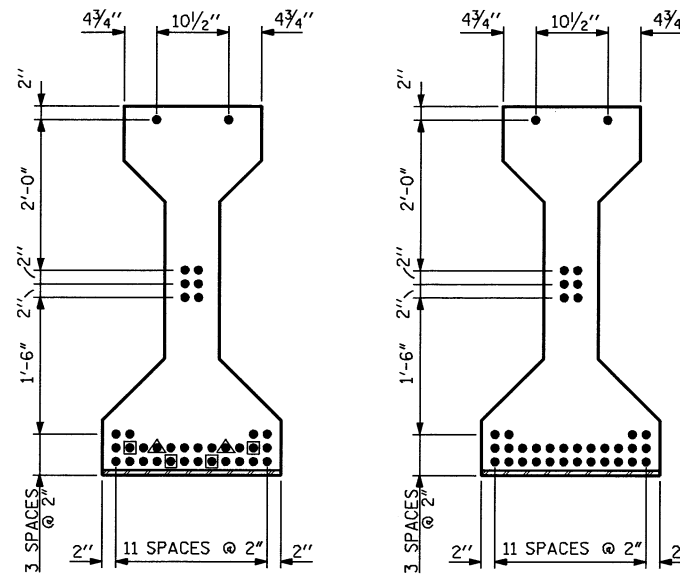
SECTION A-A

* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



SECTION C-C

(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
|-------------------------|---|---|
| 0.217 | 58,600 | 43,950 |

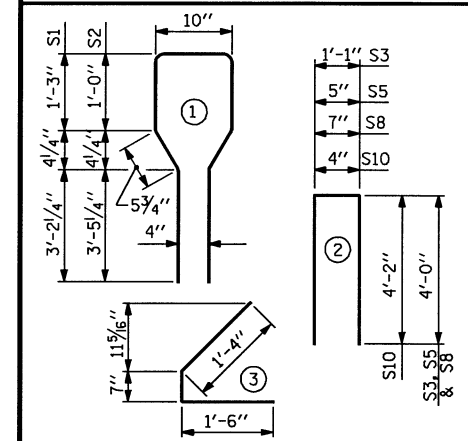
REINFORCING STEEL FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-------------------|--------|------|------|--------|--------|
| S1 | 87 | #4 | 1 | 10'-8" | 620 |
| S2 | 16 | #6 | 1 | 10'-8" | 256 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 108 | #4 | 3 | 3'-5" | 246 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S7 | 24 | #5 | STR | 3'-8" | 92 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |
| S12 | 2 | #3 | STR | 1'-4" | 1 |
| REINFORCING STEEL | | | | | 1338 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

| REINFORCING STEEL | 8000 PSI CONCRETE | 0.6" Ø L. R. STRANDS |
|-------------------|-------------------|----------------------|
| LB. | C.Y. | No. |
| 1338 | 18.1 | 36 |

GIRDERS REQUIRED

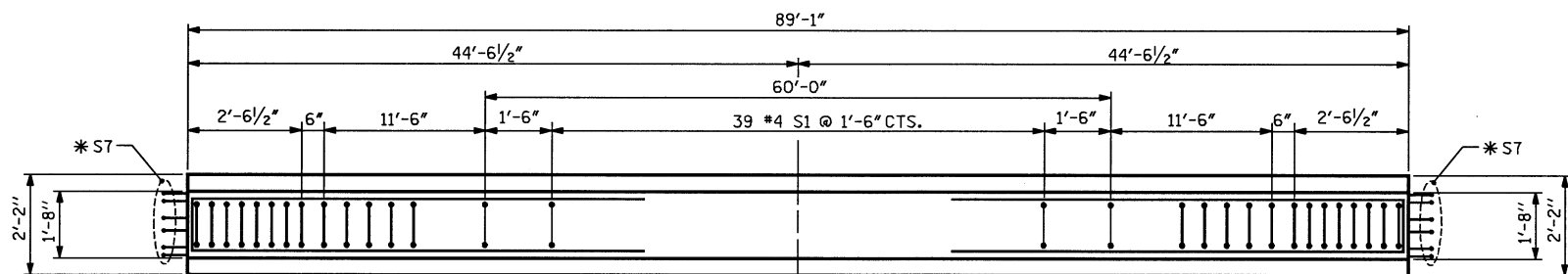
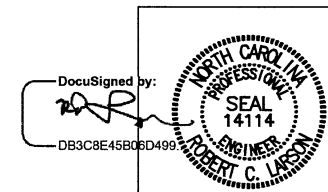
| NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------------|
| 4 | 89'-1" | 356'-4" |

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

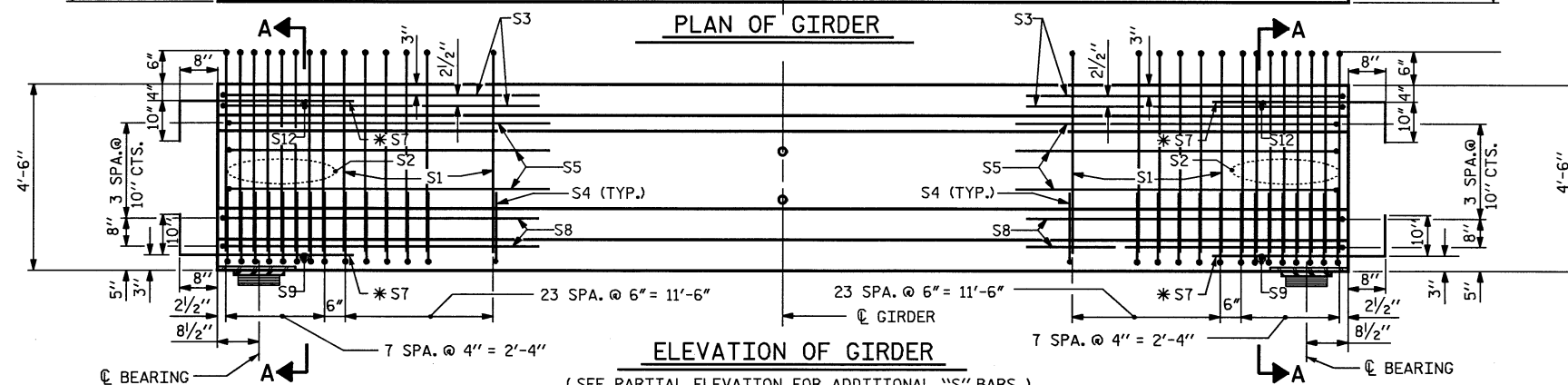
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER

STD. NO. PCG3 LEFT LANE STR-#3

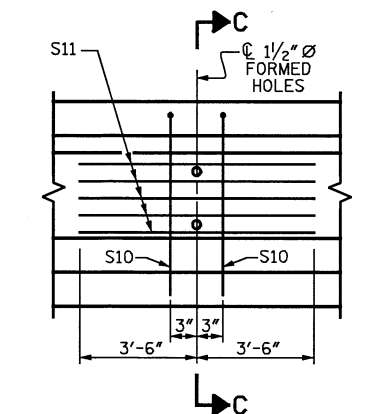


PLAN OF GIRDER



ELEVATION OF GIRDER

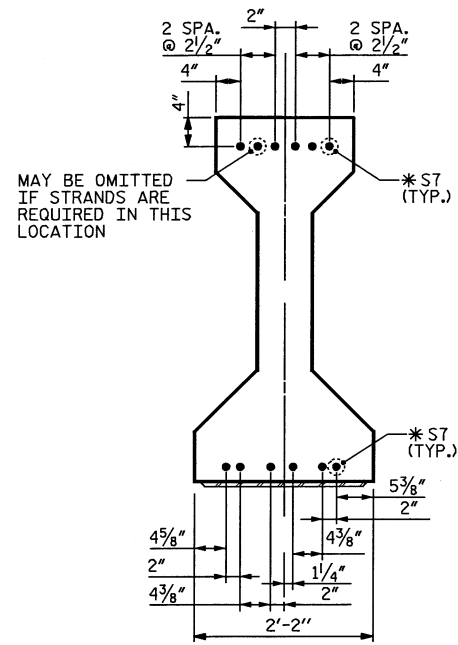
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



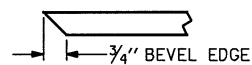
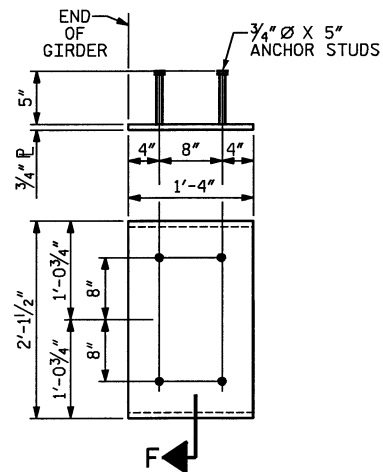
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-4

| | |
|----------------------------|------------------------|
| DESIGN ENGINEER OF RECORD: | DATE: 4/10/2015 |
| ASSEMBLED BY: R.A. PRUETT | DATE: 10/25/13 |
| CHECKED BY: R.C. LARSON | DATE: 12/13/13 |
| DRAWN BY: JMB 12/87 | REV. 8/16/99RR RWW/LES |
| CHECKED BY: ARB 12/87 | REV. 5/1/06R TLA/GM |
| | REV. 10/1/11 MAA/GM |

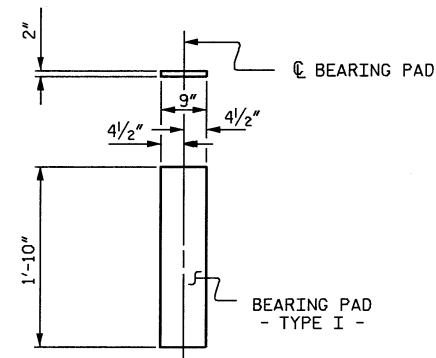


DETAIL "A"
(FOR AASHTO TYPE IV GIRDERS)



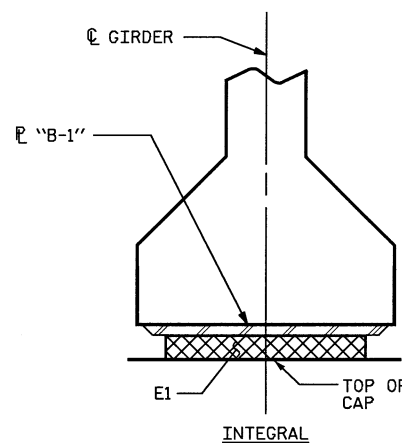
SECTION "F"
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)



E1 (8 REQ'D)

SECTION "E"



PLAIN ELASTOMERIC BEARING DETAIL

TYPE I

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

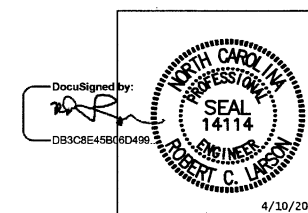
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS
STD. NO. PCG9 LEFT LANE STR-#3

| | |
|---------------------------|------------------------|
| DESIGNED BY: | DATE: 4/10/2015 |
| ASSEMBLED BY: R.A. PRUETT | DATE: 10/25/13 |
| CHECKED BY: R.C. LARSON | DATE: 12/13/13 |
| DRAWN BY: ELR 11/91 | REV. 7/10/D1RR LES/RDR |
| CHECKED BY: GRP 11/91 | REV. 5/1/06 TLA/GM |
| | REV. 10/1/11 MAA/GM |

| | | | | | | |
|---|-----|-----------|-----|-----|-------|------------------------|
| KCI Associates of North Carolina, P.A. DWG. REF. NO. 10 OF 23 | | REVISIONS | | | | SHEET NO. S03-10 |
| NO. | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS S03-23 |
| 1 | | | 3 | | | |
| 2 | | | 4 | | | |

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LOAD FACTORS:

| | | | |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ_{DC} | γ_{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING (#) | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | | |
|--------------------|-----------------------------------|----------------------|-----------------------------|-----------------------------|---------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------------------------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|--|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | |
| DESIGN LOAD RATING | HL-93 (INVENTORY) | N/A | ① | 1.02 | -- | 1.75 | 0.917 | 1.47 | 1 | EXT. | 43.8 | 1.115 | 1.11 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.02 | 1 | INT. | 43.8 | | |
| | HL-93 (OPERATING) | N/A | | 1.48 | -- | 1.35 | 0.917 | 1.90 | 1 | EXT. | 43.8 | 1.115 | 1.48 | 1 | INT. | 17.1 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20 (INVENTORY) | 36.000 | ② | 1.39 | 50.0 | 1.75 | 0.917 | 1.99 | 1 | EXT. | 43.8 | 1.115 | 1.45 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.39 | 1 | INT. | 43.8 | | |
| | HS-20 (OPERATING) | 36.000 | | 1.92 | 69.1 | 1.35 | 0.917 | 2.58 | 1 | EXT. | 43.8 | 1.115 | 1.92 | 1 | INT. | 17.1 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 3.23 | 43.6 | 1.40 | 0.917 | 5.80 | 1 | EXT. | 43.8 | 1.115 | 4.61 | 1 | INT. | 17.1 | 0.80 | 0.917 | 3.23 | 1 | INT. | 43.8 | |
| | | SNGARBS2 | 20.000 | | 2.36 | 47.2 | 1.40 | 0.917 | 4.24 | 1 | EXT. | 43.8 | 1.115 | 3.23 | 1 | INT. | 17.1 | 0.80 | 0.917 | 2.36 | 1 | INT. | 43.8 | |
| | | SNAGRIS2 | 22.000 | | 2.22 | 48.8 | 1.40 | 0.917 | 3.98 | 1 | EXT. | 43.8 | 1.115 | 2.98 | 1 | INT. | 17.1 | 0.80 | 0.917 | 2.22 | 1 | INT. | 43.8 | |
| | | SNCOTTS3 | 27.250 | | 1.61 | 43.8 | 1.40 | 0.917 | 2.88 | 1 | EXT. | 43.8 | 1.115 | 2.23 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.61 | 1 | INT. | 43.8 | |
| | | SNAGRS4 | 34.925 | | 1.33 | 46.4 | 1.40 | 0.917 | 2.38 | 1 | EXT. | 43.8 | 1.115 | 1.82 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.33 | 1 | INT. | 43.8 | |
| | | SNS5A | 35.550 | | 1.30 | 46.2 | 1.40 | 0.917 | 2.33 | 1 | EXT. | 43.8 | 1.115 | 1.84 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.30 | 1 | INT. | 43.8 | |
| | | SNS6A | 39.950 | | 1.18 | 47.1 | 1.40 | 0.917 | 2.12 | 1 | EXT. | 43.8 | 1.115 | 1.67 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.18 | 1 | INT. | 43.8 | |
| | | SNS7B | 42.000 | | 1.13 | 47.4 | 1.40 | 0.917 | 2.02 | 1 | EXT. | 43.8 | 1.115 | 1.63 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.13 | 1 | INT. | 43.8 | |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.44 | 47.5 | 1.40 | 0.917 | 2.59 | 1 | EXT. | 43.8 | 1.115 | 2.00 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.44 | 1 | INT. | 43.8 | |
| | | TNT4A | 33.075 | | 1.45 | 47.9 | 1.40 | 0.917 | 2.59 | 1 | EXT. | 43.8 | 1.115 | 1.96 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.45 | 1 | INT. | 43.8 | |
| | | TNT6A | 41.600 | | 1.18 | 49.0 | 1.40 | 0.917 | 2.11 | 1 | EXT. | 43.8 | 1.115 | 1.74 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.18 | 1 | INT. | 43.8 | |
| | | TNT7A | 42.000 | | 1.18 | 49.5 | 1.40 | 0.917 | 2.11 | 1 | EXT. | 43.8 | 1.115 | 1.70 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.18 | 1 | INT. | 43.8 | |
| | | TNT7B | 42.000 | | 1.21 | 50.8 | 1.40 | 0.917 | 2.17 | 1 | EXT. | 43.8 | 1.115 | 1.59 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.21 | 1 | INT. | 43.8 | |
| | | TNAGRIT4 | 43.000 | | 1.16 | 49.8 | 1.40 | 0.917 | 2.08 | 1 | EXT. | 43.8 | 1.115 | 1.54 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.16 | 1 | INT. | 43.8 | |
| | | TNAGT5A | 45.000 | | 1.09 | 49.0 | 1.40 | 0.917 | 1.96 | 1 | EXT. | 43.8 | 1.115 | 1.52 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.09 | 1 | INT. | 43.8 | |
| TNAGT5B | 45.000 | ③ | 1.08 | 48.6 | 1.40 | 0.917 | 1.94 | 1 | EXT. | 43.8 | 1.115 | 1.46 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.08 | 1 | INT. | 43.8 | | | |

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

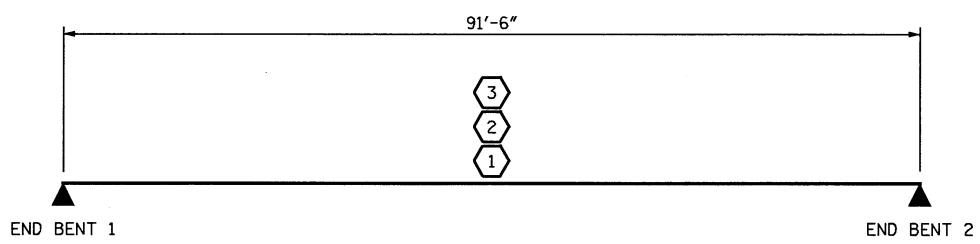
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

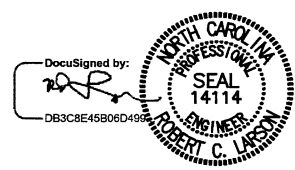
INT. - INTERIOR GIRDER
EXT. - EXTERIOR GIRDER



LRFR SUMMARY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 4 OF 4



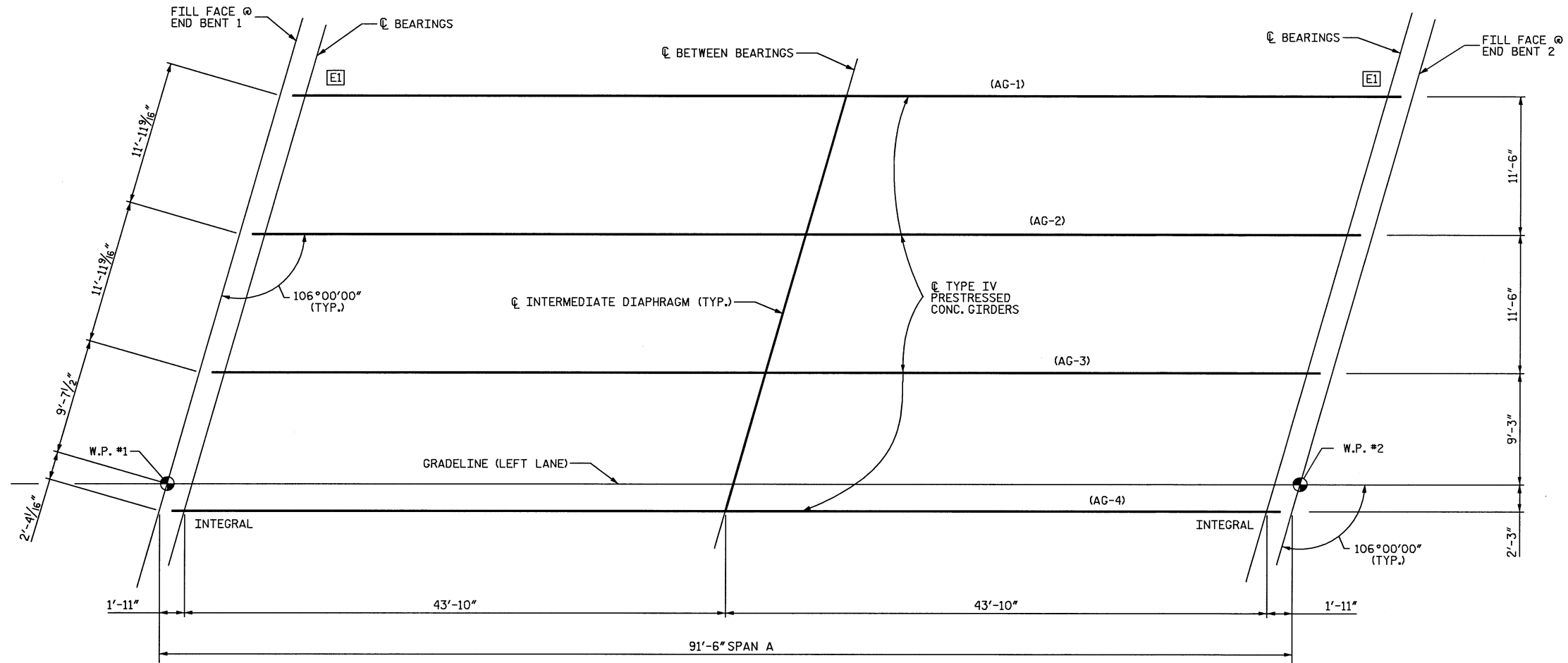
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)**

STD. NO. LRFR1 LEFT LANE STR-#3

| | | |
|----------------------------|----------------|-----------|
| DESIGN ENGINEER OF RECORD: | DATE: | 4/10/2015 |
| DRAWN BY: E. C. DECOLA | DATE: | 03/02/14 |
| CHECKED BY: R. C. LARSON | DATE: | 03/07/14 |
| DRAWN BY: MAA 1/08 | REV. 11/2/08RR | MAA/GM |
| CHECKED BY: GM/DI 2/08 | REV. 10/1/11 | MAA/GM |

| | | | | | | |
|---|-----|-----------|-----|-----------|-------|--------------|
| KCI Associates of North Carolina, P.A. | | REVISIONS | | SHEET NO. | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: | 303-4 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 303-23 |
| DWG. REF. NO. 4 OF 23 | | | | | | |



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS

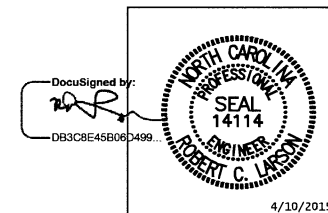
E1 INDICATES ELASTOMERIC BEARING TYPE
FOR INTERMEDIATE DIAPHRAGMS SEE STD. NO. PCG10

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | | |
|--|-----------------|------|-------|------|---------|---------|---------|---------|------|------|------|------|
| 0.6" Ø LOW RELAXATION STRANDS | SPAN A | | | | | | | | | | | |
| | GIRDERS 1 AND 4 | | | | | | | | | | | |
| | LOCATION | 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ | 0.00 | 0.09 | 0.15 | 0.20 | 0.22 | 0.22 | 0.22 | 0.20 | 0.15 | 0.09 | 0.00 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. | ↓ | 0.00 | 0.04 | 0.07 | 0.10 | 0.11 | 0.11 | 0.11 | 0.10 | 0.07 | 0.04 | 0.00 |
| FINAL CAMBER | ↑ | 0" | 5/16" | 1" | 1 1/16" | 1 1/16" | 1 1/16" | 1 1/16" | 1" | 5/8" | 0" | |

| 0.6" Ø LOW RELAXATION STRANDS | SPAN A | | | | | | | | | | | |
|---------------------------------------|-----------------|------|-------|------|------|---------|---------|---------|------|------|-------|------|
| | GIRDERS 2 AND 3 | | | | | | | | | | | |
| | LOCATION | 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ | 0.00 | 0.09 | 0.15 | 0.20 | 0.22 | 0.22 | 0.22 | 0.20 | 0.15 | 0.09 | 0.00 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. | ↓ | 0.00 | 0.04 | 0.08 | 0.11 | 0.13 | 0.13 | 0.13 | 0.11 | 0.08 | 0.04 | 0.00 |
| FINAL CAMBER | ↑ | 0" | 5/16" | 7/8" | 1" | 1 1/16" | 1 1/16" | 1 1/16" | 1" | 7/8" | 5/16" | 0" |

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
GIRDER LAYOUT**

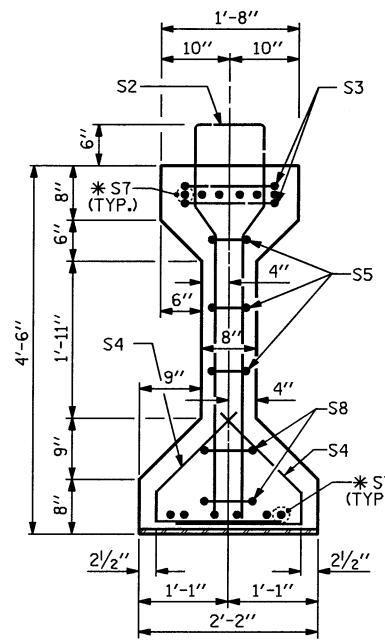
LEFT LANE STR-#3

DESIGN ENGINEER OF RECORD: _____ DATE: 4/10/2015
DRAWN BY: R.J. FLORY DATE: 7/23/13
CHECKED BY: R.C. LARSON DATE: 12/13/13

| REVISIONS | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----------|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

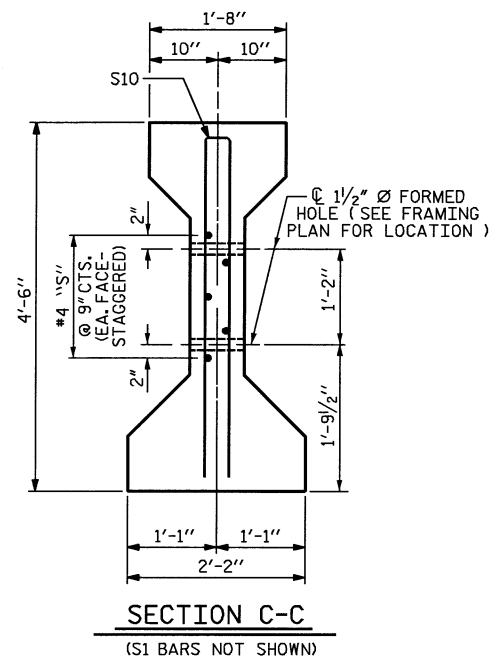
TOTAL SHEETS: 503-23

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 8 OF 23

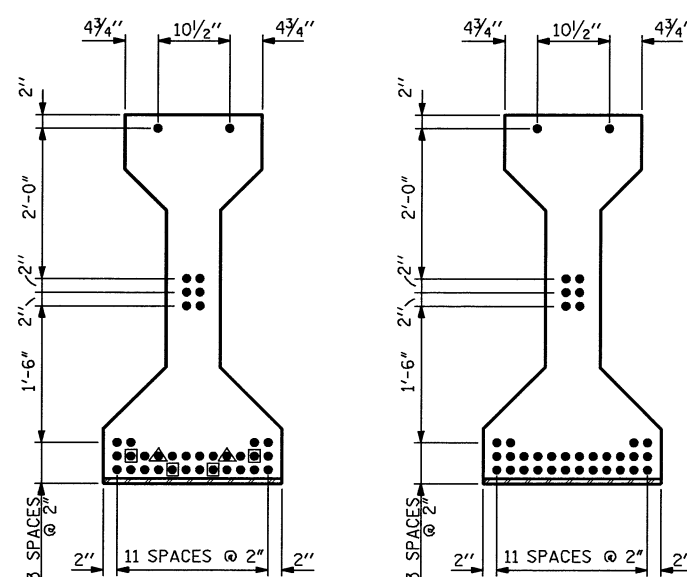


SECTION A-A

* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



SECTION C-C
(S1 BARS NOT SHOWN)



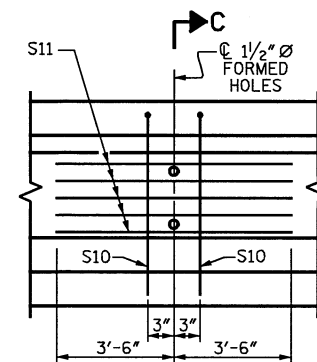
AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1-4

0.6" Ø L. R. GRADE 270 STRANDS

| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED STRENGTH (LBS. PER STRAND) |
|-------------------------|--|---------------------------------------|
| 0.217 | 58,600 | 43,950 |

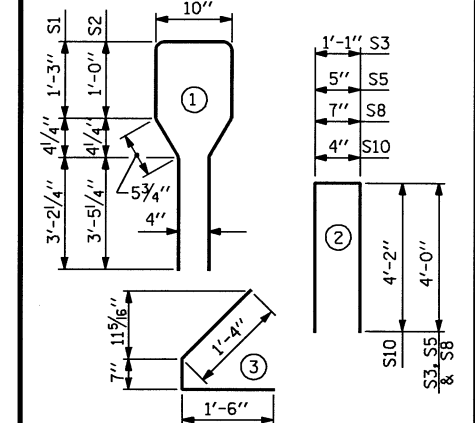
REINFORCING STEEL FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-------------------|--------|------|------|--------|--------|
| S1 | 87 | #4 | 1 | 10'-8" | 620 |
| S2 | 16 | #6 | 1 | 10'-8" | 256 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 108 | #4 | 3 | 3'-5" | 246 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S7 | 24 | #5 | STR | 3'-8" | 92 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |
| S12 | 2 | #3 | STR | 1'-4" | 1 |
| REINFORCING STEEL | | | | | 1338 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

| REINFORCING STEEL | 8000 PSI CONCRETE | 0.6" Ø L. R. STRANDS |
|-------------------|-------------------|----------------------|
| LB. | C.Y. | No. |
| 1338 | 18.1 | 36 |

GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------------|
| 4 | 89'-1" | 356'-4" |

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 1 OF 3

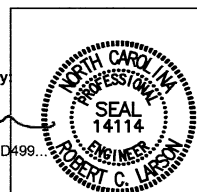
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER

STD. NO. PCG3 RIGHT LANE STR-#4

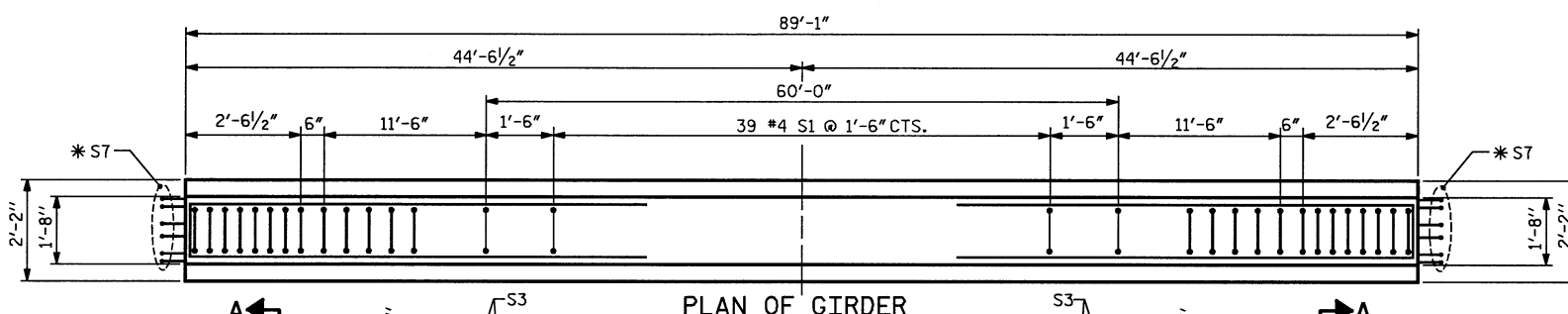
| REVISIONS | | SHEET NO. S04-9 |
|-----------|------|------------------------|
| NO. | DATE | |
| 1 | | TOTAL SHEETS S04-23 |
| 2 | | |

DocuSigned by

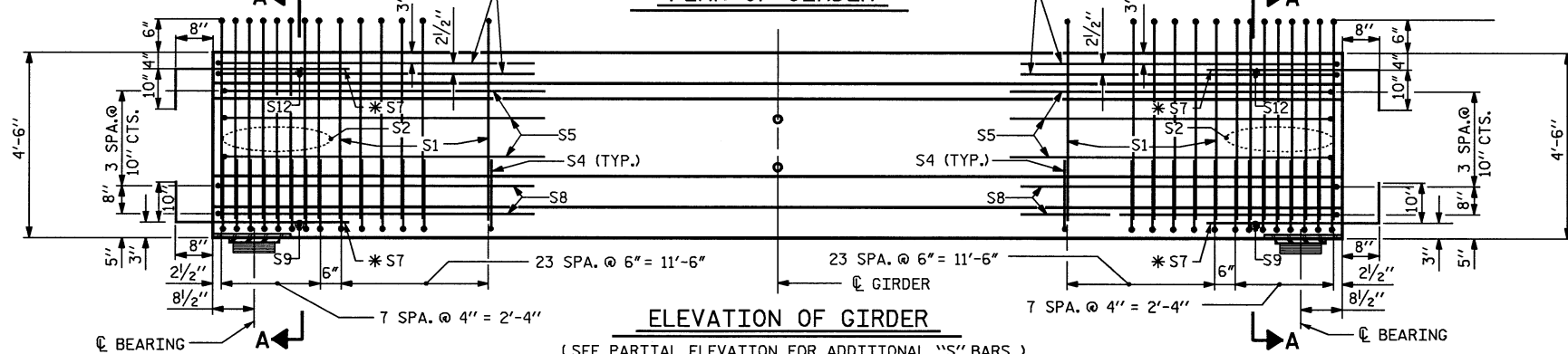
DB3C8E45B06D499...



KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 9 OF 23



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

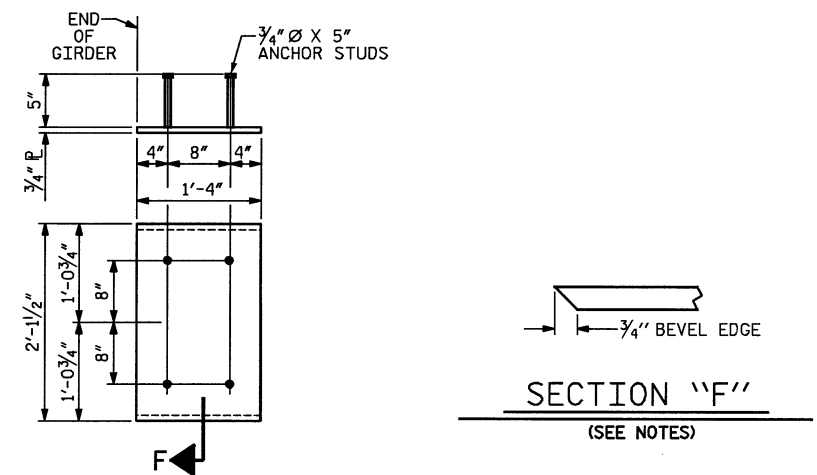
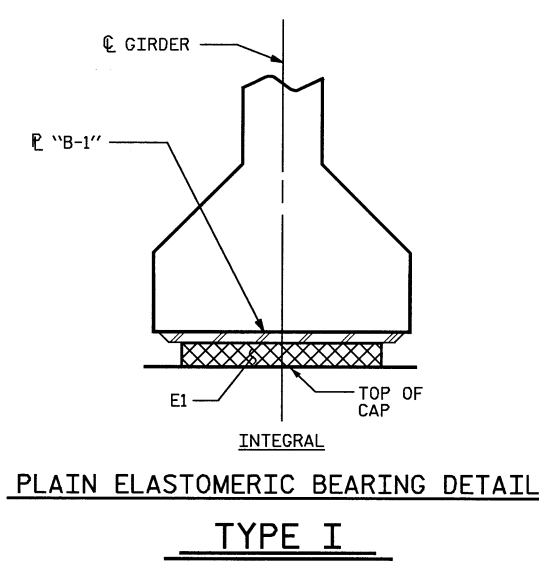
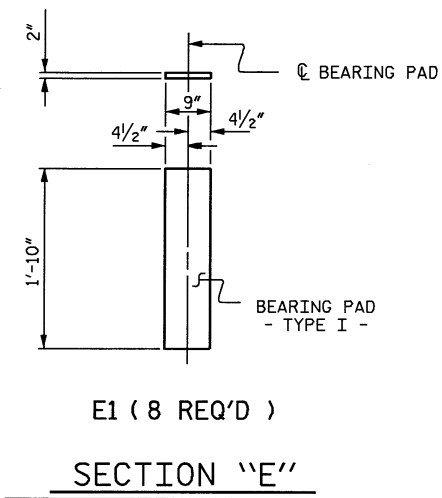
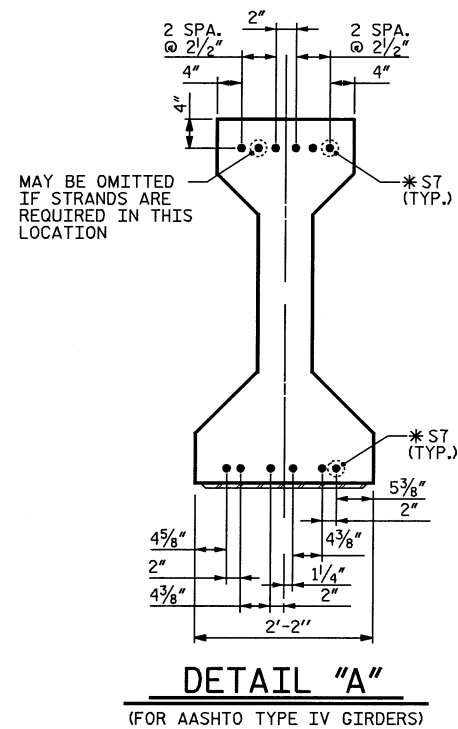
INTEGRAL

INTEGRAL

DESIGN ENGINEER OF RECORD: DATE: 4/10/2015

DRAWN BY: E. C. DECOLA DATE: 02/13/14
CHECKED BY: R. C. LARSON DATE: 02/18/14

DRAWN BY: JMB 12/87 REV. 8/16/99RR RWW/LES
CHECKED BY: ARB 12/87 REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

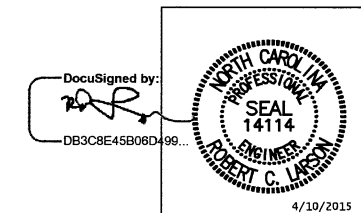
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS
RIGHT LANE STR-#4
STD. NO. PCG9

| | |
|----------------------------|------------------------|
| DESIGNED BY: | DATE: 4/10/2015 |
| DESIGN ENGINEER OF RECORD: | DATE: 4/10/2015 |
| DRAWN BY: E. C. DECOLA | DATE: 02/13/14 |
| CHECKED BY: R. C. LARSON | DATE: 02/18/14 |
| DRAWN BY: ELR 11/91 | REV. 7/10/01RR LES/RDR |
| CHECKED BY: GRP 11/91 | REV. 5/1/06 TLA/GM |
| | REV. 10/1/11 MAA/GM |

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 10 OF 23

| REVISIONS | | SHEET NO. 504-10 |
|-----------|------|------------------------|
| NO. | DATE | |
| 1 | | TOTAL SHEETS 504-23 |
| 2 | | |

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LOAD FACTORS:

| | | | |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ_{DC} | γ_{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING (#) | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | |
|--------------------|-----------------------------------|----------------------|-----------------------------|-----------------------------|---------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------------------------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) |
| DESIGN LOAD RATING | HL-93 (INVENTORY) | N/A | ① | 1.02 | -- | 1.75 | 0.917 | 1.47 | 1 | EXT. | 43.8 | 1.115 | 1.11 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.02 | 1 | INT. | 43.8 | |
| | HL-93 (OPERATING) | N/A | | 1.48 | -- | 1.35 | 0.917 | 1.90 | 1 | EXT. | 43.8 | 1.115 | 1.48 | 1 | INT. | 17.1 | N/A | -- | -- | -- | -- | -- | |
| | HS-20 (INVENTORY) | 36.000 | ② | 1.39 | 50.0 | 1.75 | 0.917 | 1.99 | 1 | EXT. | 43.8 | 1.115 | 1.45 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.39 | 1 | INT. | 43.8 | |
| | HS-20 (OPERATING) | 36.000 | | 1.92 | 69.1 | 1.35 | 0.917 | 2.58 | 1 | EXT. | 43.8 | 1.115 | 1.92 | 1 | INT. | 17.1 | N/A | -- | -- | -- | -- | -- | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 3.23 | 43.6 | 1.40 | 0.917 | 5.80 | 1 | EXT. | 43.8 | 1.115 | 4.61 | 1 | INT. | 17.1 | 0.80 | 0.917 | 3.23 | 1 | INT. | 43.8 |
| | | SNGARBS2 | 20.000 | | 2.36 | 47.2 | 1.40 | 0.917 | 4.24 | 1 | EXT. | 43.8 | 1.115 | 3.23 | 1 | INT. | 17.1 | 0.80 | 0.917 | 2.36 | 1 | INT. | 43.8 |
| | | SNAGRIS2 | 22.000 | | 2.22 | 48.8 | 1.40 | 0.917 | 3.98 | 1 | EXT. | 43.8 | 1.115 | 2.98 | 1 | INT. | 17.1 | 0.80 | 0.917 | 2.22 | 1 | INT. | 43.8 |
| | | SNCOTTS3 | 27.250 | | 1.61 | 43.8 | 1.40 | 0.917 | 2.88 | 1 | EXT. | 43.8 | 1.115 | 2.23 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.61 | 1 | INT. | 43.8 |
| | | SNAGRS4 | 34.925 | | 1.33 | 46.4 | 1.40 | 0.917 | 2.38 | 1 | EXT. | 43.8 | 1.115 | 1.82 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.33 | 1 | INT. | 43.8 |
| | | SNS5A | 35.550 | | 1.30 | 46.2 | 1.40 | 0.917 | 2.33 | 1 | EXT. | 43.8 | 1.115 | 1.84 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.30 | 1 | INT. | 43.8 |
| | | SNS6A | 39.950 | | 1.18 | 47.1 | 1.40 | 0.917 | 2.12 | 1 | EXT. | 43.8 | 1.115 | 1.67 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.18 | 1 | INT. | 43.8 |
| | | SNS7B | 42.000 | | 1.13 | 47.4 | 1.40 | 0.917 | 2.02 | 1 | EXT. | 43.8 | 1.115 | 1.63 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.13 | 1 | INT. | 43.8 |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.44 | 47.5 | 1.40 | 0.917 | 2.59 | 1 | EXT. | 43.8 | 1.115 | 2.00 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.44 | 1 | INT. | 43.8 |
| | | TNT4A | 33.075 | | 1.45 | 47.9 | 1.40 | 0.917 | 2.59 | 1 | EXT. | 43.8 | 1.115 | 1.96 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.45 | 1 | INT. | 43.8 |
| | | TNT6A | 41.600 | | 1.18 | 49.0 | 1.40 | 0.917 | 2.11 | 1 | EXT. | 43.8 | 1.115 | 1.74 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.18 | 1 | INT. | 43.8 |
| | | TNT7A | 42.000 | | 1.18 | 49.5 | 1.40 | 0.917 | 2.11 | 1 | EXT. | 43.8 | 1.115 | 1.70 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.18 | 1 | INT. | 43.8 |
| | | TNT7B | 42.000 | | 1.21 | 50.8 | 1.40 | 0.917 | 2.17 | 1 | EXT. | 43.8 | 1.115 | 1.59 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.21 | 1 | INT. | 43.8 |
| | | TNAGRIT4 | 43.000 | | 1.16 | 49.8 | 1.40 | 0.917 | 2.08 | 1 | EXT. | 43.8 | 1.115 | 1.54 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.16 | 1 | INT. | 43.8 |
| | | TNAGT5A | 45.000 | | 1.09 | 49.0 | 1.40 | 0.917 | 1.96 | 1 | EXT. | 43.8 | 1.115 | 1.52 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.09 | 1 | INT. | 43.8 |
| | | TNAGT5B | 45.000 | ③ | 1.08 | 48.6 | 1.40 | 0.917 | 1.94 | 1 | EXT. | 43.8 | 1.115 | 1.46 | 1 | INT. | 17.1 | 0.80 | 0.917 | 1.08 | 1 | INT. | 43.8 |

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

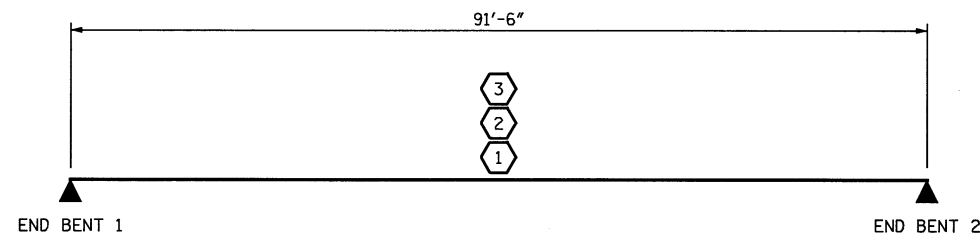
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

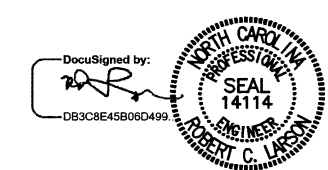
INT. - INTERIOR GIRDER
EXT. - EXTERIOR GIRDER



LRFR SUMMARY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)**

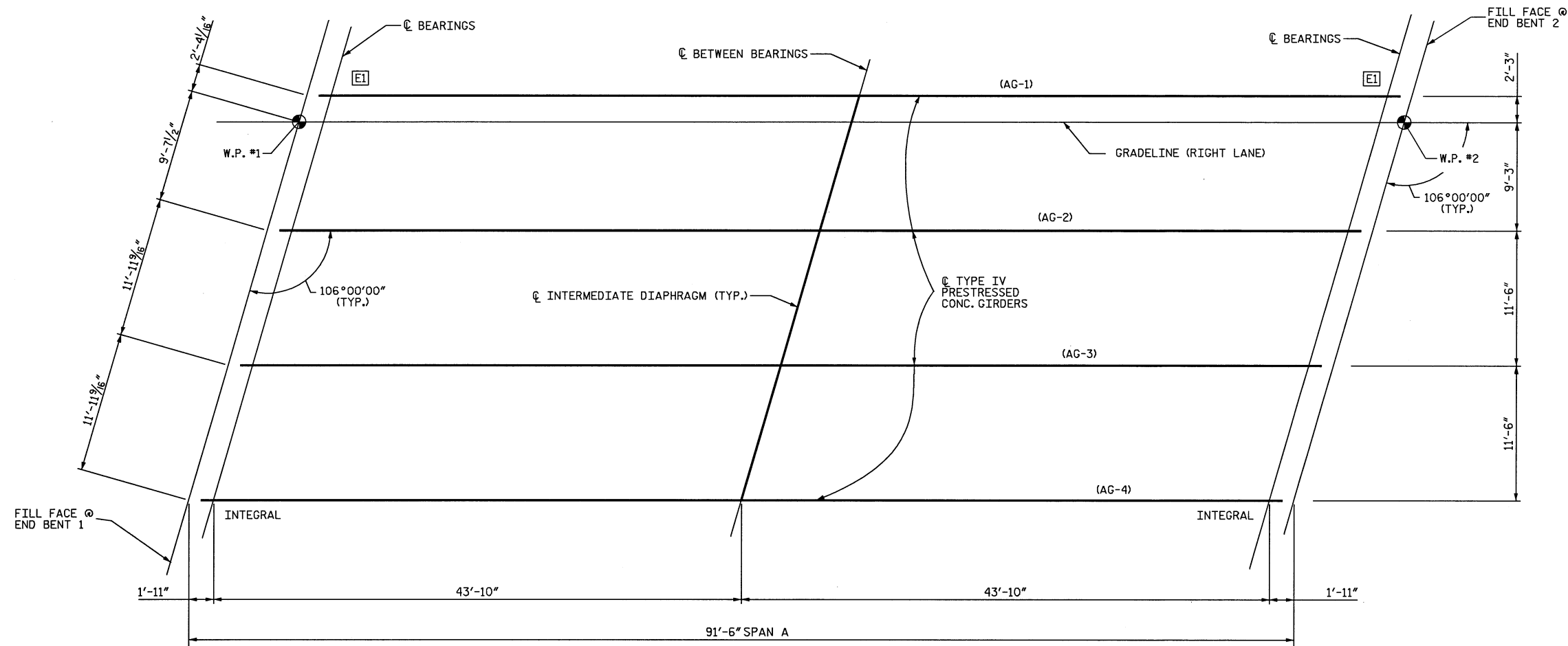
STD. NO. LRFR1 RIGHT LANE STR-#4

| | |
|---|---|
| DESIGN ENGINEER OF RECORD: <u>E. C. DECOLA</u> DATE: <u>4/10/2015</u> | |
| DRAWN BY: <u>E. C. DECOLA</u> DATE: <u>03/02/14</u> | CHECKED BY: <u>R. C. LARSON</u> DATE: <u>03/07/14</u> |
| DRAWN BY: <u>MAA</u> 1/08 | CHECKED BY: <u>GM/DI</u> 2/08 |
| REV. 11/2/08RR | REV. 10/1/11 |
| MAA/GM | MAA/GM |

| REVISIONS | | SHEET NO. | |
|-----------|------|-----------|------|
| NO. | DATE | NO. | DATE |
| 1 | | 3 | |
| 2 | | 4 | |

TOTAL SHEETS: S04-23

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 4 OF 23



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS

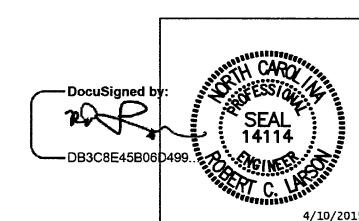
E1 INDICATES ELASTOMERIC BEARING TYPE
FOR INTERMEDIATE DIAPHRAGMS SEE STD PCC10.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|---|-----------------|------|------|---------|--------|--------|--------|--------|------|------|------|
| 0.6" Ø LOW RELAXATION STRANDS | SPAN A | | | | | | | | | | |
| | GIRDERS 1 AND 4 | | | | | | | | | | |
| LOCATION | 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
| CAMBER (GIRDER ALONE IN PLACE) ↑ | 0.00 | 0.09 | 0.15 | 0.20 | 0.22 | 0.22 | 0.22 | 0.20 | 0.15 | 0.09 | 0.00 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.00 | 0.04 | 0.07 | 0.10 | 0.11 | 0.11 | 0.11 | 0.10 | 0.07 | 0.04 | 0.00 |
| FINAL CAMBER ↑ | 0" | 5/8" | 1" | 1 1/16" | 1 1/8" | 1 1/8" | 1 1/8" | 1 1/8" | 1" | 5/8" | 0" |

| 0.6" Ø LOW RELAXATION STRANDS | SPAN A | | | | | | | | | | |
|---|-----------------|-------|------|------|---------|---------|---------|------|------|-------|------|
| | GIRDERS 2 AND 3 | | | | | | | | | | |
| LOCATION | 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
| CAMBER (GIRDER ALONE IN PLACE) ↑ | 0.00 | 0.09 | 0.15 | 0.20 | 0.22 | 0.22 | 0.22 | 0.20 | 0.15 | 0.09 | 0.00 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.00 | 0.04 | 0.08 | 0.11 | 0.13 | 0.13 | 0.13 | 0.11 | 0.08 | 0.04 | 0.00 |
| FINAL CAMBER ↑ | 0" | 3/16" | 1/8" | 1" | 1 1/16" | 1 1/16" | 1 1/16" | 1" | 7/8" | 3/16" | 0" |

* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
GIRDER LAYOUT**

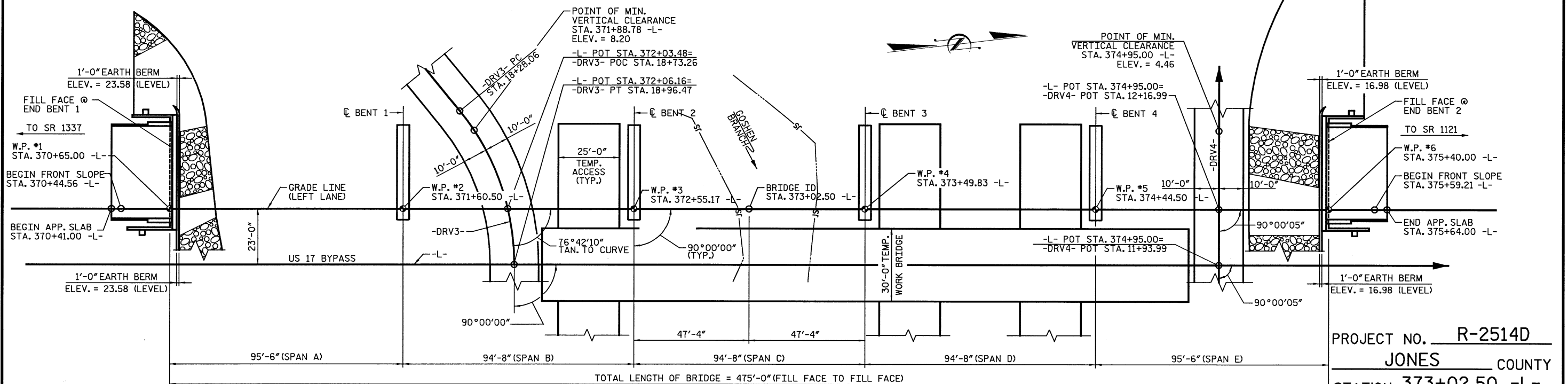
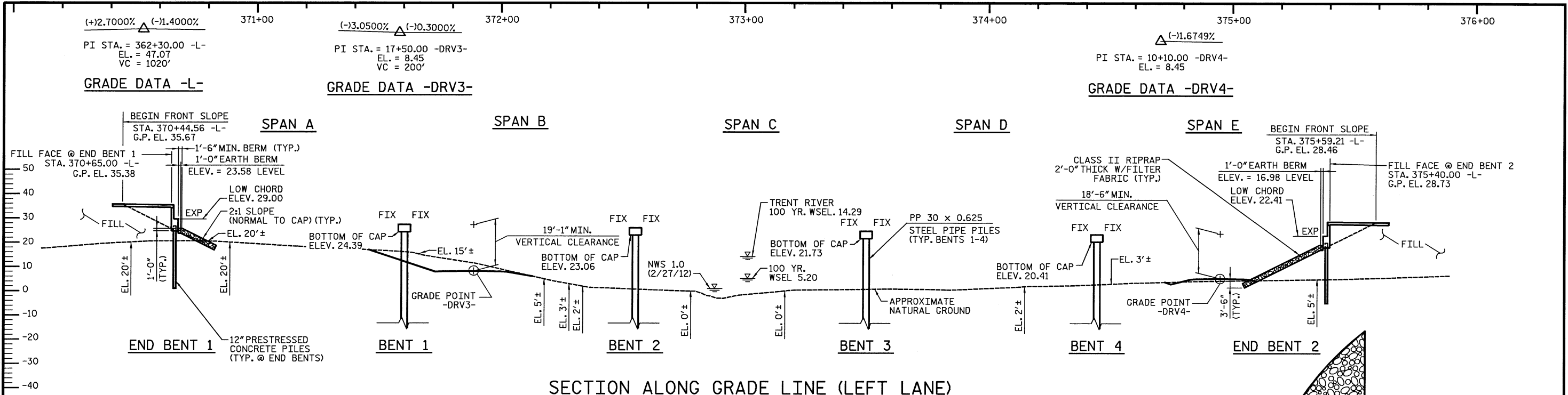
RIGHT LANE STR-#4

DESIGNED BY: DATE: 4/10/2015
DRAWN BY: E. C. DECOLA DATE: 02/13/14
CHECKED BY: R. C. LARSON DATE: 02/18/14

| REVISIONS | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----------|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

SHEET NO. S04-8
TOTAL SHEETS: S04-23

KCI Associates of North Carolina, P.A.
DWG. REF. NO. 8 OF 23



DESIGN ENGINEER OF RECORD: DATE: 4/12/2015

DRAWN BY: D.R. CLAYTON DATE: 07/29/13

CHECKED BY: R.C. LARSON DATE: 04/03/14

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 4 BRIDGE NO. 99

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

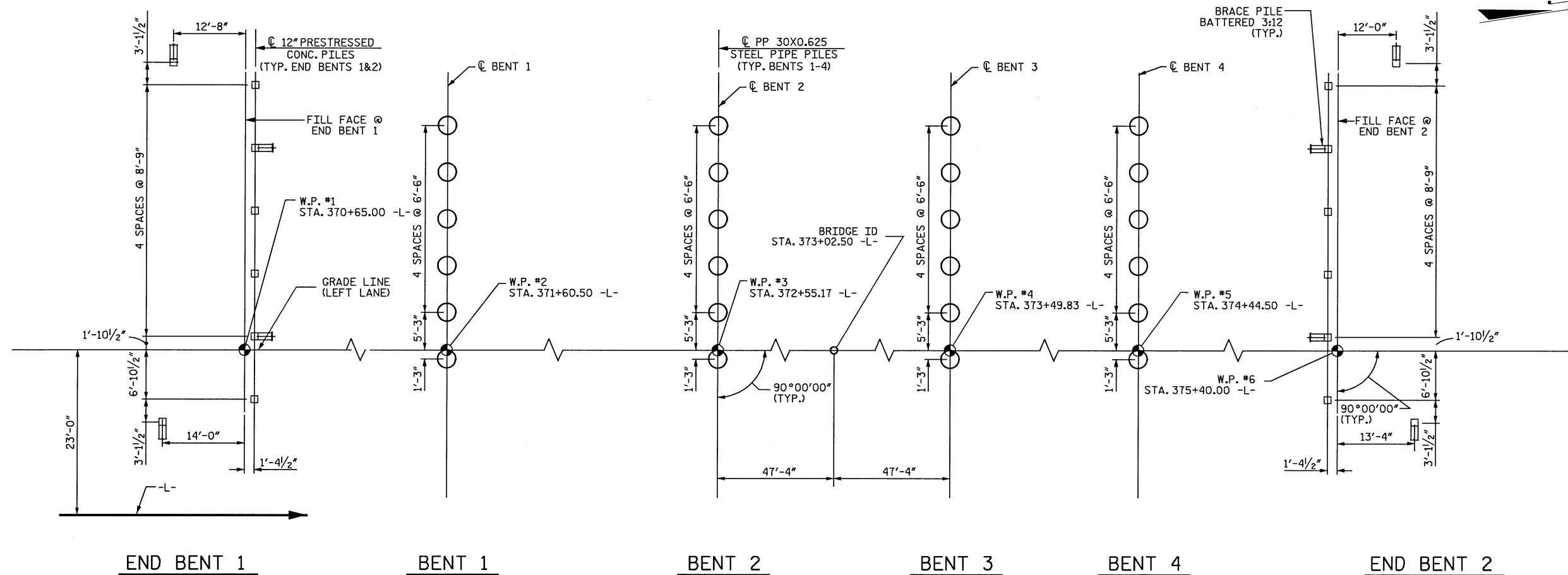
DocuSigned by: Robert C. Larson
 DB3C8E45B08D499

4/12/2015

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 LEFT LANE STR-#5

| REVISIONS | | SHEET NO. | |
|-----------|------|-----------|------|
| NO. | DATE | NO. | DATE |
| 1 | | 3 | |
| 2 | | 4 | |

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 1 OF 34



FOUNDATION LAYOUT PLAN

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

PILES AT BENT 1 THROUGH BENT 4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 225 TONS PER PILE.

DRIVE PILES AT BENT 1 THROUGH BENT 4 TO A REQUIRED DRIVING RESISTANCE OF 305 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL PILES AT BENT 1, BENT 2, BENT 3 AND BENT 4 TO A TIP ELEVATION NO HIGHER THAN -30 FT, -45 FT, -45 FT AND -35 FT, RESPECTIVELY.

STEEL PIPE PILE CUTTING SHOES ARE REQUIRED FOR STEEL PIPE PILES AT BENT 1 THROUGH BENT 4. USE "INSIDE FIT" PIPE PILE CUTTING SHOES. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATIONS FOR BENT 2, BENT 3 AND BENT 4 ARE ELEVATION -11 FT, -11 FT AND -3 FT, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 82,000 FT-LBS TO 152,500 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT 1 THROUGH BENT 4. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST 12" PRESTRESSED CONCRETE PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1 OR END BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST 30" DIA. PRODUCTION STEEL PIPE PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

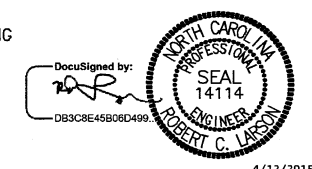
IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT 1 THROUGH BENT 4 TO NO LOWER THAN ELEVATION -30 FT, -45 FT, -45 FT AND -35 FT, RESPECTIVELY, WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 30". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR MAY PREDRILL THROUGH THE CENTER OF THE 30" DIA. STEEL PIPE PILES WITH CUTTING SHOES TO ELEVATIONS AS NOTED IN THE PLANS AT BENT 1 THROUGH BENT 4.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 4

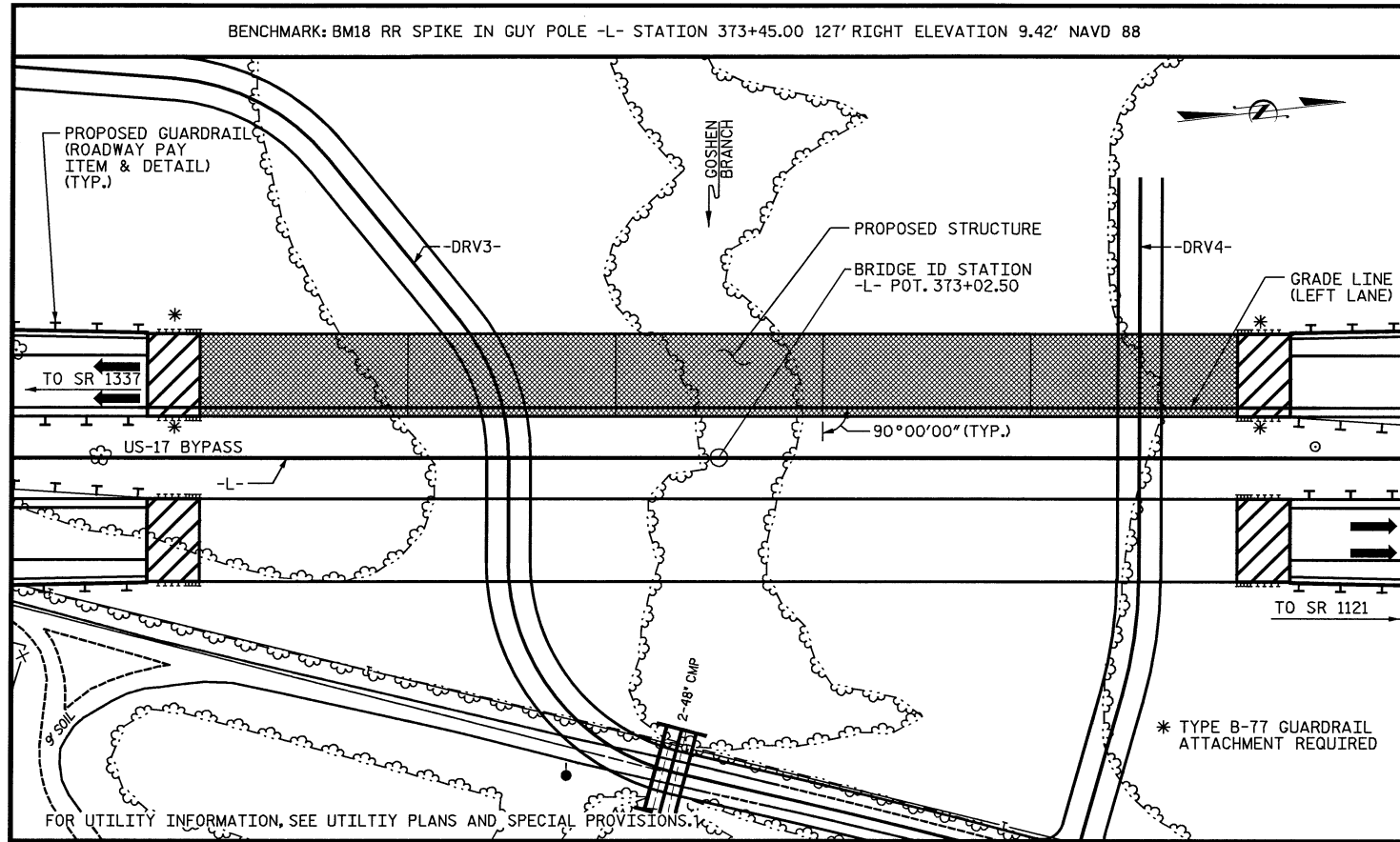
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 LEFT LANE STR-#5



DESIGNED BY: [Signature]
 DESIGN ENGINEER OF RECORD: _____ DATE: 4/12/2015
 DRAWN BY: R.J. FLORY DATE: 3/17/14
 CHECKED BY: R.C. LARSON DATE: 4/01/14

| REVISIONS | | | | | | SHEET NO. S05-2 |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS S05-34 |
| 2 | | | 4 | | | |

DWG. REF. NO. 2 OF 34



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALIZATION).
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION -7.6 FT. BENT NO. 3 IS ELEVATION -7.6 FT. BENT NO. 4 IS ELEVATION 1.8 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- FOR INTERIOR BENTS 1-4 ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

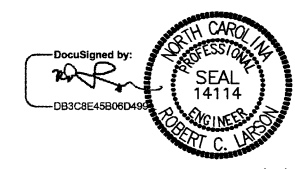
TOTAL BILL OF MATERIAL

| | CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMP ACCESS AT STA. 373+02.50 -L- | PDA TESTING | REINFORCED CONCRETE DECK SLAB | GROOVING BRIDGE FLOORS | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | 54" PRESTRESSED CONCRETE GIRDERS | 12" PRESTRESSED CONCRETE PILES | PP 30X0.625 GALVANIZED STEEL PILES | STEEL PILE POINTS | PREDRILLING FOR PILES | PILE REDRIVES | CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | EXPANSION JOINT SEALS | | | |
|----------------|--|-------------|-------------------------------|------------------------|------------------|-----------------------|-------------------|----------------------------------|--------------------------------|------------------------------------|-------------------|-----------------------|---------------|-----------------------|--------------------------------|-------------------------|----------------------|-----------------------|----------|----------|----------|
| | LUMP SUM | EA | SQ.FT. | SQ.FT. | CU.YDS. | LUMP SUM | LBS. | NO. | LIN.FT. | NO. | LIN.FT. | EA | LIN.FT. | EA | LIN.FT. | TON | SY | LUMP SUM | LUMP SUM | | |
| SUPERSTRUCTURE | | | 19505 | 18178 | | LUMP SUM | | 20 | 1876.0 | | | | | 986.0 | | | | LUMP SUM | LUMP SUM | | |
| END BENT 1 | | | | | 46.7 | | 5516 | | 8 | 240 | | | 3 | | 305 | 340 | | | | | |
| BENT 1 | | | | | 23.1 | | 3696 | | | 6 | 510 | 6 | 3 | | | | | | | | |
| BENT 2 | | | | | 23.1 | | 3696 | | | 6 | 510 | 6 | 3 | | | | | | | | |
| BENT 3 | | | | | 23.1 | | 3696 | | | 6 | 510 | 6 | 3 | | | | | | | | |
| BENT 4 | | | | | 23.1 | | 3696 | | | 6 | 510 | 6 | 3 | | | | | | | | |
| END BENT 2 | | | | | 45.2 | | 5421 | | 8 | 480 | | | 3 | | 630 | 700 | | | | | |
| TOTAL | LUMP SUM | 3 | 19505 | 18178 | 184.3 | LUMP SUM | 25,721 | 20 | 1876.0 | 16 | 720 | 24 | 2040 | 24 | 1010 | 18 | 986.0 | 935 | 1040 | LUMP SUM | LUMP SUM |

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 3 OF 4

DESIGNED BY: DATE: 04/11/14
 DESIGN ENGINEER OF RECORD: DATE: 4/12/2015
 DRAWN BY: E.C. DECOLA DATE: 02/03/14
 CHECKED BY: R.C. LARSON DATE: 04/11/14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 LEFT LANE STR-#5

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | S05-3 |
| 2 | | | 4 | | | TOTAL SHEETS S05-34 |

DESIGNED BY: PLANNING & ECOLOGISTS LEONARD KAMMEN C-0704
KCI Associates
 of North Carolina, P.A.
 DATE: 02/03/14
 DWG. REF. NO. 3 OF 34

LOAD FACTORS:

| | | | |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ_{DC} | γ_{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

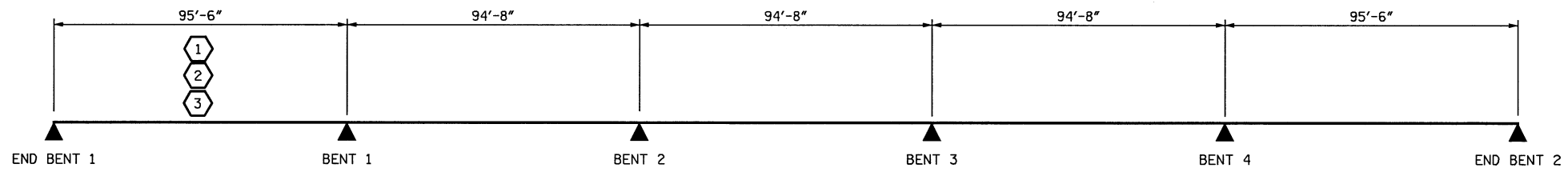
③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER

| LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS | | | | | | | | | | | | | | | | | | | | | | | |
|---|----------------------------------|----------------------|---------------------------|-----------------------------|---------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------------------------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|
| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | |
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) |
| DESIGN LOAD RATING | HL-93 (INVENTORY) | N/A | ① | 1.02 | -- | 1.75 | 0.917 | 1.68 | 1 | E | 36.8 | 1.066 | 1.20 | 1 | I | 87.6 | 0.80 | 0.858 | 1.02 | 1 | I | 46.2 | |
| | HL-93 (OPERATING) | N/A | | 1.53 | -- | 1.35 | 0.917 | 2.18 | 1 | E | 36.8 | 1.066 | 1.53 | 1 | I | 87.6 | N/A | -- | -- | -- | -- | -- | |
| | HS-20 (INVENTORY) | 36.000 | ② | 1.41 | 50.8 | 1.75 | 0.858 | 2.31 | 1 | E | 36.8 | 1.066 | 1.49 | 1 | I | 87.6 | 0.80 | 0.858 | 1.41 | 1 | I | 46.2 | |
| | HS-20 (OPERATING) | 36.000 | | 2.20 | 79.2 | 1.35 | 0.858 | 2.99 | 1 | E | 36.8 | 1.066 | 2.20 | 1 | I | 55.5 | N/A | -- | -- | -- | -- | -- | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | | 3.26 | 44.0 | 1.40 | 0.917 | 6.69 | 1 | E | 36.8 | 1.066 | 5.30 | 1 | I | 55.5 | 0.80 | 0.858 | 3.26 | 1 | I | 46.2 | |
| | | SNGARBS2 | 20.000 | | 2.38 | 47.6 | 1.40 | 0.917 | 4.88 | 1 | E | 36.8 | 1.066 | 3.70 | 1 | I | 55.5 | 0.80 | 0.858 | 2.38 | 1 | I | 46.2 |
| | | SNAGRIS2 | 22.000 | | 2.24 | 49.2 | 1.40 | 0.917 | 4.58 | 1 | E | 36.8 | 1.066 | 3.41 | 1 | I | 55.5 | 0.80 | 0.858 | 2.24 | 1 | I | 46.2 |
| | | SNCOTTS3 | 27.250 | | 1.62 | 44.1 | 1.40 | 0.917 | 3.34 | 1 | E | 36.8 | 1.066 | 2.57 | 1 | I | 55.5 | 0.80 | 0.858 | 1.62 | 1 | I | 46.2 |
| | | SNAGGRS4 | 34.925 | | 1.34 | 46.7 | 1.40 | 0.917 | 2.76 | 1 | E | 36.8 | 1.066 | 2.09 | 1 | I | 55.5 | 0.80 | 0.858 | 1.34 | 1 | I | 46.2 |
| | | SNS5A | 35.550 | | 1.32 | 46.9 | 1.40 | 0.917 | 2.71 | 1 | E | 36.8 | 1.066 | 1.85 | 1 | I | 87.6 | 0.80 | 0.858 | 1.32 | 1 | I | 46.2 |
| | | SNS6A | 39.950 | | 1.21 | 48.3 | 1.40 | 0.917 | 2.47 | 1 | E | 36.8 | 1.066 | 1.65 | 1 | I | 87.6 | 0.80 | 0.858 | 1.21 | 1 | I | 46.2 |
| | SNS7B | 42.000 | | 1.15 | 48.3 | 1.40 | 0.917 | 2.36 | 1 | E | 36.8 | 1.066 | 1.60 | 1 | I | 87.6 | 0.80 | 0.858 | 1.15 | 1 | I | 46.2 | |
| | TRUCK TRACTOR SEMI-TRAILER (TTS) | TNAGRIT3 | 33.000 | | 1.47 | 48.5 | 1.40 | 0.917 | 3.03 | 1 | E | 36.8 | 1.066 | 1.99 | 1 | I | 87.6 | 0.80 | 0.858 | 1.47 | 1 | I | 46.2 |
| | | TNT4A | 33.075 | | 1.47 | 48.6 | 1.40 | 0.917 | 3.00 | 1 | E | 36.8 | 1.066 | 1.99 | 1 | I | 87.6 | 0.80 | 0.858 | 1.47 | 1 | I | 46.2 |
| | | TNT6A | 41.600 | | 1.20 | 49.9 | 1.40 | 0.917 | 2.46 | 1 | E | 36.8 | 1.066 | 1.67 | 1 | I | 87.6 | 0.80 | 0.858 | 1.20 | 1 | I | 46.2 |
| | | TNT7A | 42.000 | | 1.20 | 50.4 | 1.40 | 0.917 | 2.46 | 1 | E | 36.8 | 1.066 | 1.65 | 1 | I | 87.6 | 0.80 | 0.858 | 1.20 | 1 | I | 46.2 |
| | | TNT7B | 42.000 | | 1.22 | 51.2 | 1.40 | 0.917 | 2.50 | 1 | E | 36.8 | 1.066 | 1.57 | 1 | I | 87.6 | 0.80 | 0.858 | 1.22 | 1 | I | 46.2 |
| | | TNAGRIT4 | 43.000 | | 1.18 | 50.7 | 1.40 | 0.917 | 2.41 | 1 | E | 36.8 | 1.066 | 1.54 | 1 | I | 87.6 | 0.80 | 0.858 | 1.18 | 1 | I | 46.2 |
| TNAGT5A | | 45.000 | | 1.12 | 50.4 | 1.40 | 0.917 | 2.30 | 1 | E | 36.8 | 1.066 | 1.50 | 1 | I | 87.6 | 0.80 | 0.858 | 1.12 | 1 | I | 46.2 | |
| TNAGT5B | 45.000 | ③ | 1.10 | 49.5 | 1.40 | 0.917 | 2.26 | 1 | E | 36.8 | 1.066 | 1.47 | 1 | I | 87.6 | 0.80 | 0.858 | 1.10 | 1 | I | 46.2 | | |

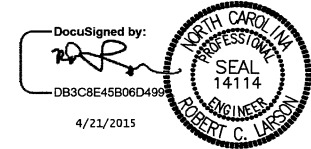


LRFR SUMMARY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 4 OF 4

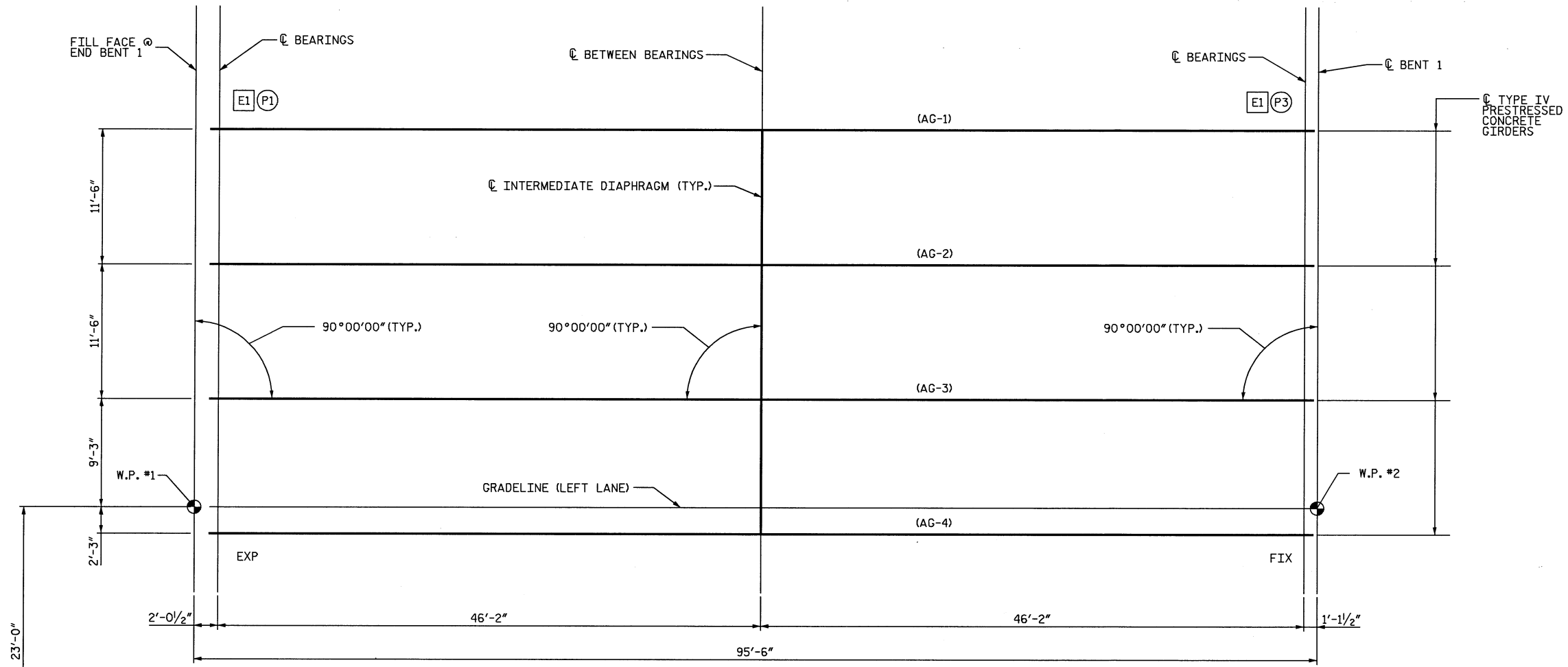
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)**
 STD. NO. LRFR1 LEFT LANE STR-#5



| | |
|----------------------------|-----------------------|
| DESIGNED BY: | DATE: 4/21/2015 |
| DESIGN ENGINEER OF RECORD: | DATE: 04/10/14 |
| DRAWN BY: E. C. DECOLA | DATE: 01/21/14 |
| CHECKED BY: R. C. LARSON | DATE: 04/10/14 |
| DRAWN BY: MAA 1/08 | REV. 11/2/08RR MAA/GM |
| CHECKED BY: GM/DI 2/08 | REV. 10/1/11 MAA/GM |

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 4 OF 34

| REVISIONS | | | | | | SHEET NO. S05-4 |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS S05-34 |
| 2 | | | 4 | | | |



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS (SPANS A AND E)
 (SPAN A SHOWN, SPAN E SIMILAR EXCEPT USE (P2) @ END BENT 2 AND (P4) @ BENT 4)

- NOTES**
1. ELASTIC BEARINGS INDICATED THUS:
 [EN] (N = NUMBER)
 2. SOLE PLATES INDICATED THUS:
 (PN) (N = NUMBER)
 3. FOR INTERMEDIATE DIAPHRAGMS SEE STD PCG10.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|---|------------------|-------|--------|--------|--------|--------|--------|--------|--------|-------|------|
| 0.6" Ø LOW RELAXATION STRANDS | SPANS A THRU E | | | | | | | | | | |
| | GIRDERS 1 THRU 4 | | | | | | | | | | |
| LOCATION | 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
| CAMBER (GIRDER ALONE IN PLACE) ↑ | 0.00 | 0.09 | 0.16 | 0.21 | 0.23 | 0.24 | 0.23 | 0.21 | 0.16 | 0.09 | 0.00 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.00 | 0.05 | 0.09 | 0.13 | 0.15 | 0.16 | 0.15 | 0.13 | 0.09 | 0.05 | 0.00 |
| FINAL CAMBER ↑ | 0" | 9/16" | 13/16" | 15/16" | 15/16" | 15/16" | 15/16" | 15/16" | 13/16" | 9/16" | 0" |

* INCLUDES FUTURE WEARING SURFACE
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

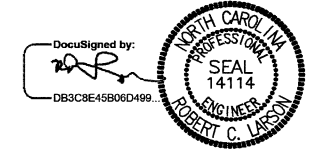
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 GIRDER LAYOUT**

LEFT LANE STR-#5



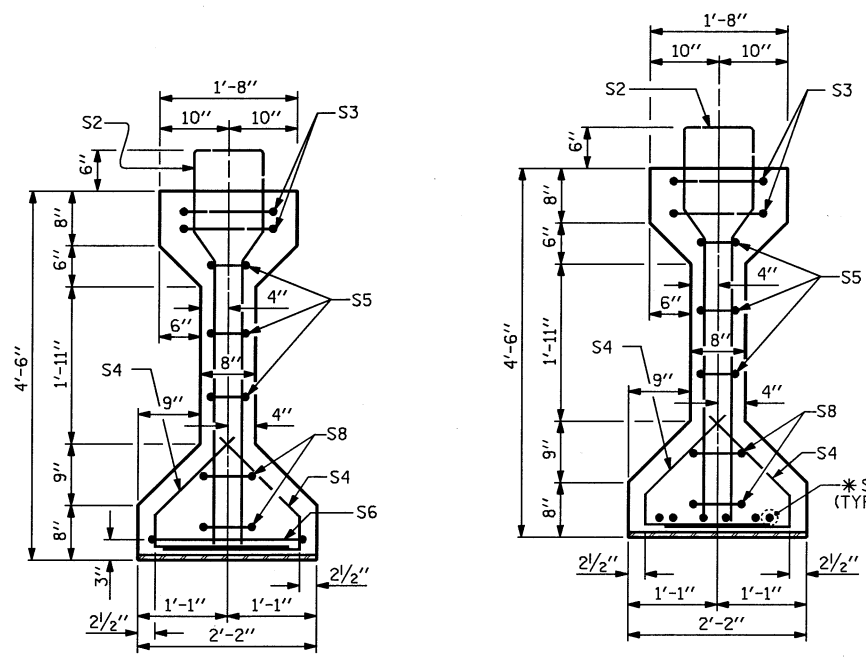
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 10 OF 34

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 505-10 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 505-34 |

DESIGN ENGINEER OF RECORD: _____ DATE: 4/12/2015

DRAWN BY: Z. SU DATE: 11/19/13

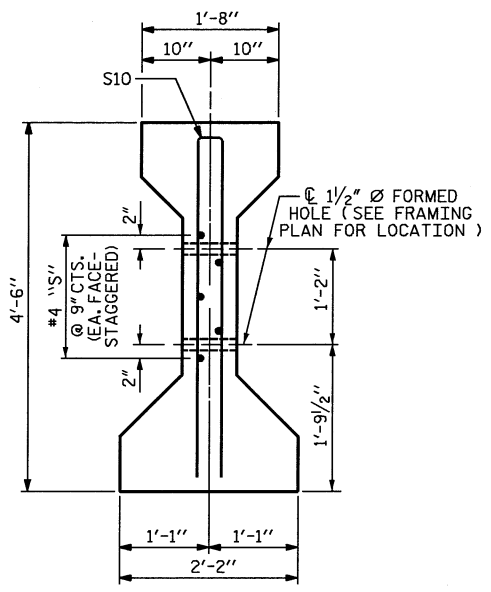
CHECKED BY: R. C. LARSON DATE: 01/15/14



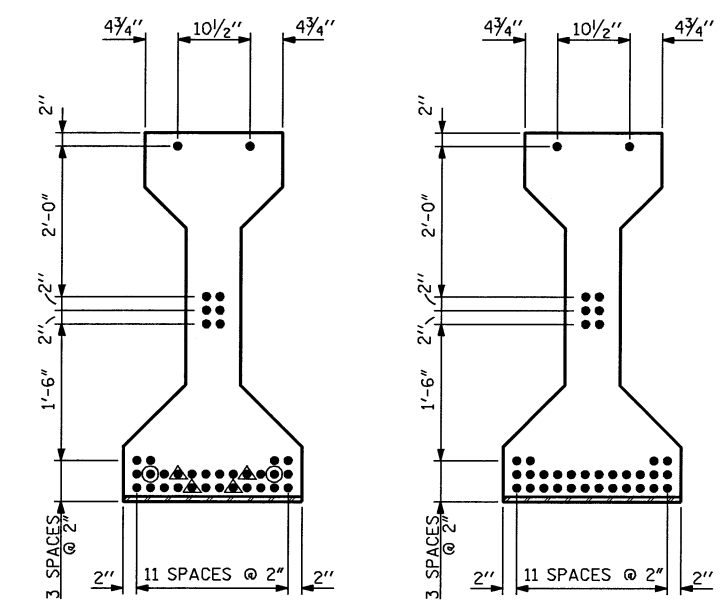
SECTION A-A

SECTION B-B

* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



SECTION C-C
(S1 BARS NOT SHOWN)



AT END OF GIRDER AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◎ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

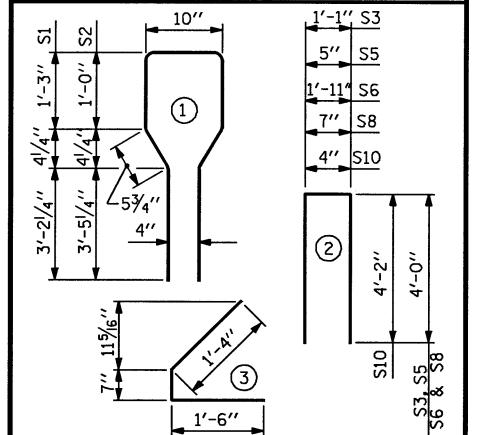
| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|---|---|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 108 | #4 | 1 | 10'-8" | 770 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 88 | #4 | 3 | 3'-5" | 201 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| S6 | 1 | #4 | 2 | 9'-11" | 7 |
| * S7 | 6 | #5 | STR | 3'-8" | 23 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 1 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



| QUANTITIES FOR ONE GIRDER | | |
|---------------------------|------------------------|--------------------------|
| REINFORCING STEEL LB. | 8000 PSI CONCRETE C.Y. | 0.6" Ø L. R. STRANDS No. |
| 1316 | 19.0 | 36 |

GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|----------|--------|--------------|
| SPAN A 4 | 93'-9" | 375'-0" |
| SPAN E 4 | 93'-9" | 375'-0" |

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

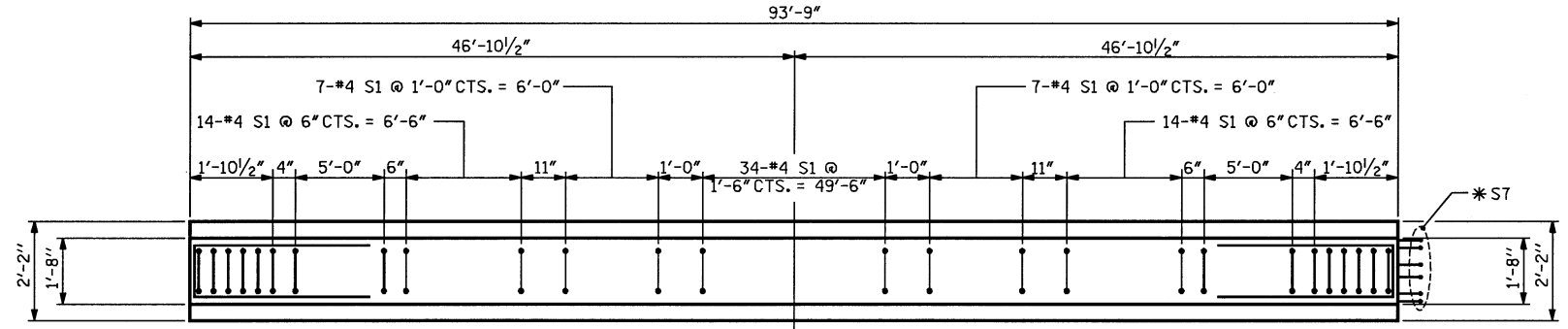
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
SPAN A OR E

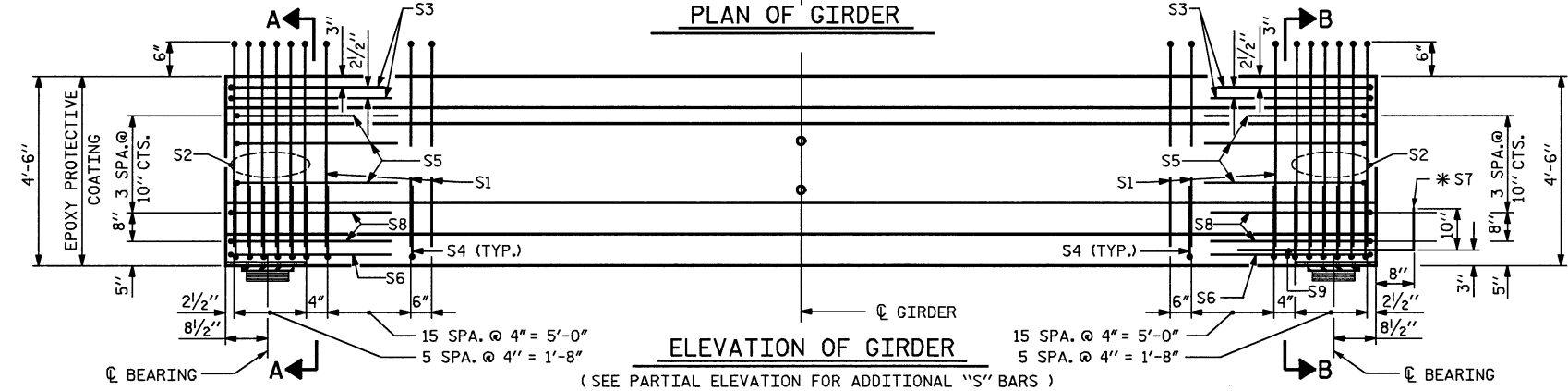


KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 12 OF 34

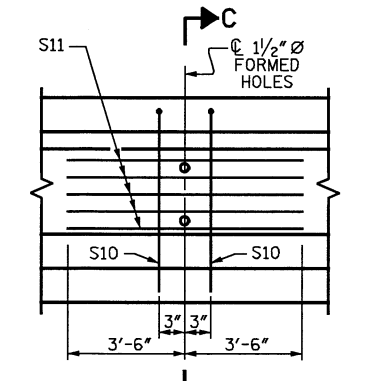
| STANDARD | | LEFT LANE | | STR-#5 | |
|----------|------|-----------|------|--------|------|
| NO. | DATE | NO. | DATE | NO. | DATE |
| 1 | | 3 | | 5 | |
| 2 | | 4 | | 6 | |



PLAN OF GIRDER

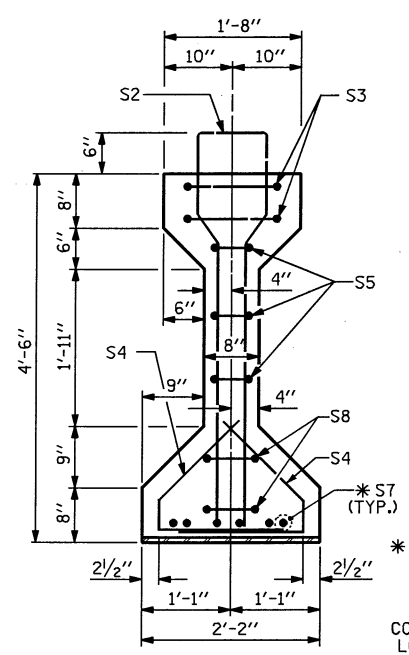


ELEVATION OF GIRDER



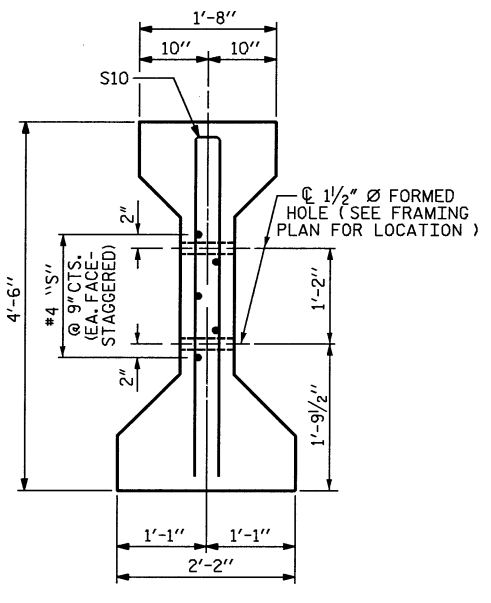
PARTIAL ELEVATION

| | | |
|--|----------------|---------|
| DRAWN BY: JMB 12/87 | REV. 8/16/99RR | RWW/LES |
| CHECKED BY: ARB 12/87 | REV. 5/1/06R | TLA/GM |
| | REV. 10/1/11 | MAA/GM |
| DESIGN ENGINEER OF RECORD: R.C. LARSON DATE: 4/12/2015 | | |
| DRAWN BY: Z. SU DATE: 11/21/13 | | |
| CHECKED BY: R. C. LARSON DATE: 01/16/14 | | |

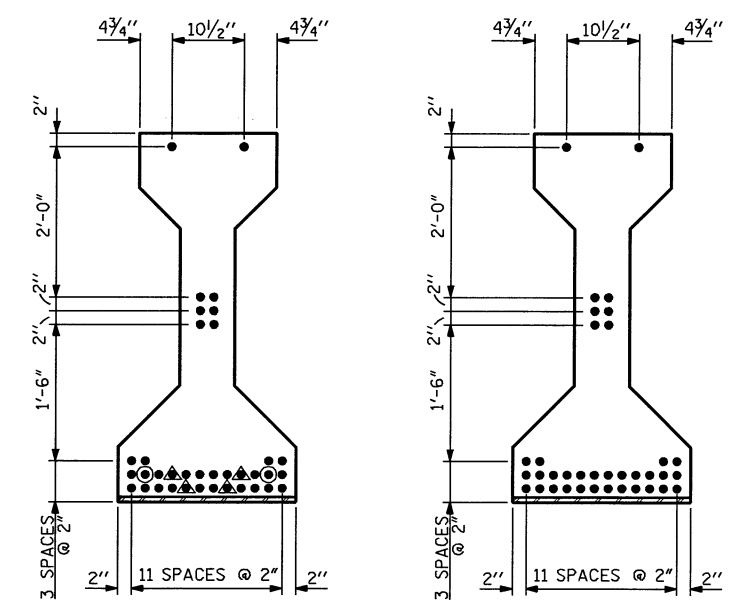


SECTION A-A

* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



SECTION B-B
(S1 BARS NOT SHOWN)

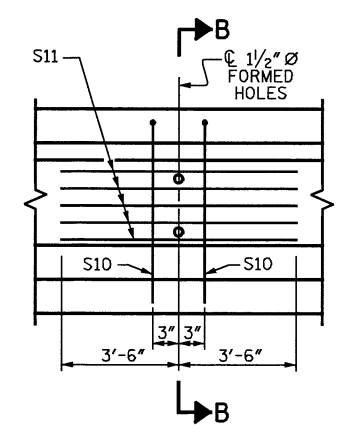


AT END OF GIRDER AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL

0.6" Ø L. R. GRADE 270 STRANDS

| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
|-------------------------|---|---|
| 0.217 | 58,600 | 43,950 |

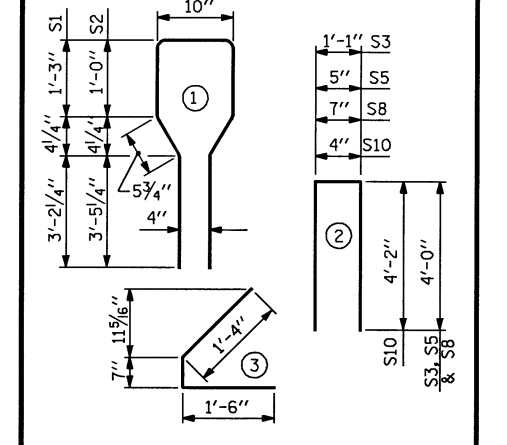
REINFORCING STEEL FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-----|--------|------|------|--------|--------|
| S1 | 108 | #4 | 1 | 10'-8" | 770 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 88 | #4 | 3 | 3'-5" | 201 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| S6 | 1 | #4 | 2 | 9'-11" | 7 |
| *S7 | 12 | #5 | STR | 3'-8" | 46 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

| REINFORCING STEEL | 8000 PSI CONCRETE | 0.6" Ø L. R. STRANDS |
|-------------------|-------------------|----------------------|
| LB. | C.Y. | No. |
| 1332 | 19.0 | 36 |

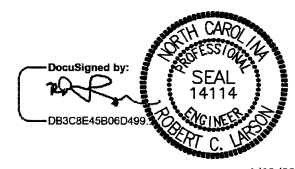
GIRDERS REQUIRED

| | NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|---------|--------------|
| SPAN B | 4 | 93'-10" | 375'-4" |
| SPAN C | 4 | 93'-10" | 375'-4" |
| SPAN D | 4 | 93'-10" | 375'-4" |

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

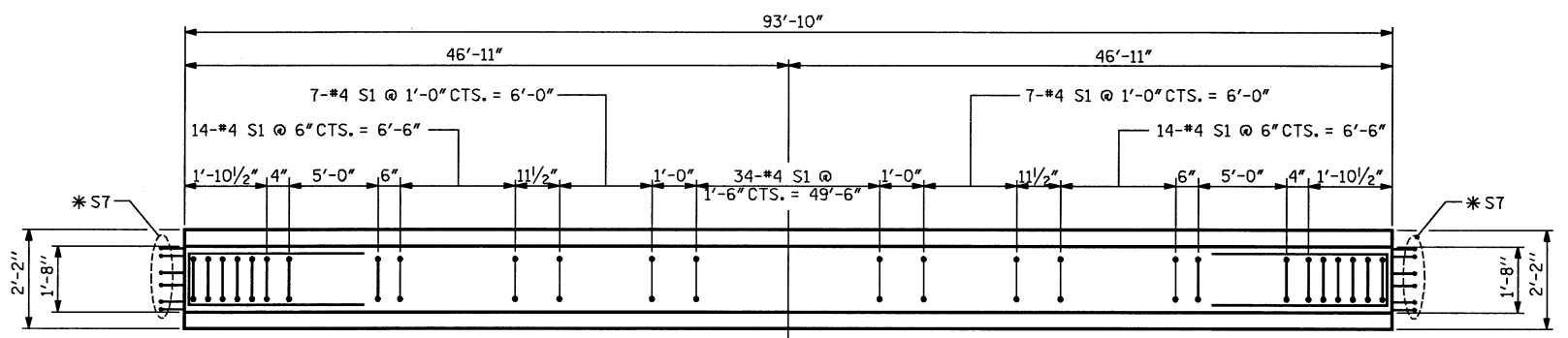
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
SPAN B, C, OR D
LEFT LANE STR-#5

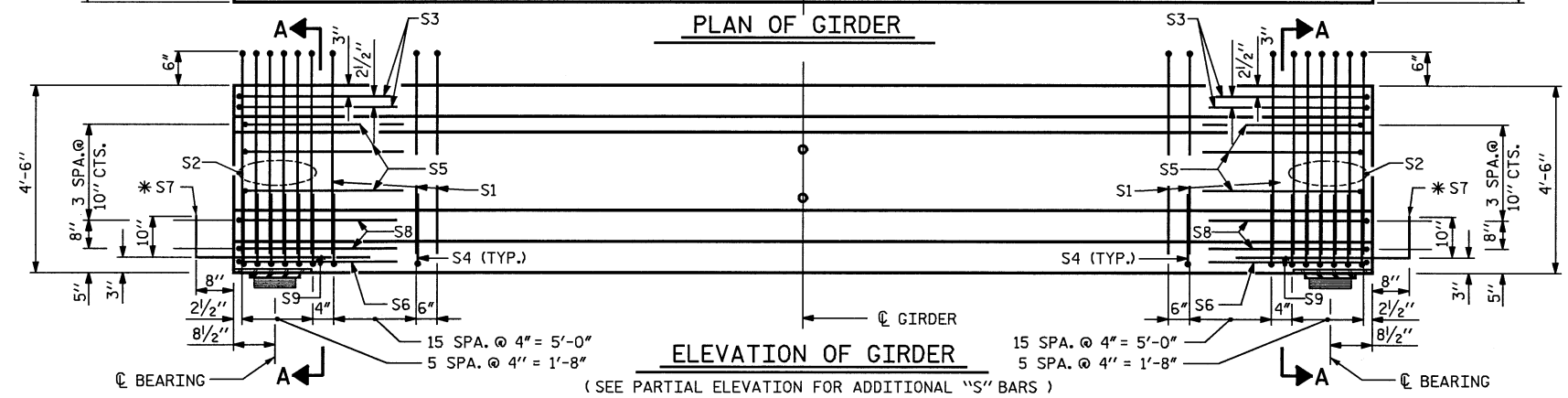


DESIGNED BY: RCL
DATE: 4/12/2015
KCI Associates of North Carolina, P.A.
DWG. REF. NO. 13 OF 34

| NO. | BY: | DATE: | NO. | BY: | DATE: | SHEET NO. |
|-----|-----|-------|-----|-----|-------|---------------------|
| 1 | | | 3 | | | S05-13 |
| 2 | | | 4 | | | TOTAL SHEETS S05-34 |



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

| | | |
|----------------------------|-----------------|---------|
| DRAWN BY: JMB 12/87 | REV. 8/16/99RR | RWW/LES |
| CHECKED BY: ARB 12/87 | REV. 5/1/06R | TLA/GM |
| | REV. 10/1/11 | MAA/GM |
| DESIGN ENGINEER OF RECORD: | DATE: 4/12/2015 | |
| DRAWN BY: Z. SU | DATE: 11/21/13 | |
| CHECKED BY: R. C. LARSON | DATE: 01/16/14 | |

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

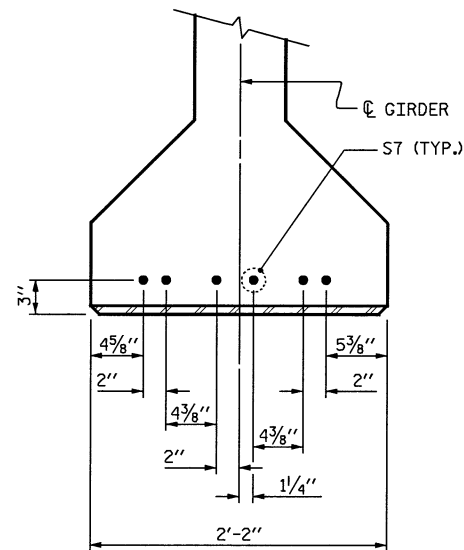
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

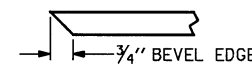
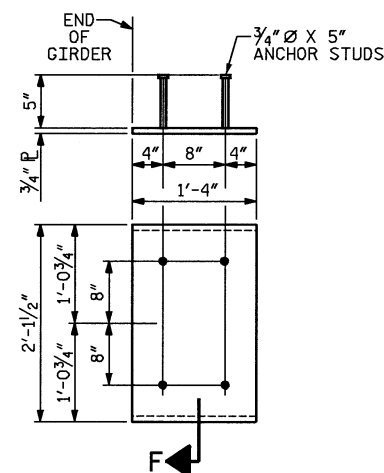
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



DETAIL "A"



SECTION "F"

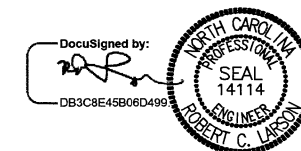
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS
LEFT LANE STR-#5



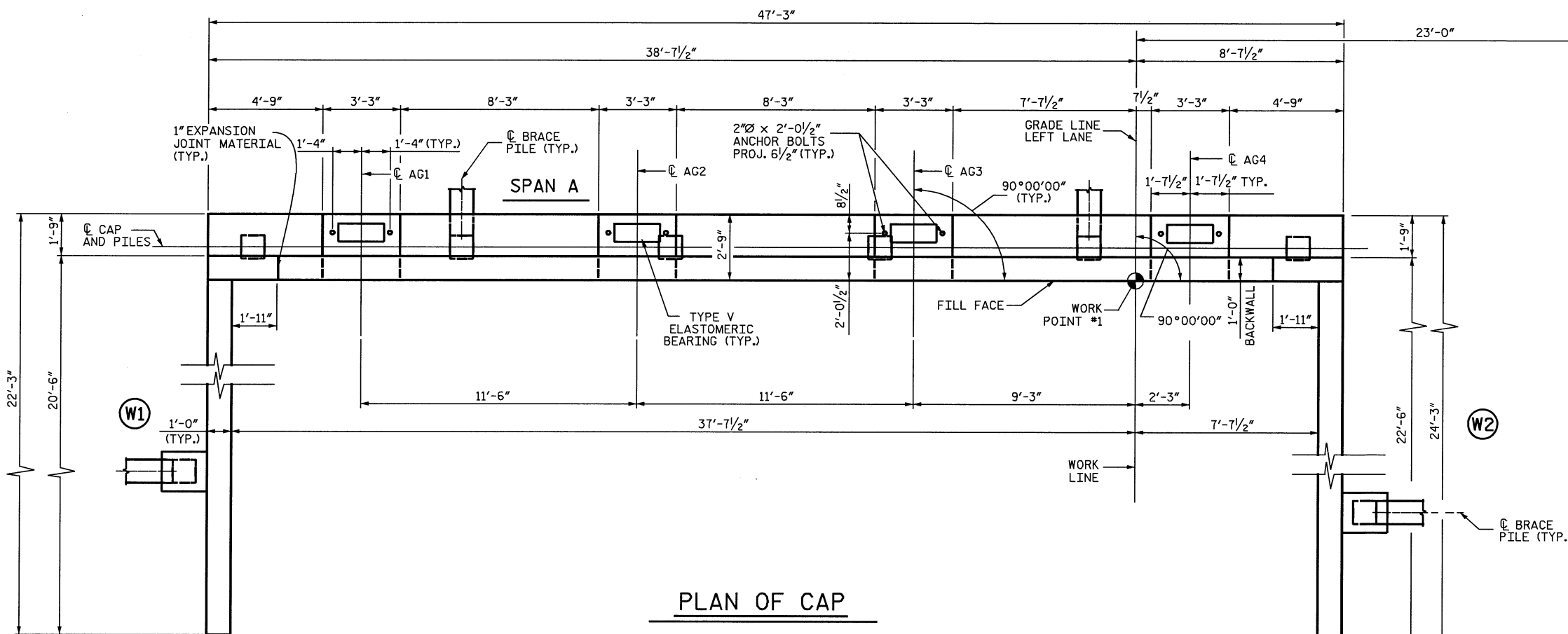
4/12/2015

STD. NO. PCG9 SHEET NO. S05-14

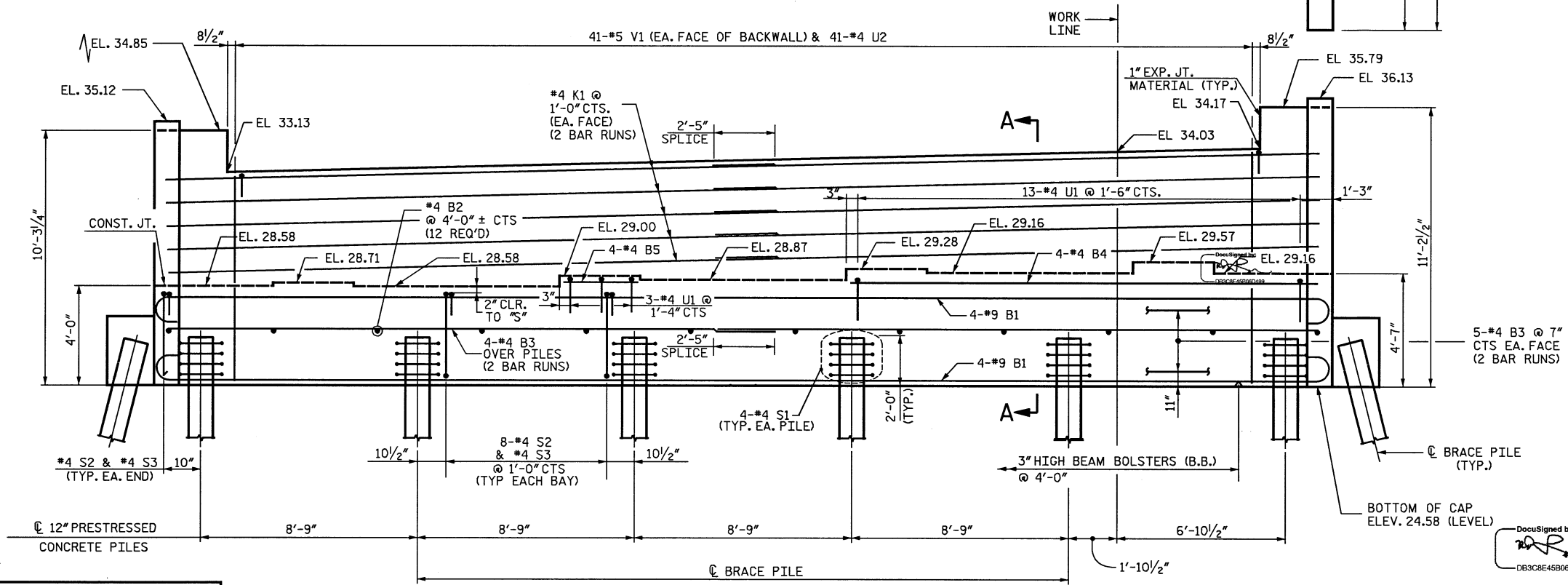
| | |
|---|------------------------|
| DRAWN BY : ELR 11/91 | REV. 7/10/01RR LES/RDR |
| CHECKED BY : GRP 11/91 | REV. 5/1/06 TLA/GM |
| | REV. 10/1/11 MAA/GM |
| DESIGN ENGINEER OF RECORD DATE : | |
| | 4/12/2015 |
| DRAWN BY : Z. SU DATE : 11/25/13 | |
| CHECKED BY : R. C. LARSON DATE : 02/05/14 | |

| | | | |
|--|--|--|--|
| KCI Associates of North Carolina, P.A. | | | |
| DWG. REF. NO. 14 OF 34 | | | |

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|---|---------------------|
| NO. | BY: | DATE: | | |
| 1 | | | 3 | TOTAL SHEETS S05-34 |
| 2 | | | 4 | |



PLAN OF CAP



ELEVATION

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- FOR "BLOCKOUT IN WINGWALL", SEE END BENT 2.

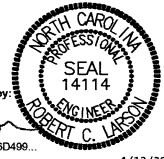
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

LEFT LANE STR-#5



DESIGNED BY: E. C. DECOLA DATE: 02/26/14
 DRAWN BY: R. C. LARSON DATE: 02/28/14
 CHECKED BY: R. C. LARSON DATE: 02/28/14

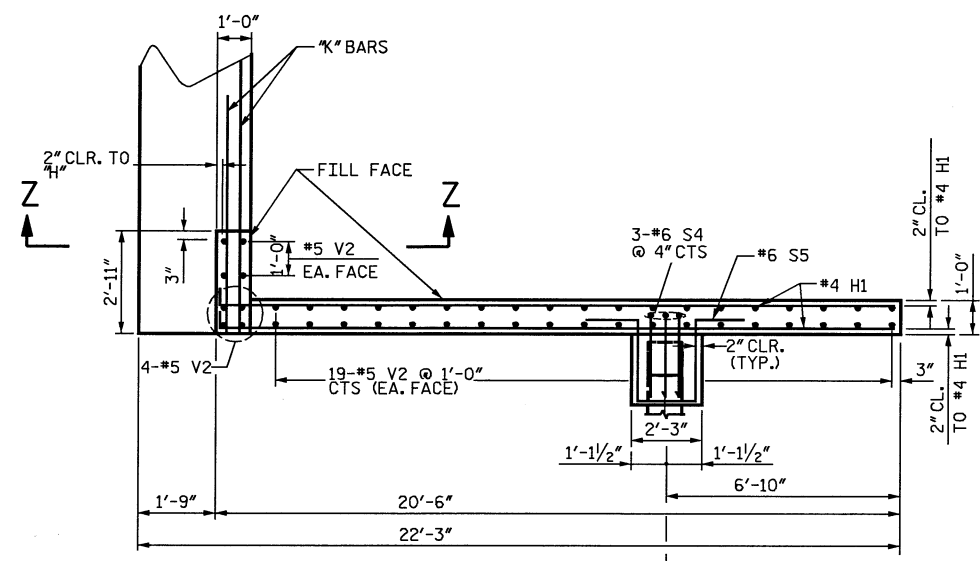
| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | | | 3 | |
| 2 | | | 4 | |

TOTAL SHEETS: 34

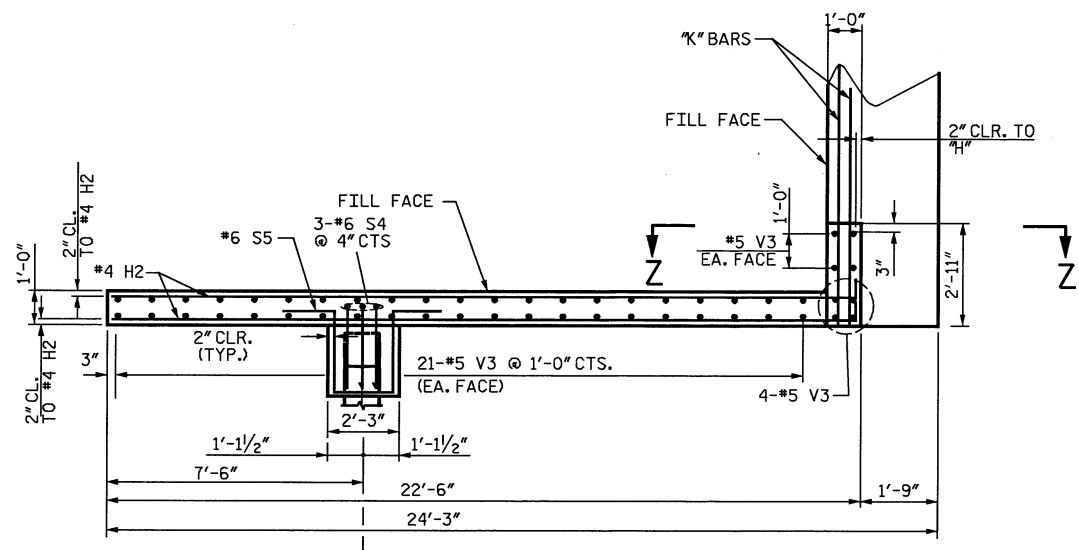
ENGINEERS & PLANNERS & CONSULTANTS LICENSE NUMBER 0-0784

KCI Associates
 of North Carolina, P.A.

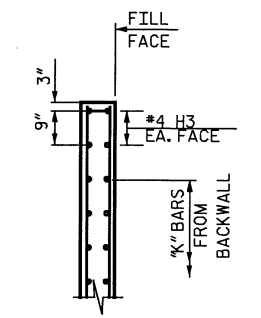
DATE: 02/28/14
 DWG. REF. NO. 22 OF 34



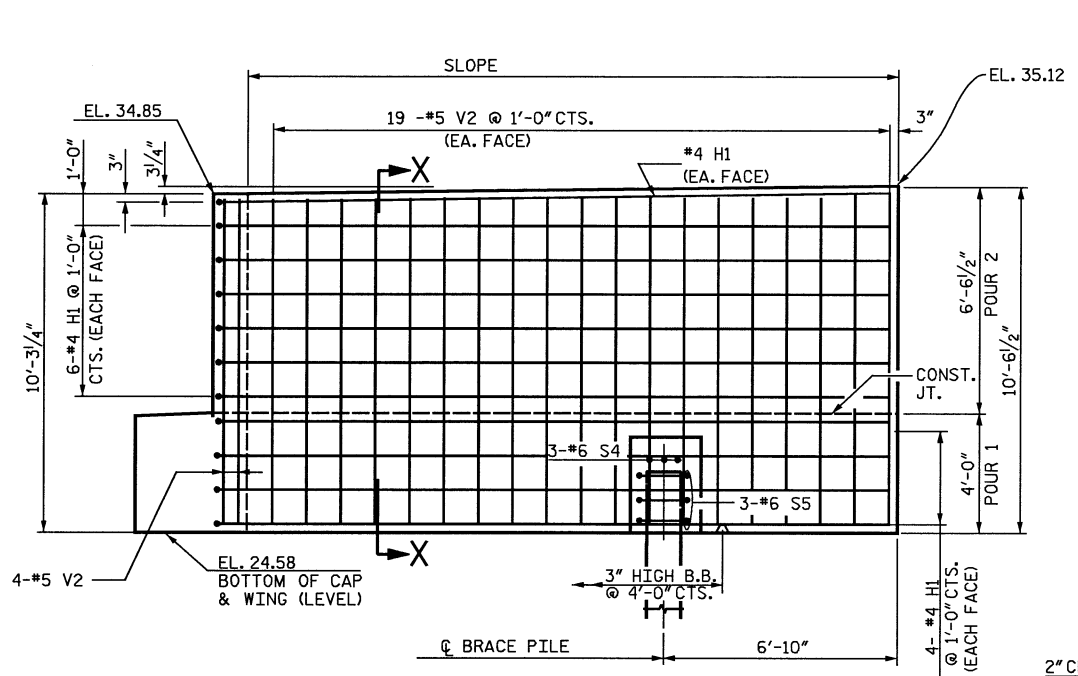
PLAN W1



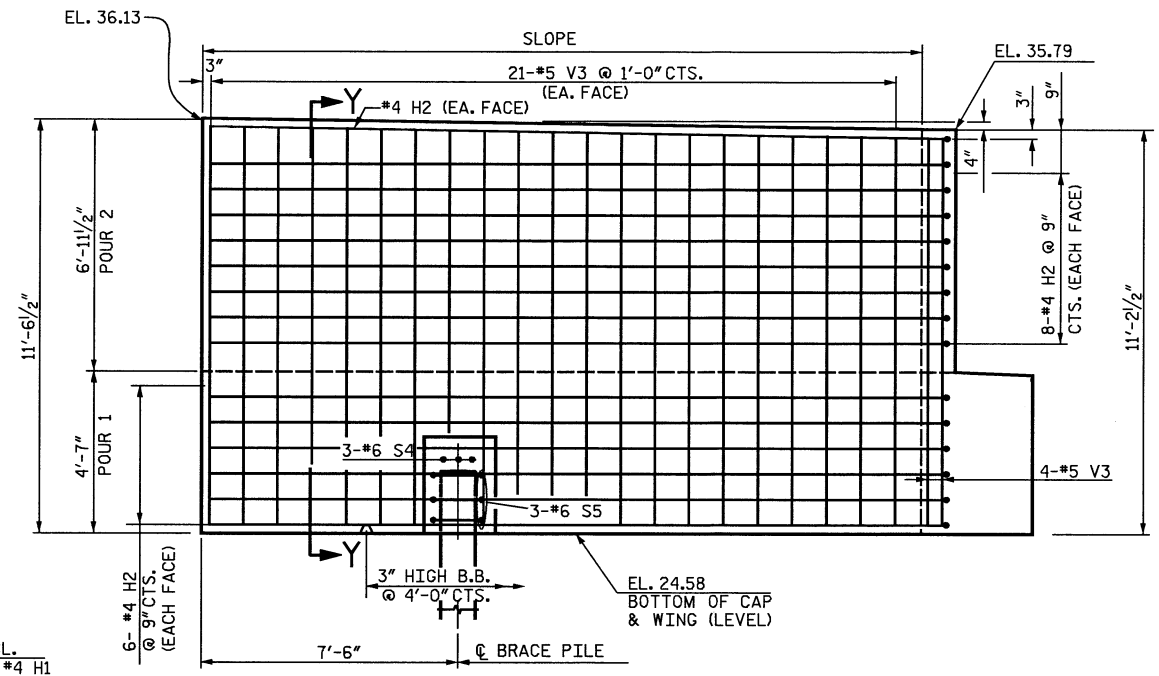
PLAN W2



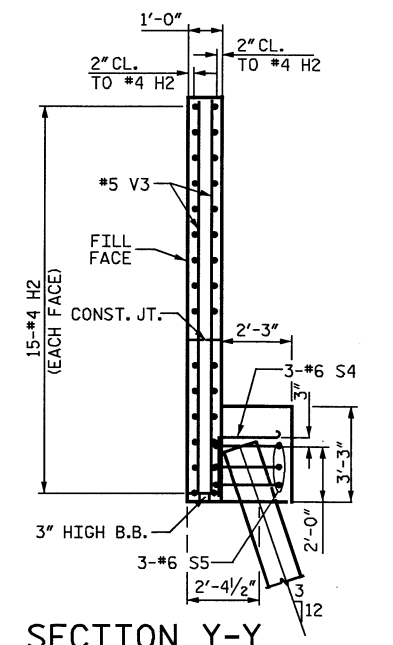
SECTION Z-Z



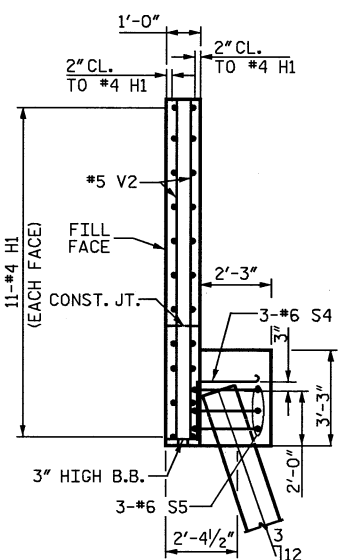
ELEVATION W1



ELEVATION W2



SECTION Y-Y

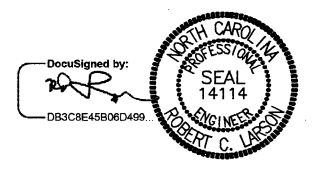


SECTION X-X

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

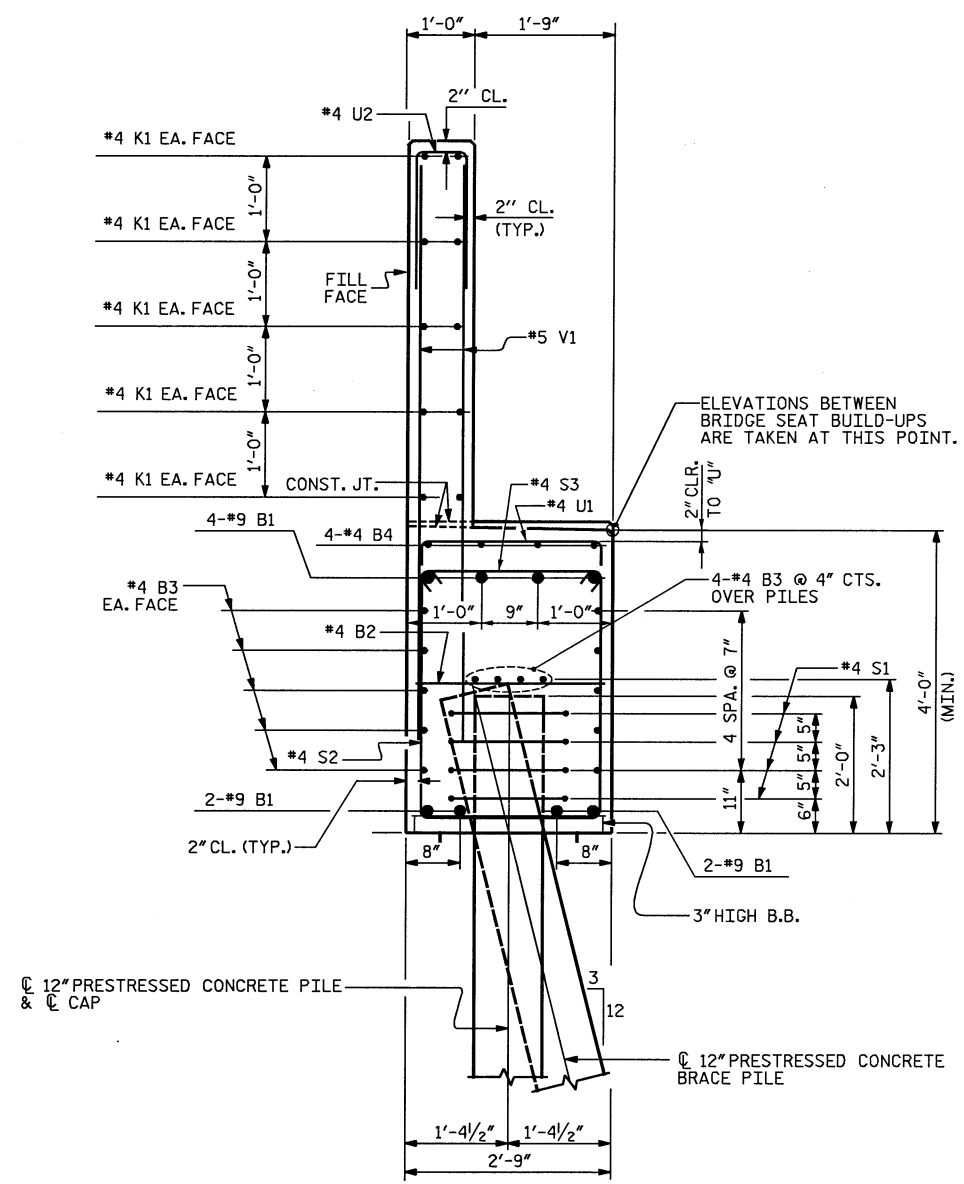
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 1**
 LEFT LANE STR-#5



DESIGNED BY: [Signature]
 DRAWING NO. DB3C8E45B06D499
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 23 OF 34

DESIGN ENGINEER OF RECORD: [Signature] DATE: 4/12/2015
 DRAWN BY: E. C. DECOLA DATE: 02/27/14
 CHECKED BY: R. C. LARSON DATE: 03/14/14

| REVISIONS | | | | | | SHEET NO. S05-23 |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS S05-34 |
| 2 | | | 4 | | | |



SECTION A-A

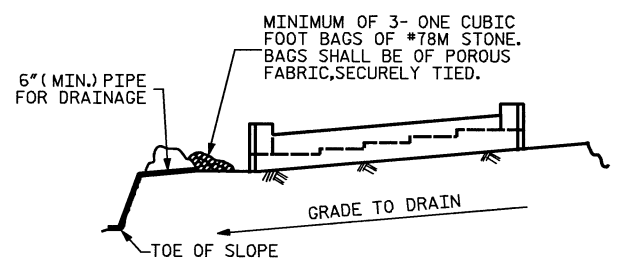
Ø 12" PRESTRESSED CONCRETE PILE & CAP

Ø 12" PRESTRESSED CONCRETE BRACE PILE

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.

| BILL OF MATERIAL | | | | |
|--|-----|------|------|-------------|
| END BENT 1 | | | | |
| BAR | NO. | SIZE | TYPE | WEIGHT |
| B1 | 8 | 9 | 1 | 49'-5" |
| B2 | 12 | 4 | STR. | 2'-5" |
| B3 | 28 | 4 | STR. | 24'-8" |
| B4 | 4 | 4 | STR. | 19'-2" |
| B5 | 4 | 4 | STR. | 2'-11" |
| H1 | 22 | 4 | 4 | 20'-10" |
| H2 | 30 | 4 | 4 | 22'-10" |
| H3 | 8 | 4 | STR. | 2'-7" |
| K1 | 20 | 4 | STR. | 24'-8" |
| S1 | 24 | 4 | 6 | 6'-6" |
| S2 | 42 | 4 | 2 | 10'-5" |
| S3 | 42 | 4 | 3 | 3'-2" |
| S4 | 6 | 6 | 7 | 5'-2" |
| S5 | 6 | 6 | 8 | 9'-9" |
| U1 | 16 | 4 | 5 | 5'-5" |
| U2 | 41 | 4 | 5 | 3'-8" |
| V1 | 82 | 5 | STR. | 8'-3" |
| V2 | 46 | 5 | STR. | 9'-11" |
| V3 | 50 | 5 | STR. | 10'-10" |
| REINFORCING STEEL, LB | | | | 5516 |
| CLASS A CONCRETE, CY | | | | POUR 1 28.1 |
| | | | | POUR 2 18.6 |
| TOTAL | | | | 46.7 |
| 12" PRESTRESSED CONCRETE PILES | | | | |
| | | | | NO. 8 |
| | | | | LF 240 |
| PILE REDRIVES | | | | EA. 3 |
| NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE. | | | | |



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

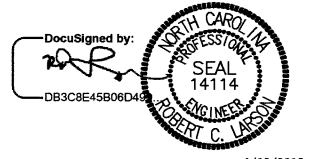
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**
 LEFT LANE STR-#5

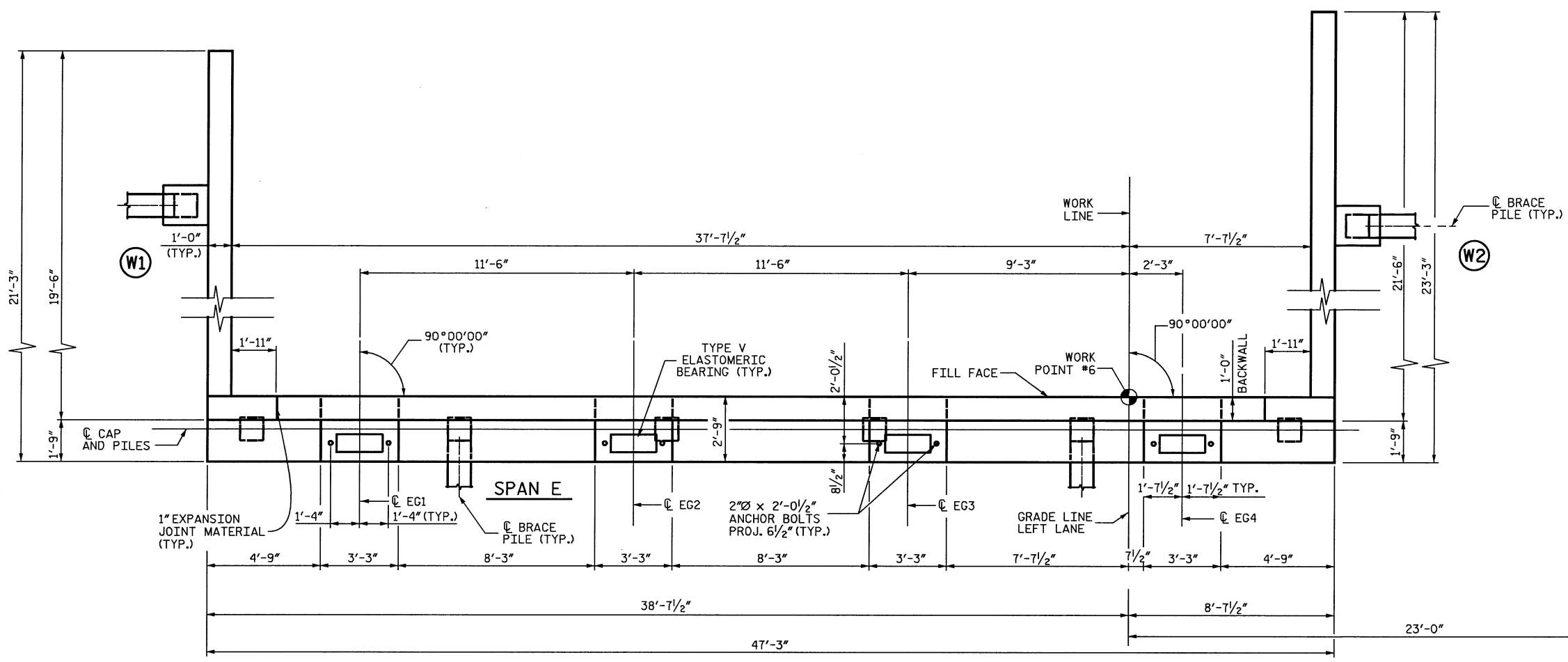


4/12/2015
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 24 OF 34

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | | | 3 | |
| 2 | | | 4 | |

| | | |
|----------------------------|--------------|-----------------|
| DESIGN ENGINEER OF RECORD: | DATE : | 4/12/2015 |
| DRAWN BY : | E. C. DECOLA | DATE : 02/28/14 |
| CHECKED BY : | R. C. LARSON | DATE : 03/03/14 |

TOTAL SHEETS
 S05-34



PLAN OF CAP

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

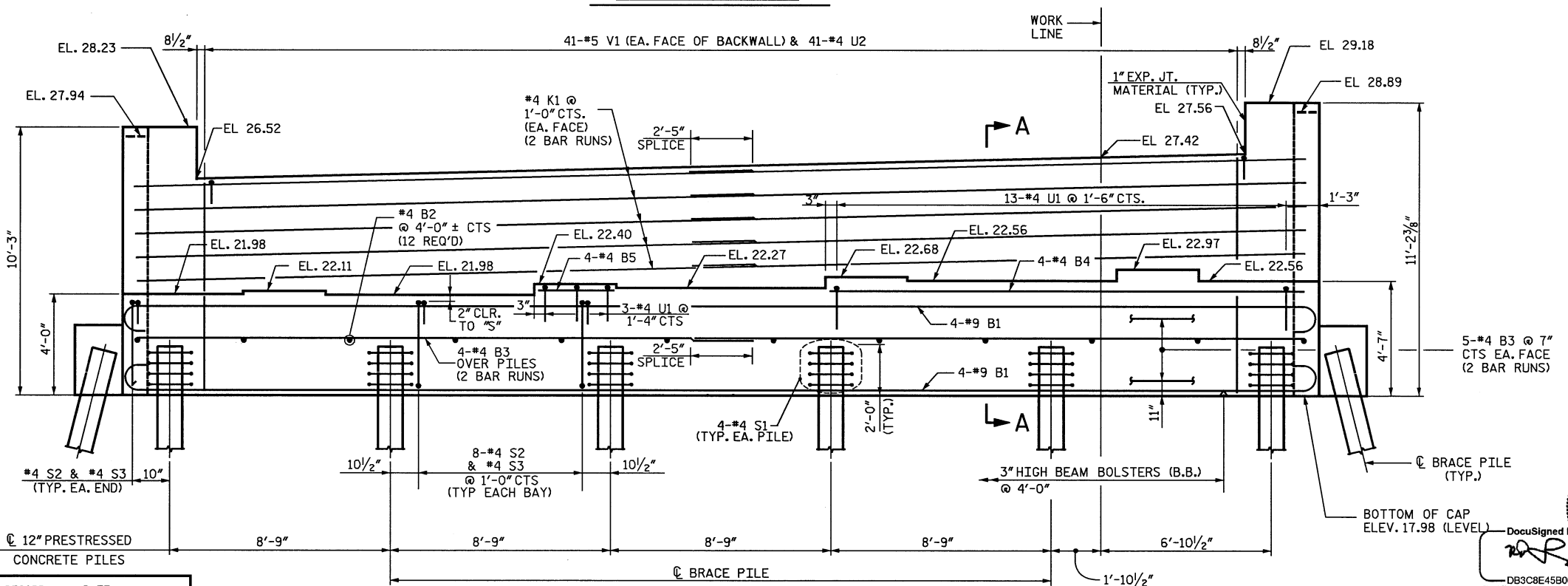
INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

FOR "TEMPORARY DRAINAGE AT END BENT" SEE END BENT 1.



ELEVATION

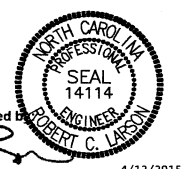
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

LEFT LANE STR-#5



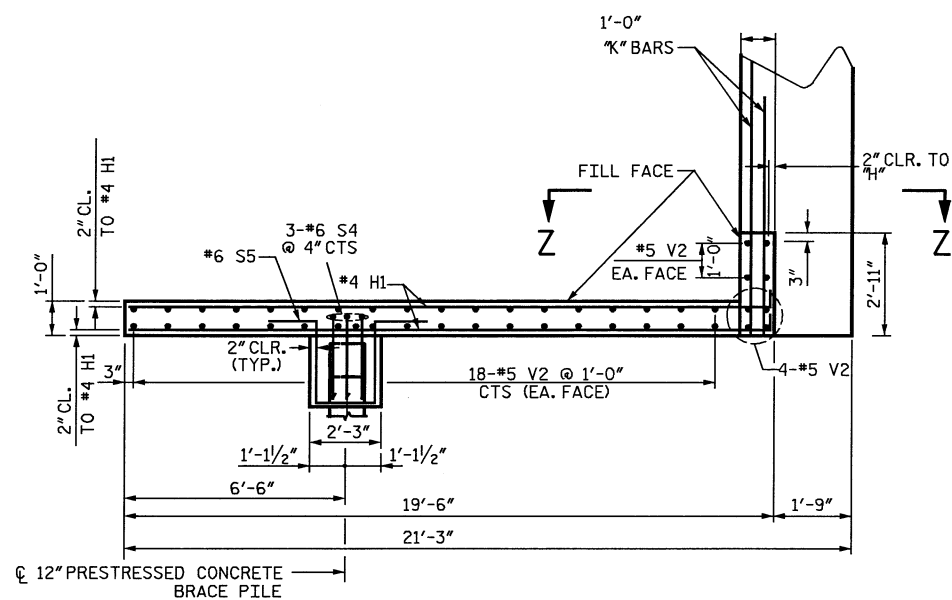
DESIGN ENGINEER OF RECORD: DATE: 4/12/2015
 DRAWN BY: E. C. DECOLA DATE: 03/06/14
 CHECKED BY: R. C. LARSON DATE: 03/18/14

REVISIONS

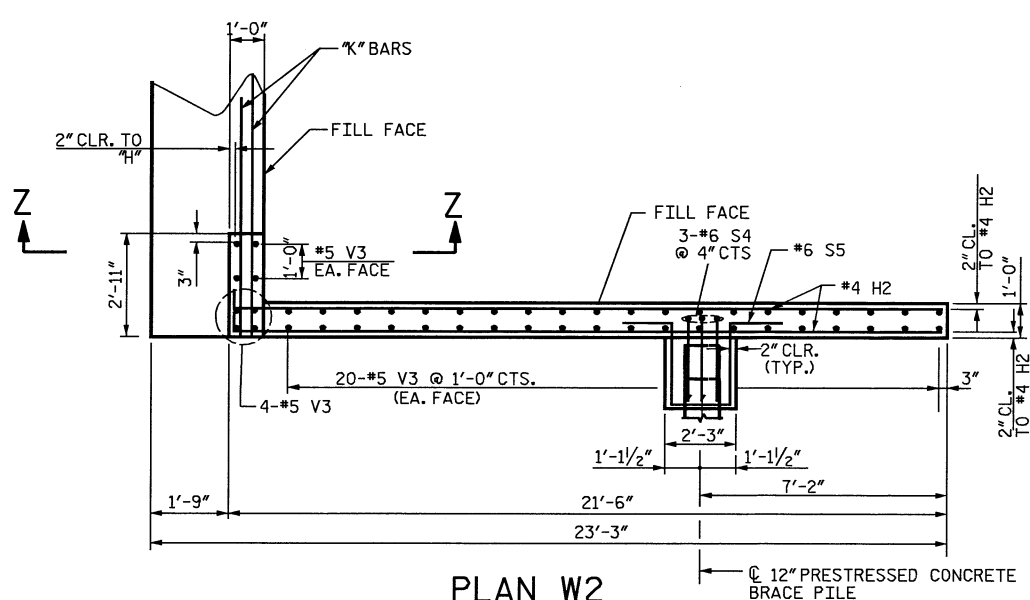
| NO. | BY: | DATE: | NO. | BY: | DATE: |
|-----|-----|-------|-----|-----|-------|
| 1 | | | 3 | | |
| 2 | | | 4 | | |

DRG. REF. NO. 27 OF 34

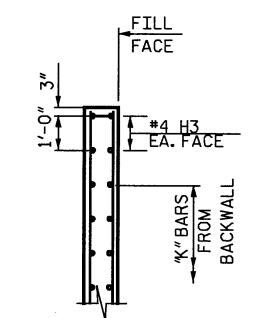
SHEET NO.
 S05-27
 TOTAL SHEETS
 S05-34



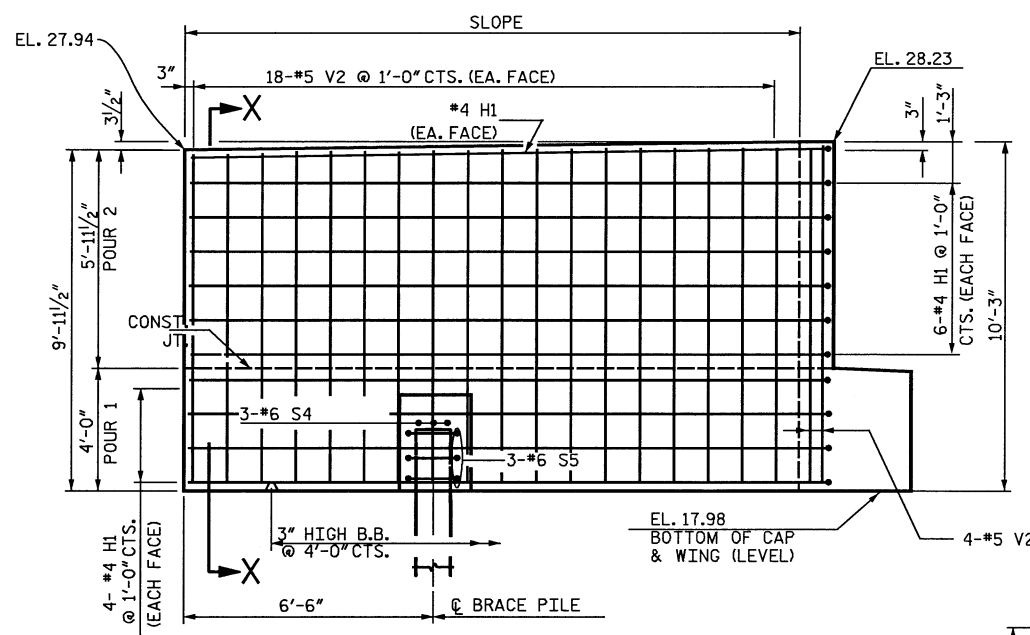
PLAN W1



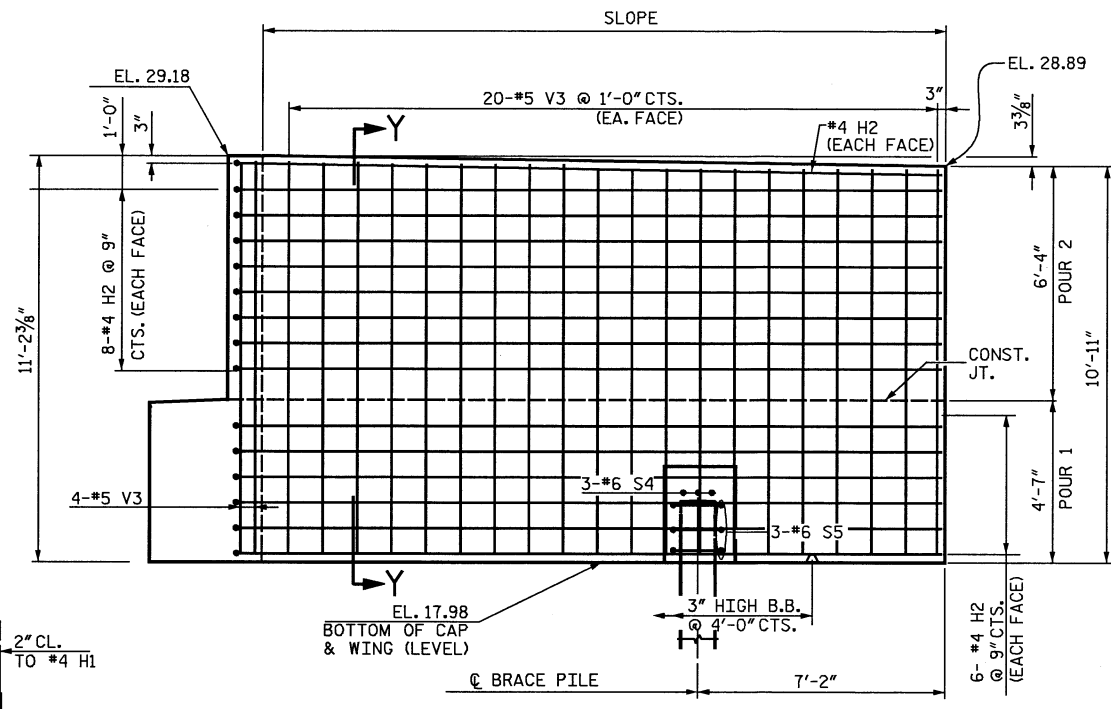
PLAN W2



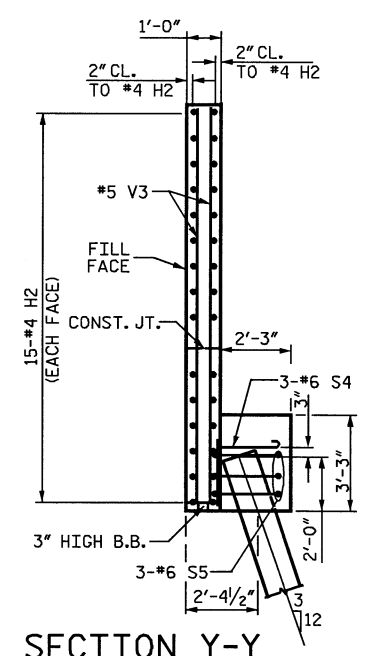
SECTION Z-Z



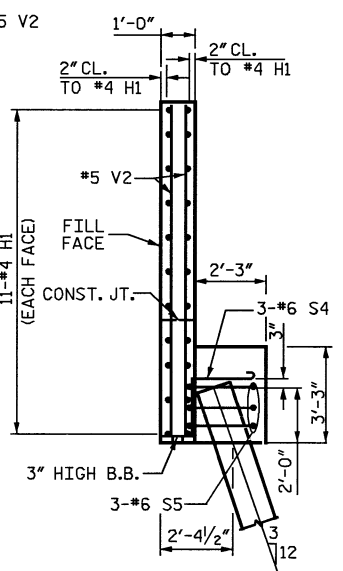
ELEVATION W1



ELEVATION W2



SECTION Y-Y



SECTION X-X

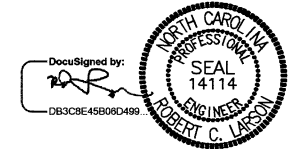
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

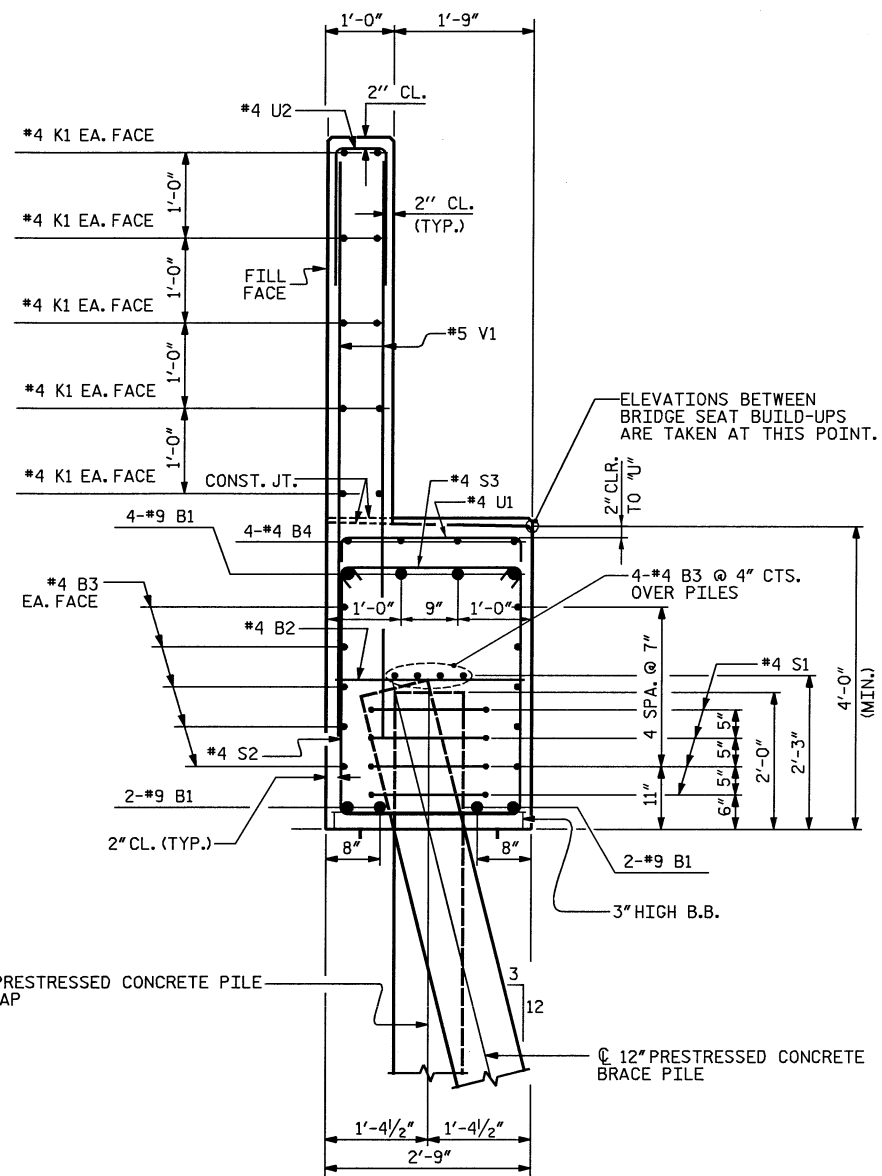
LEFT LANE STR-#5



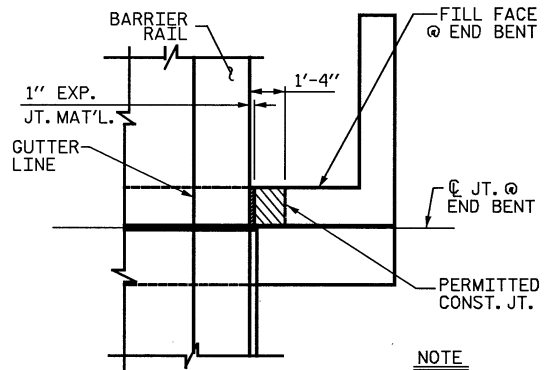
DESIGNED BY: R. C. LARSON
 DATE: 03/21/14
 DWG. REF. NO. 28 OF 34

| REVISIONS | | SHEET NO. | |
|-----------|------|-----------|------|
| NO. | DATE | NO. | DATE |
| 1 | | 3 | |
| 2 | | 4 | |

DESIGN ENGINEER OF RECORD: _____ DATE: 4/12/2015
 DRAWN BY: E. C. DECOLA DATE: 03/06/14
 CHECKED BY: R. C. LARSON DATE: 03/21/14



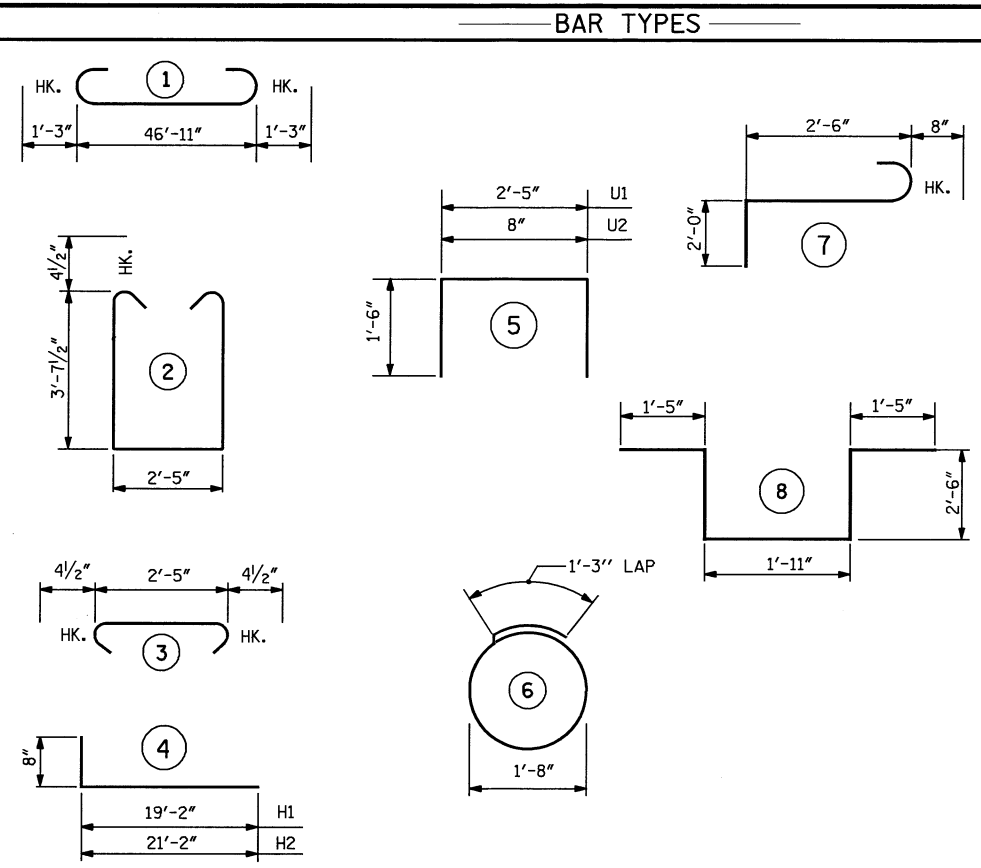
SECTION A-A



PLAN

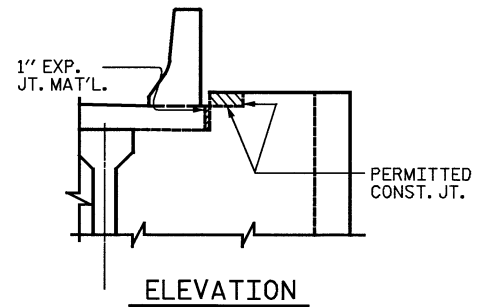
NOTE
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET IS CAST IF SLIP FORMING IS USED.

BLOCKOUT IN WING WALL



ALL BAR DIMENSIONS ARE OUT TO OUT.

| BILL OF MATERIAL | | | | | |
|--|-----|------|------|---------|--------|
| END BENT 2 | | | | | |
| BAR NO. | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | 9 | 1 | 49'-5" | 1344 |
| B2 | 12 | 4 | STR. | 2'-5" | 19 |
| B3 | 28 | 4 | STR. | 24'-8" | 461 |
| B4 | 4 | 4 | STR. | 19'-2" | 51 |
| B5 | 4 | 4 | STR. | 2'-11" | 8 |
| H1 | 22 | 4 | 4 | 19'-10" | 291 |
| H2 | 30 | 4 | 4 | 21'-10" | 438 |
| H3 | 8 | 4 | STR. | 2'-7" | 14 |
| K1 | 20 | 4 | STR. | 24'-8" | 330 |
| S1 | 24 | 4 | 6 | 6'-6" | 104 |
| S2 | 42 | 4 | 2 | 10'-5" | 292 |
| S3 | 42 | 4 | 3 | 3'-2" | 89 |
| S4 | 6 | 6 | 7 | 5'-2" | 47 |
| S5 | 6 | 6 | 8 | 9'-9" | 88 |
| U1 | 16 | 4 | 5 | 5'-5" | 58 |
| U2 | 41 | 4 | 5 | 3'-8" | 100 |
| V1 | 82 | 5 | STR. | 8'-4" | 713 |
| V2 | 44 | 5 | STR. | 9'-8" | 444 |
| V3 | 48 | 5 | STR. | 10'-7" | 530 |
| REINFORCING STEEL, LB | | | | 5421 | |
| CLASS A CONCRETE, CY | | | | POUR 1 | 27.9 |
| | | | | POUR 2 | 17.3 |
| | | | | TOTAL | 45.2 |
| 12" PRESTRESSED CONCRETE PILES | | | | | |
| | | | | NO. | 8 |
| | | | | LF | 480 |
| PILE REDRIVES | | | | EA. | 3 |
| NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE. | | | | | |

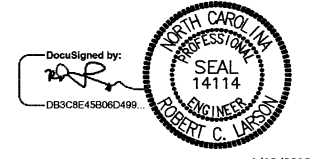


ELEVATION

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 2**
 LEFT LANE STR-#5

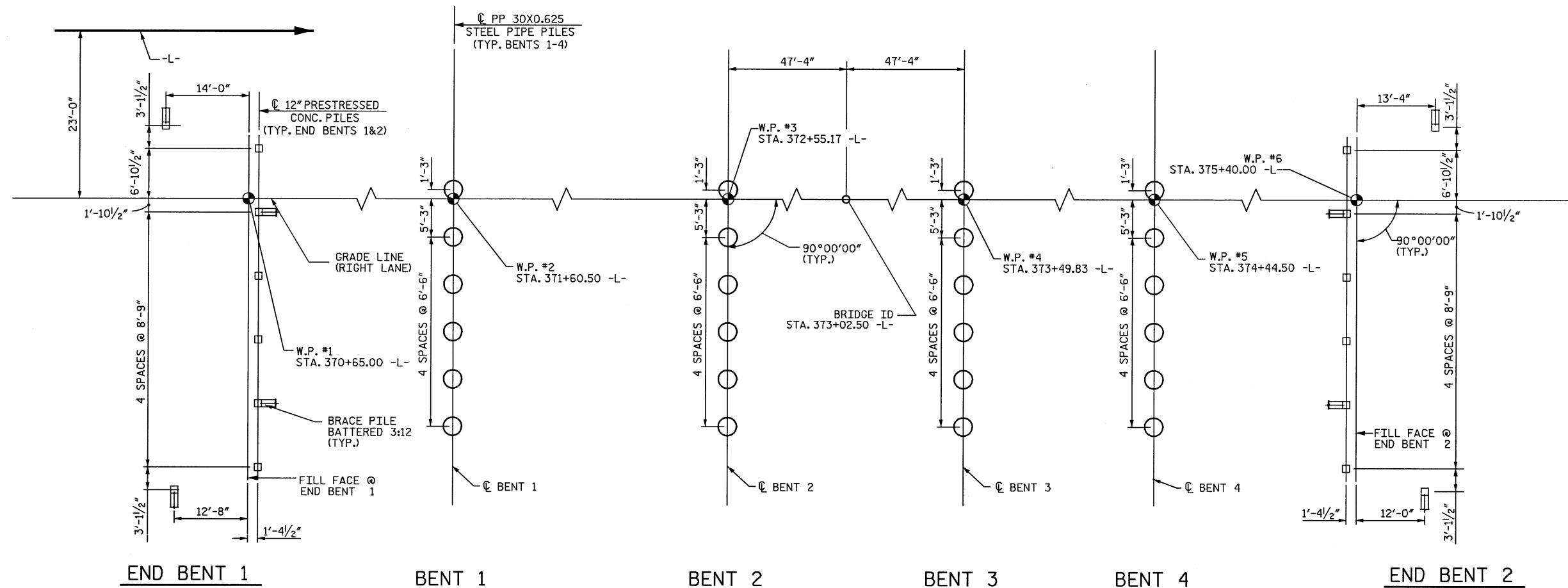


DESIGNED BY: R. C. LARSON
 DRAWING NO. 458060499
 DATE: 4/12/2015

DESIGN ENGINEER OF RECORD: E. C. DECOLA DATE: 4/12/2015
 DRAWN BY: E. C. DECOLA DATE: 03/06/14
 CHECKED BY: R. C. LARSON DATE: 03/18/14

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 505-29 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 505-34 |

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 29 OF 34



FOUNDATION LAYOUT PLAN

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

PILES AT BENT 1 THROUGH BENT 4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 225 TONS PER PILE.

DRIVE PILES AT BENT 1 THROUGH BENT 4 TO A REQUIRED DRIVING RESISTANCE OF 305 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

INSTALL PILES AT BENT 1, BENT 2, BENT 3 AND BENT 4 TO A TIP ELEVATION NO HIGHER THAN -30 FT, -45 FT, -45 FT AND -35 FT, RESPECTIVELY.

STEEL PIPE PILE CUTTING SHOES ARE REQUIRED FOR STEEL PIPE PILES AT BENT 1 THROUGH BENT 4. USE "INSIDE FIT" PIPE PILE CUTTING SHOES. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATIONS FOR BENT 2, BENT 3 AND BENT 4 ARE ELEVATION -11 FT, -11 FT AND -3 FT, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 82,000 FT-LBS TO 152,500 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT 1 THROUGH BENT 4. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST 12" PRESTRESSED CONCRETE PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1 OR END BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST 30" DIA. PRODUCTION STEEL PIPE PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

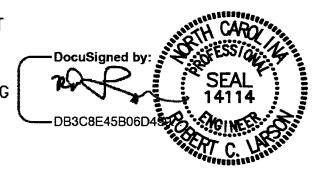
IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT 1 THROUGH BENT 4 TO NO LOWER THAN ELEVATION -30 FT, -45 FT, -45 FT AND -35 FT, RESPECTIVELY, WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 30". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR MAY PREDRILL THROUGH THE CENTER OF THE 30" DIA. STEEL PIPE PILES WITH CUTTING SHOES TO ELEVATIONS AS NOTED IN THE PLANS AT BENT 1 THROUGH BENT 4.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 RIGHT LANE STR-#6



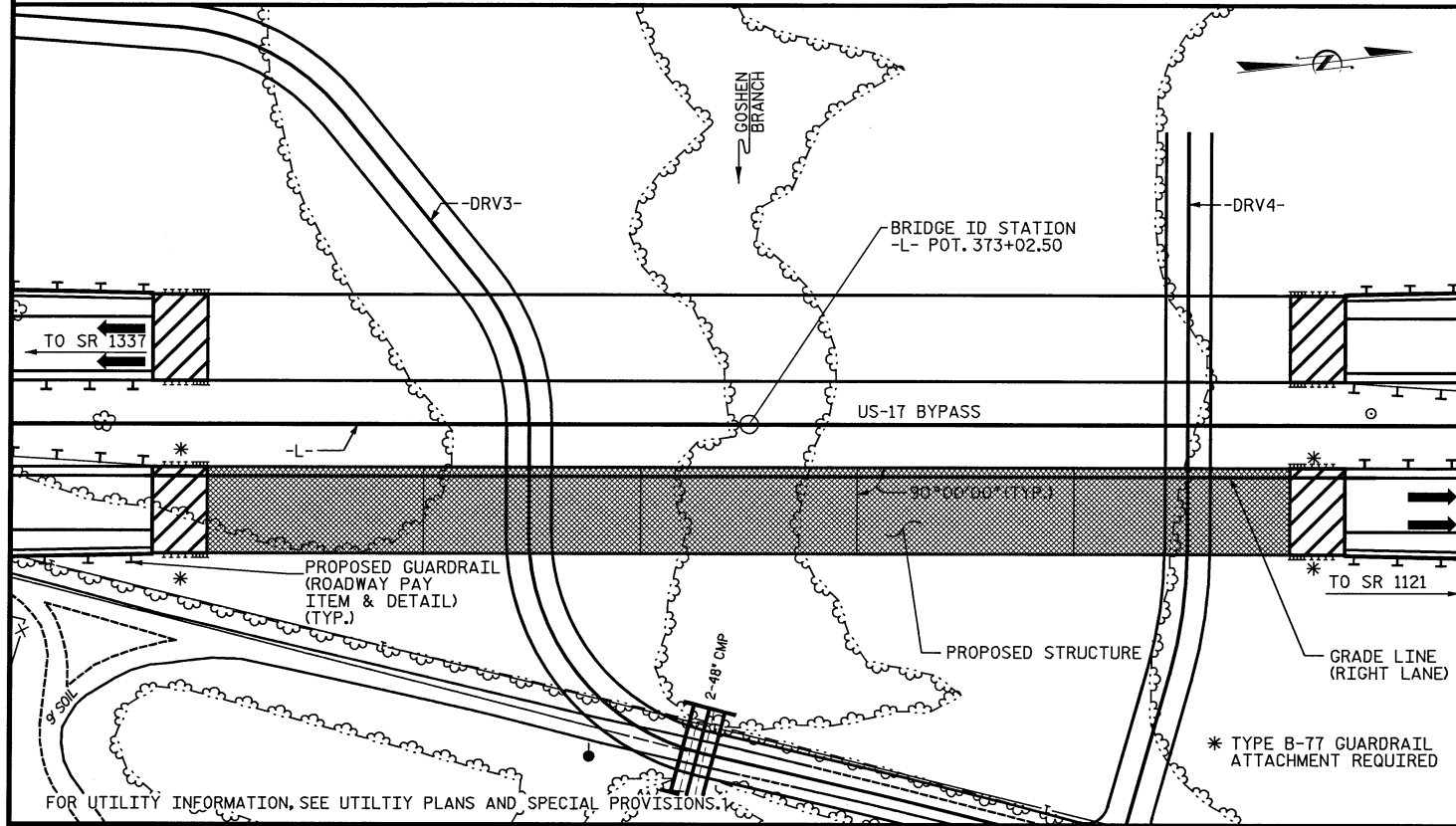
| | | |
|----------------------------|-------|-----------|
| DESIGN ENGINEER OF RECORD: | DATE: | 4/13/2015 |
| DRAWN BY: R.J. FLORY | DATE: | 03/17/14 |
| CHECKED BY: R. C. LARSON | DATE: | 4/01/14 |

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 2 OF 34

| REVISIONS | | | SHEET NO. | | |
|-----------|-----|-------|-----------|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

TOTAL SHEETS: S06-34

BENCHMARK: BM18 RR SPIKE IN GUY POLE -L- STATION 373+45.00 127' RIGHT ELEVATION 9.42' NAVD 88



LOCATION SKETCH

NOTES:


- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALIZATION).
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION -7.7 FT. BENT NO. 3 IS ELEVATION -7.7 FT. BENT NO. 4 IS ELEVATION -0.1 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- FOR INTERIOR BENTS 1-4 ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS. PAYMENT FOR THIS ACCESS IS INCLUDED IN THE LEFT LANE PAY ITEMS.

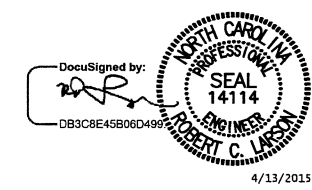
TOTAL BILL OF MATERIAL

| | PDA TESTING | REINFORCED CONCRETE DECK SLAB | GROOVING BRIDGE FLOORS | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | 54" PRESTRESSED CONCRETE GIRDERS | 12" PRESTRESSED CONCRETE PILES | PP 30X0.625 GALVANIZED STEEL PILES | STEEL PILE POINTS | PREDRILLING FOR PILES | PILE REDRIVES | CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | EXPANSION JOINT SEALS |
|----------------|-------------|-------------------------------|------------------------|------------------|-----------------------|-------------------|----------------------------------|--------------------------------|------------------------------------|-------------------|-----------------------|---------------|-----------------------|--------------------------------|-------------------------|----------------------|-----------------------|
| | EA | SQ.FT. | SQ.FT. | CU.YDS. | LUMP SUM | LBS. | NO. LIN.FT. | NO. LIN.FT. | NO. LIN.FT. | EA | LIN.FT. | EA. | LIN.FT. | TON | SY | LUMP SUM | LUMP SUM |
| SUPERSTRUCTURE | | 19505 | 18178 | | LUMP SUM | | 20 1876.0 | | | | | | 986.0 | | | LUMP SUM | LUMP SUM |
| END BENT 1 | | | | 46.7 | | 5516 | | 8 280 | | | | 3 | | 630 | 700 | | |
| BENT 1 | | | | 23.1 | | 3696 | | | 6 510 | 6 | | 3 | | | | | |
| BENT 2 | | | | 23.1 | | 3696 | | | 6 510 | 6 | | 3 | | | | | |
| BENT 3 | | | | 23.1 | | 3696 | | | 6 510 | 6 | | 3 | | | | | |
| BENT 4 | | | | 23.1 | | 3696 | | | 6 510 | 6 | | 3 | | | | | |
| END BENT 2 | | | | 45.2 | | 5421 | | 8 480 | | | | 3 | | 540 | 600 | | |
| TOTAL | 3 | 19505 | 18178 | 184.3 | LUMP SUM | 25,721 | 20 1876.0 | 16 760 | 24 2040 | 24 1010 | 18 | 986.0 | 1170 | 1300 | LUMP SUM | LUMP SUM | |

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 3 OF 4

DESIGNED BY: 
 DESIGN ENGINEER OF RECORD: DATE: 4/13/2015
 DRAWN BY: R.J. FLORY DATE: 03/14/14
 CHECKED BY: R.C. LARSON DATE: 04/14/14



DocuSigned by:
 DB3C8E45B06D498
 4/13/2015
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 3 OF 34

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 RIGHT LANE STR-#6

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | | | 3 | |
| 2 | | | 4 | |

TOTAL SHEETS 506-34

LOAD FACTORS:

| | | | |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ_{DC} | γ_{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

| LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------------------------|----------------------|-----------------------------|-----------------------------|---------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|------|----------------|
| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING (#) | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | | | | COMMENT NUMBER |
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | | |
| DESIGN LOAD RATING | HL-93 (INVENTORY) | N/A | 1 | 1.02 | -- | 1.75 | 0.917 | 1.68 | 1 | E | 36.8 | 1.066 | 1.20 | 1 | I | 87.6 | 0.80 | 0.858 | 1.02 | 1 | I | 46.2 | | |
| | HL-93 (OPERATING) | N/A | | 1.53 | -- | 1.35 | 0.917 | 2.18 | 1 | E | 36.8 | 1.066 | 1.53 | 1 | I | 87.6 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20 (INVENTORY) | 36.000 | 2 | 1.41 | 50.8 | 1.75 | 0.858 | 2.31 | 1 | E | 36.8 | 1.066 | 1.49 | 1 | I | 87.6 | 0.80 | 0.858 | 1.41 | 1 | I | 46.2 | | |
| | HS-20 (OPERATING) | 36.000 | | 2.20 | 79.2 | 1.35 | 0.858 | 2.99 | 1 | E | 36.8 | 1.066 | 2.20 | 1 | I | 55.5 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 3.26 | 44.0 | 1.40 | 0.917 | 6.69 | 1 | E | 36.8 | 1.066 | 5.30 | 1 | I | 55.5 | 0.80 | 0.858 | 3.26 | 1 | I | 46.2 | |
| | | SNGARBS2 | 20.000 | | 2.38 | 47.6 | 1.40 | 0.917 | 4.88 | 1 | E | 36.8 | 1.066 | 3.70 | 1 | I | 55.5 | 0.80 | 0.858 | 2.38 | 1 | I | 46.2 | |
| | | SNAGRIS2 | 22.000 | | 2.24 | 49.2 | 1.40 | 0.917 | 4.58 | 1 | E | 36.8 | 1.066 | 3.41 | 1 | I | 55.5 | 0.80 | 0.858 | 2.24 | 1 | I | 46.2 | |
| | | SNCOTTS3 | 27.250 | | 1.62 | 44.1 | 1.40 | 0.917 | 3.34 | 1 | E | 36.8 | 1.066 | 2.57 | 1 | I | 55.5 | 0.80 | 0.858 | 1.62 | 1 | I | 46.2 | |
| | | SNAGRS4 | 34.925 | | 1.34 | 46.7 | 1.40 | 0.917 | 2.76 | 1 | E | 36.8 | 1.066 | 2.09 | 1 | I | 55.5 | 0.80 | 0.858 | 1.34 | 1 | I | 46.2 | |
| | | SNS5A | 35.550 | | 1.32 | 46.9 | 1.40 | 0.917 | 2.71 | 1 | E | 36.8 | 1.066 | 1.85 | 1 | I | 87.6 | 0.80 | 0.858 | 1.32 | 1 | I | 46.2 | |
| | | SNS6A | 39.950 | | 1.21 | 48.3 | 1.40 | 0.917 | 2.47 | 1 | E | 36.8 | 1.066 | 1.65 | 1 | I | 87.6 | 0.80 | 0.858 | 1.21 | 1 | I | 46.2 | |
| | | SNS7B | 42.000 | | 1.15 | 48.3 | 1.40 | 0.917 | 2.36 | 1 | E | 36.8 | 1.066 | 1.60 | 1 | I | 87.6 | 0.80 | 0.858 | 1.15 | 1 | I | 46.2 | |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.47 | 48.5 | 1.40 | 0.917 | 3.03 | 1 | E | 36.8 | 1.066 | 1.99 | 1 | I | 87.6 | 0.80 | 0.858 | 1.47 | 1 | I | 46.2 | |
| | | TNT4A | 33.075 | | 1.47 | 48.6 | 1.40 | 0.917 | 3.00 | 1 | E | 36.8 | 1.066 | 1.99 | 1 | I | 87.6 | 0.80 | 0.858 | 1.47 | 1 | I | 46.2 | |
| | | TNT6A | 41.600 | | 1.20 | 49.9 | 1.40 | 0.917 | 2.46 | 1 | E | 36.8 | 1.066 | 1.67 | 1 | I | 87.6 | 0.80 | 0.858 | 1.20 | 1 | I | 46.2 | |
| | | TNT7A | 42.000 | | 1.20 | 50.4 | 1.40 | 0.917 | 2.46 | 1 | E | 36.8 | 1.066 | 1.65 | 1 | I | 87.6 | 0.80 | 0.858 | 1.20 | 1 | I | 46.2 | |
| | | TNT7B | 42.000 | | 1.22 | 51.2 | 1.40 | 0.917 | 2.50 | 1 | E | 36.8 | 1.066 | 1.57 | 1 | I | 87.6 | 0.80 | 0.858 | 1.22 | 1 | I | 46.2 | |
| | | TNAGRIT4 | 43.000 | | 1.18 | 50.7 | 1.40 | 0.917 | 2.41 | 1 | E | 36.8 | 1.066 | 1.54 | 1 | I | 87.6 | 0.80 | 0.858 | 1.18 | 1 | I | 46.2 | |
| | | TNAGT5A | 45.000 | | 1.12 | 50.4 | 1.40 | 0.917 | 2.30 | 1 | E | 36.8 | 1.066 | 1.50 | 1 | I | 87.6 | 0.80 | 0.858 | 1.12 | 1 | I | 46.2 | |
| TNAGT5B | 45.000 | 3 | 1.10 | 49.5 | 1.40 | 0.917 | 2.26 | 1 | E | 36.8 | 1.066 | 1.47 | 1 | I | 87.6 | 0.80 | 0.858 | 1.10 | 1 | I | 46.2 | | | |

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

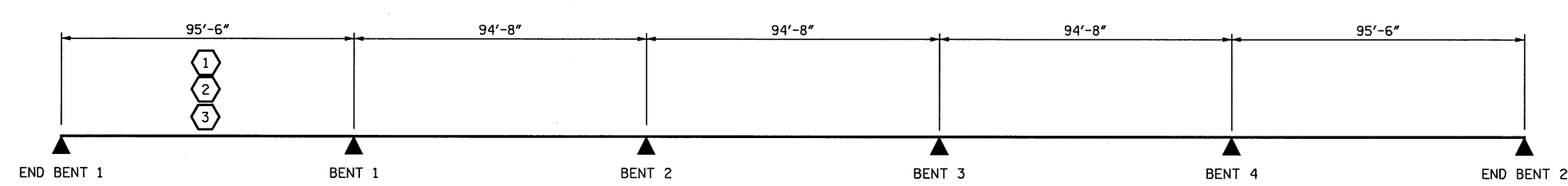
3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

E - EXTERIOR GIRDER

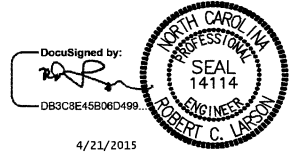


LRFR SUMMARY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)**
 STD. NO. LRFR1 RIGHT LANE STR-#6



KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 4 OF 34

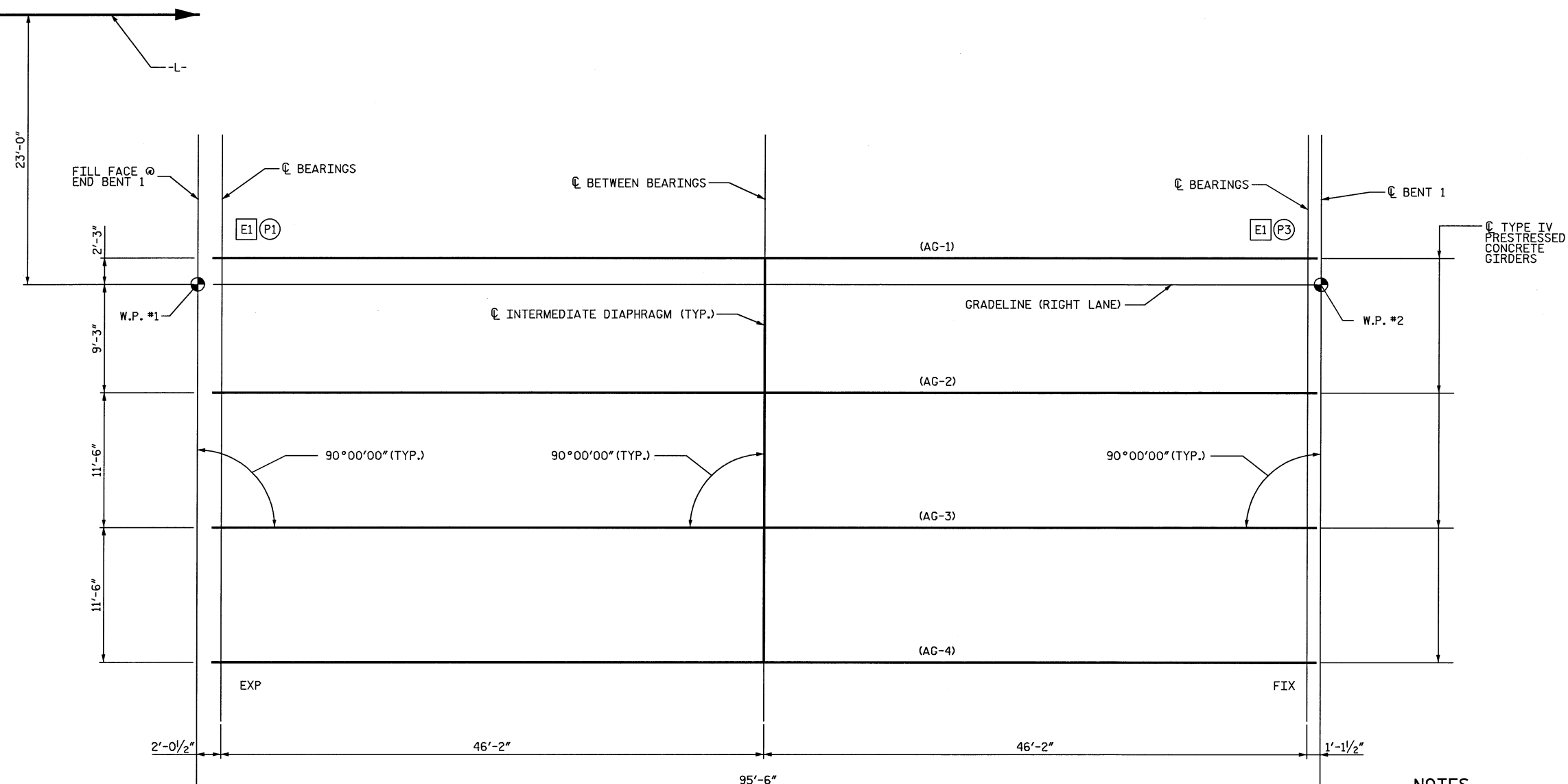
DESIGN ENGINEER OF RECORD: DATE: 4/21/2015

DRAWN BY: E. C. DECOLA DATE: 01/21/14
 CHECKED BY: R. C. LARSON DATE: 04/10/14

DRAWN BY: MAA 1/08 REV. 11/12/08RR MAA/GM
 CHECKED BY: GM/DI 2/08 REV. 10/1/11 MAA/GM

| REVISIONS | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----------|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

TOTAL SHEETS: 506-34



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS (SPANS A AND E)

(SPAN A SHOWN, SPAN E SIMILAR EXCEPT USE (P2) @ END BENT 2 AND (P4) @ BENT 4)

- NOTES**
1. ELASTIC BEARINGS INDICATED THUS:
EN (N = NUMBER)
 2. SOLE PLATES INDICATED THUS:
PN (N = NUMBER)
 3. FOR INTERMEDIATE DIAPHRAGMS SEE STD PCG10.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|--|------------------|-------|--------|--------|--------|--------|--------|--------|--------|-------|------|
| 0.6" Ø LOW RELAXATION STRANDS | SPANS A THRU E | | | | | | | | | | |
| | GIRDERS 1 THRU 4 | | | | | | | | | | |
| LOCATION | 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ 0.00 | 0.09 | 0.16 | 0.21 | 0.23 | 0.24 | 0.23 | 0.21 | 0.16 | 0.09 | 0.00 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. | ↓ 0.00 | 0.05 | 0.09 | 0.13 | 0.15 | 0.16 | 0.15 | 0.13 | 0.09 | 0.05 | 0.00 |
| FINAL CAMBER | ↑ 0" | 9/16" | 13/16" | 15/16" | 15/16" | 15/16" | 15/16" | 15/16" | 13/16" | 9/16" | 0" |

* INCLUDES FUTURE WEARING SURFACE
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

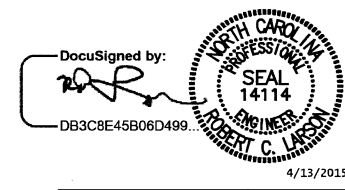
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-


SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 GIRDER LAYOUT**

RIGHT LANE STR-#6

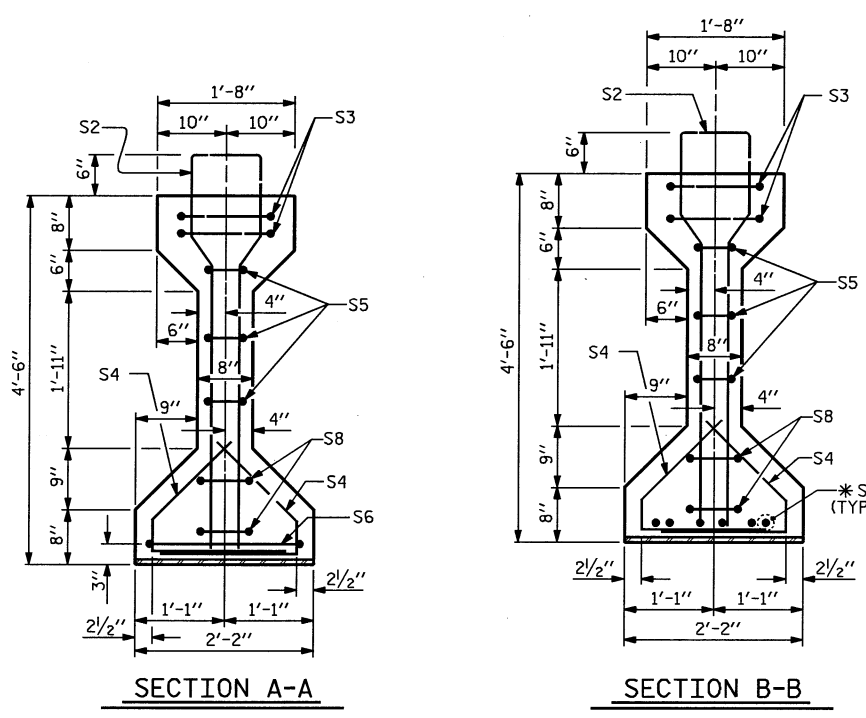


DESIGNED BY: 
 DESIGN ENGINEER OF RECORD: _____ DATE: 4/13/2015

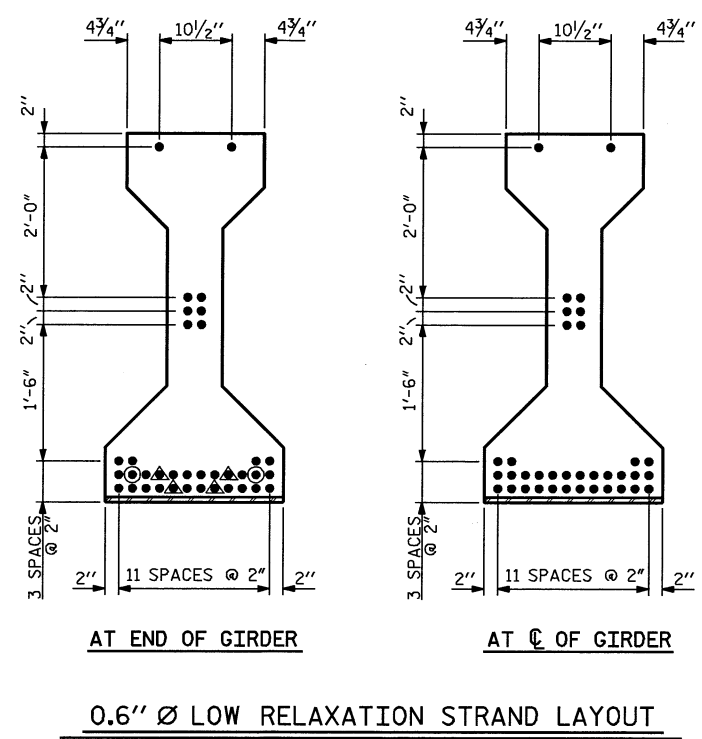
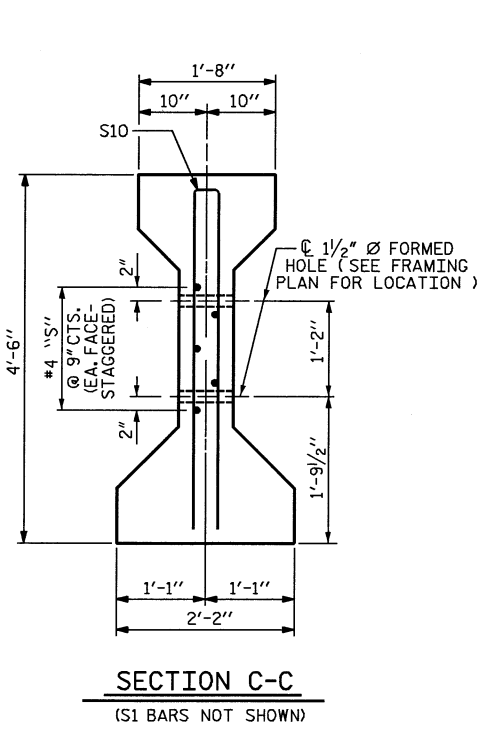
DRAWN BY: Z. SU DATE: 02/14/14
 CHECKED BY: R. C. LARSON DATE: 03/16/14

| KCI Associates of North Carolina, P.A. | | | | | | REVISIONS | | | | | | SHEET NO. | |
|--|-----|-------|-----|-----|-------|--------------|--|--|--|--|--|-----------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 506-ID | | | | | | | |
| 1 | | | 3 | | | TOTAL SHEETS | | | | | | | |
| 2 | | | 4 | | | 506-34 | | | | | | | |

DWG. REF. NO. 10 OF 34

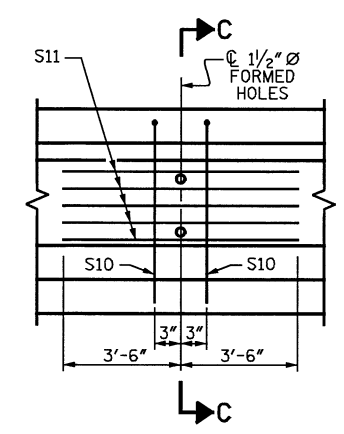


* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◎ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



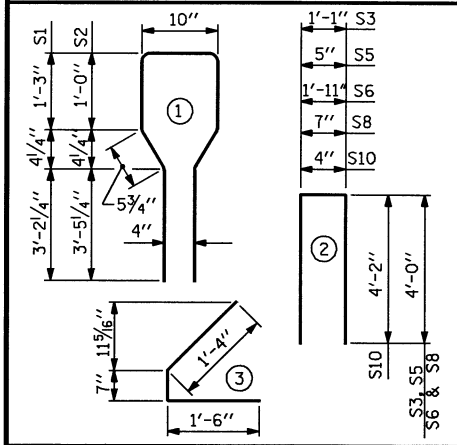
| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|---|---|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 108 | #4 | 1 | 10'-8" | 770 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 88 | #4 | 3 | 3'-5" | 201 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| S6 | 1 | #4 | 2 | 9'-11" | 7 |
| *S7 | 6 | #5 | STR | 3'-8" | 23 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 1 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|-------------------|----------------------|--|
| REINFORCING STEEL | 8000 PSI CONCRETE | 0.6" Ø L. R. STRANDS | |
| LB. | C.Y. | No. | |
| 1316 | 19.0 | 36 | |

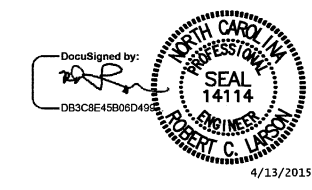
GIRDERS REQUIRED

| | NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------|--------------|
| SPAN A | 4 | 93'-9" | 375'-0" |
| SPAN E | 4 | 93'-9" | 375'-0" |

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

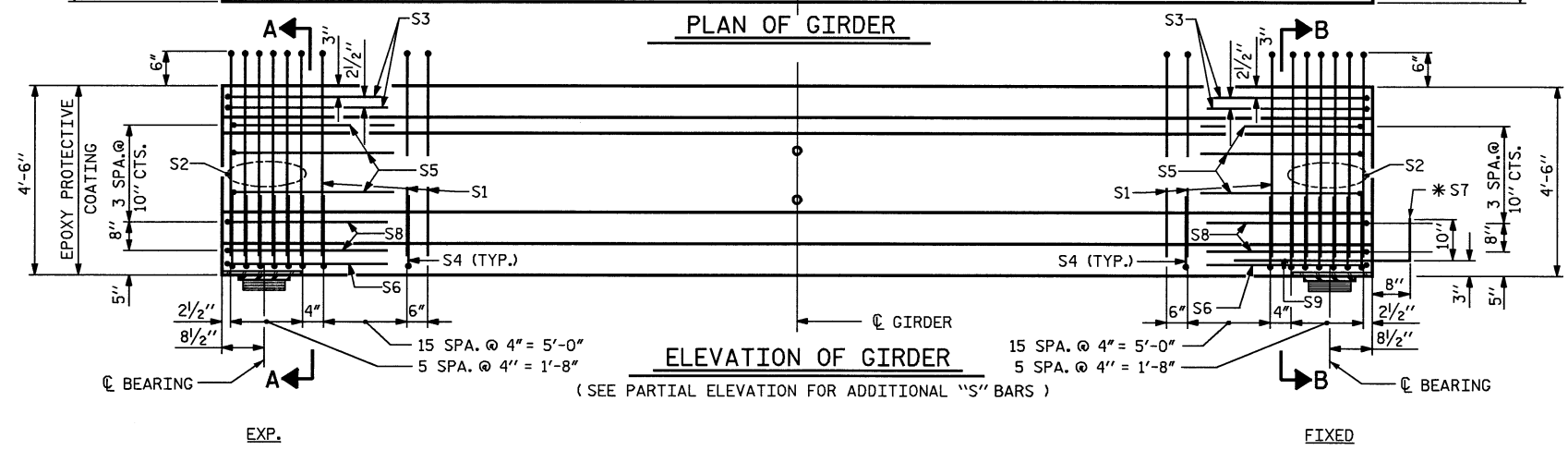
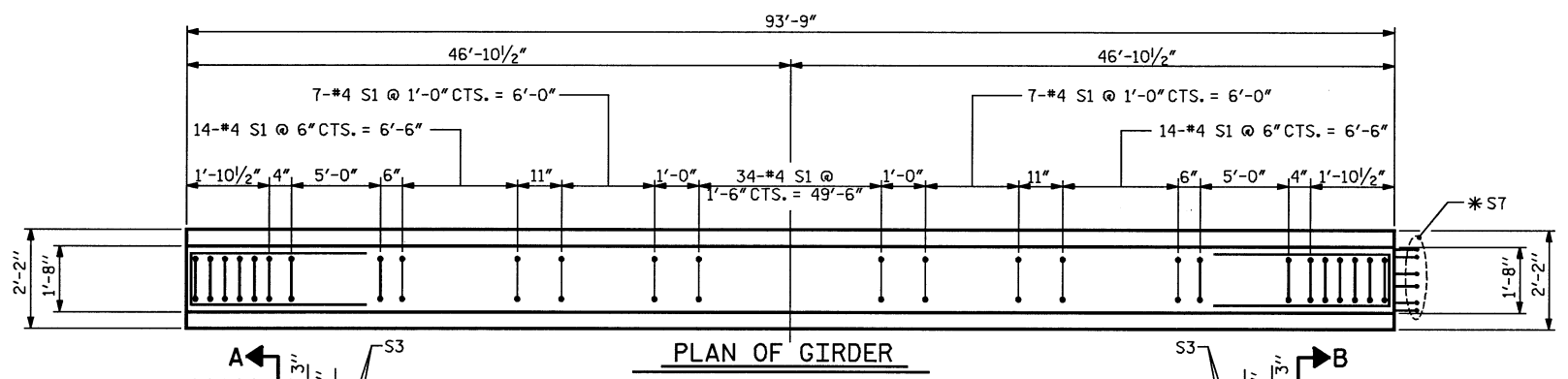
SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 SPAN A OR E
 RIGHT LANE STR-#6
 STD. NO. PCG6



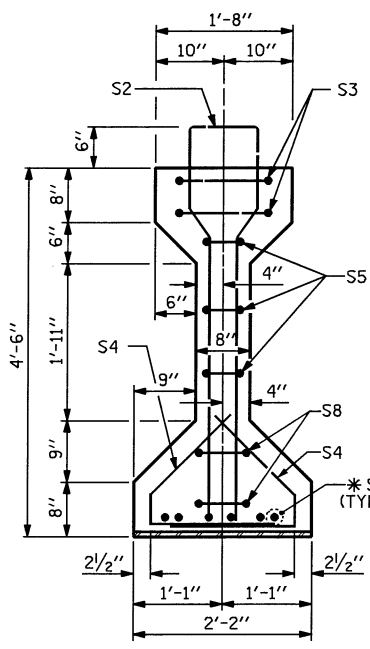
DESIGNED BY: R. C. LARSON
 DRAWN BY: Z. SU
 CHECKED BY: R. C. LARSON

| REVISIONS | | | | | |
|-----------|-----|-------|-----|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

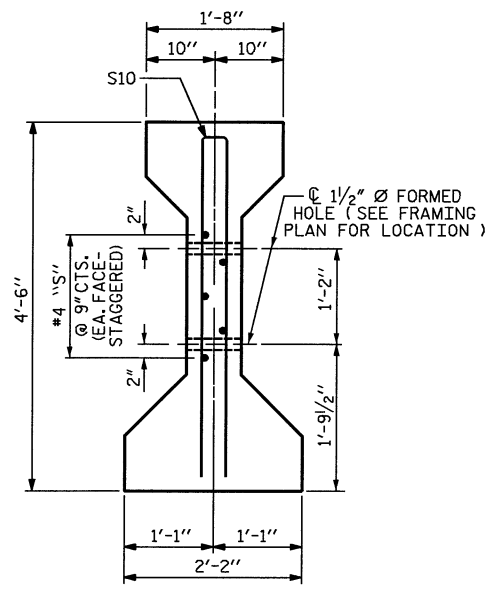


DRAWN BY: JMB 12/87
 CHECKED BY: ARB 12/87
 REV. 8/16/99RR RWW/LES
 REV. 5/1/06R TLA/GM
 REV. 10/1/11 MAA/GM
 DESIGN ENGINEER OF RECORD: R. C. LARSON DATE: 4/13/2015
 DRAWN BY: Z. SU DATE: 02/14/14
 CHECKED BY: R. C. LARSON DATE: 03/16/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 12 OF 34

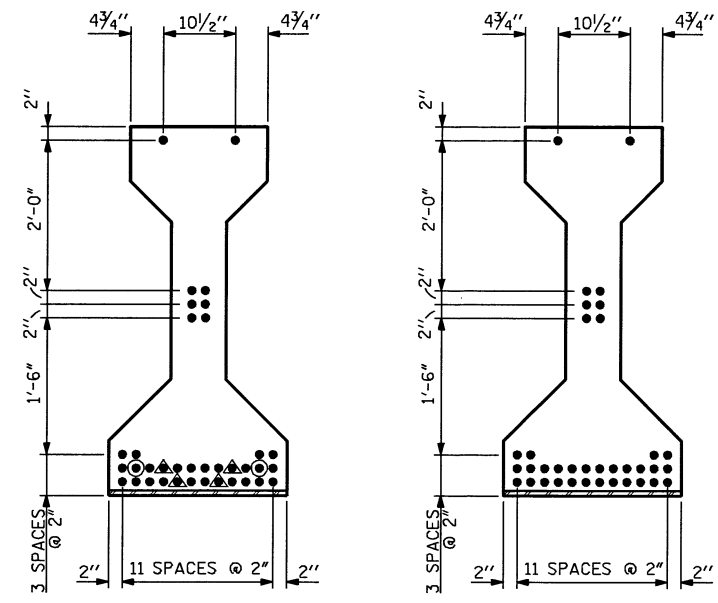


SECTION A-A



SECTION B-B
(S1 BARS NOT SHOWN)

* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



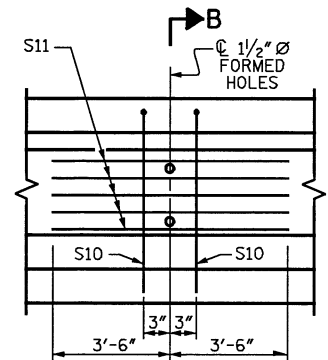
AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

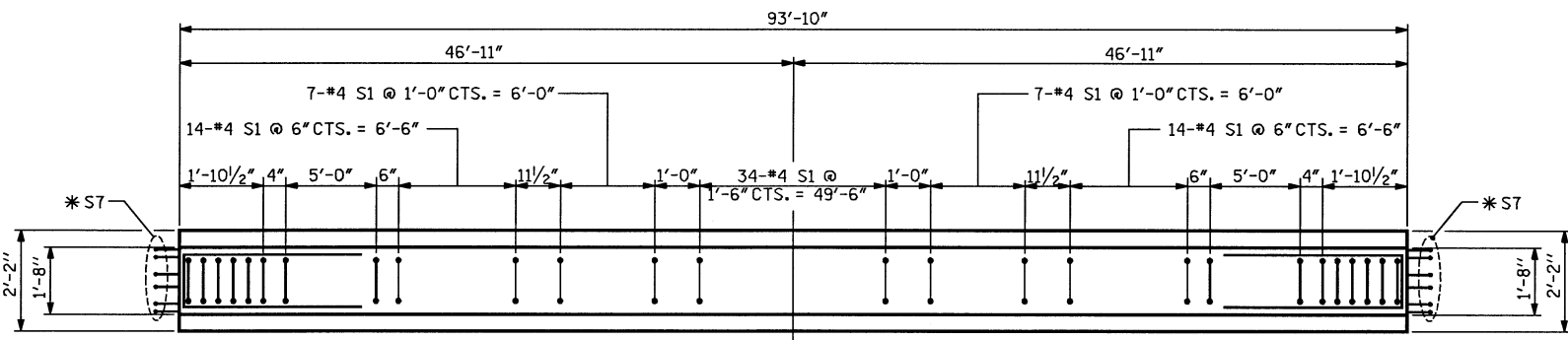
DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

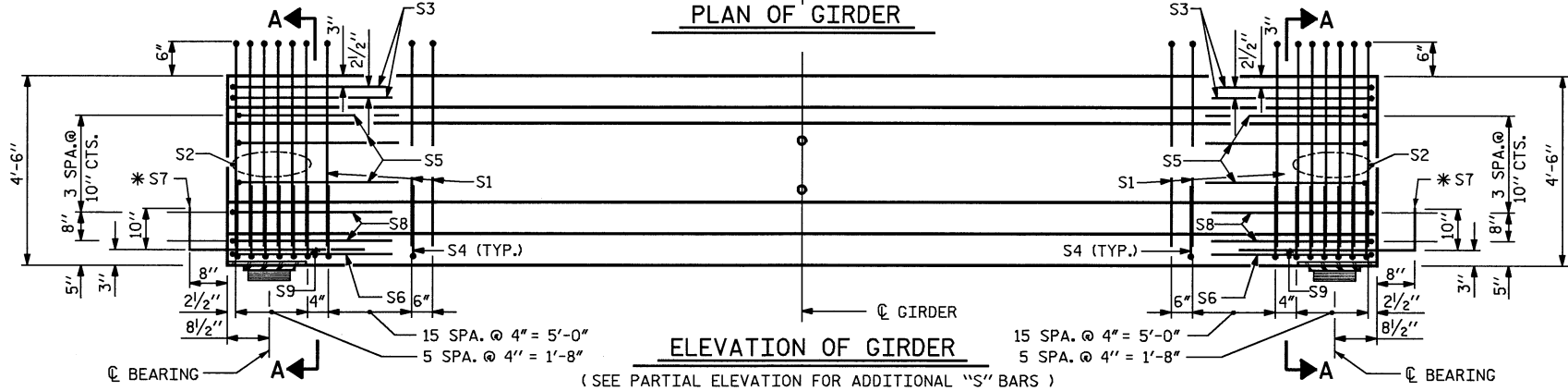


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS

| AREA (SQ. INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
|-------------------|-------------------------------------|-------------------------------------|
| 0.217 | 58,600 | 43,950 |

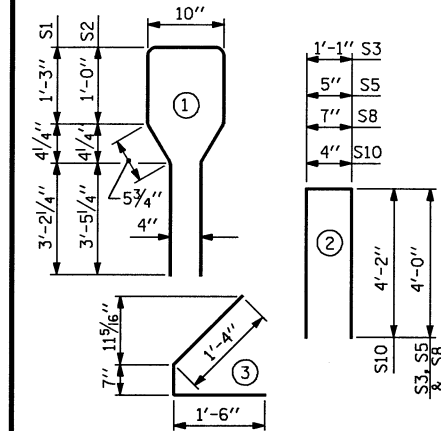
REINFORCING STEEL FOR ONE GIRDER

| BAR NUMBER | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|------------|--------|------|------|--------|--------|
| S1 | 108 | #4 | 1 | 10'-8" | 770 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 88 | #4 | 3 | 3'-5" | 201 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| S6 | 1 | #4 | 2 | 9'-11" | 7 |
| *S7 | 12 | #5 | STR | 3'-8" | 46 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

| REINFORCING STEEL LB. | 8000 PSI CONCRETE C.Y. | 0.6" Ø L. R. STRANDS No. |
|-----------------------|------------------------|--------------------------|
| 1332 | 19.0 | 36 |

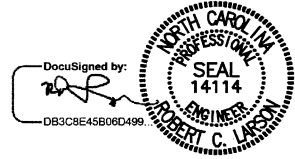
GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|----------|---------|--------------|
| SPAN B 4 | 93'-10" | 375'-4" |
| SPAN C 4 | 93'-10" | 375'-4" |
| SPAN D 4 | 93'-10" | 375'-4" |

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
SPAN B, C, OR D
RIGHT LANE STR-#6



KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 13 OF 34

DRAWN BY: JMB 12/87
CHECKED BY: ARB 12/87
DESIGN ENGINEER OF RECORD: R.C. LARSON
DATE: 03/16/14

REV. 8/16/99RR RWW/LES
REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM

DATE: 4/13/2015

DRAWN BY: Z. SU DATE: 02/14/14
CHECKED BY: R. C. LARSON DATE: 03/16/14

| NO. | BY: | DATE: | NO. | BY: | DATE: | SHEET NO. |
|-----|-----|-------|-----|-----|-------|---------------------|
| 1 | | | 3 | | | S06-13 |
| 2 | | | 4 | | | TOTAL SHEETS S06-34 |

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

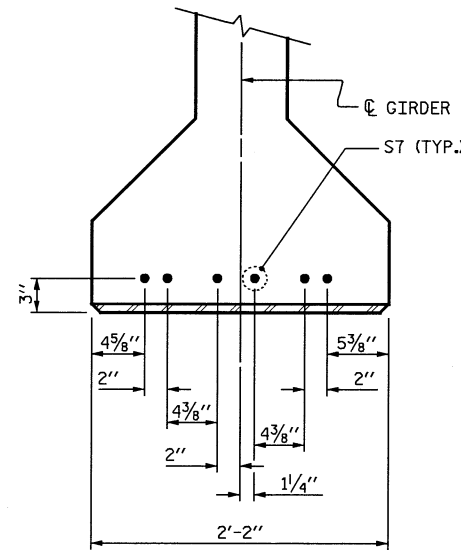
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

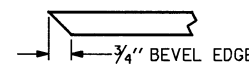
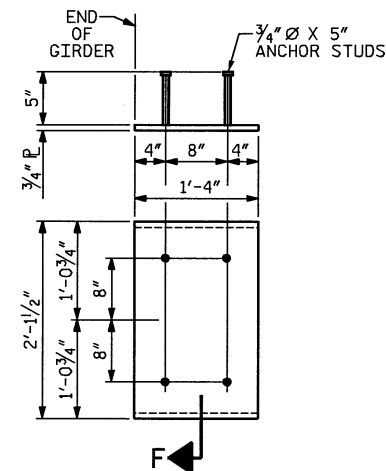
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



DETAIL "A"



SECTION "F"

(SEE NOTES)

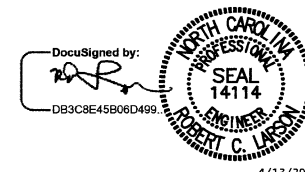
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS
RIGHT LANE STR-#6
 STD. NO. PCG9

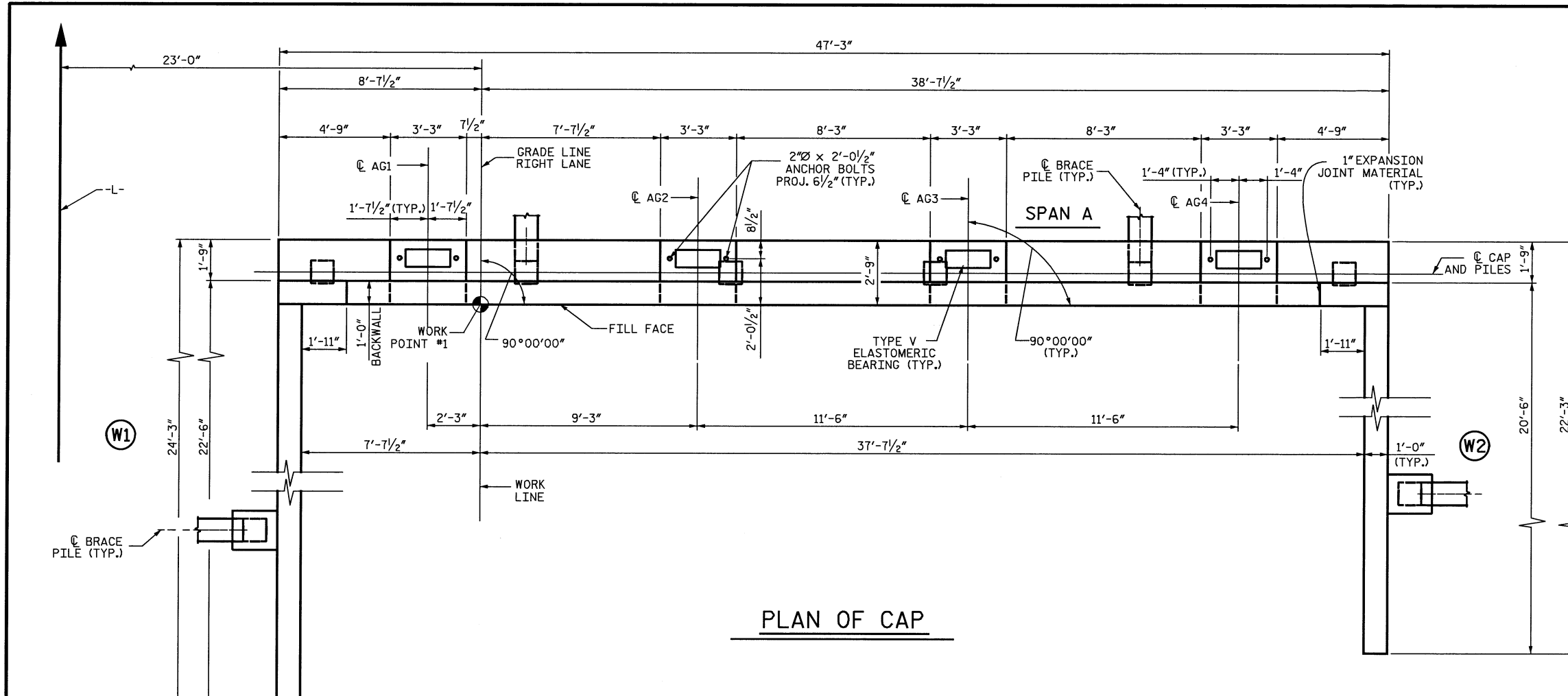


DocuSigned by:
 DB3C8E45B06D499
 4/13/2015
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 14 OF 34

| REVISIONS | | | SHEET NO. | | |
|-----------|-----|-------|-----------|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

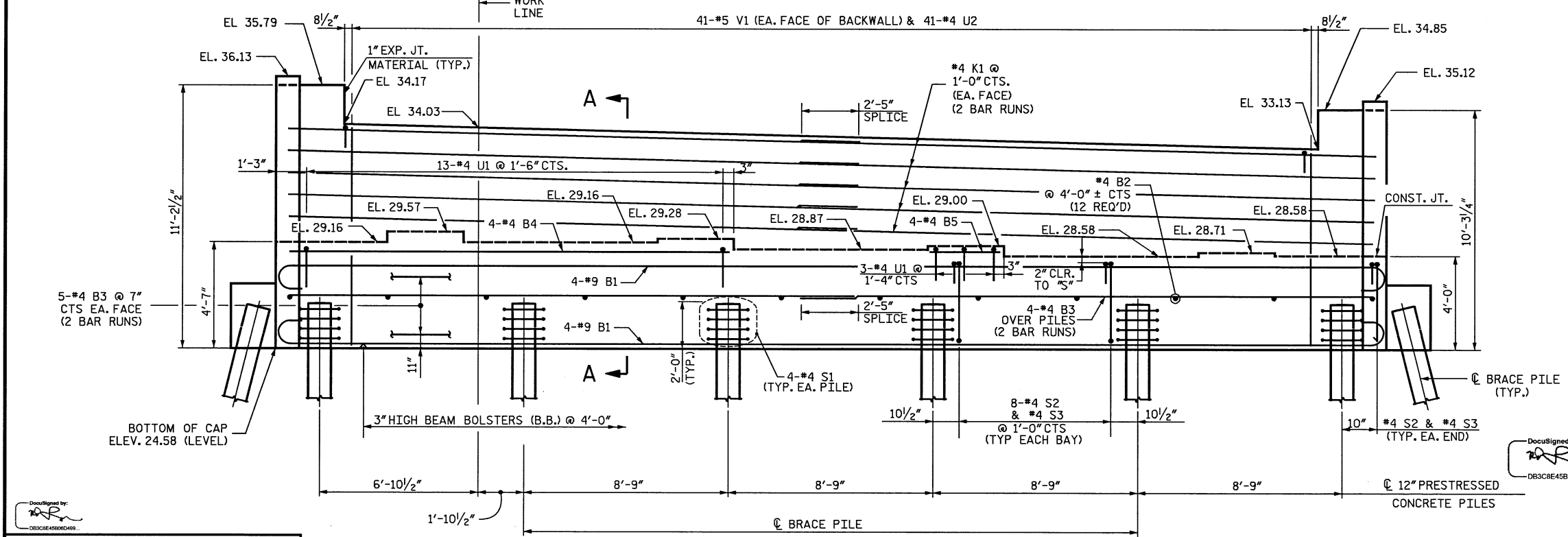
TOTAL SHEETS: 34
 SHEET NO. S06-14

| | |
|---|------------------------|
| DRAWN BY : ELR 11/91 | REV. 7/10/01RR LES/RDR |
| CHECKED BY : GRP 11/91 | REV. 5/1/06 TLA/GM |
| | REV. 10/1/11 MAA/GM |
| DESIGN ENGINEER OF RECORD: <u>[Signature]</u> DATE: _____ | |
| DRAWN BY : Z. SU | DATE : 02/14/14 |
| CHECKED BY : R. C. LARSON | DATE : 03/16/14 |



NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- FOR "BLOCKOUT IN WINGWALL", SEE END BENT 2.



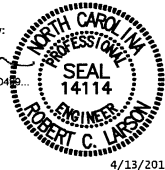
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

RIGHT LANE STR-#6

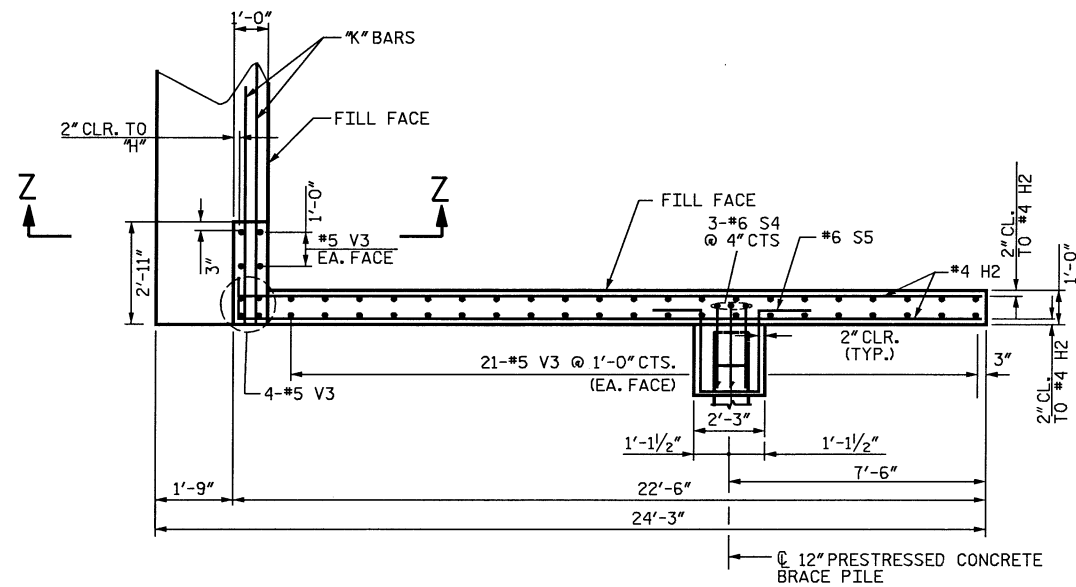


DESIGN ENGINEER OF RECORD: DATE: 4/13/2015
 DRAWN BY: E. C. DECOLA DATE: 03/19/14
 CHECKED BY: R. C. LARSON DATE: 04/02/14

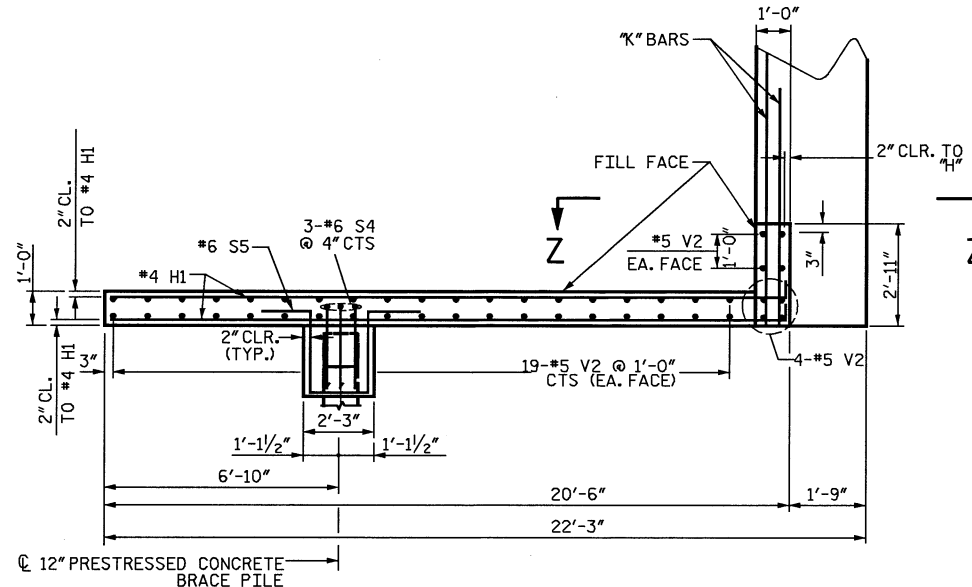
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 22 OF 34

| REVISIONS | | SHEET NO. | |
|-----------|------|-----------|------|
| NO. | DATE | NO. | DATE |
| 1 | | 3 | |
| 2 | | 4 | |

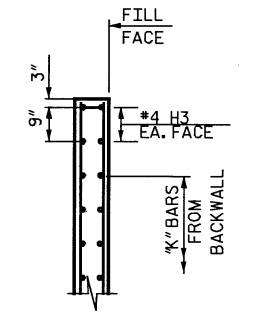
TOTAL SHEETS: 506-22, 506-34



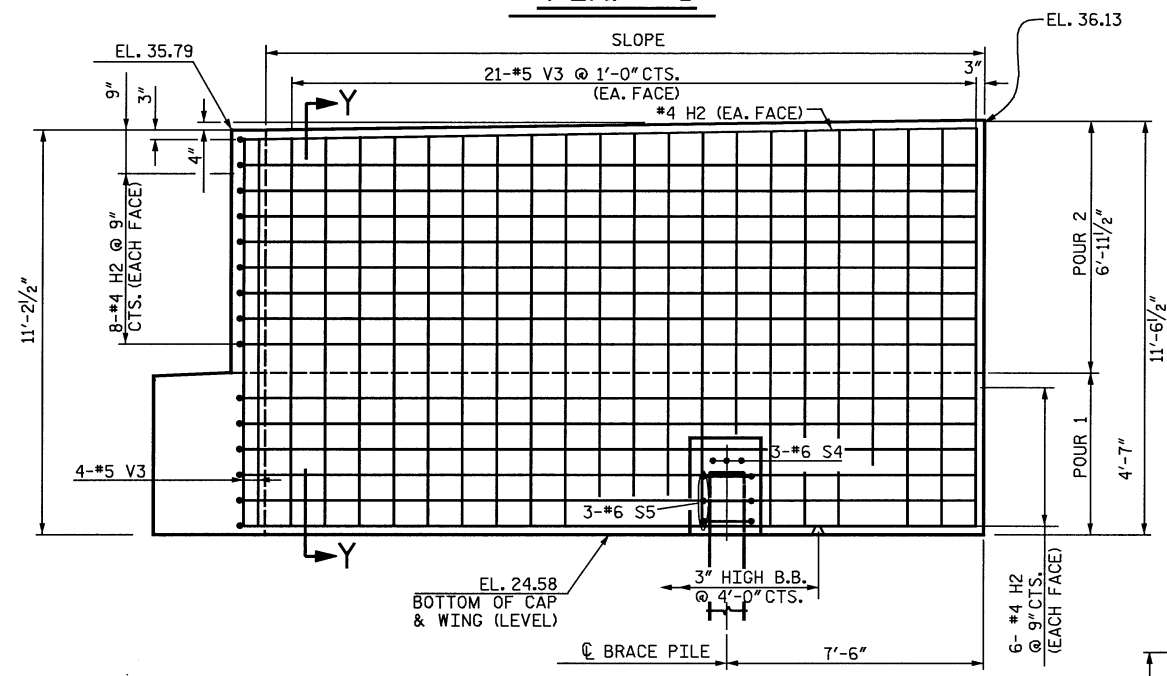
PLAN W1



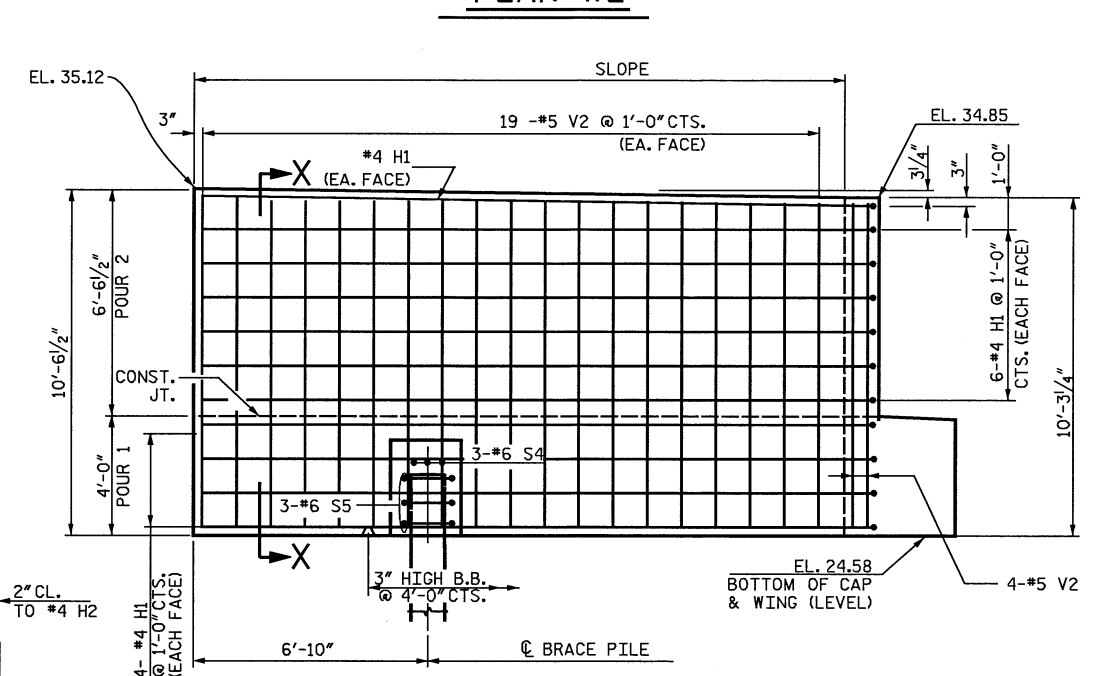
PLAN W2



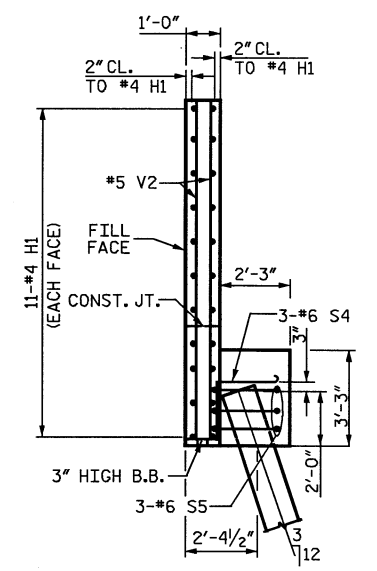
SECTION Z-Z



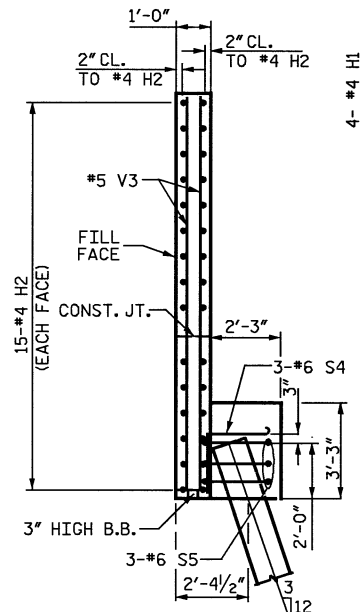
ELEVATION W1



ELEVATION W2



SECTION X-X



SECTION Y-Y

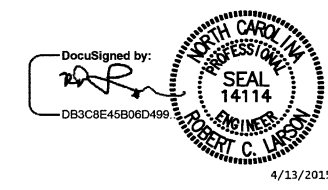
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

RIGHT LANE STR-#6



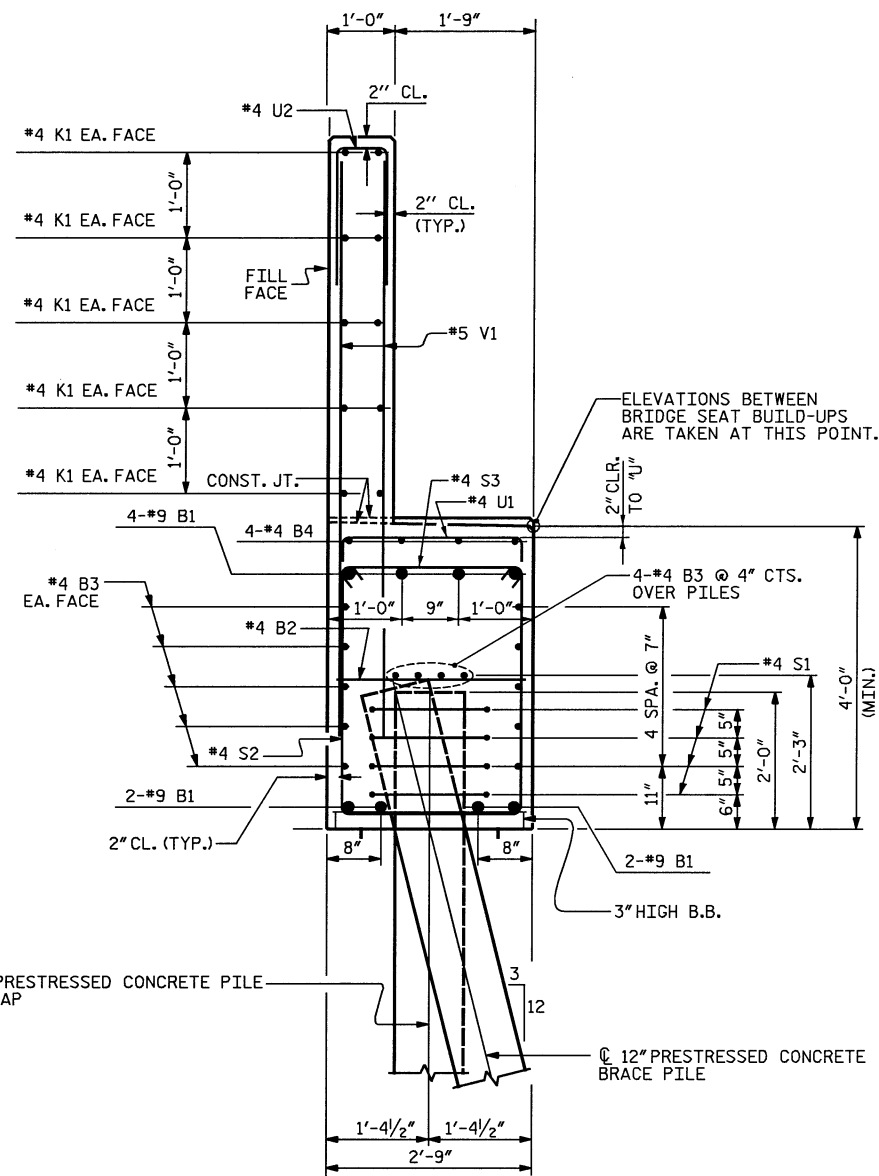
DESIGNED BY: E. C. DECOLA
 CHECKED BY: R. C. LARSON
 DATE: 03/19/14
 DATE: 04/02/14

| REVISIONS | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----------|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

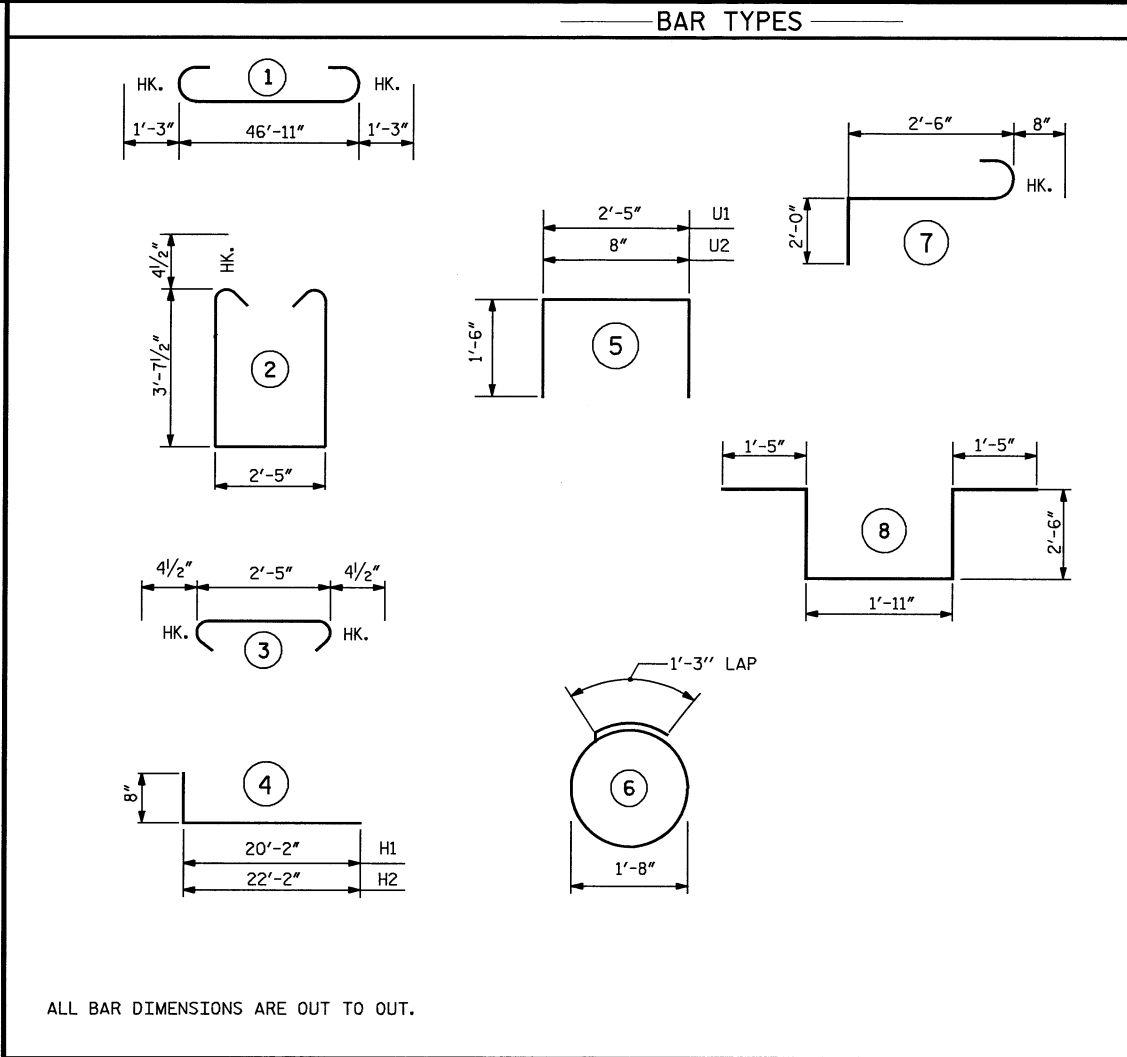
TOTAL SHEETS: 506-34

DESIGN ENGINEER OF RECORD: E. C. DECOLA DATE: 03/19/14
 DRAWN BY: E. C. DECOLA DATE: 03/19/14
 CHECKED BY: R. C. LARSON DATE: 04/02/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 23 OF 34

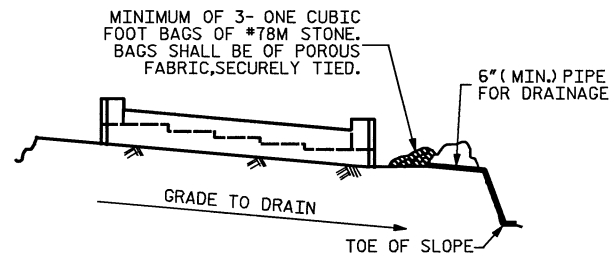


SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT.

| BILL OF MATERIAL | | | | | |
|--|-----|------|------|-------------|--------|
| END BENT 1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | 9 | 1 | 49'-5" | 1344 |
| B2 | 12 | 4 | STR. | 2'-5" | 19 |
| B3 | 28 | 4 | STR. | 24'-8" | 461 |
| B4 | 4 | 4 | STR. | 19'-2" | 51 |
| B5 | 4 | 4 | STR. | 2'-11" | 8 |
| H1 | 22 | 4 | 4 | 20'-10" | 306 |
| H2 | 30 | 4 | 4 | 22'-10" | 458 |
| H3 | 8 | 4 | STR. | 2'-7" | 14 |
| K1 | 20 | 4 | STR. | 24'-8" | 330 |
| S1 | 24 | 4 | 6 | 6'-6" | 104 |
| S2 | 42 | 4 | 2 | 10'-5" | 292 |
| S3 | 42 | 4 | 3 | 3'-2" | 89 |
| S4 | 6 | 6 | 7 | 5'-2" | 47 |
| S5 | 6 | 6 | 8 | 9'-9" | 88 |
| U1 | 16 | 4 | 5 | 5'-5" | 58 |
| U2 | 41 | 4 | 5 | 3'-8" | 100 |
| V1 | 82 | 5 | STR. | 8'-3" | 706 |
| V2 | 46 | 5 | STR. | 9'-11" | 476 |
| V3 | 50 | 5 | STR. | 10'-10" | 565 |
| REINFORCING STEEL, LB | | | | 5516 | |
| CLASS A CONCRETE, CY | | | | POUR 1 28.1 | |
| | | | | POUR 2 18.6 | |
| | | | | TOTAL 46.7 | |
| 12" PRESTRESSED CONCRETE PILES | | | | NO. 8 | |
| | | | | LF 280 | |
| PILE REDRIVES | | | | EA. 3 | |
| NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE. | | | | | |



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

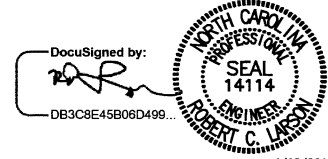
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

RIGHT LANE STR-#6



DESIGNED BY: E. C. DECOLA DATE: 03/19/14
 CHECKED BY: R. C. LARSON DATE: 04/02/14

| REVISIONS | | | | | |
|-----------|----|------|-----|----|------|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

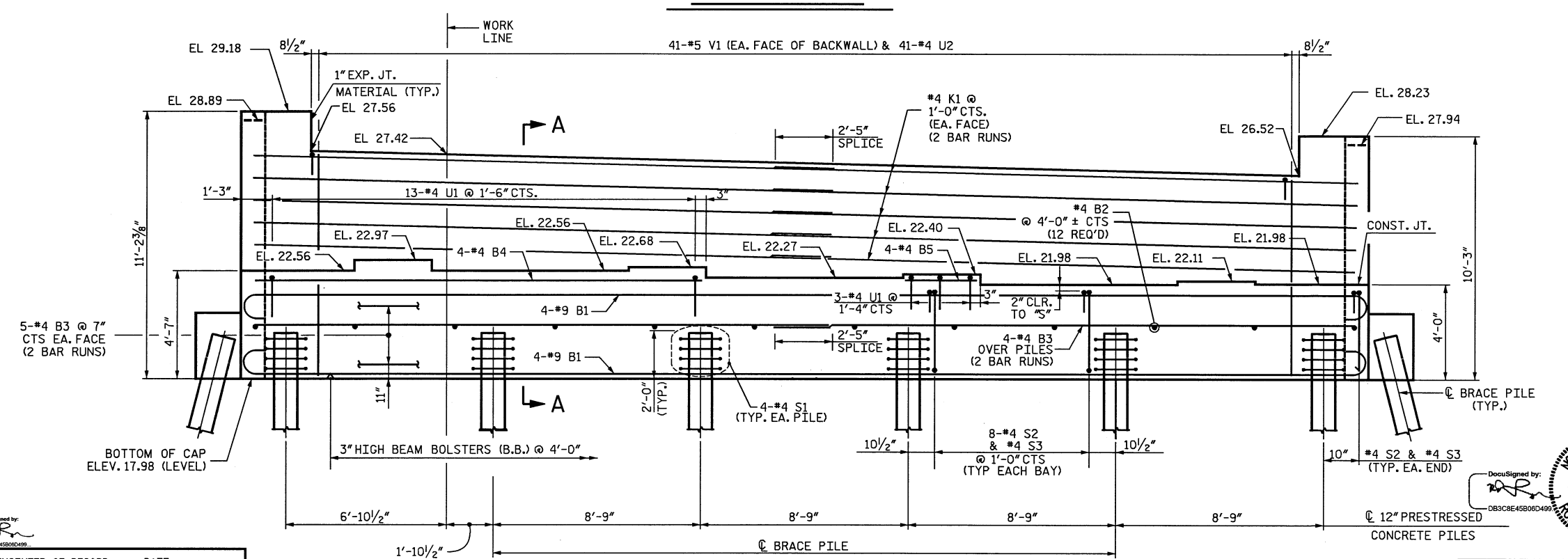
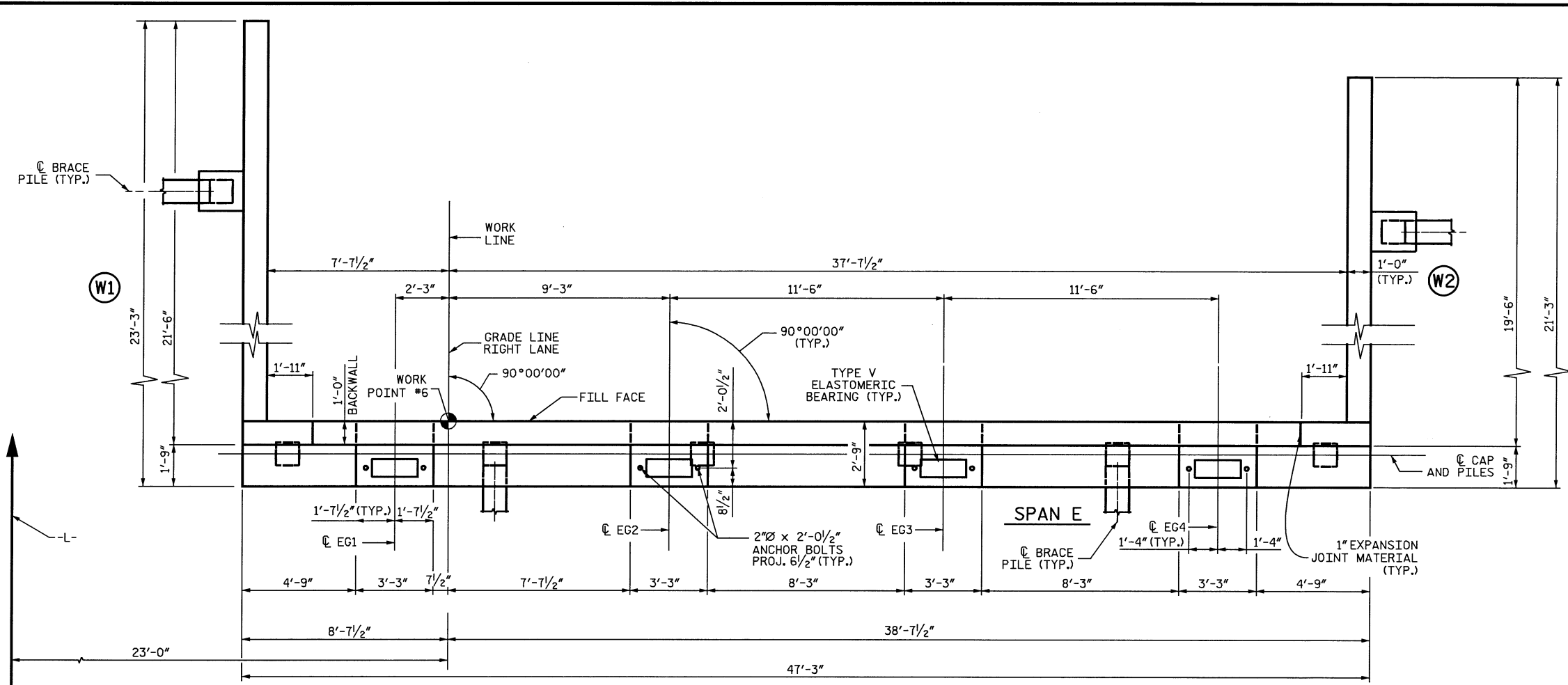
SHEET NO. S06-24
 TOTAL SHEETS S06-34

DESIGN ENGINEER OF RECORD: DATE: 4/13/2015
 DRAWN BY: E. C. DECOLA DATE: 03/19/14
 CHECKED BY: R. C. LARSON DATE: 04/02/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 24 OF 34

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- FOR "TEMPORARY DRAINAGE AT END BENT", SEE END BENT 1.



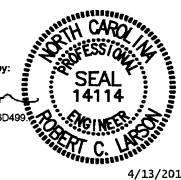
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

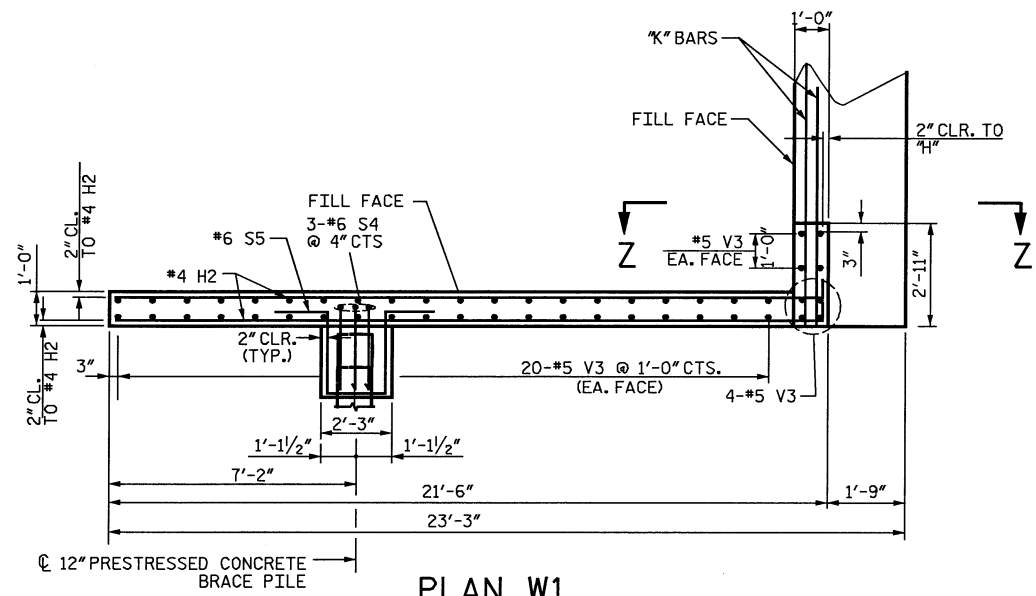
RIGHT LANE STR-#6



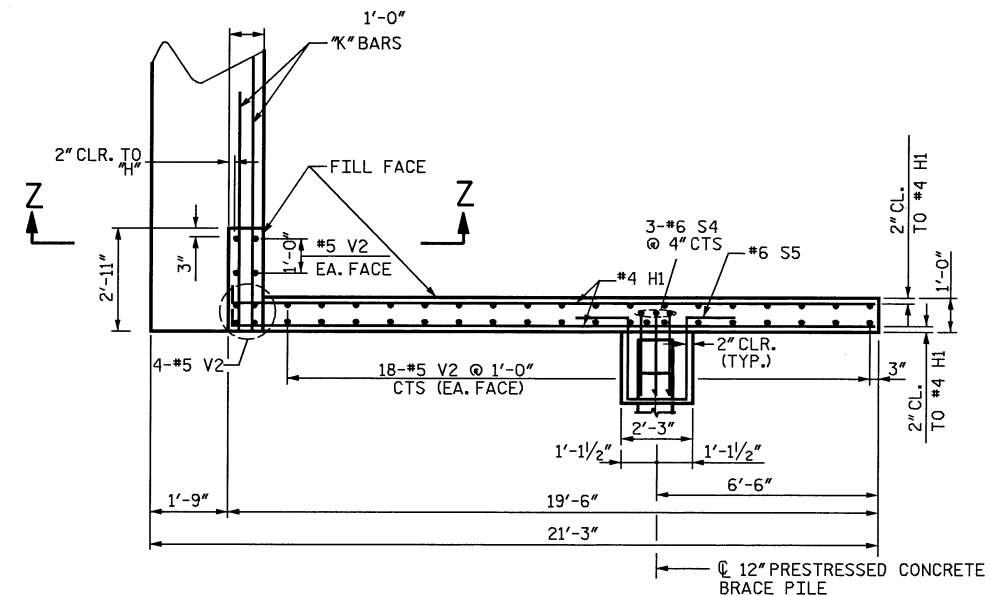
DESIGNED BY: [Signature]
 DESIGN ENGINEER OF RECORD: DATE: 4/13/2015
 DRAWN BY: E. C. DECOLA DATE: 03/20/14
 CHECKED BY: R. C. LARSON DATE: 04/02/14

| REVISIONS | | | | | | SHEET NO. S06-27 |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS S06-34 |
| 2 | | | 4 | | | |

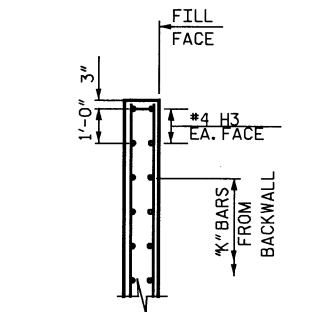
KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 27 OF 34



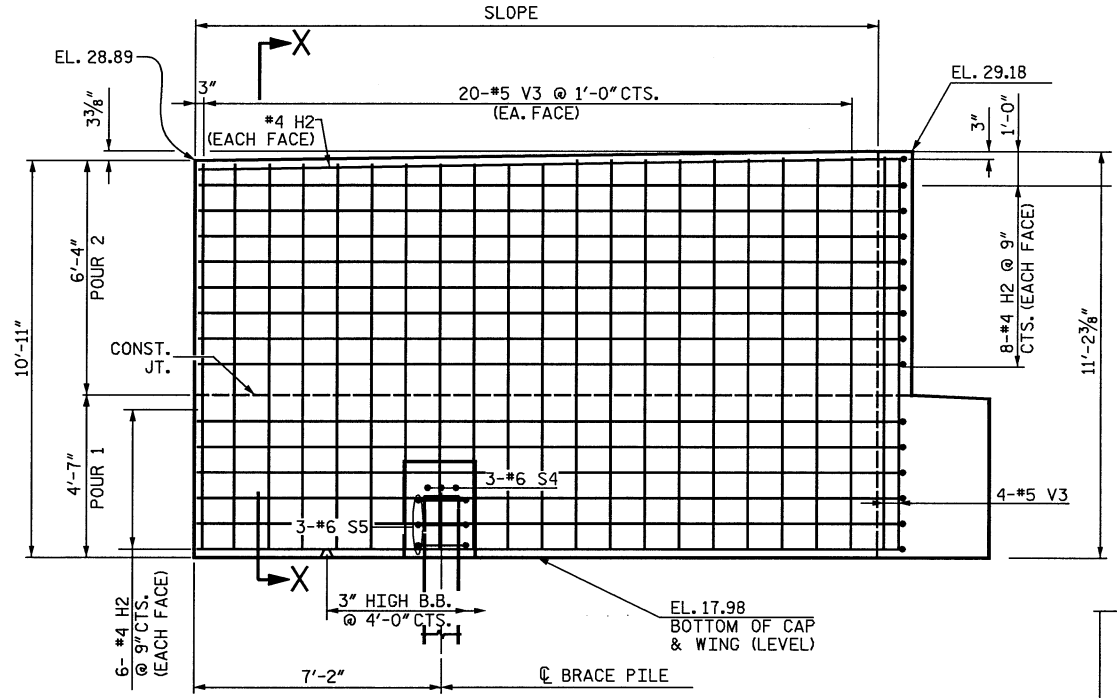
PLAN W1



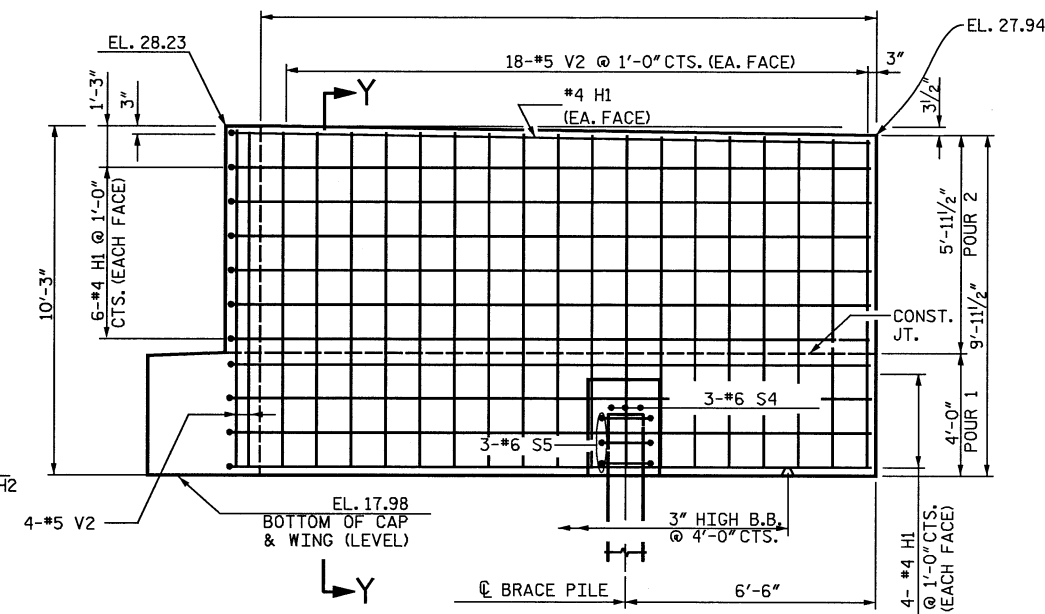
PLAN W2



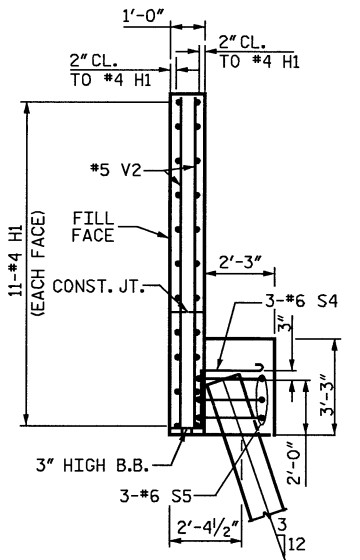
SECTION Z-Z



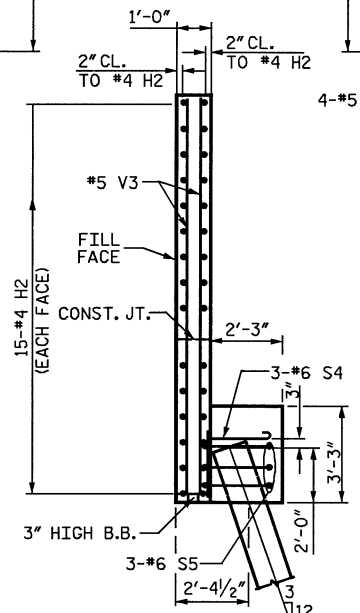
ELEVATION W1



ELEVATION W2



SECTION Y-Y

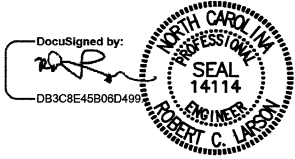


SECTION X-X

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

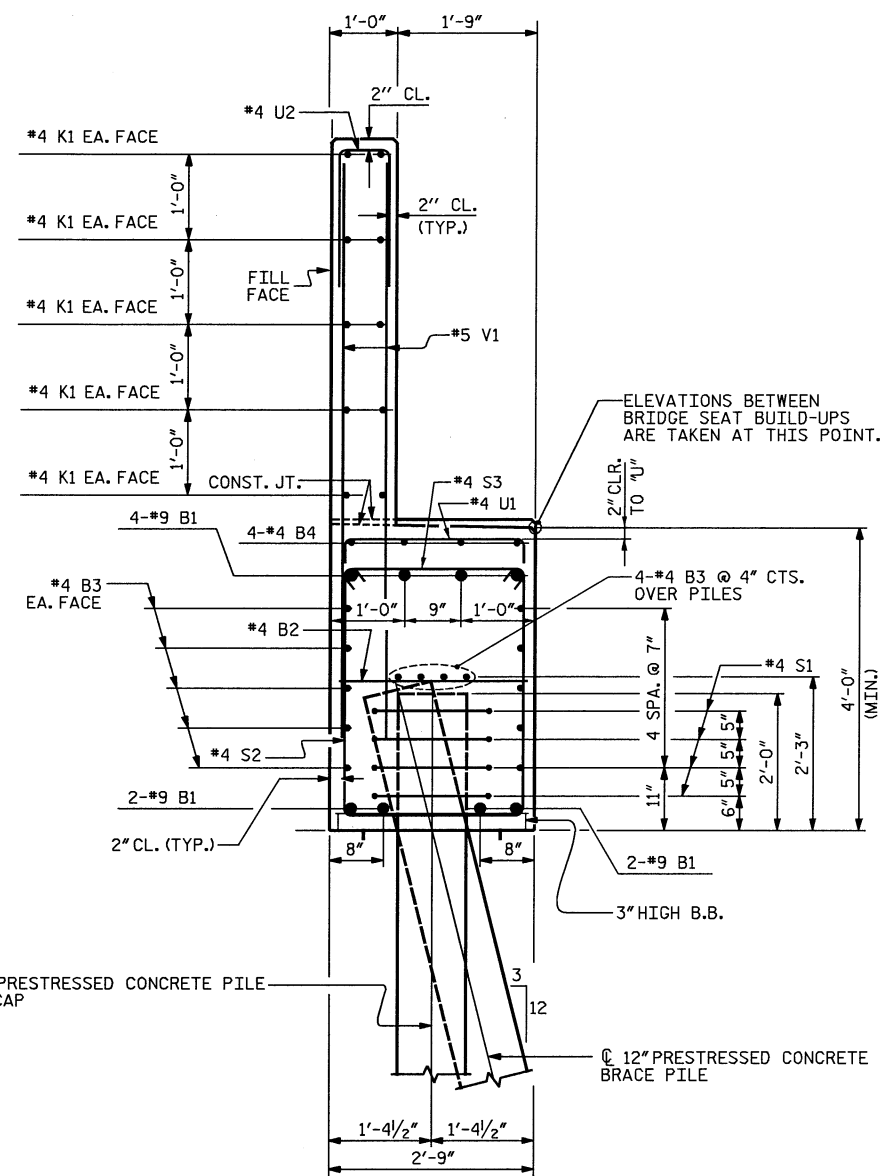
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 2**
 RIGHT LANE STR-#6



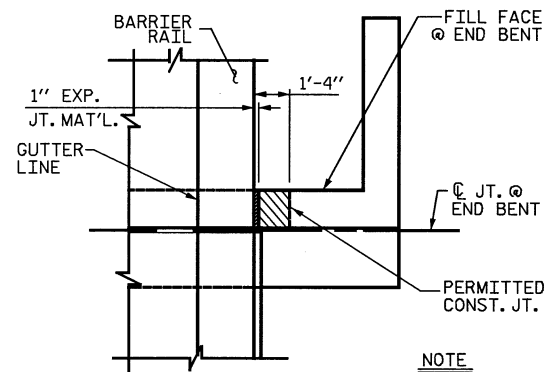
DESIGN ENGINEER OF RECORD: _____ DATE: 4/13/2015
 DRAWN BY: E. C. DECOLA DATE: 03/06/14
 CHECKED BY: R. C. LARSON DATE: 04/02/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 28 OF 34

| REVISIONS | | | | | | SHEET NO. S06-28 |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS S06-34 |
| 2 | | | 4 | | | |



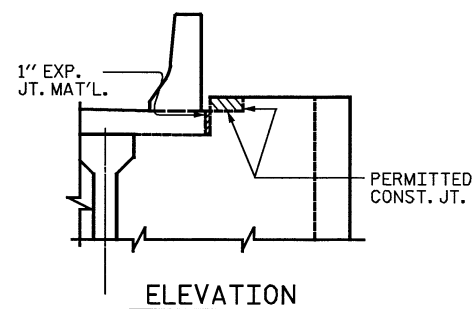
SECTION A-A



PLAN

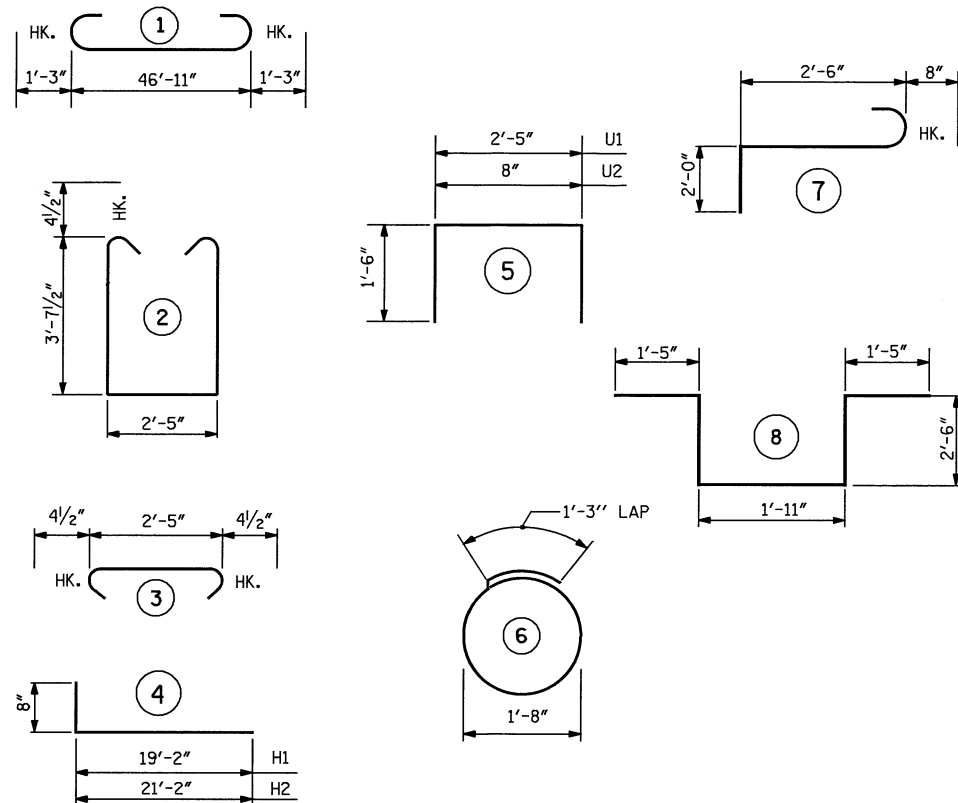
NOTE
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET IS CAST IF SLIP FORMING IS USED.

BLOCKOUT IN WING WALL



ELEVATION

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | |
|---------|------|------|--------|---------|------|
| B1 | 8 | 9 | 1 | 49'-5" | 1344 |
| B2 | 12 | 4 | STR. | 2'-5" | 19 |
| B3 | 28 | 4 | STR. | 24'-8" | 461 |
| B4 | 4 | 4 | STR. | 19'-2" | 51 |
| B5 | 4 | 4 | STR. | 2'-11" | 8 |
| H1 | 22 | 4 | 4 | 19'-10" | 291 |
| H2 | 30 | 4 | 4 | 21'-10" | 438 |
| H3 | 8 | 4 | STR. | 2'-7" | 14 |
| K1 | 20 | 4 | STR. | 24'-8" | 330 |
| S1 | 24 | 4 | 6 | 6'-6" | 104 |
| S2 | 42 | 4 | 2 | 10'-5" | 292 |
| S3 | 42 | 4 | 3 | 3'-2" | 89 |
| S4 | 6 | 6 | 7 | 5'-2" | 47 |
| S5 | 6 | 6 | 8 | 9'-9" | 88 |
| U1 | 16 | 4 | 5 | 5'-5" | 58 |
| U2 | 41 | 4 | 5 | 3'-8" | 100 |
| V1 | 82 | 5 | STR. | 8'-4" | 713 |
| V2 | 44 | 5 | STR. | 9'-8" | 444 |
| V3 | 48 | 5 | STR. | 10'-7" | 530 |

REINFORCING STEEL, LB 5421

CLASS A CONCRETE, CY POUR 1 27.9
POUR 2 17.3
TOTAL 45.2

12" PRESTRESSED CONCRETE PILES
NO. 8
LF 480

PILE REDRIVES EA. 3

NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE.

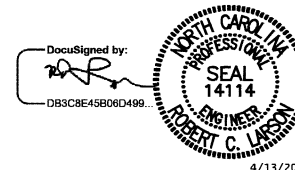
PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
END BENT 2**

RIGHT LANE STR-#6



| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S06-29 |
| 1 | | | 3 | | | TOTAL SHEETS S06-34 |
| 2 | | | 4 | | | |

| | |
|----------------------------|-----------|
| DESIGN ENGINEER OF RECORD: | DATE : |
| <i>E. C. Decola</i> | 4/13/2015 |
| DRAWN BY : | DATE : |
| E. C. DECOLA | 03/20/14 |
| CHECKED BY : | DATE : |
| R. C. LARSON | 04/02/14 |

LOAD FACTORS:

| | | | |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ_{DC} | γ_{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING (#) | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | | | | | | COMMENT NUMBER |
|--------------------|-----------------------------------|-------------------|-----------------------------|-----------------------------|---------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------|---|--|----------------|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | | | | |
| DESIGN LOAD RATING | HL-93 (INVENTORY) | N/A | ① | 1.19 | -- | 1.75 | 0.72 | 1.62 | D | EL | 46.40 | 0.88 | 1.19 | D | I | 8.70 | 0.80 | 0.72 | 1.35 | D | I | 46.40 | 1 | | | |
| | HL-93 (OPERATING) | N/A | | 1.58 | -- | 1.35 | 0.72 | 2.10 | D | EL | 46.40 | 0.88 | 1.58 | D | I | 84.00 | N/A | -- | -- | -- | -- | -- | 1,2 | | | |
| | HS-20 (INVENTORY) | 36.000 | ② | 1.61 | 57.96 | 1.75 | 0.72 | 2.22 | D | EL | 46.40 | 0.88 | 1.61 | D | I | 84.00 | 0.80 | 0.72 | 1.86 | D | I | 46.40 | 1 | | | |
| | HS-20 (OPERATING) | 36.000 | | 2.12 | 76.32 | 1.35 | 0.72 | 2.88 | D | EL | 46.40 | 0.88 | 2.12 | D | I | 84.00 | N/A | -- | -- | -- | -- | -- | 1,2 | | | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 4.37 | 59.00 | 1.40 | 0.72 | 6.52 | D | EL | 46.40 | 0.88 | 5.17 | D | I | 84.00 | 0.80 | 0.72 | 4.37 | D | I | 46.40 | 1 | | |
| | | SNGARBS2 | 20.000 | | 3.18 | 63.60 | 1.40 | 0.72 | 4.75 | D | EL | 46.40 | 0.88 | 3.59 | D | I | 84.00 | 0.80 | 0.72 | 3.18 | D | I | 46.40 | 1 | | |
| | | SNAGRIS2 | 22.000 | | 2.98 | 65.56 | 1.40 | 0.72 | 4.45 | D | EL | 46.40 | 0.88 | 3.31 | D | I | 84.00 | 0.80 | 0.72 | 2.98 | D | I | 46.40 | 1 | | |
| | | SNCOTTS3 | 27.250 | | 2.17 | 59.13 | 1.40 | 0.72 | 3.24 | D | EL | 46.40 | 0.88 | 2.51 | D | I | 84.00 | 0.80 | 0.72 | 2.17 | D | I | 46.40 | 1 | | |
| | | SNAGGRS4 | 34.925 | | 1.78 | 62.17 | 1.40 | 0.72 | 2.67 | D | EL | 46.40 | 0.88 | 2.04 | D | I | 84.00 | 0.80 | 0.72 | 1.78 | D | I | 46.40 | 1 | | |
| | | SNS5A | 35.550 | | 1.75 | 62.21 | 1.40 | 0.72 | 2.61 | D | EL | 46.40 | 0.88 | 2.05 | D | I | 84.00 | 0.80 | 0.72 | 1.75 | D | I | 46.40 | 1 | | |
| | | SNS6A | 39.950 | | 1.59 | 63.52 | 1.40 | 0.72 | 2.38 | D | EL | 46.40 | 0.88 | 1.85 | D | I | 8.70 | 0.80 | 0.72 | 1.59 | D | I | 46.40 | 1 | | |
| | | SNS7B | 42.000 | | 1.51 | 63.42 | 1.40 | 0.72 | 2.26 | D | EL | 46.40 | 0.88 | 1.80 | D | I | 84.00 | 0.80 | 0.72 | 1.51 | D | I | 46.40 | 1 | | |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.94 | 64.02 | 1.40 | 0.72 | 2.89 | D | EL | 46.40 | 0.88 | 2.23 | D | I | 8.70 | 0.80 | 0.72 | 1.94 | D | I | 46.40 | 1 | | |
| | | TNT4A | 33.075 | | 1.94 | 64.17 | 1.40 | 0.72 | 2.90 | D | EL | 46.40 | 0.88 | 2.18 | D | I | 8.70 | 0.80 | 0.72 | 1.94 | D | I | 46.40 | 1 | | |
| | | TNT6A | 41.600 | | 1.58 | 65.73 | 1.40 | 0.72 | 2.36 | D | EL | 46.40 | 0.88 | 1.89 | D | I | 84.00 | 0.80 | 0.72 | 1.58 | D | I | 46.40 | 1 | | |
| | | TNT7A | 42.000 | | 1.58 | 66.36 | 1.40 | 0.72 | 2.36 | D | EL | 46.40 | 0.88 | 1.86 | D | I | 8.70 | 0.80 | 0.72 | 1.58 | D | I | 46.40 | 1 | | |
| | | TNT7B | 42.000 | | 1.62 | 68.04 | 1.40 | 0.72 | 2.42 | D | EL | 46.40 | 0.88 | 1.76 | D | I | 84.00 | 0.80 | 0.72 | 1.62 | D | I | 46.40 | 1 | | |
| | | TNAGRIT4 | 43.000 | | 1.55 | 66.65 | 1.40 | 0.72 | 2.32 | D | EL | 46.40 | 0.88 | 1.71 | D | I | 84.00 | 0.80 | 0.72 | 1.55 | D | I | 46.40 | 1 | | |
| | | TNAGT5A | 45.000 | | 1.47 | 66.15 | 1.40 | 0.72 | 2.19 | D | EL | 46.40 | 0.88 | 1.68 | D | I | 8.70 | 0.80 | 0.72 | 1.47 | D | I | 46.40 | 1 | | |
| | | TNAGT5B | 45.000 | ③ | 1.45 | 65.25 | 1.40 | 0.72 | 2.17 | D | EL | 46.40 | 0.88 | 1.62 | D | I | 84.00 | 0.80 | 0.72 | 1.45 | D | I | 46.40 | 1 | | |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- ALL DISTANCES ARE MEASURED FROM THE CENTERLINE OF BEARING AT THE LEFT END OF THE SPAN.
- SERVICE III LIMIT STATE NOT APPLICABLE AT THE OPERATIONAL LEVEL.
- SPANS A & M ARE SIMILAR.
- SPANS B, C, D, E, F, G, H, I, J, K & L ARE SIMILAR.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

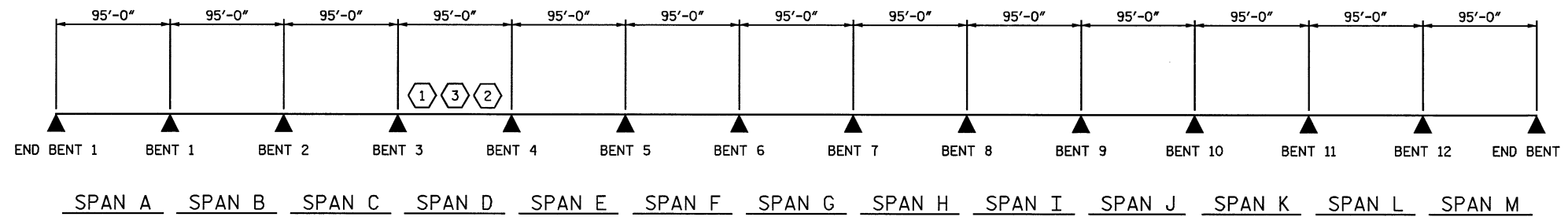
③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 389+47.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

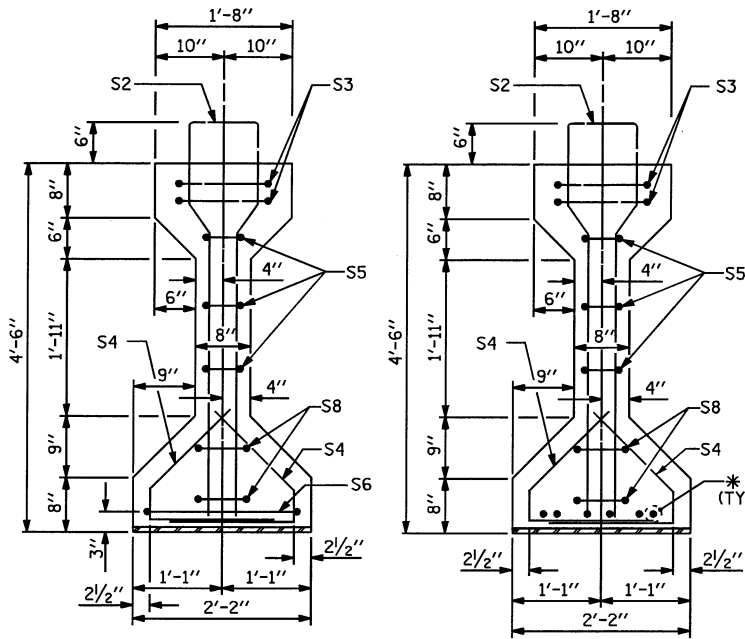
LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)
 LEFT LANE

| REVISIONS | | | | | | SHEET NO. SOT-6 |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 68 |
| 2 | | | 4 | | | |

DWG. 6 OF 68

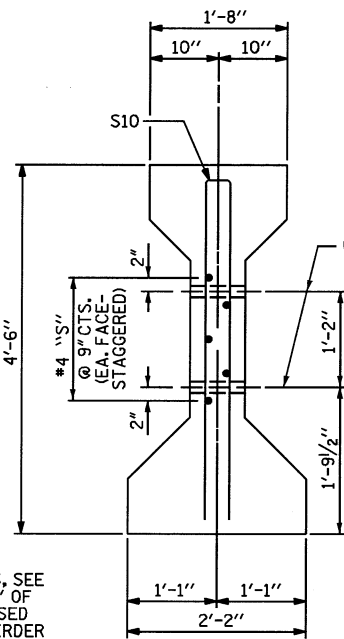
DRAWN BY: M. D. MAYHEW DATE: 8-7-13
 CHECKED BY: A. L. PHILLIPS DATE: 8-7-13

LRFR SUMMARY



SECTION A-A

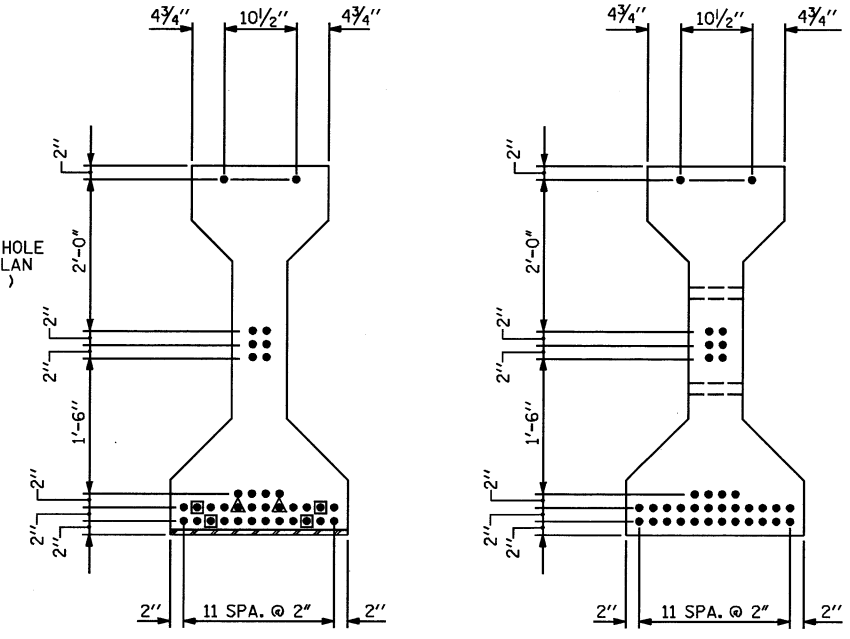
SECTION B-B



SECTION C-C
(S1 BARS NOT SHOWN)

* FOR S7 BARS, SEE "DETAIL A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.

| SPAN | ① | ② | ③ |
|------|------------|------------|-----------|
| A | 93'-3 1/2" | 46'-7 3/4" | 9 1/4" |
| C | 94'-2" | 47'-1" | 1'-2 1/2" |
| F | 94'-2" | 47'-1" | 1'-2 1/2" |
| I | 94'-2" | 47'-1" | 1'-2 1/2" |
| L | 94'-2" | 47'-1" | 1'-2 1/2" |



AT END OF GIRDER AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

| AREA (SQ. INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
|-------------------|-------------------------------------|-------------------------------------|
| 0.217 | 58,600 | 43,950 |

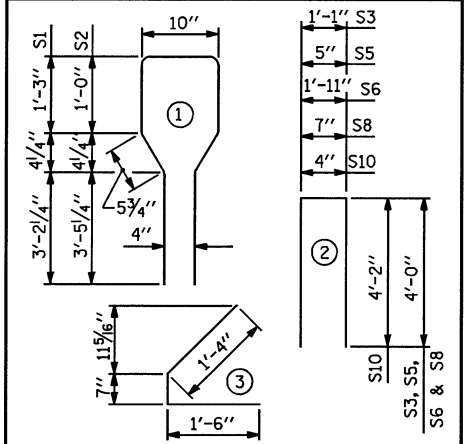
REINFORCING STEEL FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-----|--------|------|------|--------|--------|
| S1 | 73 | #4 | 1 | 10'-8" | 520 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 64 | #4 | 3 | 3'-5" | 146 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| S6 | 1 | #4 | 2 | 9'-11" | 7 |
| *S7 | 6 | #5 | STR | 3'-8" | 23 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 1 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

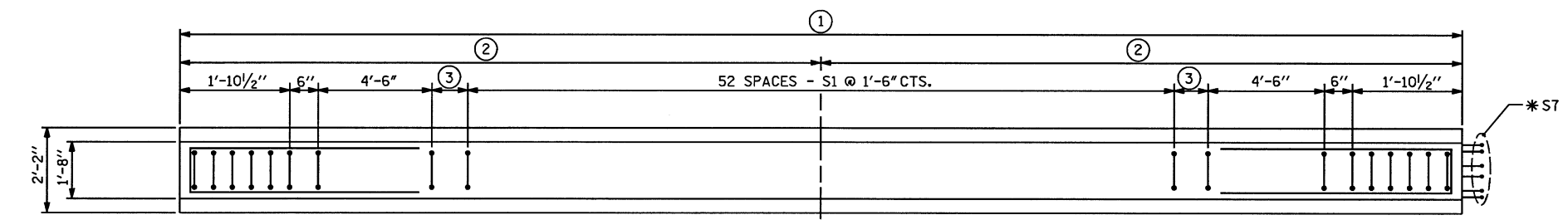
ALL BAR DIMENSIONS ARE OUT-TO-OUT



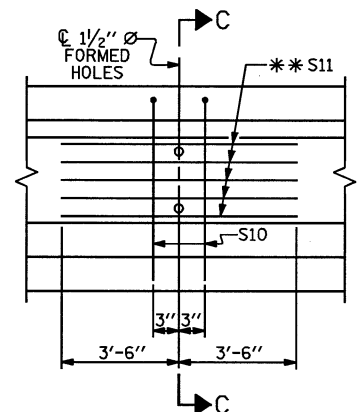
QUANTITIES FOR ONE GIRDER

| | REINFORCING STEEL | | 8,000 PSI CONCRETE | | 0.6" Ø L. R. STRANDS | |
|-------------------|-------------------|------|--------------------|------|----------------------|-----|
| | LB. | C.Y. | LB. | C.Y. | No. | No. |
| SPAN A | 1011 | 18.9 | | | | 36 |
| SPANS C, F, I & L | 1011 | 19.1 | | | | 36 |

| GIRDERS REQUIRED | | |
|-------------------|--------|--------------|
| | NUMBER | TOTAL LENGTH |
| SPAN A | 5 | 93'-3 1/2" |
| SPANS C, F, I & L | 20 | 94'-2" |

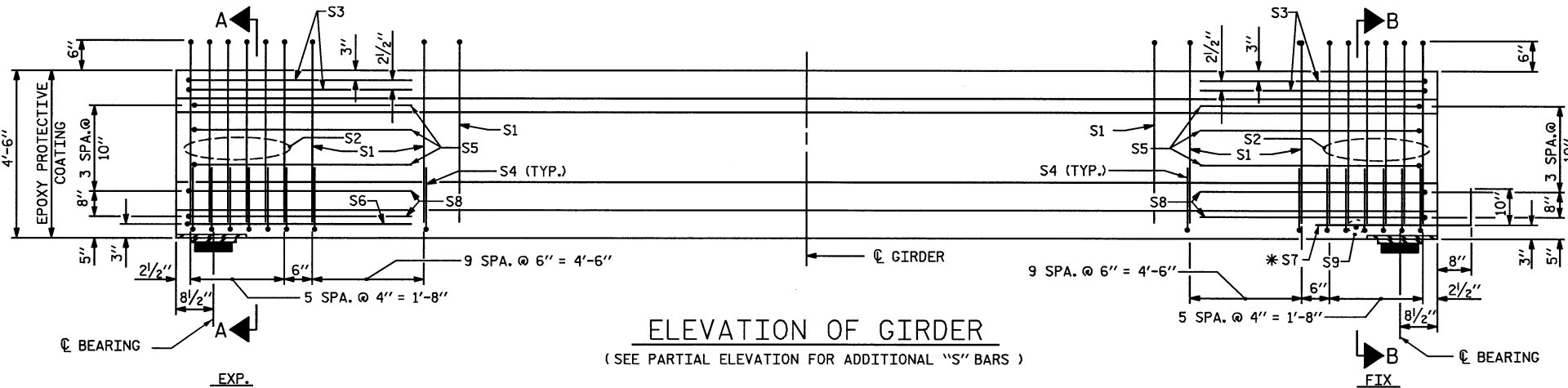


PLAN OF GIRDER



PARTIAL ELEVATION

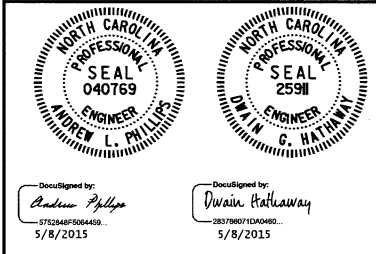
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER NOS. 1-5
* * S11 BARS MAY BE SHIFTED SLIGHTLY AS NEEDED TO AVOID STRANDS.



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

PROJECT NO. R-2514D
JONES COUNTY
STATION: 389+47.50 -L-
SHEET 1 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS A, C, F, I & L
LEFT LANE

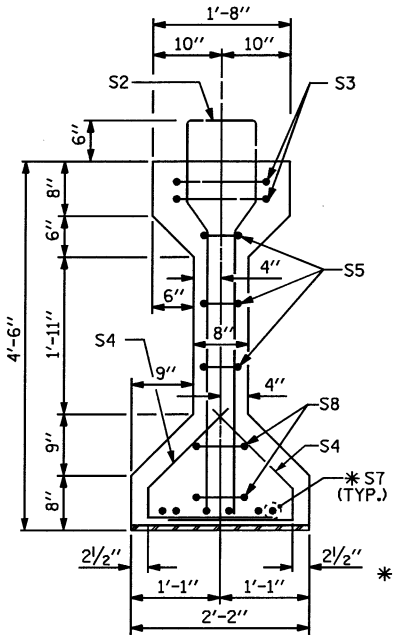
| REVISIONS | | | SHEET NO. | | |
|-----------|----|------|-----------|----|------|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

DRAWN BY : N. B. SPEAKS DATE : 7-31-13
CHECKED BY : A. L. PHILLIPS DATE : 8-7-13

DWG. 16 OF 68

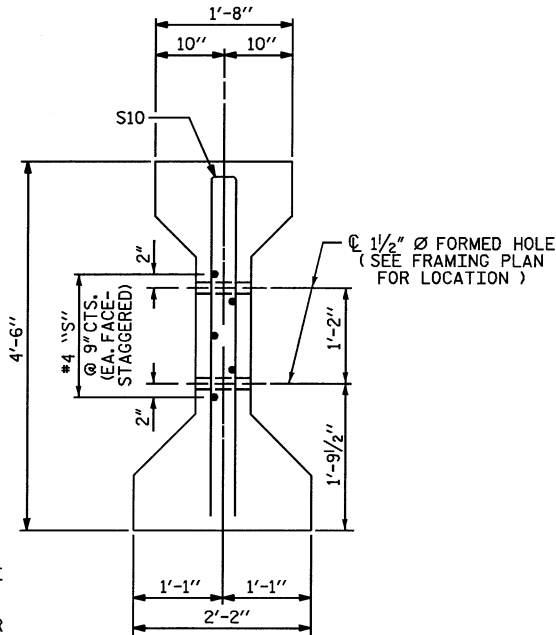


Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

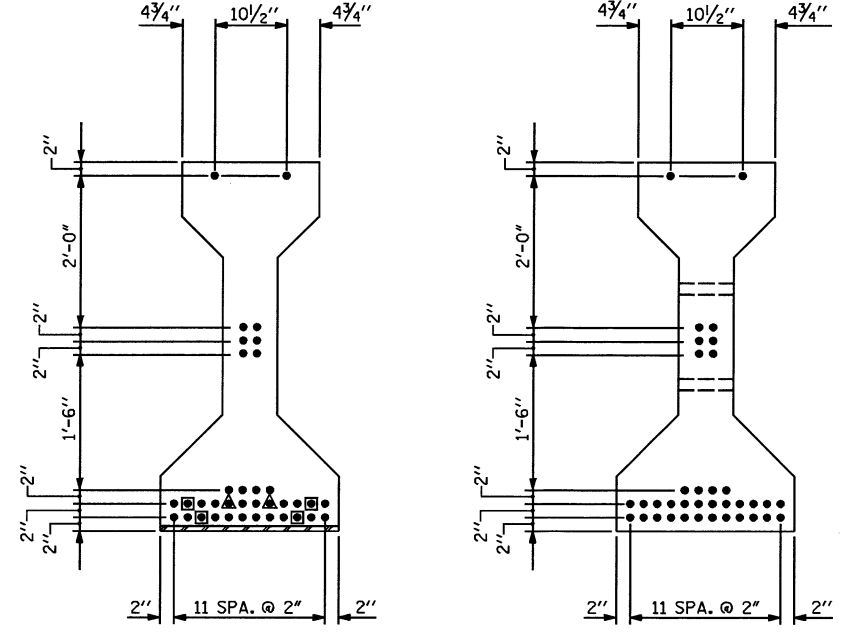


SECTION A-A

* FOR S7 BARS, SEE "DETAIL A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.



SECTION C-C
(S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT

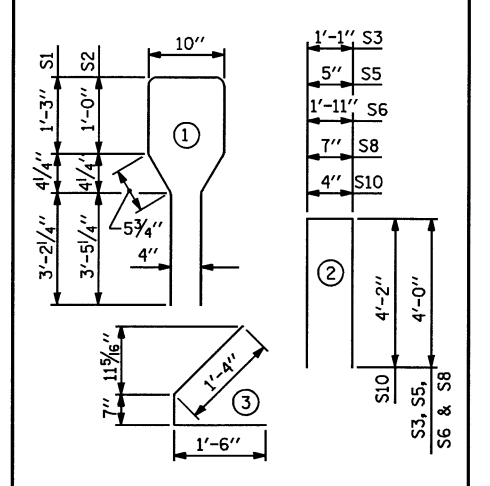
■ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 73 | #4 | 1 | 10'-8" | 520 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 64 | #4 | 3 | 3'-5" | 146 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S7 | 12 | #5 | STR | 3'-8" | 46 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

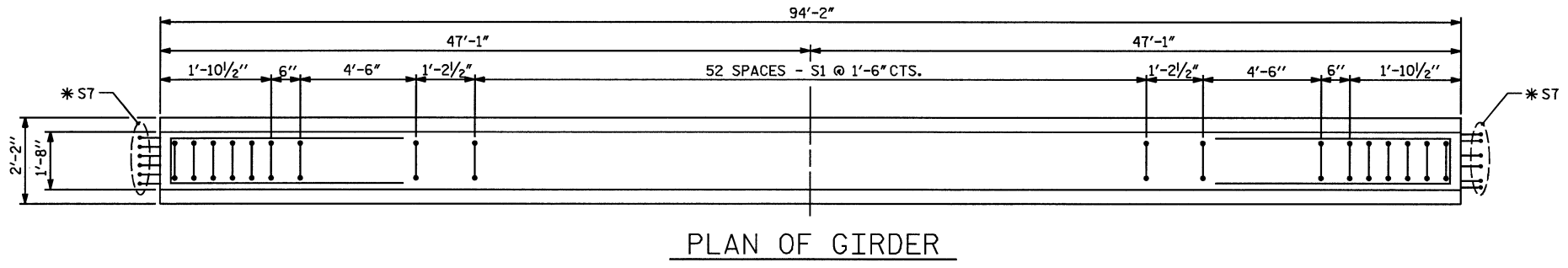
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT

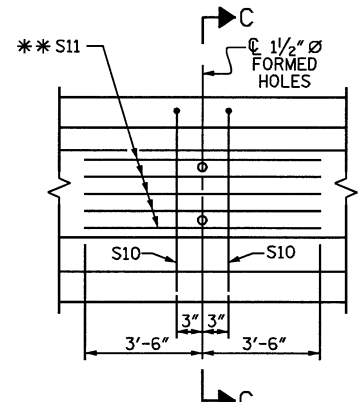


| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|-------------------------|--------------------------|--|
| REINFORCING STEEL LB. | 8,000 PSI CONCRETE C.Y. | 0.6" Ø L. R. STRANDS No. | |
| 1027 | 19.1 | 36 | |

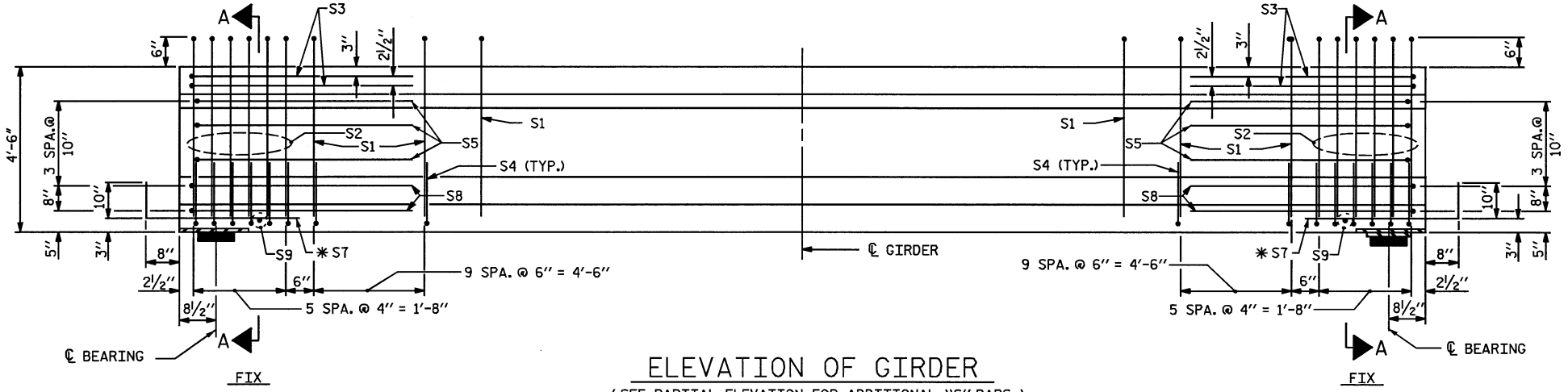
| GIRDERS REQUIRED | | |
|------------------|--------|--------------|
| NUMBER | LENGTH | TOTAL LENGTH |
| 15 | 94'-2" | 1412'-6" |



PLAN OF GIRDER

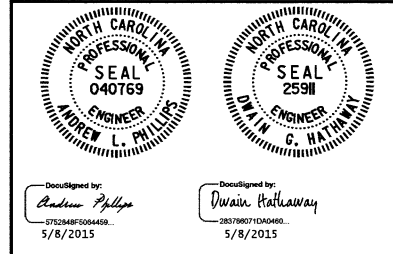


PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER NOS. 1-5
* S11 BARS MAY BE SHIFTED SLIGHTLY AS NEEDED TO AVOID STRANDS.



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

PROJECT NO. R-2514D
JONES COUNTY
STATION: 389+47.50 -L-
SHEET 2 OF 5



Michael Baker Engineering
8000 Regency Parkway, Suite 900
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS D, G & J
LEFT LANE

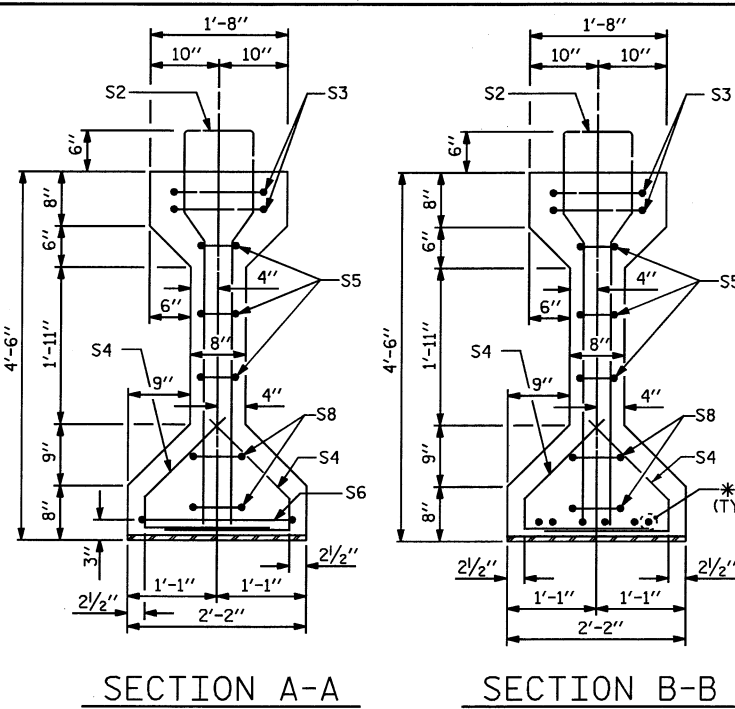
| REVISIONS | | | | | | SHEET NO. S07-17 |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 68 |
| 2 | | | 4 | | | |

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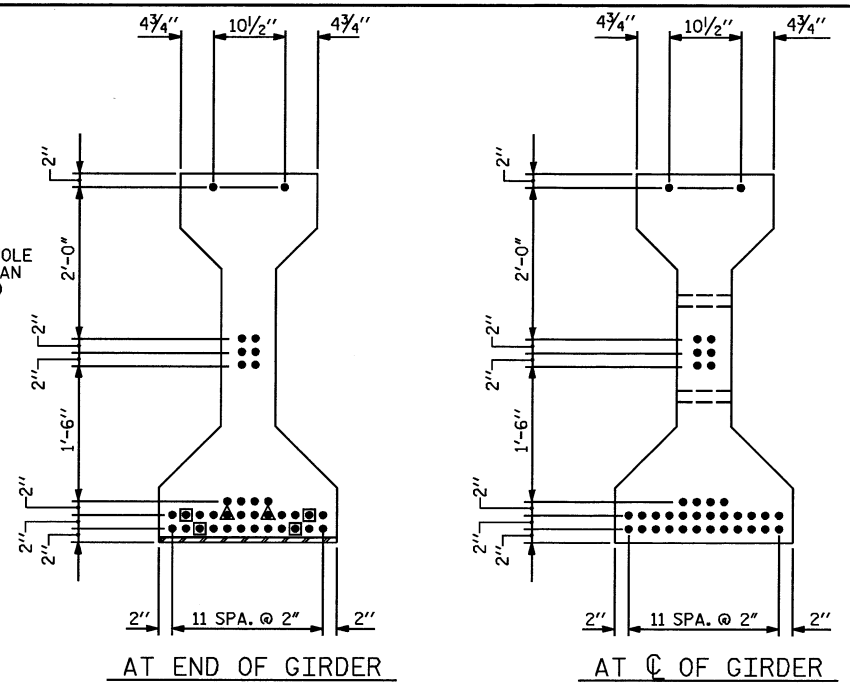
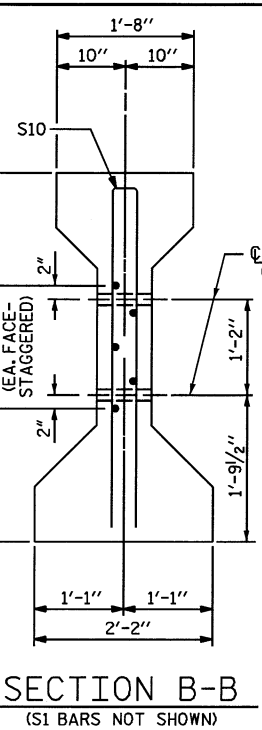
DRAWN BY: N. B. SPEAKS DATE: 8-6-13
CHECKED BY: A. L. PHILLIPS DATE: 8-7-13

DWG. 17 OF 68





*FOR ST BARS, SEE "DETAIL A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.



0.6" Ø LOW RELAXATION STRAND LAYOUT

- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

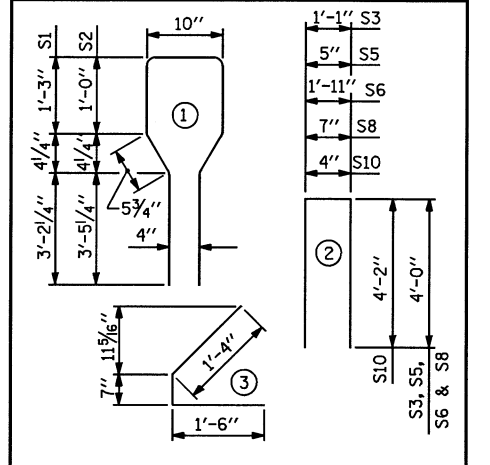
| SPAN | ① | ② | ③ |
|------|------------|------------|-----------|
| B | 94'-2" | 47'-1" | 1'-2 1/2" |
| E | 94'-2" | 47'-1" | 1'-2 1/2" |
| H | 94'-2" | 47'-1" | 1'-2 1/2" |
| K | 94'-2" | 47'-1" | 1'-2 1/2" |
| M | 93'-3 1/2" | 46'-7 1/4" | 9/4" |

| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 73 | #4 | 1 | 10'-8" | 520 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 64 | #4 | 3 | 3'-5" | 146 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| S6 | 1 | #4 | 2 | 9'-11" | 7 |
| *S7 | 6 | #5 | STR | 3'-8" | 23 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 1 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



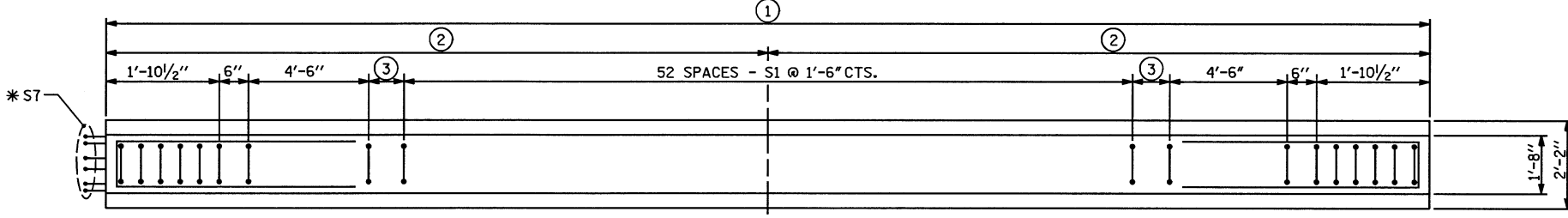
SECTION A-A

SECTION B-B

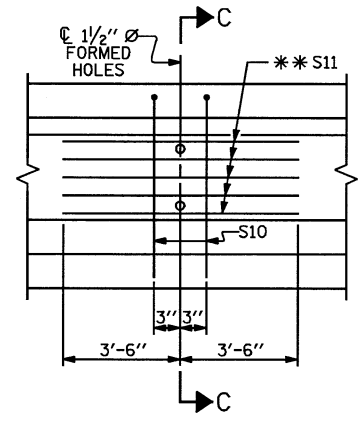
SECTION B-B (S1 BARS NOT SHOWN)

AT END OF GIRDER

AT C OF GIRDER

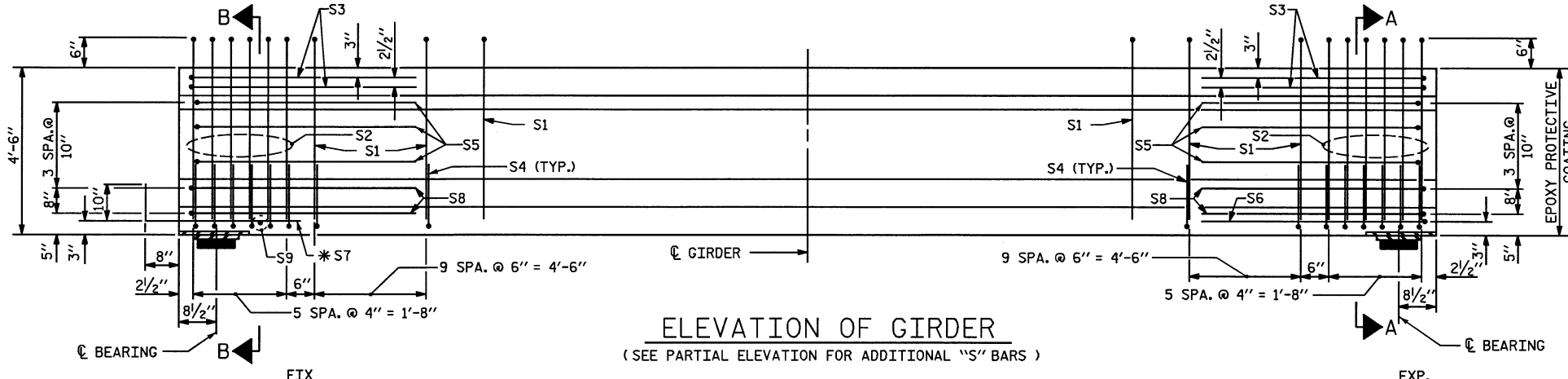


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER NOS. 1-5
 ** S11 BARS MAY BE SHIFTED SLIGHTLY AS NEEDED TO AVOID STRANDS.



ELEVATION OF GIRDER (SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

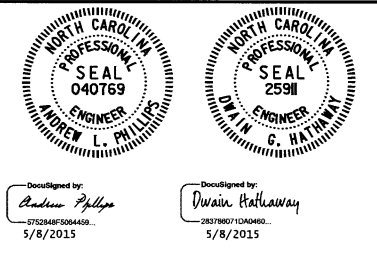
QUANTITIES FOR ONE GIRDER

| | REINFORCING STEEL | | 8,000 PSI CONCRETE | | 0.6" Ø L. R. STRANDS | |
|-------------------|-------------------|------|--------------------|------|----------------------|-----|
| | LB. | C.Y. | LB. | C.Y. | NO. | NO. |
| SPANS B, E, H & K | 1011 | | 19.1 | | 36 | |
| SPAN M | 1011 | | 18.9 | | 36 | |

GIRDERS REQUIRED

| | NUMBER | LENGTH | TOTAL LENGTH |
|-------------------|--------|------------|--------------|
| SPANS B, E, H & K | 20 | 94'-2" | 1883'-4" |
| SPAN M | 5 | 93'-3 1/2" | 466'-5 1/2" |

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 389+47.50 -L-
 SHEET 3 OF 5

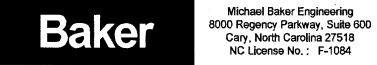


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPANS B, E, H, K & M
 LEFT LANE

| REVISIONS | | | | | | SHEET NO. S07-18 |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 68 |
| 2 | | | 4 | | | |

DRAWN BY: N. B. SPEAKS DATE: 8-6-13
 CHECKED BY: A. L. PHILLIPS DATE: 8-7-13

DWG. 18 OF 68



NOTES:

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

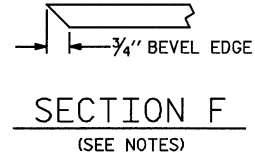
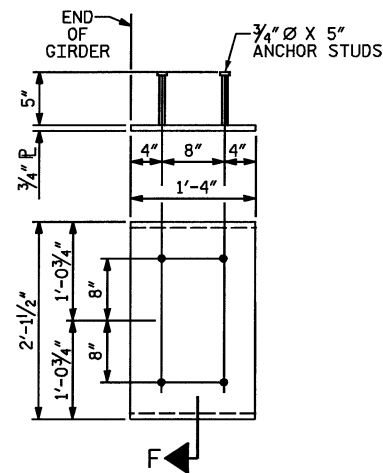
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

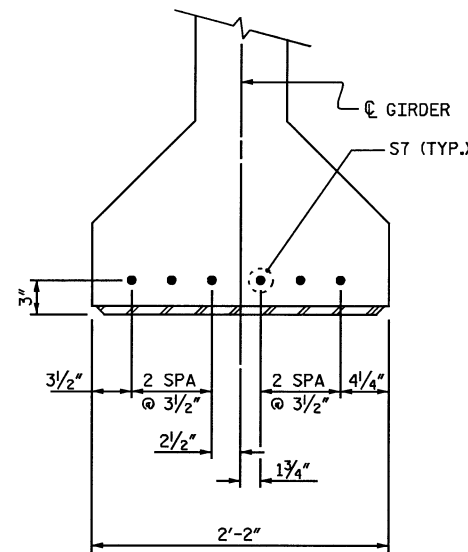
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".



EMBEDDED PLATE "B-1" DETAILS
FOR AASHTO TYPE IV GIRDER
(2 REQ'D PER GIRDER)



DETAIL A

PROJECT NO. R-2514D
JONES COUNTY
STATION: 389+47.50 -L-

SHEET 4 OF 5

| | | | | STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS LEFT LANE | | | | | | | | | | | | | | | | | | | |
|--|-----|--|-----|---|-------|-----|-----|-------|-----|-----|-------|---|--|--|---|--|--|---|--|--|---|--|--|
| DocuSigned by: Andrew Phillips 272344F5084495 5/11/2015 | | DocuSigned by: Dwan Hathaway 2837880710A0460... 5/11/2015 | | REVISIONS <table border="1"> <thead> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </tbody> </table> | | NO. | BY: | DATE: | NO. | BY: | DATE: | 1 | | | 3 | | | 2 | | | 4 | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: | | | | | | | | | | | | | | | | | | |
| 1 | | | 3 | | | | | | | | | | | | | | | | | | | | |
| 2 | | | 4 | | | | | | | | | | | | | | | | | | | | |
| DWG. <u>19</u> OF <u>68</u> | | | | SHEET NO. S07-19 TOTAL SHEETS 68 | | | | | | | | | | | | | | | | | | | |

DRAWN BY : N. B. SPEAKS DATE : 8-6-13
CHECKED BY : A. L. PHILLIPS DATE : 8-7-13

Baker
Michael Baker Engineering
8000 Regency Parkway, Suite 800
Cary, North Carolina 27518
NC License No.: F-1084

Joutelin 5/8/2015 3:11:17 PM
 FileNames: Y:\Projects\NCDOT\R-2514D\SIFe 4\Draws\Left\Final\407_019_R2514D_SML_004.dgn

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|---|------------------|-------|-------|-------|--------|--------|--------|-------|-------|-------|-------|
| SPAN A | | | | | | | | | | | |
| 0.6" Ø LOW RELAXATION STRANDS | GIRDER AG1 & AG5 | | | | | | | | | | |
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.104 | 0.143 | 0.167 | 0.175 | 0.167 | 0.143 | 0.104 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.034 | 0.067 | 0.093 | 0.110 | 0.115 | 0.110 | 0.093 | 0.067 | 0.034 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 1/4" | 3/16" | 5/8" | 11/16" | 11/16" | 11/16" | 5/8" | 3/16" | 1/4" | 0 |

| 0.6" Ø LOW RELAXATION STRANDS | GIRDER AG2 THRU AG4 | | | | | | | | | | |
|---|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.104 | 0.143 | 0.167 | 0.175 | 0.167 | 0.143 | 0.104 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.037 | 0.073 | 0.101 | 0.119 | 0.125 | 0.119 | 0.101 | 0.073 | 0.037 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 3/16" | 3/8" | 1/2" | 9/16" | 5/8" | 9/16" | 1/2" | 3/8" | 3/16" | 0 |

* INCLUDES WEIGHT OF DECK SLAB, BUILD-UPS, DIAPHRAGMS, BARRIERS, AND FUTURE WEARING SURFACE.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|---|----------------|-------|-------|-------|--------|-------|--------|-------|-------|-------|-------|
| SPANS B THRU L | | | | | | | | | | | |
| 0.6" Ø LOW RELAXATION STRANDS | GIRDER G1 & G5 | | | | | | | | | | |
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.105 | 0.143 | 0.168 | 0.176 | 0.168 | 0.143 | 0.105 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.034 | 0.067 | 0.093 | 0.110 | 0.115 | 0.110 | 0.093 | 0.067 | 0.034 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 1/4" | 3/16" | 5/8" | 11/16" | 3/4" | 11/16" | 5/8" | 3/16" | 1/4" | 0 |

| 0.6" Ø LOW RELAXATION STRANDS | GIRDER G2 THRU G4 | | | | | | | | | | |
|---|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.105 | 0.143 | 0.168 | 0.176 | 0.168 | 0.143 | 0.105 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.037 | 0.073 | 0.101 | 0.119 | 0.125 | 0.119 | 0.101 | 0.073 | 0.037 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 3/16" | 3/8" | 1/2" | 9/16" | 5/8" | 9/16" | 1/2" | 3/8" | 3/16" | 0 |

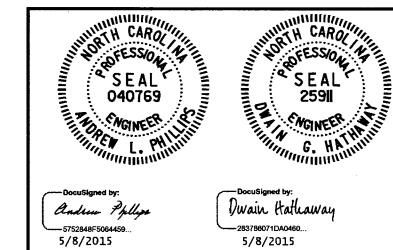
* INCLUDES WEIGHT OF DECK SLAB, BUILD-UPS, DIAPHRAGMS, BARRIERS, AND FUTURE WEARING SURFACE.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|---|------------------|-------|-------|-------|--------|--------|--------|-------|-------|-------|-------|
| SPAN M | | | | | | | | | | | |
| 0.6" Ø LOW RELAXATION STRANDS | GIRDER MG1 & MG5 | | | | | | | | | | |
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.104 | 0.143 | 0.167 | 0.175 | 0.167 | 0.143 | 0.104 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.034 | 0.067 | 0.093 | 0.110 | 0.115 | 0.110 | 0.093 | 0.067 | 0.034 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 1/4" | 3/16" | 5/8" | 11/16" | 11/16" | 11/16" | 5/8" | 3/16" | 1/4" | 0 |

| 0.6" Ø LOW RELAXATION STRANDS | GIRDER MG2 THRU MG4 | | | | | | | | | | |
|---|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.104 | 0.143 | 0.167 | 0.175 | 0.167 | 0.143 | 0.104 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.037 | 0.073 | 0.101 | 0.119 | 0.125 | 0.119 | 0.101 | 0.073 | 0.037 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 3/16" | 3/8" | 1/2" | 9/16" | 5/8" | 9/16" | 1/2" | 3/8" | 3/16" | 0 |

* INCLUDES WEIGHT OF DECK SLAB, BUILD-UPS, DIAPHRAGMS, BARRIERS, AND FUTURE WEARING SURFACE.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 389+47.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER DEFLECTIONS
 AND CAMBER
 LEFT LANE

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------|----|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S07-22 | |
| 1 | | | 3 | | | TOTAL | 68 |
| 2 | | | 4 | | | SHEETS | 68 |

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DWG. 22 OF 68

DRAWN BY : N. B. SPEAKS DATE : 8-7-13
 CHECKED BY : A. L. PHILLIPS DATE : 8-8-13

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 File Name: Y:\Projects\N000T\R-2514D\Site 4\Draws\Left\Final\407_022_R2514D_SML.D01.dgn

LOAD FACTORS:

| | | | |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ_{DC} | γ_{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | | |
|--------------------|-----------------------------------|-------------------|---------------------------|-----------------------------|---------------|-------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|---|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (%LL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | LIVE-LOAD FACTORS (%LL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | |
| DESIGN LOAD RATING | HL-93 (INVENTORY) | N/A | ① | 1.19 | -- | 1.75 | 0.72 | 1.62 | D | EL | 46.40 | 0.88 | 1.19 | D | I | 8.70 | 0.80 | 0.72 | 1.35 | D | I | 46.40 | 1 | |
| | HL-93 (OPERATING) | N/A | | 1.58 | -- | 1.35 | 0.72 | 2.10 | D | EL | 46.40 | 0.88 | 1.58 | D | I | 84.00 | N/A | -- | -- | -- | -- | -- | 1,2 | |
| | HS-20 (INVENTORY) | 36.000 | ② | 1.61 | 57.96 | 1.75 | 0.72 | 2.22 | D | EL | 46.40 | 0.88 | 1.61 | D | I | 84.00 | 0.80 | 0.72 | 1.86 | D | I | 46.40 | 1 | |
| | HS-20 (OPERATING) | 36.000 | | 2.12 | 76.32 | 1.35 | 0.72 | 2.88 | D | EL | 46.40 | 0.88 | 2.12 | D | I | 84.00 | N/A | -- | -- | -- | -- | -- | 1,2 | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 4.37 | 59.00 | 1.40 | 0.72 | 6.52 | D | EL | 46.40 | 0.88 | 5.17 | D | I | 84.00 | 0.80 | 0.72 | 4.37 | D | I | 46.40 | 1 |
| | | SNGARBS2 | 20.000 | | 3.18 | 63.60 | 1.40 | 0.72 | 4.75 | D | EL | 46.40 | 0.88 | 3.59 | D | I | 84.00 | 0.80 | 0.72 | 3.18 | D | I | 46.40 | 1 |
| | | SNAGRIS2 | 22.000 | | 2.98 | 65.56 | 1.40 | 0.72 | 4.45 | D | EL | 46.40 | 0.88 | 3.31 | D | I | 84.00 | 0.80 | 0.72 | 2.98 | D | I | 46.40 | 1 |
| | | SNCOTTS3 | 27.250 | | 2.17 | 59.13 | 1.40 | 0.72 | 3.24 | D | EL | 46.40 | 0.88 | 2.51 | D | I | 84.00 | 0.80 | 0.72 | 2.17 | D | I | 46.40 | 1 |
| | | SNAGGRS4 | 34.925 | | 1.78 | 62.17 | 1.40 | 0.72 | 2.67 | D | EL | 46.40 | 0.88 | 2.04 | D | I | 84.00 | 0.80 | 0.72 | 1.78 | D | I | 46.40 | 1 |
| | | SNS5A | 35.550 | | 1.75 | 62.21 | 1.40 | 0.72 | 2.61 | D | EL | 46.40 | 0.88 | 2.05 | D | I | 84.00 | 0.80 | 0.72 | 1.75 | D | I | 46.40 | 1 |
| | | SNS6A | 39.950 | | 1.59 | 63.52 | 1.40 | 0.72 | 2.38 | D | EL | 46.40 | 0.88 | 1.85 | D | I | 8.70 | 0.80 | 0.72 | 1.59 | D | I | 46.40 | 1 |
| | | SNS7B | 42.000 | | 1.51 | 63.42 | 1.40 | 0.72 | 2.26 | D | EL | 46.40 | 0.88 | 1.80 | D | I | 84.00 | 0.80 | 0.72 | 1.51 | D | I | 46.40 | 1 |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.94 | 64.02 | 1.40 | 0.72 | 2.89 | D | EL | 46.40 | 0.88 | 2.23 | D | I | 8.70 | 0.80 | 0.72 | 1.94 | D | I | 46.40 | 1 |
| | | TNT4A | 33.075 | | 1.94 | 64.17 | 1.40 | 0.72 | 2.90 | D | EL | 46.40 | 0.88 | 2.18 | D | I | 8.70 | 0.80 | 0.72 | 1.94 | D | I | 46.40 | 1 |
| | | TNT6A | 41.600 | | 1.58 | 65.73 | 1.40 | 0.72 | 2.36 | D | EL | 46.40 | 0.88 | 1.89 | D | I | 84.00 | 0.80 | 0.72 | 1.58 | D | I | 46.40 | 1 |
| | | TNT7A | 42.000 | | 1.58 | 66.36 | 1.40 | 0.72 | 2.36 | D | EL | 46.40 | 0.88 | 1.86 | D | I | 8.70 | 0.80 | 0.72 | 1.58 | D | I | 46.40 | 1 |
| | | TNT7B | 42.000 | | 1.62 | 68.04 | 1.40 | 0.72 | 2.42 | D | EL | 46.40 | 0.88 | 1.76 | D | I | 84.00 | 0.80 | 0.72 | 1.62 | D | I | 46.40 | 1 |
| | | TNAGRIT4 | 43.000 | | 1.55 | 66.65 | 1.40 | 0.72 | 2.32 | D | EL | 46.40 | 0.88 | 1.71 | D | I | 84.00 | 0.80 | 0.72 | 1.55 | D | I | 46.40 | 1 |
| | | TNAGT5A | 45.000 | | 1.47 | 66.15 | 1.40 | 0.72 | 2.19 | D | EL | 46.40 | 0.88 | 1.68 | D | I | 8.70 | 0.80 | 0.72 | 1.47 | D | I | 46.40 | 1 |
| | | TNAGT5B | 45.000 | ③ | 1.45 | 65.25 | 1.40 | 0.72 | 2.17 | D | EL | 46.40 | 0.88 | 1.62 | D | I | 84.00 | 0.80 | 0.72 | 1.45 | D | I | 46.40 | 1 |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- ALL DISTANCES ARE MEASURED FROM THE CENTERLINE OF BEARING AT THE LEFT END OF THE SPAN.
- SERVICE III LIMIT STATE NOT APPLICABLE AT THE OPERATIONAL LEVEL.
- SPANS A & M ARE SIMILAR.
- SPANS B, C, D, E, F, G, H, I, J, K & L ARE SIMILAR.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

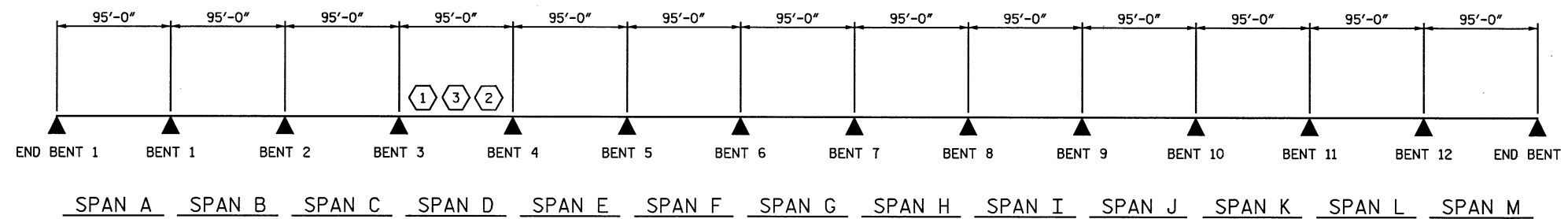
③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

PROJECT NO. R-2514D
JONES COUNTY
STATION: 389+47.50 -L-



Professional Engineer seals for Andrew Phillip and Duane Hathaway, State of North Carolina.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)
RIGHT LANE

DRAWN BY: M. D. MAYHEW DATE: 8-13-13
CHECKED BY: A. L. PHILLIPS DATE: 8-26-13

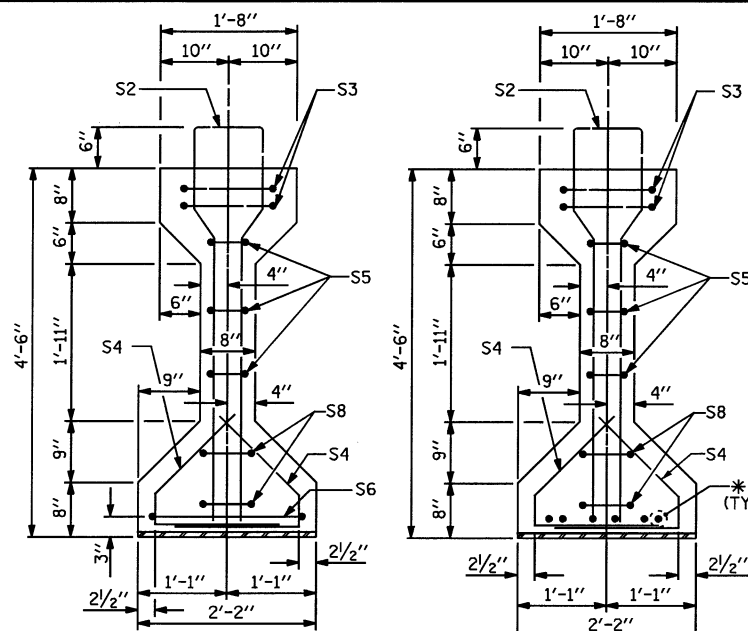
LRFR SUMMARY

DWG. 6 OF 68

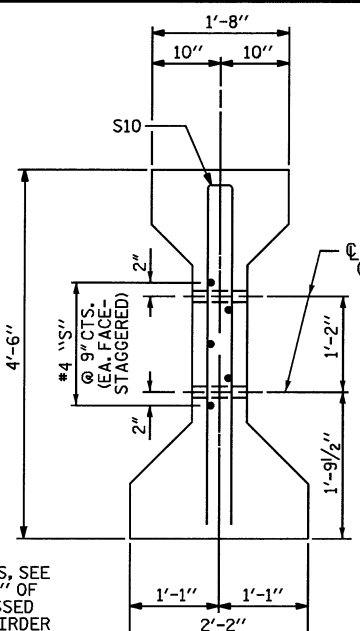


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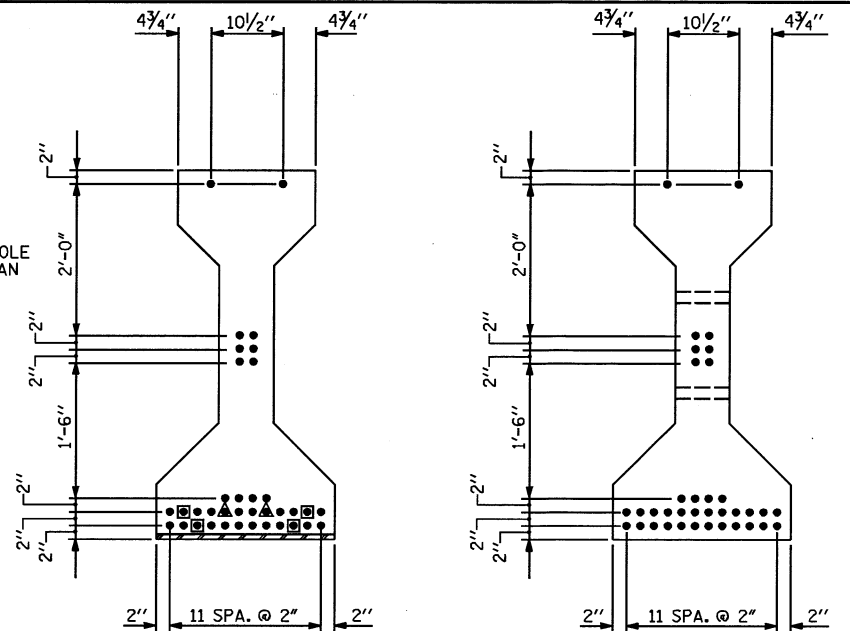
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|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 68 |
| 2 | | | 4 | | | |



*FOR ST BARS, SEE "DETAIL A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.



SECTION C-C (S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT

- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

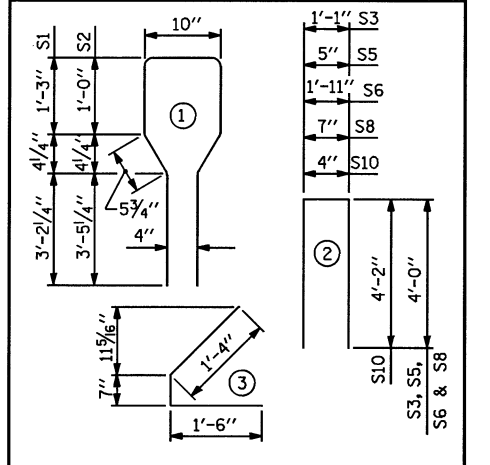
| SPAN | ① | ② | ③ |
|------|------------|------------|-----------|
| A | 93'-3 1/2" | 46'-7 3/4" | 9 1/4" |
| C | 94'-2" | 47'-1" | 1'-2 1/2" |
| F | 94'-2" | 47'-1" | 1'-2 1/2" |
| I | 94'-2" | 47'-1" | 1'-2 1/2" |
| L | 94'-2" | 47'-1" | 1'-2 1/2" |

| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQ. INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 73 | #4 | 1 | 10'-8" | 520 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 64 | #4 | 3 | 3'-5" | 146 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| S6 | 1 | #4 | 2 | 9'-11" | 7 |
| *S7 | 6 | #5 | STR | 3'-8" | 23 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 1 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

*NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

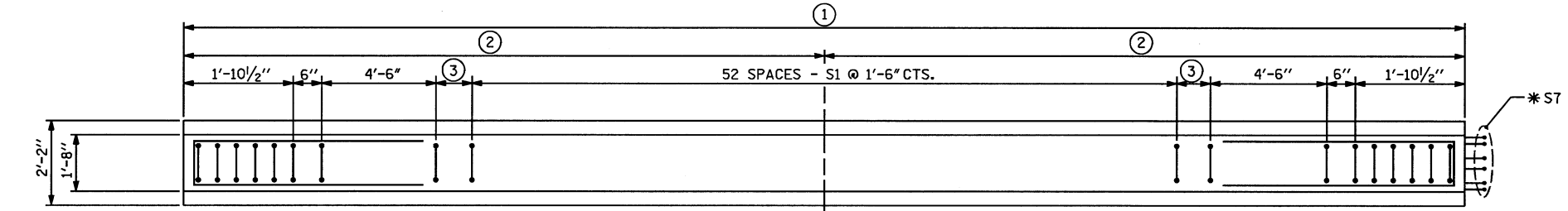


QUANTITIES FOR ONE GIRDER

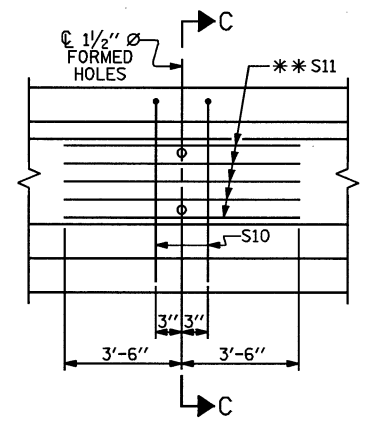
| | REINFORCING STEEL | 8,000 PSI CONCRETE | 0.6" Ø L. R. STRANDS |
|-------------------|-------------------|--------------------|----------------------|
| | LB. | C.Y. | No. |
| SPAN A | 1011 | 18.9 | 36 |
| SPANS C, F, I & L | 1011 | 19.1 | 36 |

GIRDERS REQUIRED

| | NUMBER | LENGTH | TOTAL LENGTH |
|-------------------|--------|--------|--------------|
| | SPAN A | 5 | 93'-3 1/2" |
| SPANS C, F, I & L | 20 | 94'-2" | 1883'-4" |

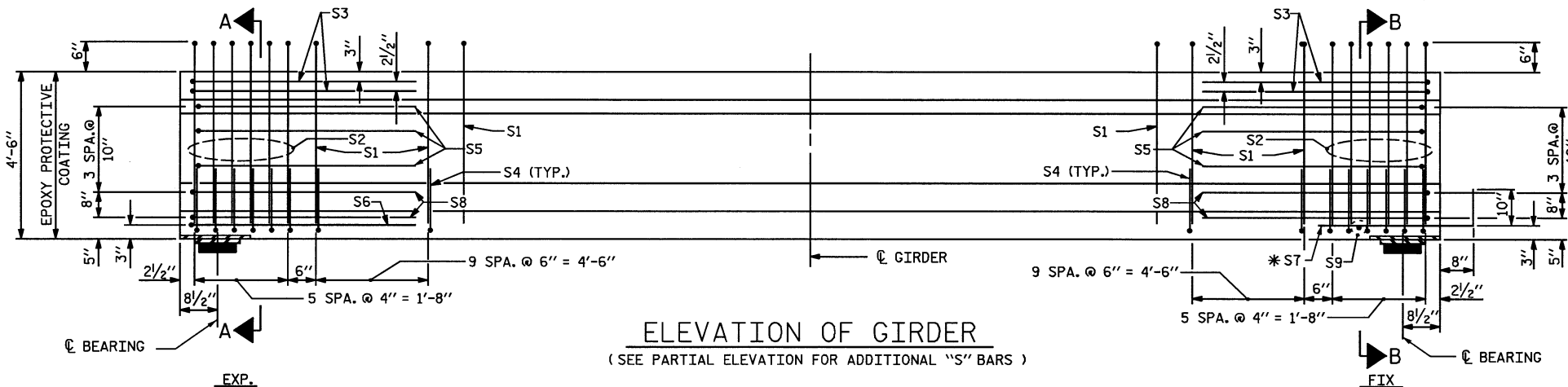


PLAN OF GIRDER



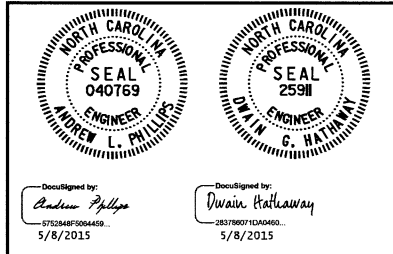
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER NOS. 1-5
 **S11 BARS MAY BE SHIFTED SLIGHTLY AS NEEDED TO AVOID STRANDS.



ELEVATION OF GIRDER (SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 389+47.50 -L-
 SHEET 1 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPANS A, C, F, I & L
 RIGHT LANE

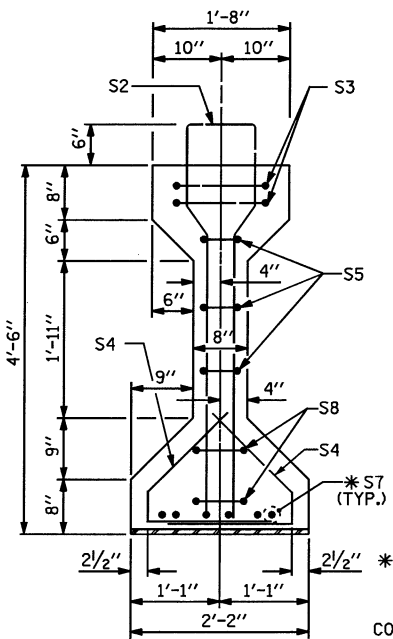
| REVISIONS | | | | | SHEET NO. S08-16 |
|-----------|-----|-------|-----|-------|---------------------|
| NO. | BY: | DATE: | NO. | DATE: | |
| 1 | | | 3 | | TOTAL SHEETS 68 |
| 2 | | | 4 | | |



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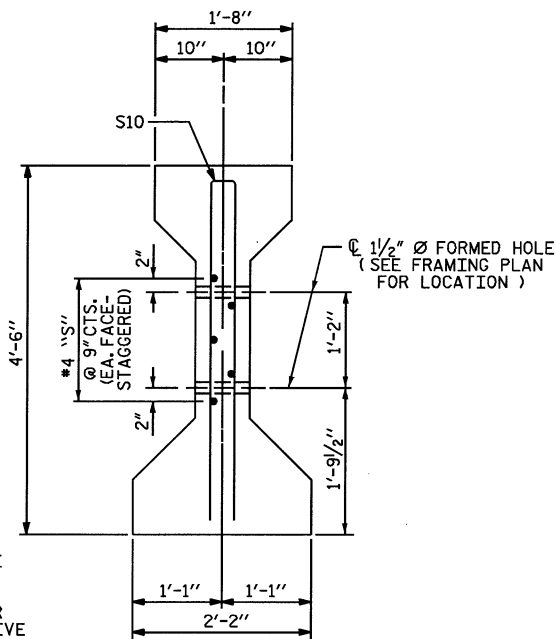
DWG. 16 OF 68

DRAWN BY: N. B. SPEAKS DATE: 7-31-13
 CHECKED BY: A. L. PHILLIPS DATE: 8-23-13

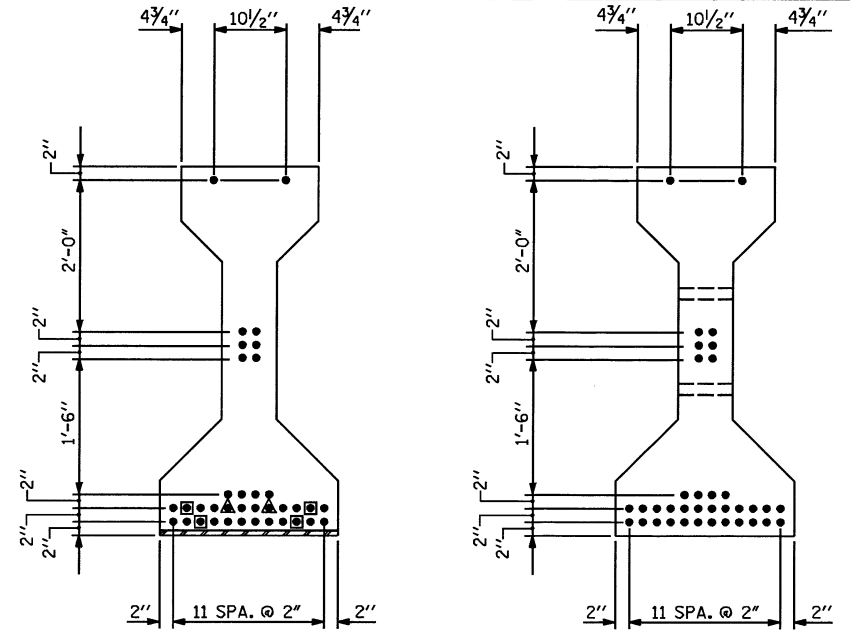


SECTION A-A

* FOR S7 BARS, SEE "DETAIL A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.



SECTION C-C
(S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT

■ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

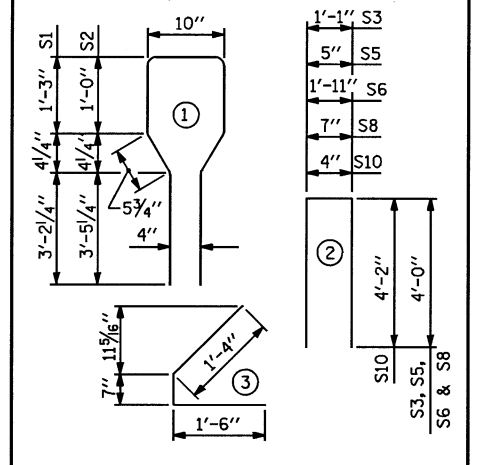
| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQ. INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 73 | #4 | 1 | 10'-8" | 520 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 64 | #4 | 3 | 3'-5" | 146 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S7 | 12 | #5 | STR | 3'-8" | 46 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 2 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



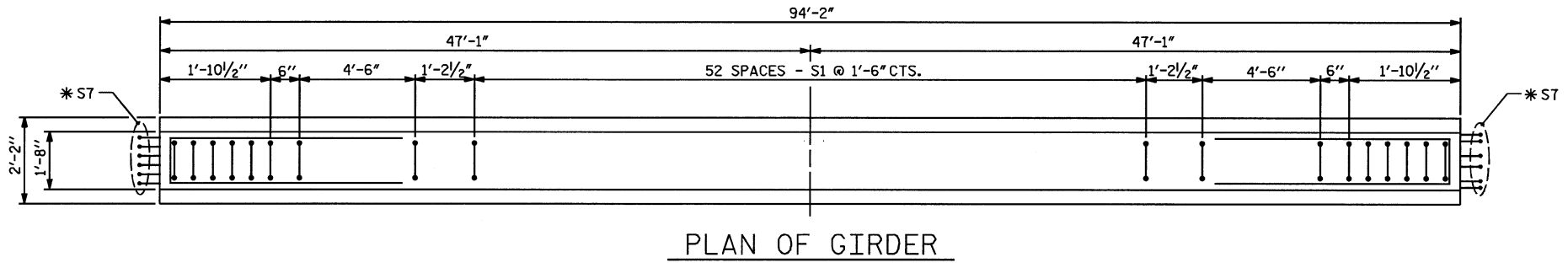
QUANTITIES FOR ONE GIRDER

| REINFORCING STEEL | 8,000 PSI CONCRETE | | 0.6" Ø L. R. STRANDS |
|-------------------|--------------------|------|----------------------|
| | LB. | C.Y. | |
| SPANS D, G AND J | 102T | 19.1 | 36 |

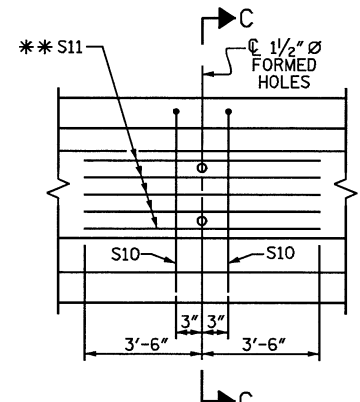
GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------------|
| 15 | 94'-2" | 1412'-6" |

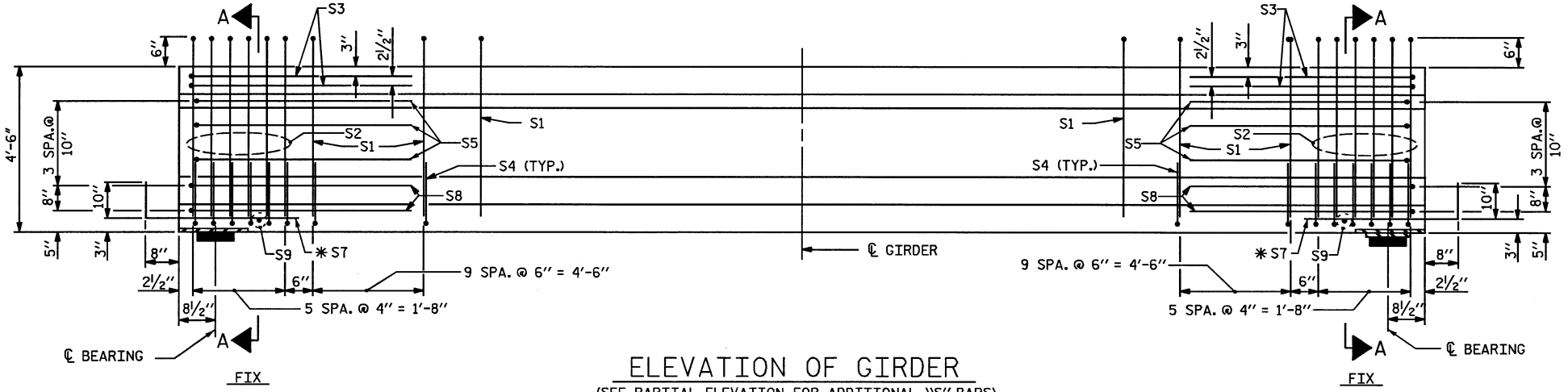
PROJECT NO. R-2514D
JONES COUNTY
STATION: 389+47.50 -L-
SHEET 2 OF 5



PLAN OF GIRDER



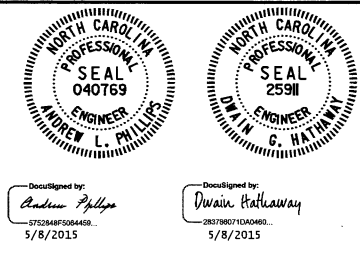
PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER NOS. 1-5
* S11 BARS MAY BE SHIFTED SLIGHTLY AS NEEDED TO AVOID STRANDS.



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

DRAWN BY: N. B. SPEAKS DATE: 8-6-13
CHECKED BY: A. L. PHILLIPS DATE: 8-12-13

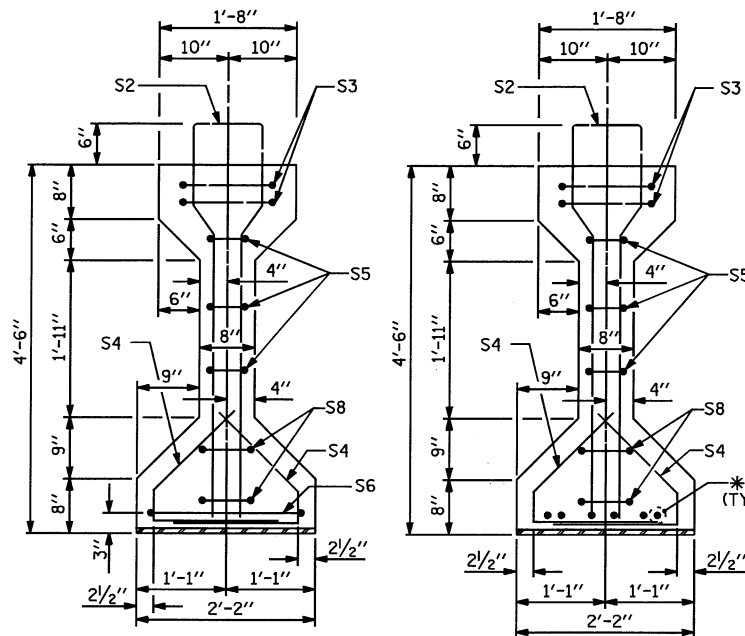
DWG. 17 OF 68



Baker
Michael Baker Engineering
8000 Regency Parkway, Suite 500
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS D, G & J
RIGHT LANE

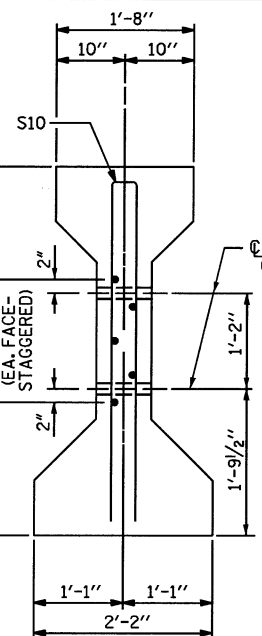
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|-----------|-----|-------|-----|-----|-------|---------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 68 |
| 2 | | | 4 | | | |



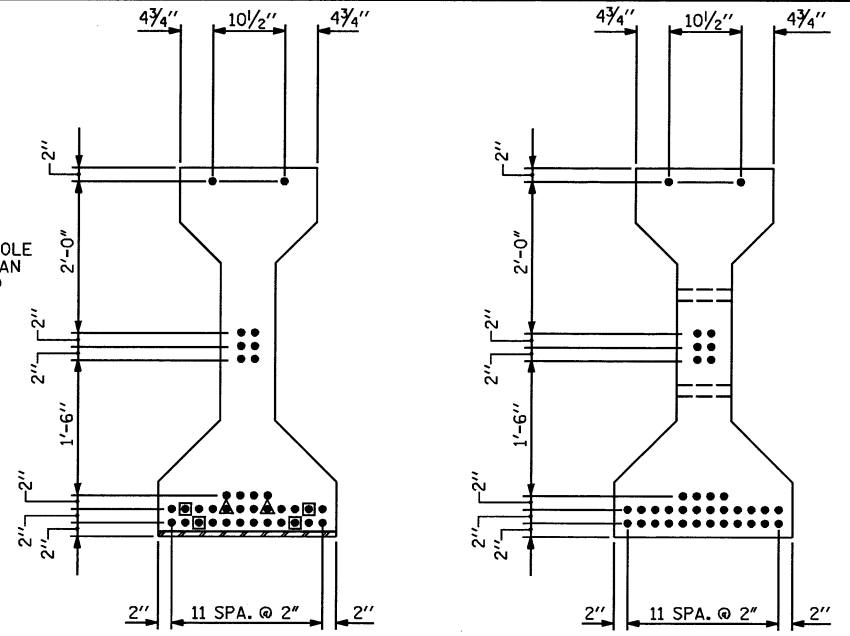
SECTION A-A

SECTION B-B

*FOR S7 BARS, SEE "DETAIL A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.



SECTION C-C
(S1 BARS NOT SHOWN)



AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

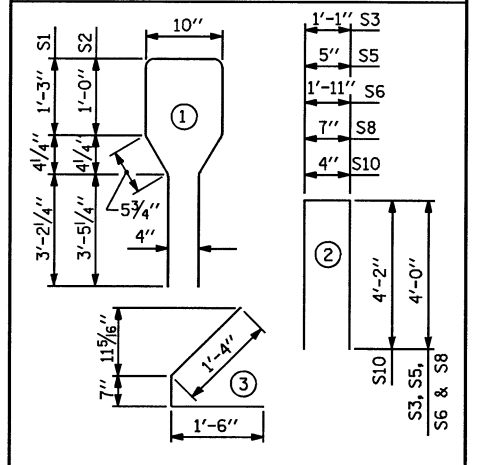
| SPAN | ① | ② | ③ |
|------|------------|------------|-----------|
| B | 94'-2" | 47'-1" | 1'-2 1/2" |
| E | 94'-2" | 47'-1" | 1'-2 1/2" |
| H | 94'-2" | 47'-1" | 1'-2 1/2" |
| K | 94'-2" | 47'-1" | 1'-2 1/2" |
| M | 93'-3 1/2" | 46'-7 1/4" | 9 1/4" |

| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 73 | #4 | 1 | 10'-8" | 520 |
| S2 | 12 | #6 | 1 | 10'-8" | 192 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 64 | #4 | 3 | 3'-5" | 146 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| S6 | 1 | #4 | 2 | 9'-11" | 7 |
| *S7 | 6 | #5 | STR | 3'-8" | 23 |
| S8 | 4 | #4 | 2 | 8'-7" | 23 |
| S9 | 1 | #3 | STR | 1'-10" | 1 |
| S10 | 2 | #5 | 2 | 8'-8" | 18 |
| S11 | 5 | #4 | STR | 7'-0" | 23 |

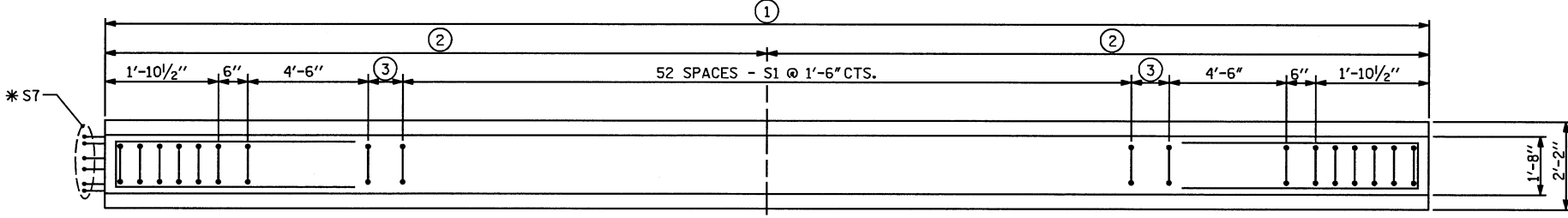
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

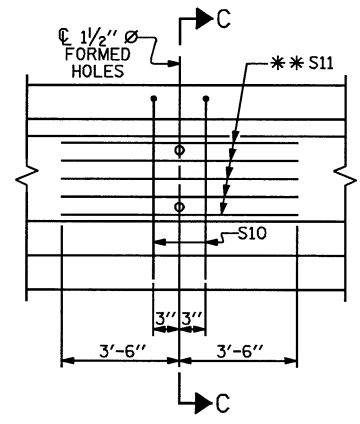


| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|-------------------|--------------------|----------------------|
| SPAN | REINFORCING STEEL | 8,000 PSI CONCRETE | 0.6" Ø L. R. STRANDS |
| | L.B. | C.Y. | No. |
| SPANS B, E, H & K | 1011 | 19.1 | 36 |
| SPAN M | 1011 | 18.9 | 36 |

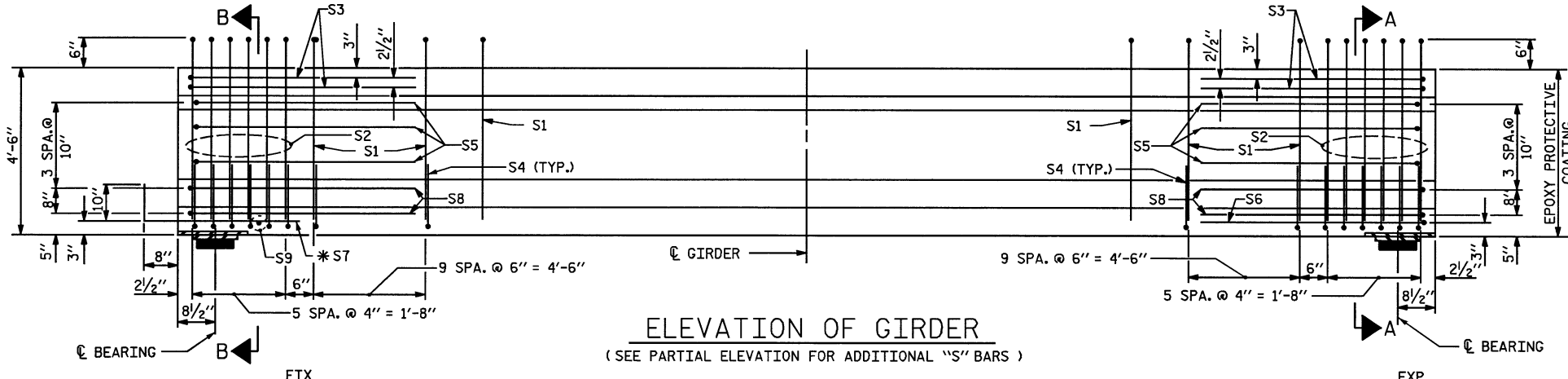
| GIRDERS REQUIRED | | |
|-------------------|--------|--------------|
| NUMBER | LENGTH | TOTAL LENGTH |
| SPANS B, E, H & K | 20 | 94'-2" |
| SPAN M | 5 | 93'-3 1/2" |
| | | 1883'-4" |
| | | 466'-5 1/2" |



PLAN OF GIRDER



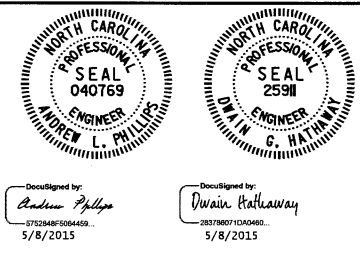
PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER NOS. 1-5
*S11 BARS MAY BE SHIFTED SLIGHTLY AS NEEDED TO AVOID STRANDS.



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

DRAWN BY: N. B. SPEAKS DATE: 8-6-13
CHECKED BY: A. L. PHILLIPS DATE: 8-12-13

DWG. 18 OF 68



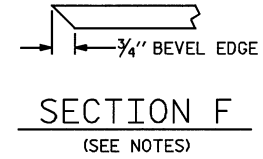
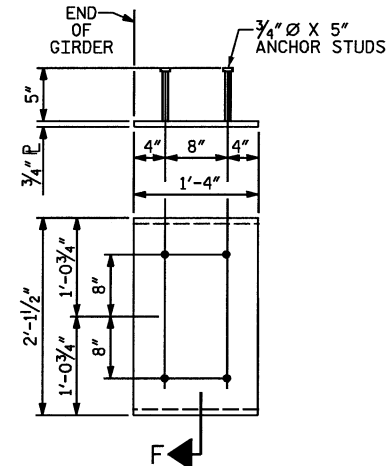
PROJECT NO. R-2514D
JONES COUNTY
STATION: 389+47.50 -L-
SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS B, E, H, K & M
RIGHT LANE

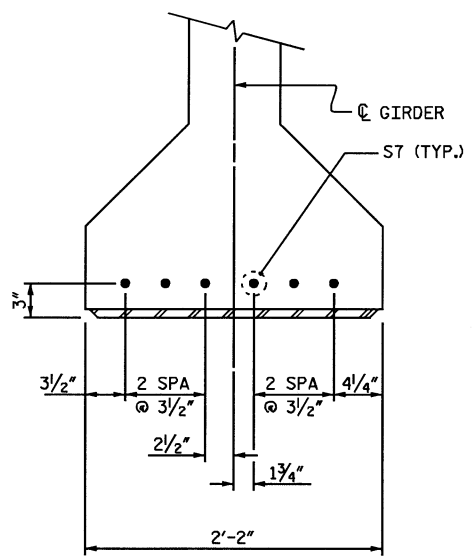
| REVISIONS | | | | | | SHEET NO. S08-18 |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 68 |
| 2 | | | 4 | | | |

NOTES:

- ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL SHALL BE GRADE 60.
- APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.
- EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.
- AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.
- THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.
- DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.
- THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

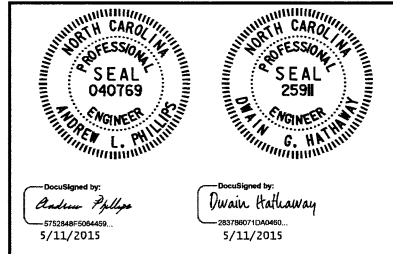


EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER
(2 REQ'D PER GIRDER)



DETAIL A

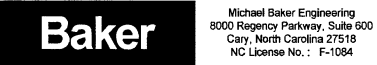
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 389+47.50 -L-
 SHEET 4 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD DETAILS
 RIGHT LANE

DRAWN BY : N. B. SPEAKS DATE : 8-6-13
 CHECKED BY : A. L. PHILLIPS DATE : 8-12-13

DWG. 19 OF 68



| REVISIONS | | | | | |
|-----------|-----|-------|-----|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
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SHEET NO. S08-19
 TOTAL SHEETS 68

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 5/8/2015
 File Name: Y:\Projects\NCDOT\R-2514D\Site 4\Drawings\Right\Final\408_019_R2514D_SML_004.dgn

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|---|------------------|-------|-------|-------|--------|--------|--------|-------|-------|-------|-------|
| SPAN A | | | | | | | | | | | |
| 0.6" Ø LOW RELAXATION STRANDS | GIRDER AG1 & AG5 | | | | | | | | | | |
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.104 | 0.143 | 0.167 | 0.175 | 0.167 | 0.143 | 0.104 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.034 | 0.067 | 0.093 | 0.110 | 0.115 | 0.110 | 0.093 | 0.067 | 0.034 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 1/4" | 3/16" | 5/8" | 11/16" | 11/16" | 11/16" | 5/8" | 7/16" | 1/4" | 0 |

| 0.6" Ø LOW RELAXATION STRANDS | GIRDER AG2 THRU AG4 | | | | | | | | | | |
|---|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.104 | 0.143 | 0.167 | 0.175 | 0.167 | 0.143 | 0.104 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.037 | 0.073 | 0.101 | 0.119 | 0.125 | 0.119 | 0.101 | 0.073 | 0.037 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 3/16" | 3/8" | 1/2" | 5/16" | 5/8" | 5/16" | 1/2" | 3/8" | 3/16" | 0 |

* INCLUDES WEIGHT OF DECK SLAB, BUILD-UPS, DIAPHRAGMS, BARRIERS, AND FUTURE WEARING SURFACE.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|---|----------------|-------|-------|-------|--------|-------|--------|-------|-------|-------|-------|
| SPANS B THRU L | | | | | | | | | | | |
| 0.6" Ø LOW RELAXATION STRANDS | GIRDER G1 & G5 | | | | | | | | | | |
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.105 | 0.143 | 0.168 | 0.176 | 0.168 | 0.143 | 0.105 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.034 | 0.067 | 0.093 | 0.110 | 0.115 | 0.110 | 0.093 | 0.067 | 0.034 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 1/4" | 7/16" | 5/8" | 11/16" | 3/4" | 11/16" | 5/8" | 7/16" | 1/4" | 0 |

| 0.6" Ø LOW RELAXATION STRANDS | GIRDER G2 THRU G4 | | | | | | | | | | |
|---|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.105 | 0.143 | 0.168 | 0.176 | 0.168 | 0.143 | 0.105 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.037 | 0.073 | 0.101 | 0.119 | 0.125 | 0.119 | 0.101 | 0.073 | 0.037 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 3/16" | 3/8" | 1/2" | 5/16" | 5/8" | 5/16" | 1/2" | 3/8" | 3/16" | 0 |

* INCLUDES WEIGHT OF DECK SLAB, BUILD-UPS, DIAPHRAGMS, BARRIERS, AND FUTURE WEARING SURFACE.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS | | | | | | | | | | | |
|---|------------------|-------|-------|-------|--------|--------|--------|-------|-------|-------|-------|
| SPAN M | | | | | | | | | | | |
| 0.6" Ø LOW RELAXATION STRANDS | GIRDER MG1 & MG5 | | | | | | | | | | |
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.104 | 0.143 | 0.167 | 0.175 | 0.167 | 0.143 | 0.104 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.034 | 0.067 | 0.093 | 0.110 | 0.115 | 0.110 | 0.093 | 0.067 | 0.034 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 1/4" | 7/16" | 5/8" | 11/16" | 11/16" | 11/16" | 5/8" | 7/16" | 1/4" | 0 |

| 0.6" Ø LOW RELAXATION STRANDS | GIRDER MG2 THRU MG4 | | | | | | | | | | |
|---|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| TENTH POINTS BETWEEN BRGS. | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑ | 0.000 | 0.055 | 0.104 | 0.143 | 0.167 | 0.175 | 0.167 | 0.143 | 0.104 | 0.055 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓ | 0.000 | 0.037 | 0.073 | 0.101 | 0.119 | 0.125 | 0.119 | 0.101 | 0.073 | 0.037 | 0.000 |
| FINAL CAMBER (IN.) ↑ | 0 | 3/16" | 3/8" | 1/2" | 5/16" | 5/8" | 5/16" | 1/2" | 3/8" | 3/16" | 0 |

* INCLUDES WEIGHT OF DECK SLAB, BUILD-UPS, DIAPHRAGMS, BARRIERS, AND FUTURE WEARING SURFACE.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 389+47.50 -L-

5/8/2015 1:44:59 PM
 File name: Y:\Projects\NC001\VR-2514D\Site 4\Drawings\Right\Final\022_R2514D_SML.DWG

DRAWN BY : N. B. SPEAKS DATE : 8-8-13
 CHECKED BY : A. L. PHILLIPS DATE : 8-12-13

DWG. 22 OF 68

| | | | |
|--|--|--|--|
| | | | |
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE GIRDER DEFLECTIONS AND CAMBER RIGHT LANE | | | |
| DocuSigned by: Andrew Phillips 5/8/2015 | | DocuSigned by: Duane Hathaway 5/8/2015 | |
| Baker Michael Baker Engineering 8000 Regency Parkway, Suite 600 Cary, North Carolina 27516 NC License No.: F-1084 | | | |
| REVISIONS NO. BY: DATE: NO. BY: DATE: | | SHEET NO. S08-22 TOTAL SHEETS 68 | |
| 1 | | 3 | |
| 2 | | 4 | |

LOAD FACTORS:

| | | | |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ_{DC} | γ_{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING (#) | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | | |
|--------------------|-----------------------------------|-------------------|-----------------------------|-----------------------------|---------------|-------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|--|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (%LL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FF) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FF) | LIVE-LOAD FACTORS (%LL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FF) | |
| DESIGN LOAD RATING | HL-93 (INVENTORY) | N/A | ① | 1.15 | -- | 1.75 | 0.78 | 1.56 | A | EL | 45.9 | 0.90 | 1.15 | A | I | 8.6 | 0.80 | 0.78 | 1.30 | A | EL | 45.9 | | |
| | HL-93 (OPERATING) | N/A | | 1.52 | -- | 1.35 | 0.78 | 2.02 | A | EL | 45.9 | 0.90 | 1.52 | A | I | 8.6 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20 (INVENTORY) | 36.000 | ② | 1.54 | 55.44 | 1.75 | 0.78 | 2.14 | A | EL | 45.9 | 0.90 | 1.54 | A | I | 8.6 | 0.80 | 0.78 | 1.78 | A | EL | 45.9 | | |
| | HS-20 (OPERATING) | 36.000 | | 2.04 | 73.44 | 1.35 | 0.78 | 2.77 | A | EL | 45.9 | 0.90 | 2.04 | A | I | 8.6 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 4.19 | 56.57 | 1.40 | 0.78 | 6.27 | A | EL | 45.9 | 0.90 | 5.00 | A | I | 8.6 | 0.80 | 0.78 | 4.19 | A | EL | 45.9 | |
| | | SNGARBS2 | 20.000 | | 3.05 | 61.00 | 1.40 | 0.78 | 4.57 | A | EL | 45.9 | 0.90 | 3.47 | A | I | 8.6 | 0.80 | 0.78 | 3.05 | A | EL | 45.9 | |
| | | SNAGRIS2 | 22.000 | | 2.86 | 62.92 | 1.40 | 0.78 | 4.29 | A | EL | 45.9 | 0.90 | 3.20 | A | I | 8.6 | 0.80 | 0.78 | 2.86 | A | EL | 45.9 | |
| | | SNCOTTS3 | 27.250 | | 2.08 | 56.68 | 1.40 | 0.78 | 3.12 | A | EL | 45.9 | 0.90 | 2.43 | A | I | 8.6 | 0.80 | 0.78 | 2.08 | A | EL | 45.9 | |
| | | SNAGGRS4 | 34.925 | | 1.71 | 59.72 | 1.40 | 0.78 | 2.57 | A | EL | 45.9 | 0.90 | 1.96 | A | I | 8.6 | 0.80 | 0.78 | 1.71 | A | EL | 45.9 | |
| | | SNS5A | 35.550 | | 1.68 | 59.72 | 1.40 | 0.78 | 2.51 | A | EL | 45.9 | 0.90 | 1.97 | A | I | 8.6 | 0.80 | 0.78 | 1.68 | A | EL | 45.9 | |
| | | SNS6A | 39.950 | | 1.53 | 61.12 | 1.40 | 0.78 | 2.29 | A | EL | 45.9 | 0.90 | 1.78 | A | I | 8.6 | 0.80 | 0.78 | 1.53 | A | EL | 45.9 | |
| | SNS7B | 42.000 | | 1.45 | 60.90 | 1.40 | 0.78 | 2.18 | A | EL | 45.9 | 0.90 | 1.73 | A | I | 8.6 | 0.80 | 0.78 | 1.45 | A | EL | 45.9 | | |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.86 | 61.38 | 1.40 | 0.78 | 2.79 | A | EL | 45.9 | 0.90 | 2.15 | A | I | 8.6 | 0.80 | 0.78 | 1.86 | A | EL | 45.9 | |
| | | TNT4A | 33.075 | | 1.86 | 61.52 | 1.40 | 0.78 | 2.79 | A | EL | 45.9 | 0.90 | 2.10 | A | I | 8.6 | 0.80 | 0.78 | 1.86 | A | EL | 45.9 | |
| | | TNT6A | 41.600 | | 1.51 | 62.82 | 1.40 | 0.78 | 2.27 | A | EL | 45.9 | 0.90 | 1.83 | A | I | 8.6 | 0.80 | 0.78 | 1.51 | A | EL | 45.9 | |
| | | TNT7A | 42.000 | | 1.52 | 63.84 | 1.40 | 0.78 | 2.27 | A | EL | 45.9 | 0.90 | 1.79 | A | I | 8.6 | 0.80 | 0.78 | 1.52 | A | EL | 45.9 | |
| | | TNT7B | 42.000 | | 1.56 | 65.52 | 1.40 | 0.78 | 2.33 | A | EL | 45.9 | 0.90 | 1.70 | A | I | 8.6 | 0.80 | 0.78 | 1.56 | A | EL | 45.9 | |
| | | TNAGRIT4 | 43.000 | | 1.49 | 64.07 | 1.40 | 0.78 | 2.23 | A | EL | 45.9 | 0.90 | 1.64 | A | I | 8.6 | 0.80 | 0.78 | 1.49 | A | EL | 45.9 | |
| TNAGT5A | | 45.000 | | 1.41 | 63.45 | 1.40 | 0.78 | 2.11 | A | EL | 45.9 | 0.90 | 1.62 | A | I | 8.6 | 0.80 | 0.78 | 1.41 | A | EL | 45.9 | | |
| TNAGT5B | 45.000 | ③ | 1.40 | 63.00 | 1.40 | 0.78 | 2.09 | A | EL | 45.9 | 0.90 | 1.56 | A | I | 8.6 | 0.80 | 0.78 | 1.40 | A | EL | 45.9 | | | |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

③ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

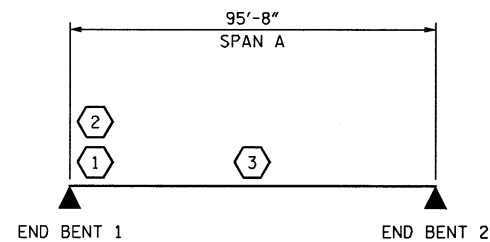
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

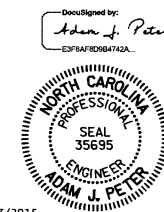
GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. R-2514D
JONES & CRAVEN COUNTY
STATION: 428+53.58 -L-
= 13+04.09 -Y5-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)
-LEFT LANE-

| REVISIONS | | | | SHEET NO. |
|--------------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | STV | 4-15 | 3 | |
| 2 | | | 4 | |
| TOTAL SHEETS | | | | 24 |

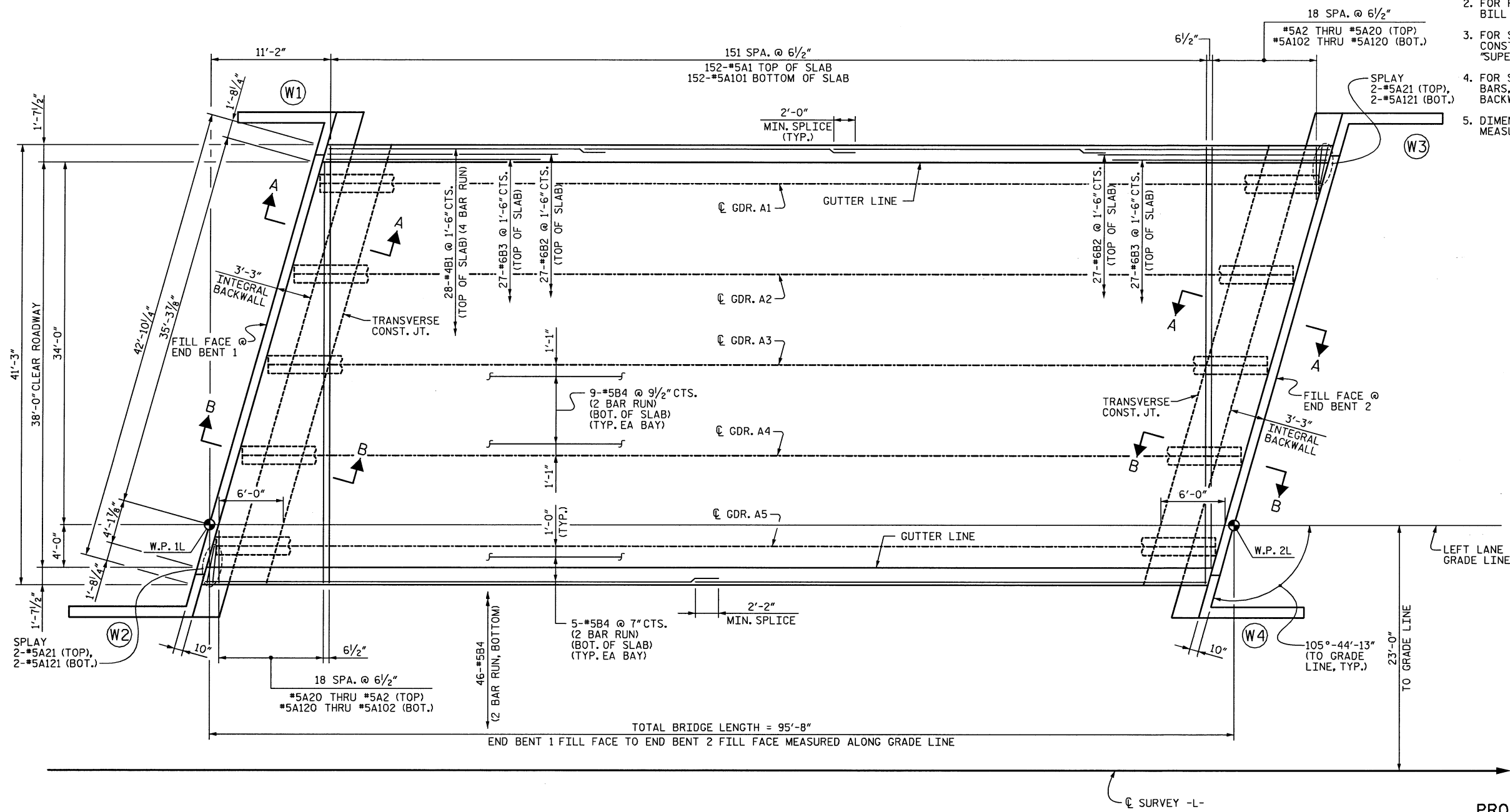
STV / Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

REVISED PER NCDOT COMMENTS

4/17/2015 10:54:00 PM R:\Site 5\usta\findis\Site 5 LLY409.004-R2514D-SMUL_LRFR.dgn

DRAWN BY: VMW DATE: 5-14
CHECKED BY: AJP DATE: 5-14
DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

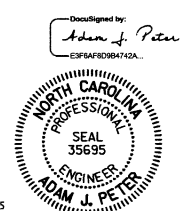
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 4/10/2015 9:21:16 AM



- NOTES:**
1. FOR CONCRETE BARRIER RAIL DIMENSIONS, REINFORCEMENT AND JOINT SPACING, SEE "CONCRETE BARRIER RAIL" SHEET.
 2. FOR POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
 3. FOR SECTION A-A, B-B, & TRANSVERSE CONST. JOINT IN DECK SLAB, SEE "SUPERSTRUCTURE DETAILS" SHEET.
 4. FOR SPACING OF TOP AND BOTTOM "B" BARS, SEE "TYPICAL SECTION AND INTEGRAL BACKWALL" SHEET.
 5. DIMENSIONS TO CONSTRUCTION JOINTS ARE MEASURED ALONG THE GRADE LINE.

SPAN A

PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 428+53.58 -L-
 = 13+04.09 -Y5-

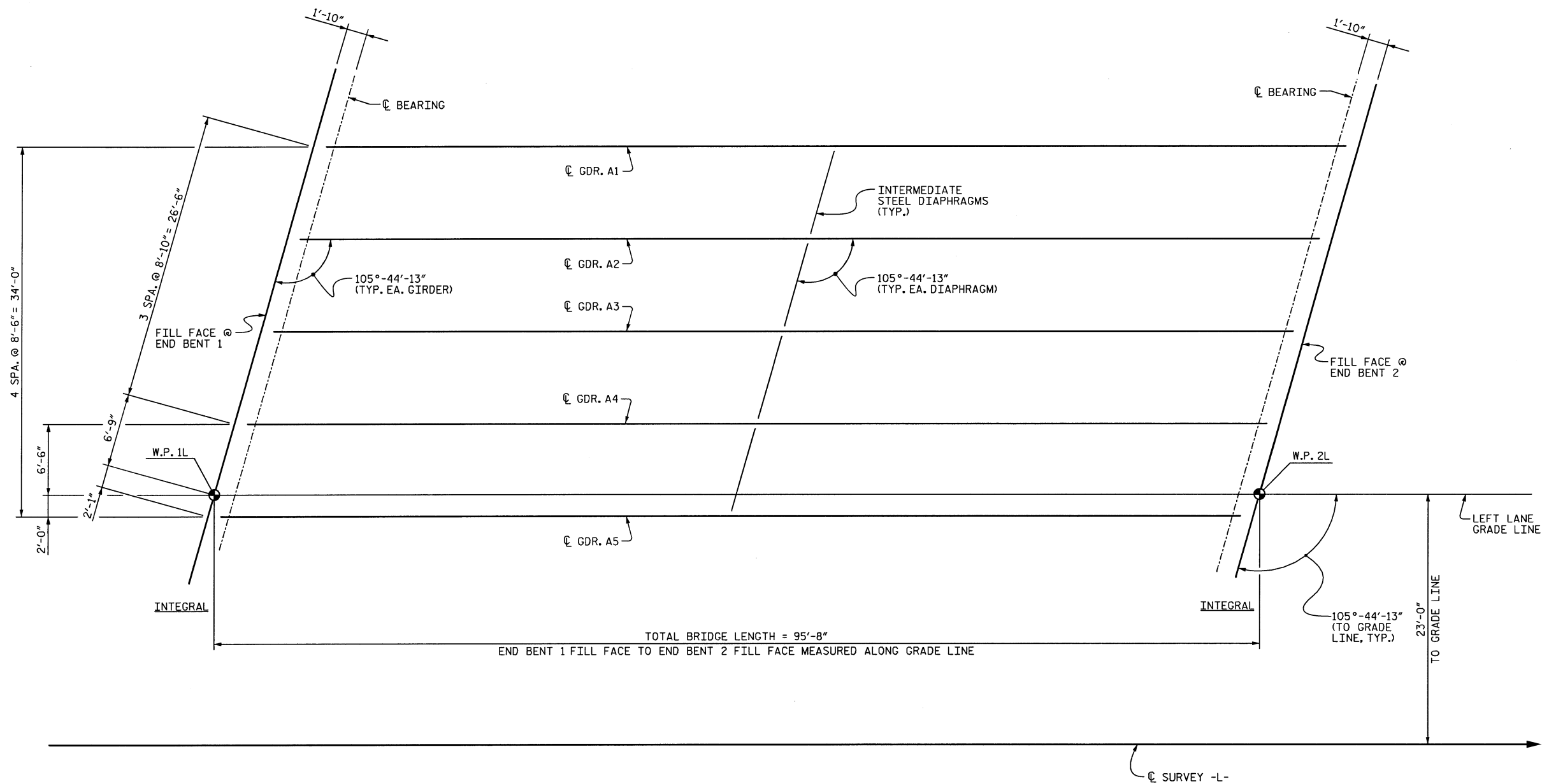


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 -LEFT LANE-

| | | | |
|------------------|-------------|-------------------------------------|-------------|
| DRAWN BY : JWJ | DATE : 4-14 | DESIGN ENGINEER OF RECORD: A. PETER | DATE : 6-14 |
| CHECKED BY : MLO | DATE : 5-14 | | |

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 900 West Trade Street, Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

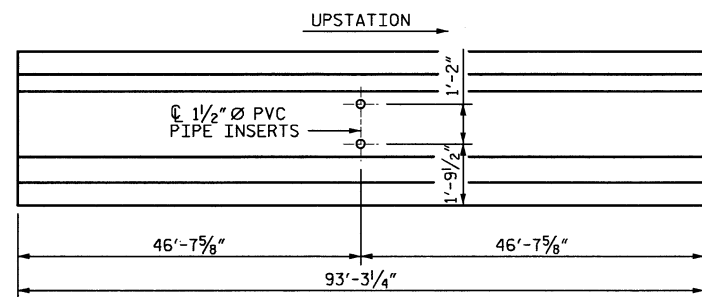
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | 509-7 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |



FRAMING PLAN - SPAN A

| △ DEAD LOAD DEFLECTION TABLE | | | | | | | | | | | |
|---|---------|-------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| SPAN A GIRDERS 1 & 5 | | | | | | | | | | | |
| TENTH POINTS | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ 0.000 | 0.096 | 0.166 | 0.212 | 0.238 | 0.247 | 0.238 | 0.212 | 0.166 | 0.096 | 0.000 |
| DEFLECTION DUE TO SUPERIMPOSED D.L. ▲ ↓ | 0.000 | 0.033 | 0.064 | 0.089 | 0.105 | 0.110 | 0.105 | 0.089 | 0.064 | 0.033 | 0.000 |
| FINAL CAMBER | ↑ 0" | 3/4" | 1 1/8" | 1 1/2" | 1 5/8" | 1 5/8" | 1 5/8" | 1 1/2" | 1 3/8" | 3/4" | 0" |

| △ DEAD LOAD DEFLECTION TABLE | | | | | | | | | | | |
|---|---------|-------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| SPAN A GIRDERS 2-4 | | | | | | | | | | | |
| TENTH POINTS | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ 0.000 | 0.096 | 0.166 | 0.212 | 0.238 | 0.247 | 0.238 | 0.212 | 0.166 | 0.096 | 0.000 |
| DEFLECTION DUE TO SUPERIMPOSED D.L. ▲ ↓ | 0.000 | 0.034 | 0.068 | 0.094 | 0.111 | 0.117 | 0.111 | 0.094 | 0.068 | 0.034 | 0.000 |
| FINAL CAMBER | ↑ 0" | 3/4" | 1 3/8" | 1 7/8" | 1 1/2" | 1 5/8" | 1 1/2" | 1 1/8" | 1 1/8" | 3/4" | 0" |



GIRDER INSERTS

NOTES:
 ALL GIRDER ALONE IN PLACE CAMBERS AND DEFLECTIONS ARE SHOWN IN DECIMAL FEET.
 ▲ DOES NOT INCLUDE FUTURE WEARING SURFACE.



PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 428+53.58 -L-
 = 13+04.09 -Y5-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN &
 DEAD
 LOAD DEFLECTIONS
 -LEFT LANE-

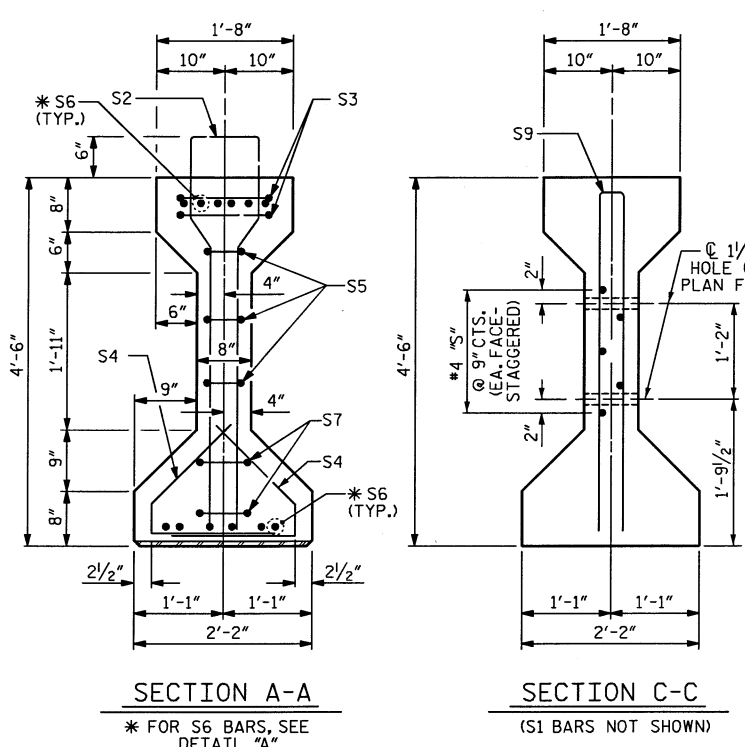
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 CHECKED BY: MLO DATE: 5-14
 DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

△ REVISED PER NCDOT COMMENTS

STV / Ralph Whitehead Associates, Inc.
 900 West Trade Street, Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

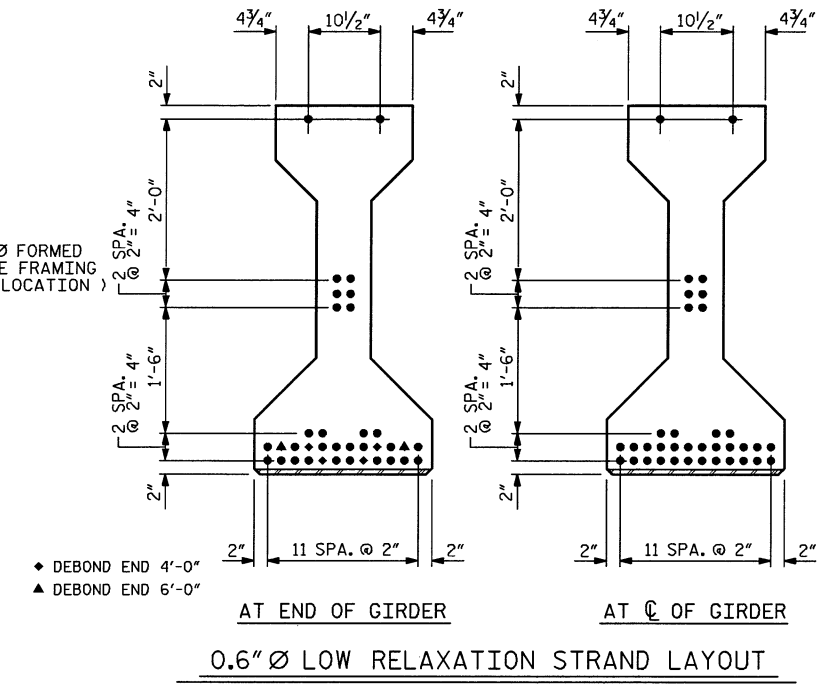
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| NO. | BY: | DATE: | NO. | BY: | DATE: | 509-10 |
| 1 | STV | 4-15 | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

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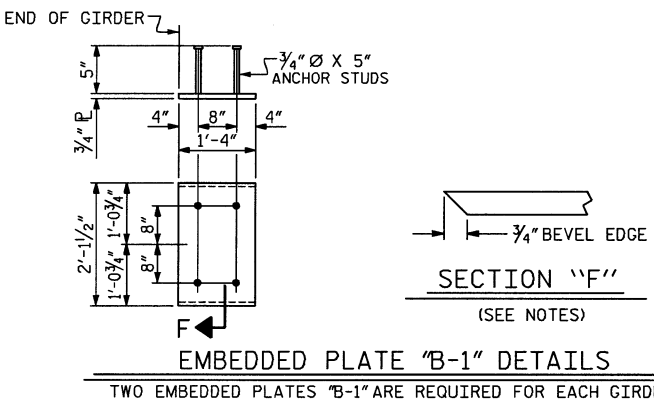
SECTION A-A
* FOR S6 BARS, SEE DETAIL "A"

SECTION C-C
(S1 BARS NOT SHOWN)



◆ DEBOND END 4'-0"
▲ DEBOND END 6'-0"

0.6" Ø LOW RELAXATION STRAND LAYOUT



EMBEDDED PLATE "B-1" DETAILS
TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

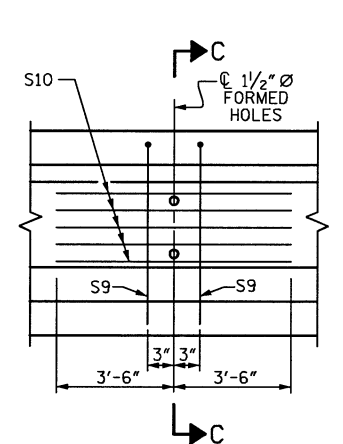
AT ENDS OF GIRDERS TO BE EMBEDDED IN END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 LBS.

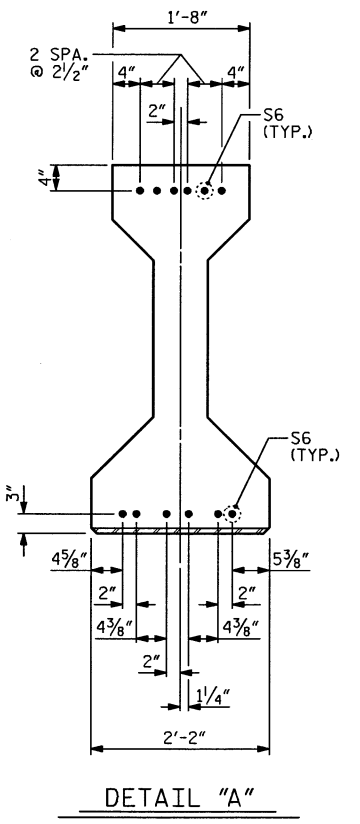
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

DEPENDENT ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



DETAIL "A"

0.6" Ø L. R. GRADE 270 STRANDS

| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
|-------------------------|--|--|
| 0.217 | 58,600 | 43,950 |

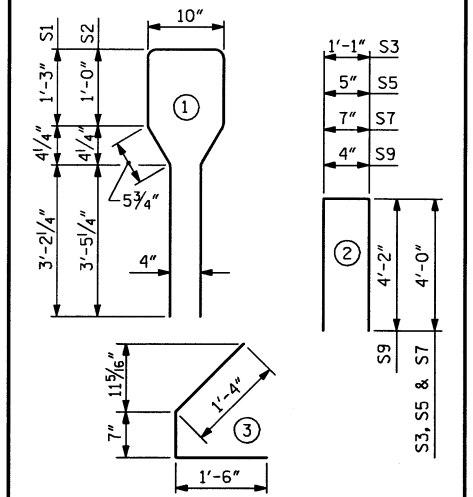
REINFORCING STEEL FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-----|--------|------|------|--------|--------|
| S1 | 81 | #4 | 1 | 10'-8" | 577 |
| S2 | 18 | #6 | 1 | 10'-8" | 288 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 76 | #4 | 3 | 3'-5" | 173 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S6 | 24 | #5 | STR | 3'-8" | 92 |
| S7 | 4 | #4 | 2 | 8'-7" | 23 |
| S8 | 2 | #3 | STR | 1'-10" | 1 |
| S9 | 2 | #5 | 2 | 8'-8" | 18 |
| S10 | 5 | #4 | STR | 7'-0" | 23 |
| S11 | 2 | #3 | STR | 1'-4" | 1 |

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

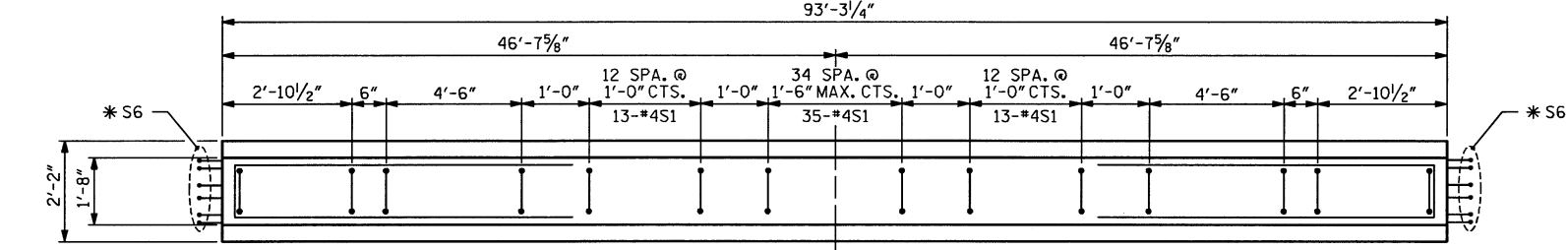


QUANTITIES FOR ONE GIRDER

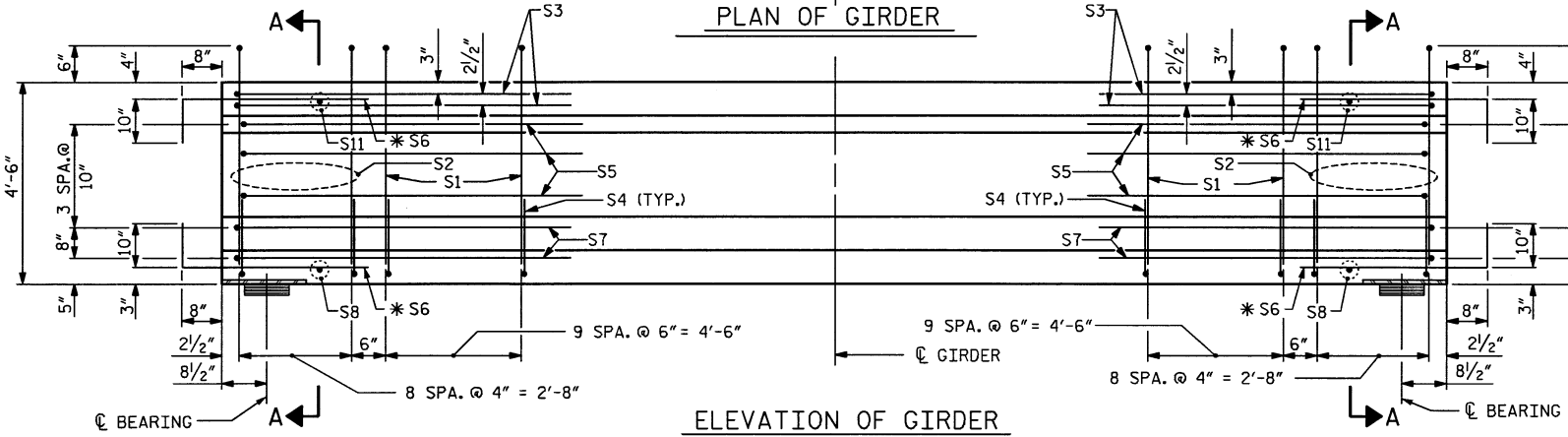
| REINFORCING STEEL | 8,000 PSI CONCRETE | 0.6" Ø L. R. STRANDS |
|-------------------|--------------------|----------------------|
| LB. | C.Y. | No. |
| 1,254 | 18.9 | 36 |

GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|--------|----------|--------------|
| 5 | 93'-3/4" | 466'-4/4" |



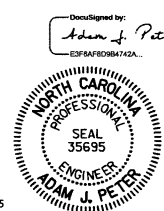
PLAN OF GIRDER



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

DRAWN BY: J.W.J. DATE: 4-14
 CHECKED BY: M.L.O. DATE: 5-14
 DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

STV/ Ralph Whitehead Associates, Inc.
 900 West Trade Street, Suite 715
 Charlotte, NC 28202
 NC License Number F-0991



PROJECT NO. R-25140
 JONES & CRAVEN COUNTY
 STATION: 428+53.58 -L-
 = 13+04.09 -Y5-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 -LEFT LANE-

REVISIONS

| NO. | BY: | DATE: | NO. | BY: | DATE: |
|-----|-----|-------|-----|-----|-------|
| 1 | | | 3 | | |
| 2 | | | 4 | | |

SHEET NO. S09-11
 TOTAL SHEETS 24

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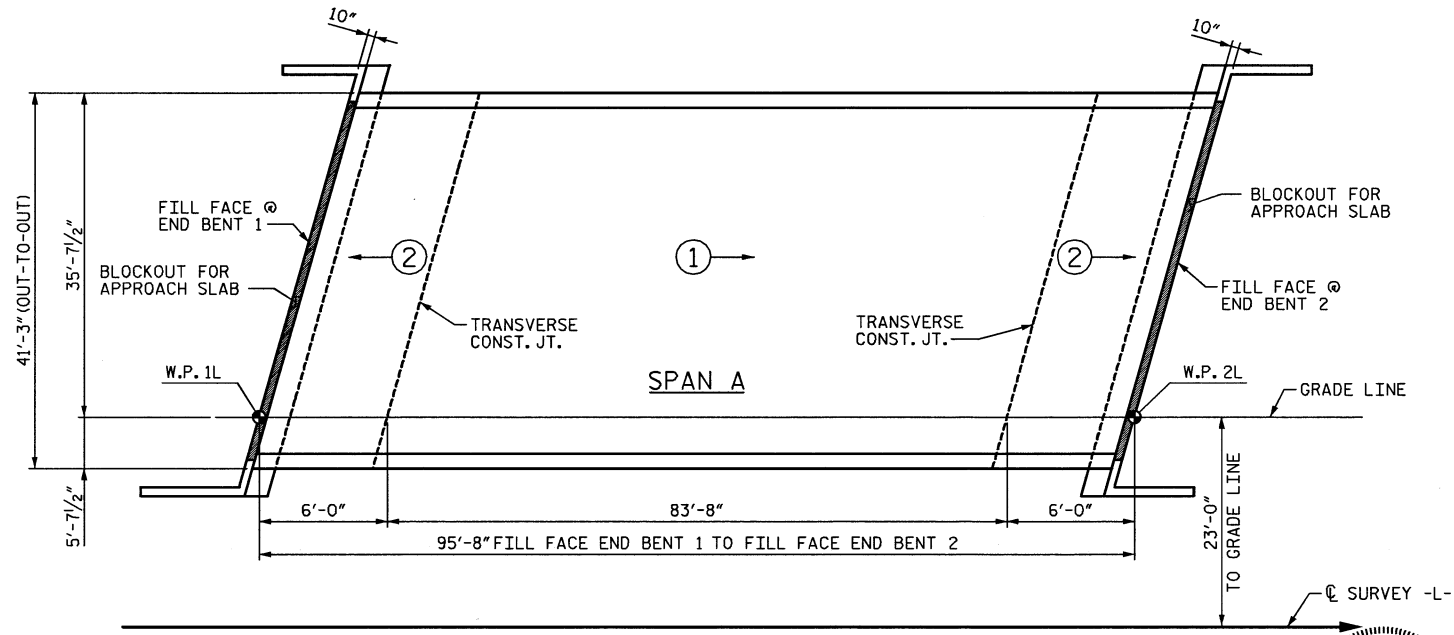
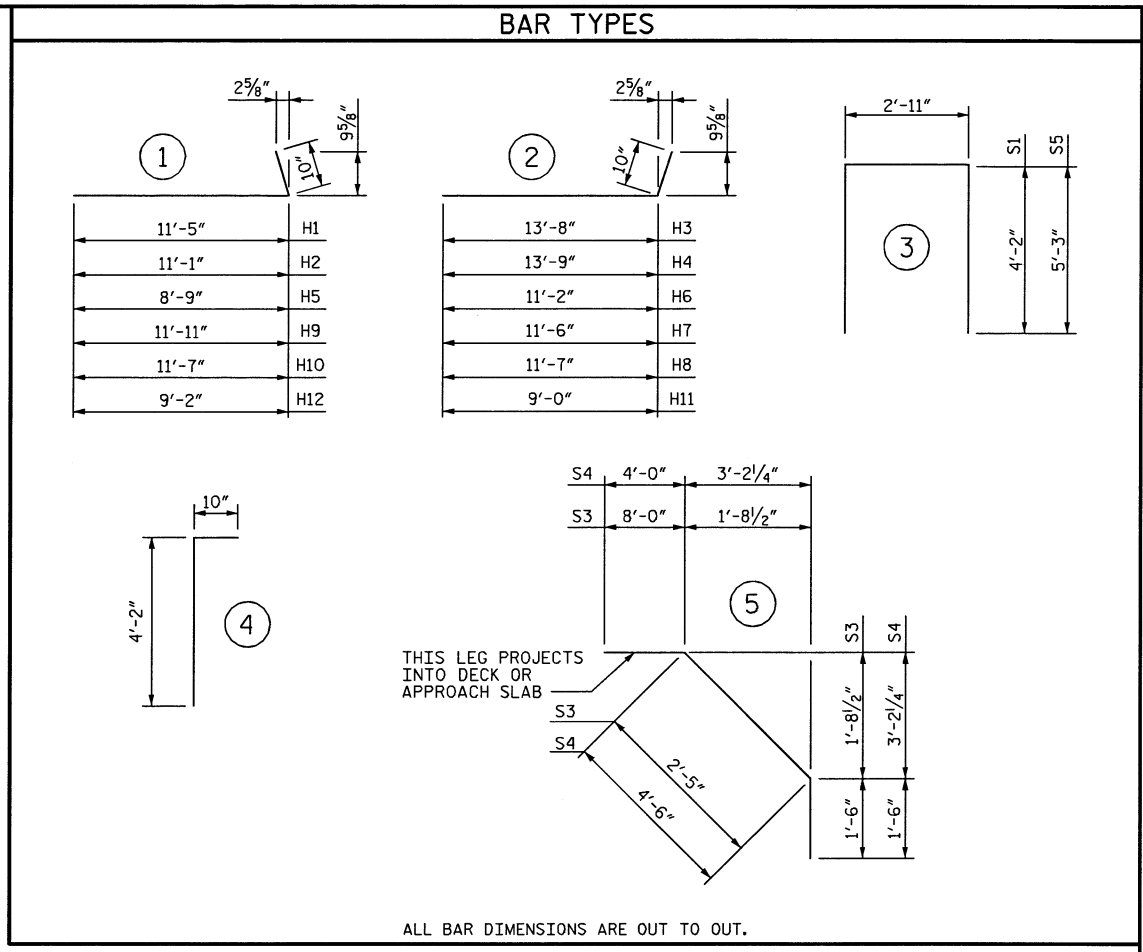
| REINFORCING BAR SCHEDULE | | | | | | | | | | | | | |
|--------------------------|-----|------|------|---------|--------|------|-----|------|------|---------|------------------------------------|--------|--|
| MARK | NO. | SIZE | TYPE | LENGTH | WEIGHT | MARK | NO. | SIZE | TYPE | LENGTH | WEIGHT | | |
| *A1 | 152 | #5 | STR | 40'-10" | 6,474 | *B1 | 112 | #4 | STR | 24'-11" | 1,864 | | |
| *A2 | 2 | #5 | STR | 39'-3" | 82 | *B2 | 54 | #6 | STR | 23'-0" | 1,865 | | |
| *A3 | 2 | #5 | STR | 37'-4" | 78 | *B3 | 54 | #6 | STR | 20'-0" | 1,622 | | |
| *A4 | 2 | #5 | STR | 35'-5" | 74 | B4 | 92 | #5 | STR | 47'-10" | 4,590 | | |
| *A5 | 2 | #5 | STR | 33'-6" | 70 | | | | | | | | |
| *A6 | 2 | #5 | STR | 31'-7" | 66 | K1 | 20 | #4 | STR | 25'-3" | 337 | | |
| *A7 | 2 | #5 | STR | 29'-8" | 62 | K2 | 8 | #4 | STR | 6'-1" | 33 | | |
| *A8 | 2 | #5 | STR | 27'-8" | 58 | K3 | 8 | #4 | STR | 7'-1" | 38 | | |
| *A9 | 2 | #5 | STR | 25'-9" | 54 | K4 | 16 | #4 | STR | 7'-8" | 82 | | |
| *A10 | 2 | #5 | STR | 23'-11" | 50 | K5 | 8 | #4 | STR | 6'-8" | 36 | | |
| *A11 | 2 | #5 | STR | 21'-11" | 46 | K6 | 4 | #4 | STR | 5'-4" | 14 | | |
| *A12 | 2 | #5 | STR | 20'-0" | 42 | K7 | 4 | #4 | STR | 5'-9" | 15 | | |
| *A13 | 2 | #5 | STR | 18'-1" | 38 | K8 | 8 | #4 | STR | 6'-1" | 33 | | |
| *A14 | 2 | #5 | STR | 16'-2" | 34 | K9 | 4 | #4 | STR | 5'-7" | 15 | | |
| *A15 | 2 | #5 | STR | 14'-3" | 30 | K10 | 16 | #4 | STR | 2'-9" | 29 | | |
| *A16 | 2 | #5 | STR | 12'-4" | 26 | K11 | 8 | #4 | STR | 3'-9" | 20 | | |
| *A17 | 2 | #5 | STR | 10'-5" | 22 | | | | | | | | |
| *A18 | 2 | #5 | STR | 8'-6" | 18 | H1 | 11 | #5 | ① | 12'-3" | 141 | | |
| *A19 | 2 | #5 | STR | 6'-7" | 14 | H2 | 11 | #5 | ① | 11'-11" | 137 | | |
| *A20 | 2 | #5 | STR | 4'-8" | 10 | H3 | 11 | #5 | ② | 14'-6" | 166 | | |
| *A21 | 4 | #5 | STR | 3'-4" | 14 | H4 | 11 | #5 | ② | 14'-7" | 167 | | |
| A101 | 152 | #5 | STR | 40'-10" | 6,474 | H5 | 2 | #5 | ① | 9'-7" | 20 | | |
| A102 | 2 | #5 | STR | 39'-3" | 82 | H6 | 2 | #5 | ② | 12'-0" | 25 | | |
| A103 | 2 | #5 | STR | 37'-4" | 78 | H7 | 11 | #5 | ② | 12'-4" | 142 | | |
| A104 | 2 | #5 | STR | 35'-5" | 74 | H8 | 11 | #5 | ② | 12'-5" | 142 | | |
| A105 | 2 | #5 | STR | 33'-6" | 70 | H9 | 11 | #5 | ① | 12'-9" | 146 | | |
| A106 | 2 | #5 | STR | 31'-7" | 66 | H10 | 11 | #5 | ① | 12'-5" | 142 | | |
| A107 | 2 | #5 | STR | 29'-8" | 62 | H11 | 2 | #5 | ② | 9'-10" | 21 | | |
| A108 | 2 | #5 | STR | 27'-8" | 58 | H12 | 2 | #5 | ① | 10'-0" | 21 | | |
| A109 | 2 | #5 | STR | 25'-9" | 54 | S1 | 60 | #4 | ③ | 11'-3" | 451 | | |
| A110 | 2 | #5 | STR | 23'-11" | 50 | S2 | 30 | #4 | ④ | 5'-0" | 100 | | |
| A111 | 2 | #5 | STR | 21'-11" | 46 | *S3 | 52 | #4 | ⑤ | 11'-11" | 414 | | |
| A112 | 2 | #5 | STR | 20'-0" | 42 | *S4 | 52 | #4 | ⑤ | 10'-0" | 347 | | |
| A113 | 2 | #5 | STR | 18'-1" | 38 | *S5 | 8 | #4 | ③ | 13'-5" | 72 | | |
| A114 | 2 | #5 | STR | 16'-2" | 34 | | | | | | | | |
| A115 | 2 | #5 | STR | 14'-3" | 30 | V3 | 40 | #5 | STR | 5'-8" | 236 | | |
| A116 | 2 | #5 | STR | 12'-4" | 26 | V4 | 8 | #5 | STR | 5'-4" | 45 | | |
| A117 | 2 | #5 | STR | 10'-5" | 22 | V5 | 44 | #5 | STR | 5'-9" | 264 | | |
| A118 | 2 | #5 | STR | 8'-6" | 18 | V6 | 8 | #5 | STR | 5'-5" | 45 | | |
| A119 | 2 | #5 | STR | 6'-7" | 14 | | | | | | | | |
| A120 | 2 | #5 | STR | 4'-8" | 10 | | | | | | | | |
| A121 | 4 | #5 | STR | 3'-4" | 14 | | | | | | | | |
| | | | | | | | | | | | * EPOXY COATED REINF. STEEL (LBS.) | 13,546 | |
| | | | | | | | | | | | REINF. STEEL (LBS.) | 15,015 | |

| SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS | | | | | |
|--|---|----------|----------------|----------|--------------------------|
| BAR SIZE | SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL | | APPROACH SLABS | | PARAPET AND BARRIER RAIL |
| | EPOXY COATED | UNCOATED | EPOXY COATED | UNCOATED | |
| #4 | 2'-0" | 1'-9" | 2'-0" | 1'-9" | 2'-9" |
| #5 | 2'-6" | 2'-2" | 2'-6" | 2'-2" | 3'-5" |
| #6 | 3'-0" | 2'-7" | 3'-10" | 2'-7" | 4'-4" |
| #7 | 5'-3" | 3'-6" | | | |
| #8 | 6'-10" | 4'-7" | | | |

| SUPERSTRUCTURE BILL OF MATERIAL | | | |
|---------------------------------|-------------------|----------------------------------|-------------------|
| | CLASS AA CONCRETE | * EPOXY COATED STEEL REINFORCING | STEEL REINFORCING |
| SPAN A | (CU. YDS.) | (LBS.) | (LBS.) |
| POUR 1 | 104.7 | -- | -- |
| POUR 2 | 71.4 | -- | -- |
| TOTAL** | 176.1 | 13,546 | 14,952 |

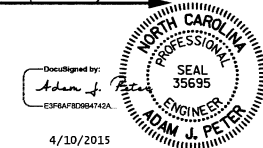
** QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED
 • POUR 2 INCLUDES CONCRETE FOR SUPERSTRUCTURE PORTION OF INTEGRAL END BENT AND WING WALL. ALL COSTS ASSOCIATED WITH THE SUPERSTRUCTURE PORTION OF THE INTEGRAL END BENT AND WING WALL, INCLUDING BUT NOT LIMITED TO, MATERIALS, LABOR AND ALL INCIDENTALS SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR REINFORCED CONCRETE DECK SLAB. NO ADDITIONAL PAYMENT WILL BE MADE.

| GROOVING BRIDGE FLOORS | |
|------------------------|--------------|
| APPROACH SLABS | 1,690 SQ.FT. |
| BRIDGE DECK | 3,276 SQ.FT. |
| TOTAL | 4,966 SQ.FT. |



POURING DIAGRAM AND LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3,946)

= INDICATES POUR NUMBER AND DIRECTION OF POUR



STV / Ralph Whitehead Associates, Inc.
 900 West Trade Street, Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 428+53.58 -L-
 = 13+04.09 -Y5-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BILL OF MATERIAL
 -LEFT LANE-

| REVISIONS | | | | | | SHEET NO. S09-16 |
|-----------|----|------|-----|----|------|---------------------|
| NO. | BY | DATE | NO. | BY | DATE | |
| 1 | | | 3 | | | TOTAL SHEETS 24 |
| 2 | | | 4 | | | |

LOAD FACTORS:

| | | | |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | γ_{DC} | γ_{DW} |
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

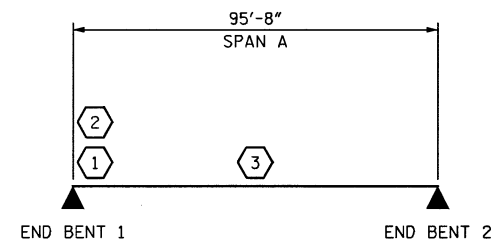
③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W x RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | | |
|--------------------|-----------------------------------|-------------------|---------------------------|-----------------------------|---------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|-------------------------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|--|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | LIVE-LOAD FACTORS (γ_{LL}) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (FT) | |
| DESIGN LOAD RATING | HL-93 (INVENTORY) | N/A | ① | 1.15 | -- | 1.75 | 0.78 | 1.56 | A | EL | 45.9 | 0.90 | 1.15 | A | I | 8.6 | 0.80 | 0.78 | 1.30 | A | EL | 45.9 | | |
| | HL-93 (OPERATING) | N/A | | 1.52 | -- | 1.35 | 0.78 | 2.02 | A | EL | 45.9 | 0.90 | 1.52 | A | I | 8.6 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20 (INVENTORY) | 36.000 | ② | 1.54 | 55.44 | 1.75 | 0.78 | 2.14 | A | EL | 45.9 | 0.90 | 1.54 | A | I | 8.6 | 0.80 | 0.78 | 1.78 | A | EL | 45.9 | | |
| | HS-20 (OPERATING) | 36.000 | | 2.04 | 73.44 | 1.35 | 0.78 | 2.77 | A | EL | 45.9 | 0.90 | 2.04 | A | I | 8.6 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 4.19 | 56.57 | 1.40 | 0.78 | 6.27 | A | EL | 45.9 | 0.90 | 5.00 | A | I | 8.6 | 0.80 | 0.78 | 4.19 | A | EL | 45.9 | |
| | | SNGARBS2 | 20.000 | | 3.05 | 61.00 | 1.40 | 0.78 | 4.57 | A | EL | 45.9 | 0.90 | 3.47 | A | I | 8.6 | 0.80 | 0.78 | 3.05 | A | EL | 45.9 | |
| | | SNAGRIS2 | 22.000 | | 2.86 | 62.92 | 1.40 | 0.78 | 4.29 | A | EL | 45.9 | 0.90 | 3.20 | A | I | 8.6 | 0.80 | 0.78 | 2.86 | A | EL | 45.9 | |
| | | SNCOTTS3 | 27.250 | | 2.08 | 56.68 | 1.40 | 0.78 | 3.12 | A | EL | 45.9 | 0.90 | 2.43 | A | I | 8.6 | 0.80 | 0.78 | 2.08 | A | EL | 45.9 | |
| | | SNAGGRS4 | 34.925 | | 1.71 | 59.72 | 1.40 | 0.78 | 2.57 | A | EL | 45.9 | 0.90 | 1.96 | A | I | 8.6 | 0.80 | 0.78 | 1.71 | A | EL | 45.9 | |
| | | SNS5A | 35.550 | | 1.68 | 59.72 | 1.40 | 0.78 | 2.51 | A | EL | 45.9 | 0.90 | 1.97 | A | I | 8.6 | 0.80 | 0.78 | 1.68 | A | EL | 45.9 | |
| | | SNS6A | 39.950 | | 1.53 | 61.12 | 1.40 | 0.78 | 2.29 | A | EL | 45.9 | 0.90 | 1.78 | A | I | 8.6 | 0.80 | 0.78 | 1.53 | A | EL | 45.9 | |
| | | SNS7B | 42.000 | | 1.45 | 60.90 | 1.40 | 0.78 | 2.18 | A | EL | 45.9 | 0.90 | 1.73 | A | I | 8.6 | 0.80 | 0.78 | 1.45 | A | EL | 45.9 | |
| | TRUCK TRACTOR SEMI-TRAILER (TTS1) | TNAGRIT3 | 33.000 | | 1.86 | 61.38 | 1.40 | 0.78 | 2.79 | A | EL | 45.9 | 0.90 | 2.15 | A | I | 8.6 | 0.80 | 0.78 | 1.86 | A | EL | 45.9 | |
| | | TNT4A | 33.075 | | 1.86 | 61.52 | 1.40 | 0.78 | 2.79 | A | EL | 45.9 | 0.90 | 2.10 | A | I | 8.6 | 0.80 | 0.78 | 1.86 | A | EL | 45.9 | |
| | | TNT6A | 41.600 | | 1.51 | 62.82 | 1.40 | 0.78 | 2.27 | A | EL | 45.9 | 0.90 | 1.83 | A | I | 8.6 | 0.80 | 0.78 | 1.51 | A | EL | 45.9 | |
| | | TNT7A | 42.000 | | 1.52 | 63.84 | 1.40 | 0.78 | 2.27 | A | EL | 45.9 | 0.90 | 1.79 | A | I | 8.6 | 0.80 | 0.78 | 1.52 | A | EL | 45.9 | |
| | | TNT7B | 42.000 | | 1.56 | 65.52 | 1.40 | 0.78 | 2.33 | A | EL | 45.9 | 0.90 | 1.70 | A | I | 8.6 | 0.80 | 0.78 | 1.56 | A | EL | 45.9 | |
| | | TNAGRIT4 | 43.000 | | 1.49 | 64.07 | 1.40 | 0.78 | 2.23 | A | EL | 45.9 | 0.90 | 1.64 | A | I | 8.6 | 0.80 | 0.78 | 1.49 | A | EL | 45.9 | |
| TNAGT5A | 45.000 | | 1.41 | 63.45 | 1.40 | 0.78 | 2.11 | A | EL | 45.9 | 0.90 | 1.62 | A | I | 8.6 | 0.80 | 0.78 | 1.41 | A | EL | 45.9 | | | |
| TNAGT5B | 45.000 | ③ | 1.40 | 63.00 | 1.40 | 0.78 | 2.09 | A | EL | 45.9 | 0.90 | 1.56 | A | I | 8.6 | 0.80 | 0.78 | 1.40 | A | EL | 45.9 | | | |



LRFR SUMMARY

PROJECT NO. R-2514D
JONES & CRAVEN COUNTY
STATION: 428+53.58 -L-
= 13+04.09 -Y5-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)
-RIGHT LANE-

DRAWN BY: VMW DATE: 6-14
CHECKED BY: AJP DATE: 6-14
DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

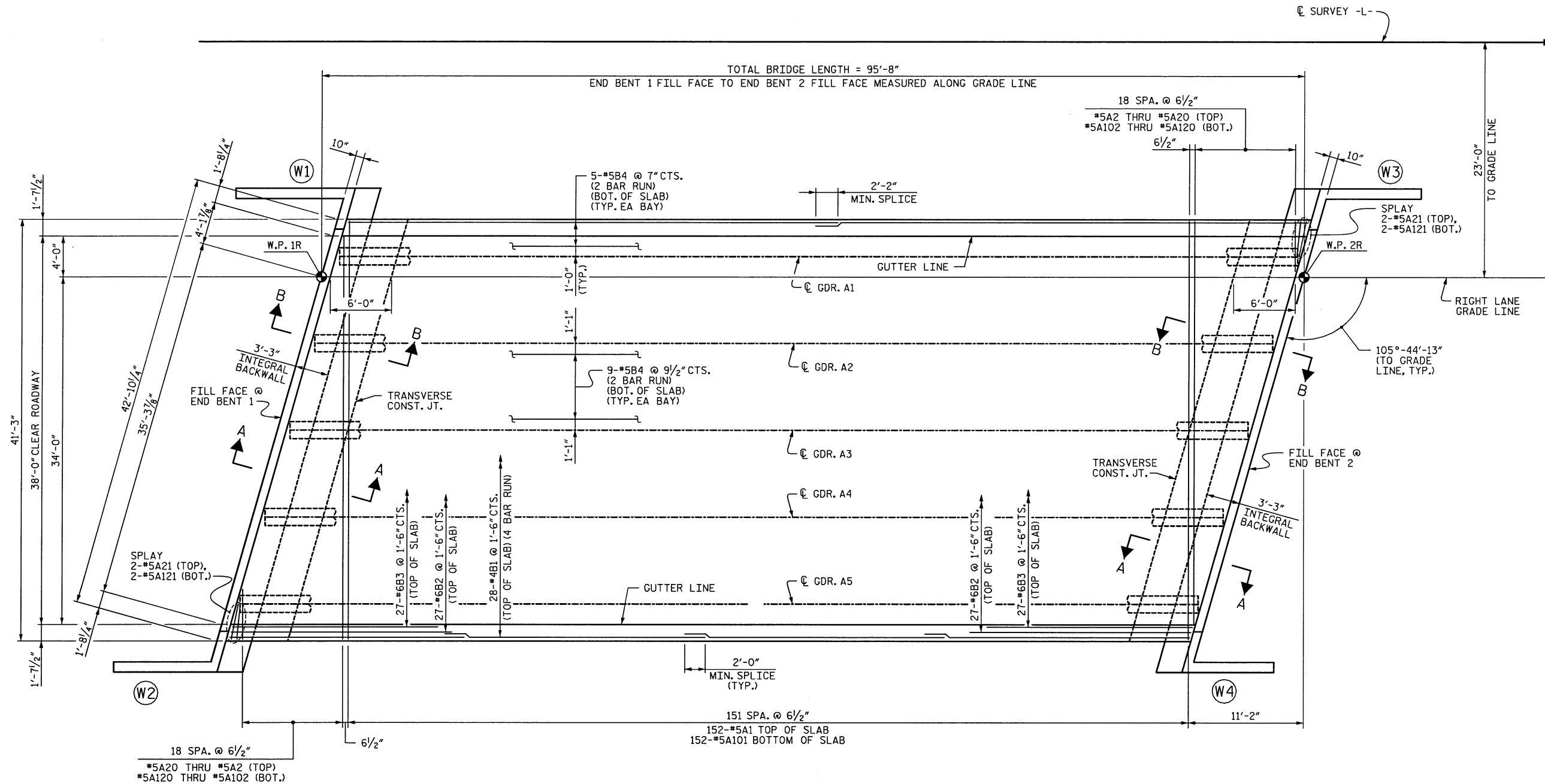
REVISED PER NCDOT COMMENTS

STV / Ralph Whitehead Associates, Inc.
900 West Trade Street, Suite 715
Charlotte, NC 28202
NC License Number F-0991

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S10-4 |
| 1 | STV | 4-15 | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |

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SPAN A

NOTES:

1. FOR CONCRETE BARRIER RAIL DIMENSIONS, REINFORCEMENT AND JOINT SPACING, SEE "CONCRETE BARRIER RAIL" SHEET.
2. FOR POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
3. FOR SECTION A-A, B-B, & TRANSVERSE CONST. JOINT IN DECK SLAB, SEE "SUPERSTRUCTURE DETAILS" SHEET.
4. FOR SPACING OF TOP AND BOTTOM "B" BARS, SEE "TYPICAL SECTION AND INTEGRAL BACKWALL" SHEET.
5. DIMENSIONS TO CONSTRUCTION JOINTS ARE MEASURED ALONG THE GRADE LINE.

PROJECT NO. R-25140
JONES & CRAVEN COUNTY
 STATION: 428+53.58 -L-
= 13+04.09 -Y5-

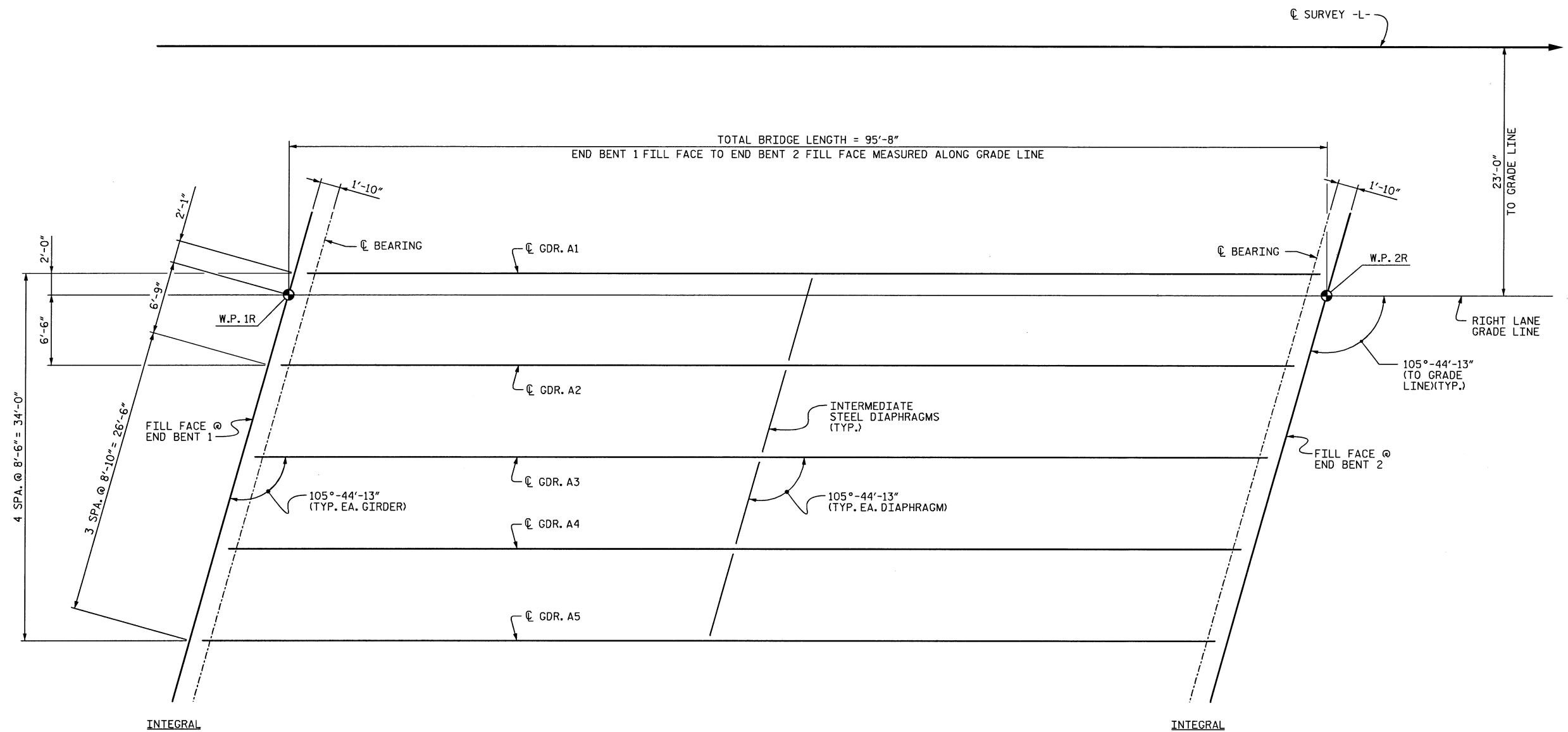


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
-RIGHT LANE-

DRAWN BY: VMW DATE: 6-14
 CHECKED BY: MLO DATE: 6-14
 DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

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 Charlotte, NC 28202
 NC License Number F-0991

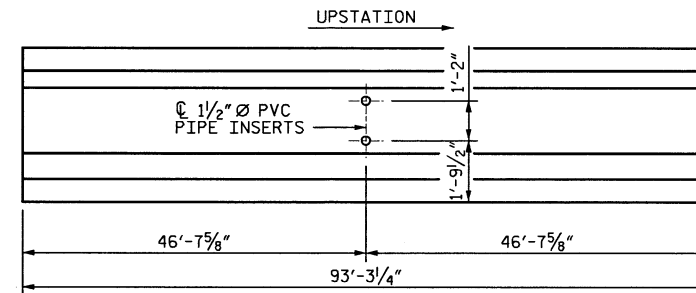
| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S10-7 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 24 |



FRAMING PLAN - SPAN A

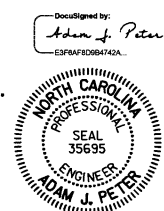
| △ DEAD LOAD DEFLECTION TABLE | | | | | | | | | | | |
|-------------------------------------|---------|-------|---------|--------|--------|--------|---------------|--------|---------|-------|-------|
| | SPAN A | | | | | | GIRDERS 1 & 5 | | | | |
| TENTH POINTS | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ 0.000 | 0.096 | 0.166 | 0.212 | 0.238 | 0.247 | 0.238 | 0.212 | 0.166 | 0.096 | 0.000 |
| DEFLECTION DUE TO SUPERIMPOSED D.L. | ▲ 0.000 | 0.033 | 0.064 | 0.089 | 0.105 | 0.110 | 0.105 | 0.089 | 0.064 | 0.033 | 0.000 |
| FINAL CAMBER | ↑ 0" | 3/4" | 1 1/16" | 1 1/2" | 1 5/8" | 1 5/8" | 1 5/8" | 1 1/2" | 1 3/16" | 3/4" | 0" |

| △ DEAD LOAD DEFLECTION TABLE | | | | | | | | | | | |
|-------------------------------------|---------|-------|---------|---------|--------|--------|-------------|---------|---------|-------|-------|
| | SPAN A | | | | | | GIRDERS 2-4 | | | | |
| TENTH POINTS | 0.0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.4 | 0.3 | 0.2 | 0.1 | 1.0 |
| CAMBER (GIRDER ALONE IN PLACE) | ↑ 0.000 | 0.096 | 0.166 | 0.212 | 0.238 | 0.247 | 0.238 | 0.212 | 0.166 | 0.096 | 0.000 |
| DEFLECTION DUE TO SUPERIMPOSED D.L. | ▲ 0.000 | 0.034 | 0.068 | 0.094 | 0.111 | 0.117 | 0.111 | 0.094 | 0.068 | 0.034 | 0.000 |
| FINAL CAMBER | ↑ 0" | 3/4" | 1 3/16" | 1 7/16" | 1 1/2" | 1 5/8" | 1 1/2" | 1 1/16" | 1 3/16" | 3/4" | 0" |



GIRDER INSERTS

NOTES:
 ALL GIRDER ALONE IN PLACE CAMBERS AND DEFLECTIONS ARE SHOWN IN DECIMAL FEET.
 ▲ DOES NOT INCLUDE FUTURE WEARING SURFACE.



PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 428+53.58 -L-
 = 13+04.09 -Y5-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN &
 DEAD
 LOAD DEFLECTIONS
 -RIGHT LANE-

DRAWN BY: VMW DATE: 6-14
 CHECKED BY: MLO DATE: 6-14
 DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

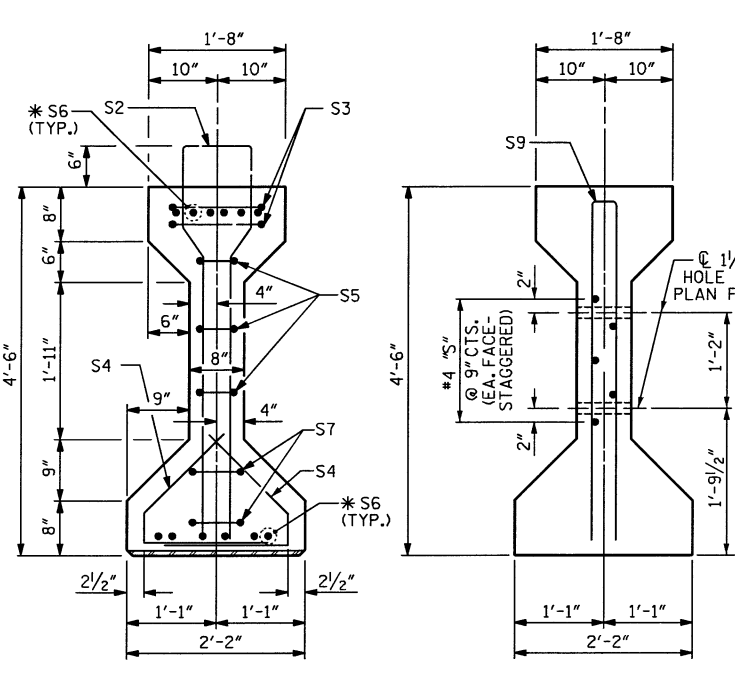
STV / Ralph Whitehead Associates, Inc.
 900 West Trade Street, Suite 715
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 NC License Number F-0991

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S10-10 |
| 1 | STV | 4-15 | 3 | | | TOTAL SHEETS 24 |
| 2 | | | 4 | | | |

△ REVISED PER NCDOT COMMENTS

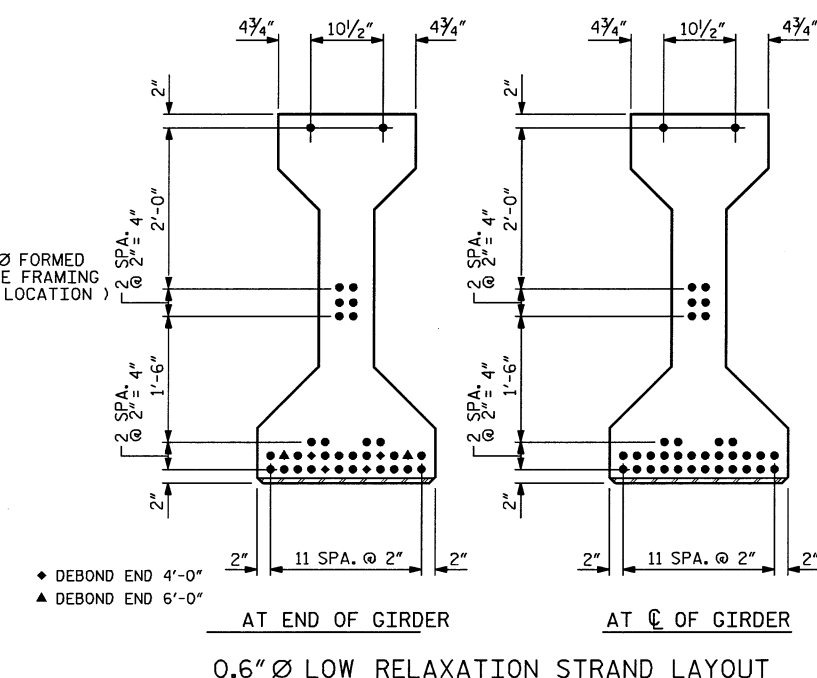
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4/10/2015 9:23:06 AM I:\Projects\251550\251550\0002\50_Deliverables & Submittals\R-2514D\Structures\Site 5\usta\Findis\Site 5 RL\10_OIL_R2514D_SML_PCG.dgn

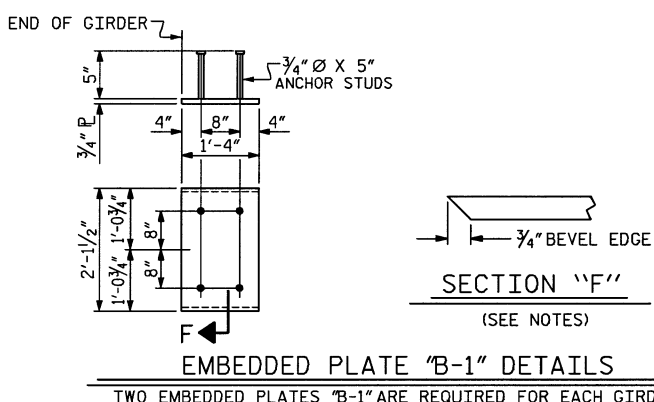


SECTION A-A
* FOR S6 BARS, SEE DETAIL "A"

SECTION C-C
(S1 BARS NOT SHOWN)



0.6" Ø LOW RELAXATION STRAND LAYOUT



SECTION "F"
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS
TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

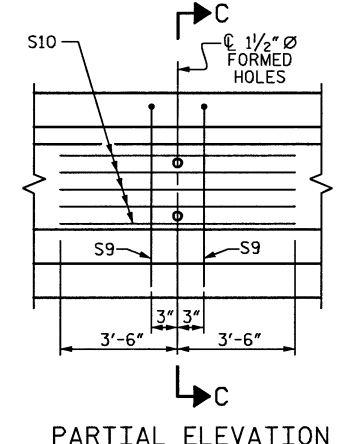
AT ENDS OF GIRDERS TO BE EMBEDDED IN END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS, OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 LBS.

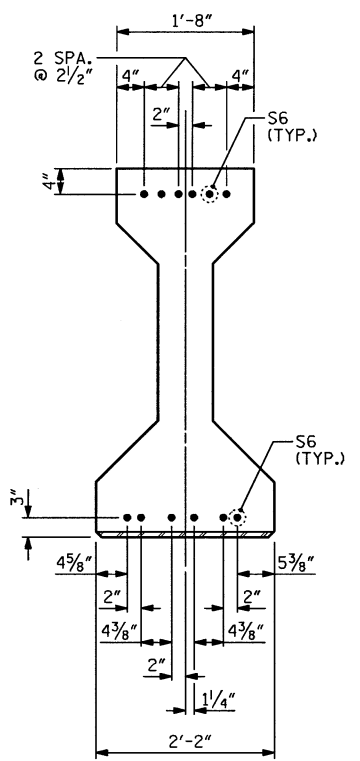
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

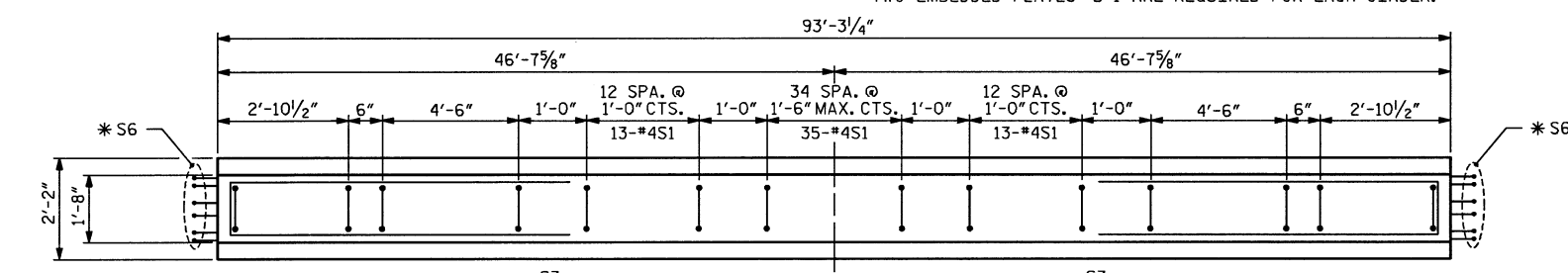
THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.



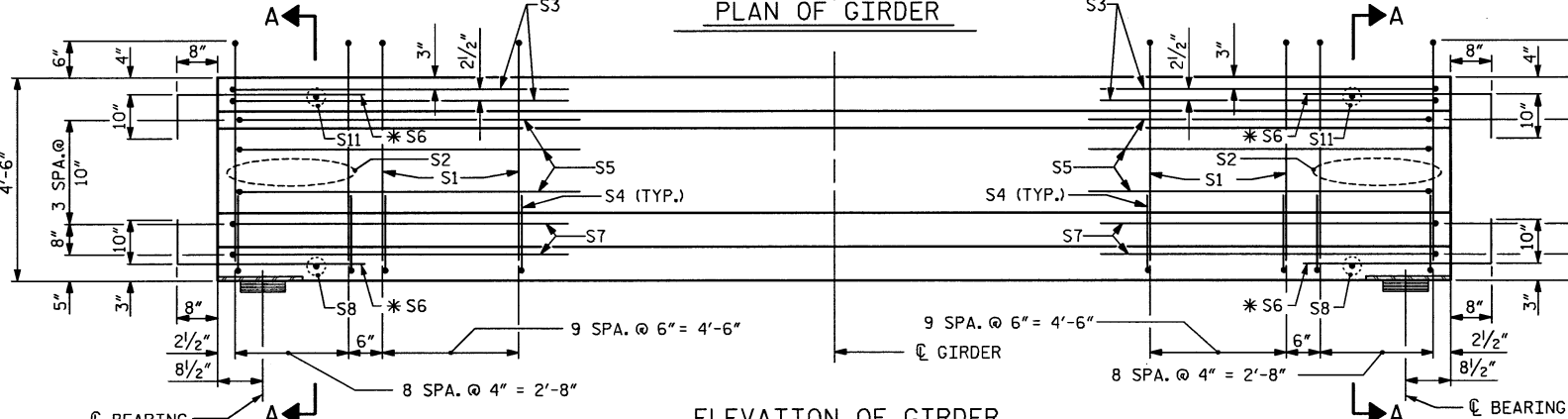
PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



DETAIL "A"



PLAN OF GIRDER



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|--|--|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | |
|----------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 81 | #4 | 1 | 10'-8" | 577 |
| S2 | 18 | #6 | 1 | 10'-8" | 288 |
| S3 | 4 | #4 | 2 | 9'-1" | 24 |
| S4 | 76 | #4 | 3 | 3'-5" | 173 |
| S5 | 6 | #4 | 2 | 8'-5" | 34 |
| *S6 | 24 | #5 | STR | 3'-8" | 92 |
| S7 | 4 | #4 | 2 | 8'-7" | 23 |
| S8 | 2 | #3 | STR | 1'-10" | 1 |
| S9 | 2 | #5 | 2 | 8'-8" | 18 |
| S10 | 5 | #4 | STR | 7'-0" | 23 |
| S11 | 2 | #3 | STR | 1'-4" | 1 |

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

| BAR TYPES | |
|-----------------------------------|--|
| ALL BAR DIMENSIONS ARE OUT-TO-OUT | |
| | |
| | |
| | |
| | |
| | |
| | |

| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|--------------------|------|----------------------|
| REINFORCING STEEL | 8,000 PSI CONCRETE | | 0.6" Ø L. R. STRANDS |
| | LB. | C.Y. | No. |
| | 1,254 | 18.9 | 36 |

| GIRDERS REQUIRED | | |
|------------------|------------|--------------|
| NUMBER | LENGTH | TOTAL LENGTH |
| 5 | 93'-3 1/4" | 466'-4 1/4" |

PROJECT NO. R-2514D
JONES & CRAVEN COUNTY
 STATION: 428+53.58 -L-
 = 13+04.09 -Y5-



STV/ Ralph Whitehead Associates, Inc.
 900 West Trade Street, Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

| REVISIONS | | | | SHEET NO. S10-11 |
|-----------|-----|-------|-------|---------------------|
| NO. | BY: | DATE: | DATE: | |
| 1 | | | | TOTAL SHEETS |
| 2 | | | | 24 |

DRAWN BY: VMW DATE: 6-14
 CHECKED BY: MLO DATE: 6-14
 DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

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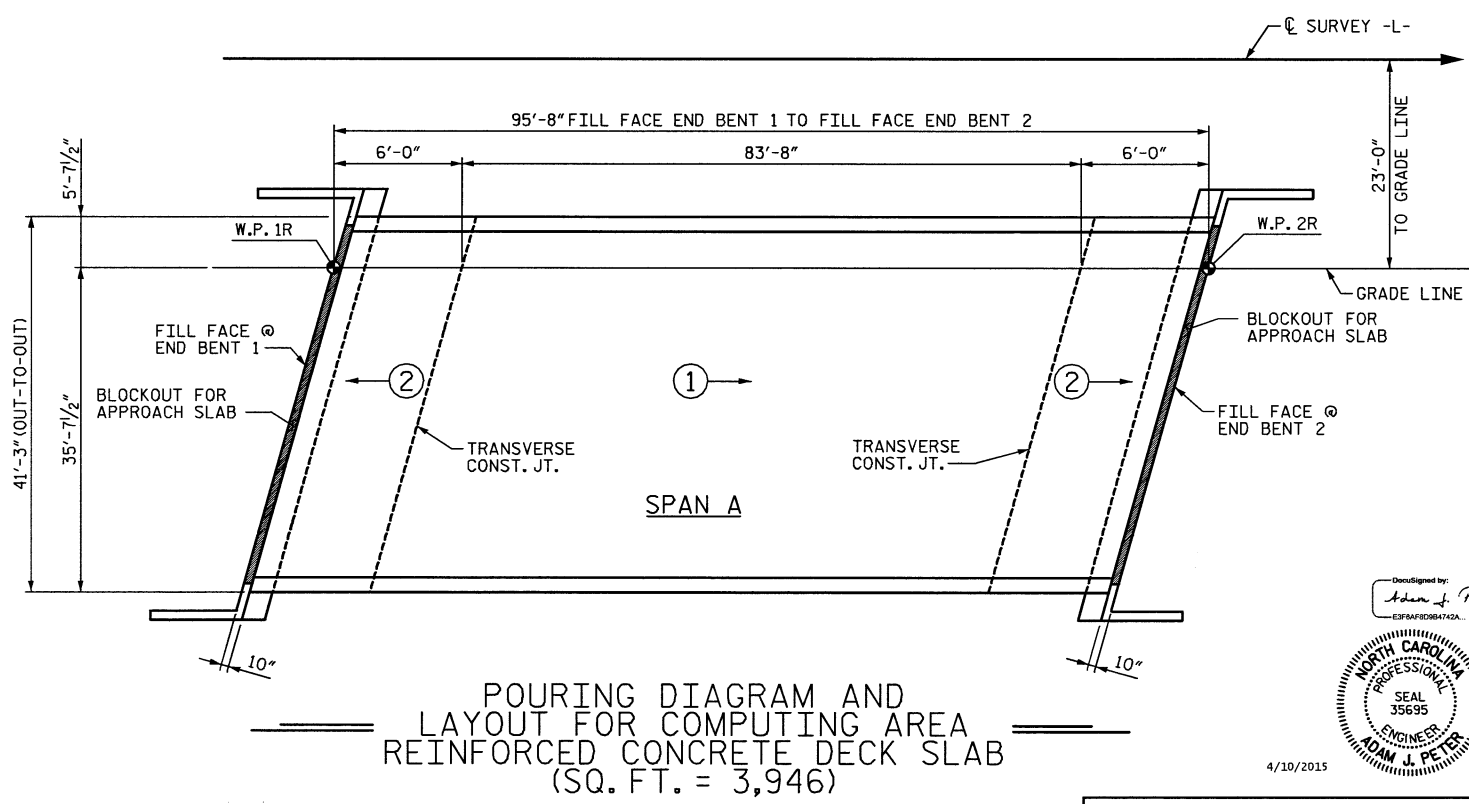
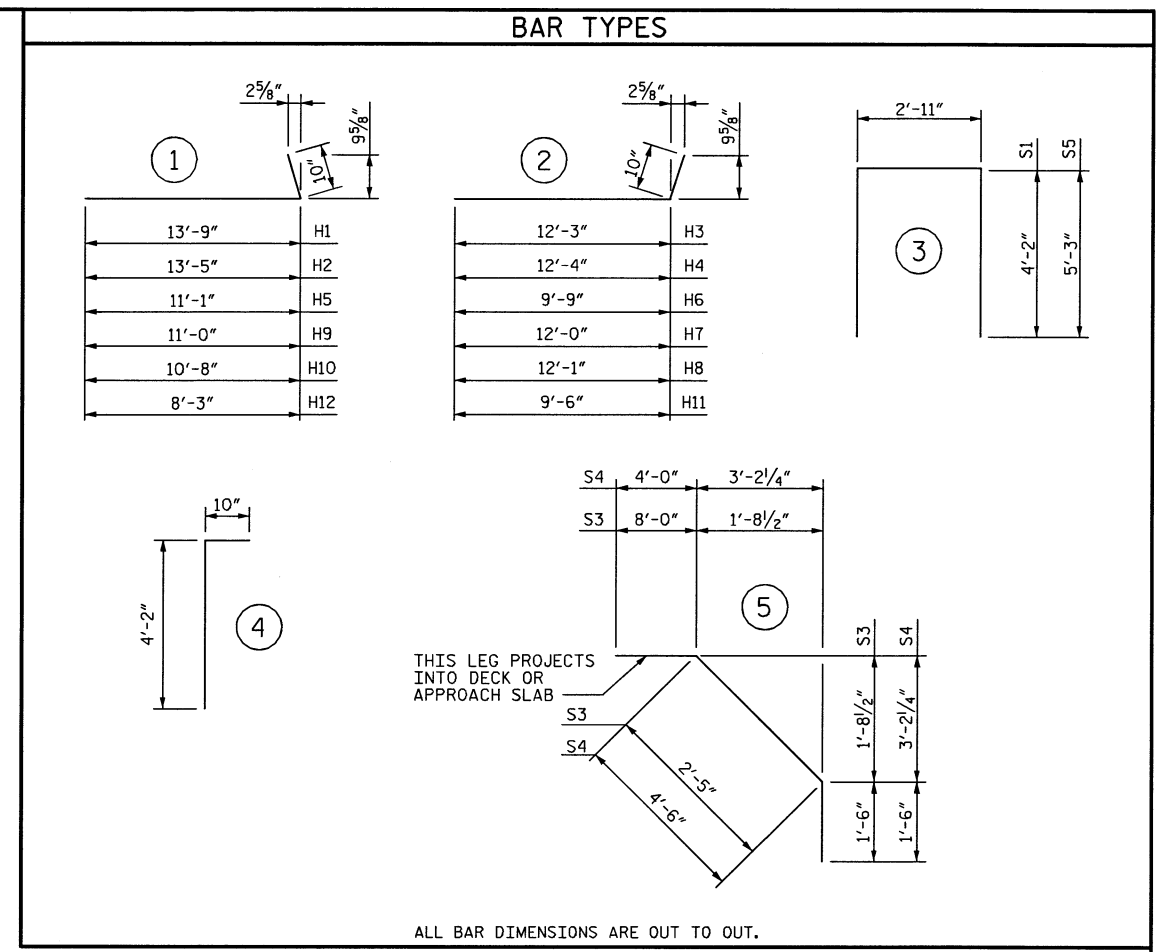
| REINFORCING BAR SCHEDULE | | | | | | | | | | | |
|--------------------------|-----|------|------|---------|--------|------|-----|------|------|------------------------------------|--------|
| MARK | NO. | SIZE | TYPE | LENGTH | WEIGHT | MARK | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 152 | #5 | STR | 40'-10" | 6,474 | *B1 | 112 | #4 | STR | 24'-11" | 1,864 |
| *A2 | 2 | #5 | STR | 39'-3" | 82 | *B2 | 54 | #6 | STR | 23'-0" | 1,865 |
| *A3 | 2 | #5 | STR | 37'-4" | 78 | *B3 | 54 | #6 | STR | 20'-0" | 1,622 |
| *A4 | 2 | #5 | STR | 35'-5" | 74 | B4 | 92 | #5 | STR | 47'-10" | 4,590 |
| *A5 | 2 | #5 | STR | 33'-6" | 70 | | | | | | |
| *A6 | 2 | #5 | STR | 31'-7" | 66 | K1 | 20 | #4 | STR | 25'-3" | 337 |
| *A7 | 2 | #5 | STR | 29'-8" | 62 | K2 | 8 | #4 | STR | 6'-1" | 33 |
| *A8 | 2 | #5 | STR | 27'-8" | 58 | K3 | 8 | #4 | STR | 7'-1" | 38 |
| *A9 | 2 | #5 | STR | 25'-9" | 54 | K4 | 16 | #4 | STR | 7'-8" | 82 |
| *A10 | 2 | #5 | STR | 23'-11" | 50 | K5 | 8 | #4 | STR | 6'-8" | 36 |
| *A11 | 2 | #5 | STR | 21'-11" | 46 | K6 | 4 | #4 | STR | 5'-4" | 14 |
| *A12 | 2 | #5 | STR | 20'-0" | 42 | K7 | 4 | #4 | STR | 5'-9" | 15 |
| *A13 | 2 | #5 | STR | 18'-1" | 38 | K8 | 8 | #4 | STR | 6'-1" | 33 |
| *A14 | 2 | #5 | STR | 16'-2" | 34 | K9 | 4 | #4 | STR | 5'-7" | 15 |
| *A15 | 2 | #5 | STR | 14'-3" | 30 | K10 | 16 | #4 | STR | 2'-9" | 29 |
| *A16 | 2 | #5 | STR | 12'-4" | 26 | K11 | 8 | #4 | STR | 3'-9" | 20 |
| *A17 | 2 | #5 | STR | 10'-5" | 22 | | | | | | |
| *A18 | 2 | #5 | STR | 8'-6" | 18 | H1 | 11 | #5 | (1) | 14'-7" | 167 |
| *A19 | 2 | #5 | STR | 6'-7" | 14 | H2 | 11 | #5 | (1) | 14'-3" | 163 |
| *A20 | 2 | #5 | STR | 4'-8" | 10 | H3 | 11 | #5 | (2) | 13'-1" | 150 |
| *A21 | 4 | #5 | STR | 3'-4" | 14 | H4 | 11 | #5 | (2) | 13'-2" | 151 |
| A101 | 152 | #5 | STR | 40'-10" | 6,474 | H5 | 2 | #5 | (1) | 11'-11" | 25 |
| A102 | 2 | #5 | STR | 39'-3" | 82 | H6 | 2 | #5 | (2) | 10'-7" | 22 |
| A103 | 2 | #5 | STR | 37'-4" | 78 | H7 | 11 | #5 | (2) | 12'-10" | 147 |
| A104 | 2 | #5 | STR | 35'-5" | 74 | H8 | 11 | #5 | (2) | 12'-11" | 148 |
| A105 | 2 | #5 | STR | 33'-6" | 70 | H9 | 11 | #5 | (1) | 11'-10" | 136 |
| A106 | 2 | #5 | STR | 31'-7" | 66 | H10 | 11 | #5 | (1) | 11'-6" | 132 |
| A107 | 2 | #5 | STR | 29'-8" | 62 | H11 | 2 | #5 | (2) | 10'-4" | 22 |
| A108 | 2 | #5 | STR | 27'-8" | 58 | H12 | 2 | #5 | (1) | 9'-1" | 19 |
| A109 | 2 | #5 | STR | 25'-9" | 54 | S1 | 60 | #4 | (3) | 11'-3" | 451 |
| A110 | 2 | #5 | STR | 23'-11" | 50 | S2 | 30 | #4 | (4) | 5'-0" | 100 |
| A111 | 2 | #5 | STR | 21'-11" | 46 | *S3 | 52 | #4 | (5) | 11'-11" | 414 |
| A112 | 2 | #5 | STR | 20'-0" | 42 | *S4 | 52 | #4 | (5) | 10'-0" | 347 |
| A113 | 2 | #5 | STR | 18'-1" | 38 | *S5 | 8 | #4 | (3) | 13'-5" | 72 |
| A114 | 2 | #5 | STR | 16'-2" | 34 | V3 | 44 | #5 | STR | 5'-9" | 264 |
| A115 | 2 | #5 | STR | 14'-3" | 30 | V4 | 8 | #5 | STR | 5'-5" | 45 |
| A116 | 2 | #5 | STR | 12'-4" | 26 | V5 | 40 | #5 | STR | 5'-8" | 236 |
| A117 | 2 | #5 | STR | 10'-5" | 22 | V6 | 8 | #5 | STR | 5'-4" | 45 |
| A118 | 2 | #5 | STR | 8'-6" | 18 | | | | | | |
| A119 | 2 | #5 | STR | 6'-7" | 14 | | | | | | |
| A120 | 2 | #5 | STR | 4'-8" | 10 | | | | | | |
| A121 | 4 | #5 | STR | 3'-4" | 14 | | | | | | |
| | | | | | | | | | | * EPOXY COATED REINF. STEEL (LBS.) | 13,546 |
| | | | | | | | | | | REINF. STEEL (LBS.) | 15,027 |

| SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS | | | | | |
|--|---|----------|----------------|----------|--------------------------|
| BAR SIZE | SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL | | APPROACH SLABS | | PARAPET AND BARRIER RAIL |
| | EPOXY COATED | UNCOATED | EPOXY COATED | UNCOATED | |
| #4 | 2'-0" | 1'-9" | 2'-0" | 1'-9" | 2'-9" |
| #5 | 2'-6" | 2'-2" | 2'-6" | 2'-2" | 3'-5" |
| #6 | 3'-0" | 2'-7" | 3'-10" | 2'-7" | 4'-4" |
| #7 | 5'-3" | 3'-6" | | | |
| #8 | 6'-10" | 4'-7" | | | |

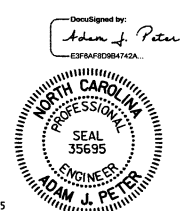
| SUPERSTRUCTURE BILL OF MATERIAL | | | |
|---------------------------------|-------------------|----------------------------------|-------------------|
| | CLASS AA CONCRETE | * EPOXY COATED STEEL REINFORCING | STEEL REINFORCING |
| SPAN A | (CU. YDS.) | (LBS.) | (LBS.) |
| POUR 1 | 104.7 | -- | -- |
| POUR 2 | 71.1 | -- | -- |
| TOTAL** | 175.8 | 13,546 | 14,965 |

** QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED
 • POUR 2 INCLUDES CONCRETE FOR SUPERSTRUCTURE PORTION OF INTEGRAL END BENT AND WING WALL. ALL COSTS ASSOCIATED WITH THE SUPERSTRUCTURE PORTION OF THE INTEGRAL END BENT AND WING WALL, INCLUDING BUT NOT LIMITED TO, MATERIALS, LABOR AND ALL INCIDENTALS SHALL BE INCLUDED IN THE CONTRACT BID PRICE FOR REINFORCED CONCRETE DECK SLAB. NO ADDITIONAL PAYMENT WILL BE MADE.

| GROOVING BRIDGE FLOORS | |
|------------------------|--------------|
| APPROACH SLABS | 1,690 SQ.FT. |
| BRIDGE DECK | 3,276 SQ.FT. |
| TOTAL | 4,966 SQ.FT. |



PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 428+53.58 -L-
 = 13+04.09 -Y5-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BILL OF MATERIAL
 -RIGHT LANE-

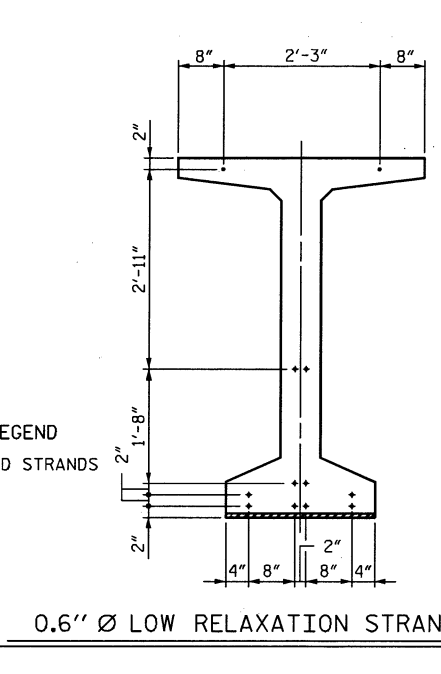
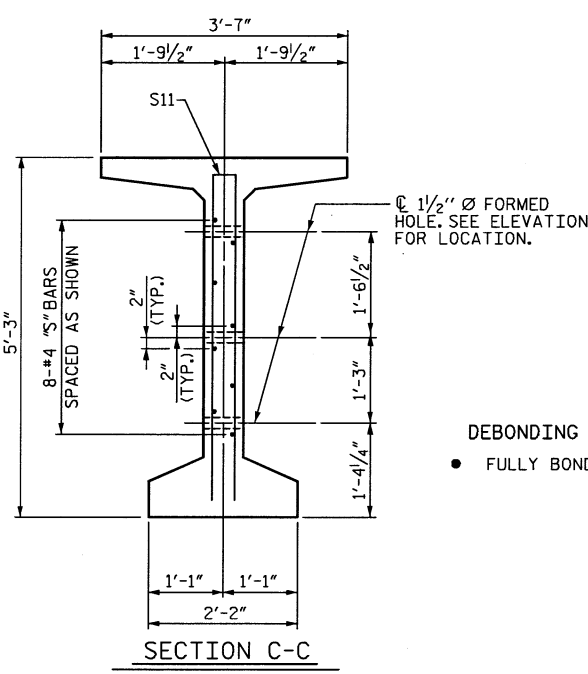
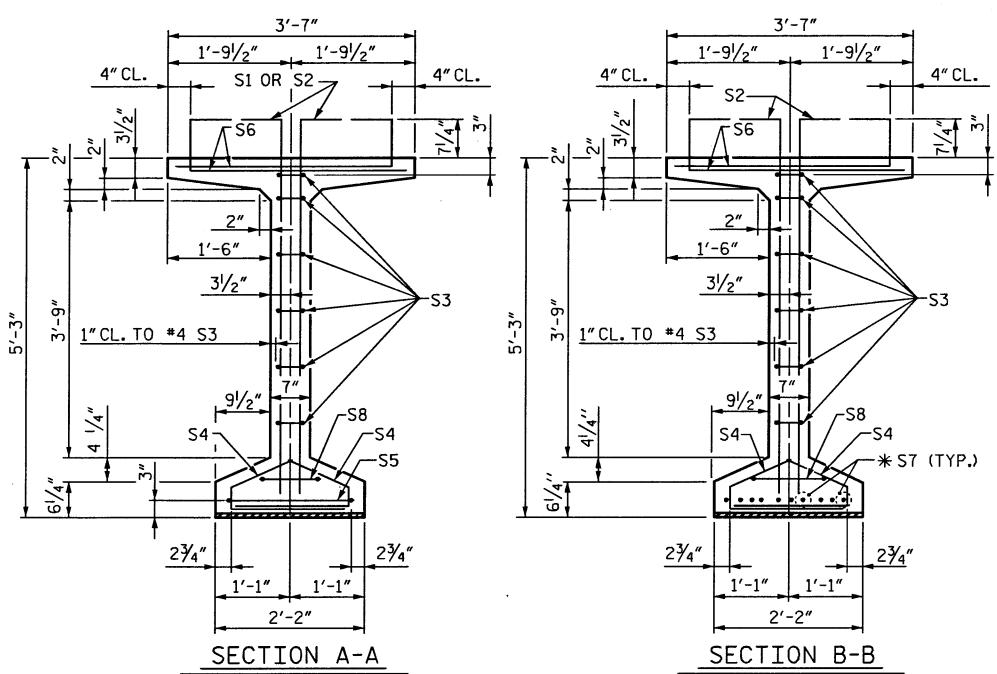
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 CHECKED BY: MLO DATE: 6-14
 DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

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 900 West Trade Street, Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S10-16 |
| 1 | | | 3 | | | TOTAL SHEETS 24 |
| 2 | | | 4 | | | |

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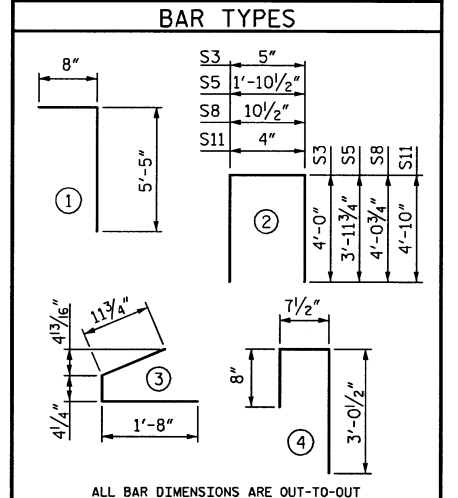
NOTES:
 1. FOR DIAPHRAGM HOLE LOCATIONS, SEE "FRAMING PLAN" SHEET.
 2. FOR GIRDER DETAILS, SEE SHEET 3 OF 3.
 3. FOR NOTES, SEE SHEET 3 OF 3.

DEBONDING LEGEND
 ● FULLY BONDED STRANDS

| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQ. INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GIRDER | | | | | | |
|----------------------------------|--------|------|------|--------|--------|----|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT | |
| S1 | 92 | #4 | 1 | 6'-1" | 374 | |
| S2 | 24 | #5 | 1 | 6'-1" | 152 | |
| S3 | 12 | #4 | 2 | 8'-5" | 67 | |
| S4 | 72 | #4 | 3 | 3'-0" | 144 | |
| S5 | 1 | #5 | 2 | 9'-10" | 10 | |
| S6 | 116 | #5 | 4 | 4'-4" | 524 | |
| *S7 | 10 | #5 | STR | 3'-8" | 38 | |
| S8 | 2 | #5 | 2 | 9'-0" | 19 | |
| S9 | 13 | #5 | STR | 3'-3" | 44 | |
| S10 | 1 | #3 | STR | 1'-10" | 1 | |
| EXTERIOR GDR. | S11 | 4 | #5 | 2 | 10'-0" | 42 |
| INTERIOR GDR. | S11 | 8 | #5 | 2 | 10'-0" | 83 |
| EXTERIOR GDR. | S12 | 8 | #4 | STR | 8'-0" | 43 |
| INTERIOR GDR. | S12 | 16 | #4 | STR | 8'-0" | 86 |

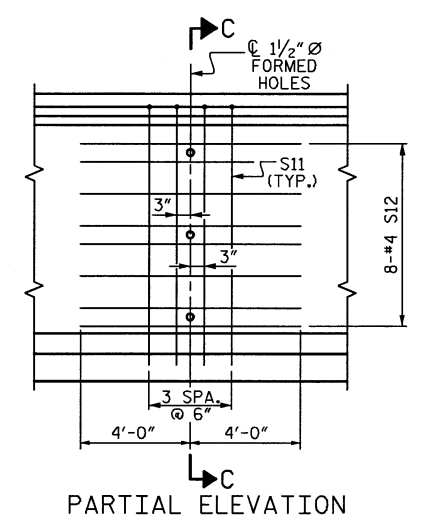
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



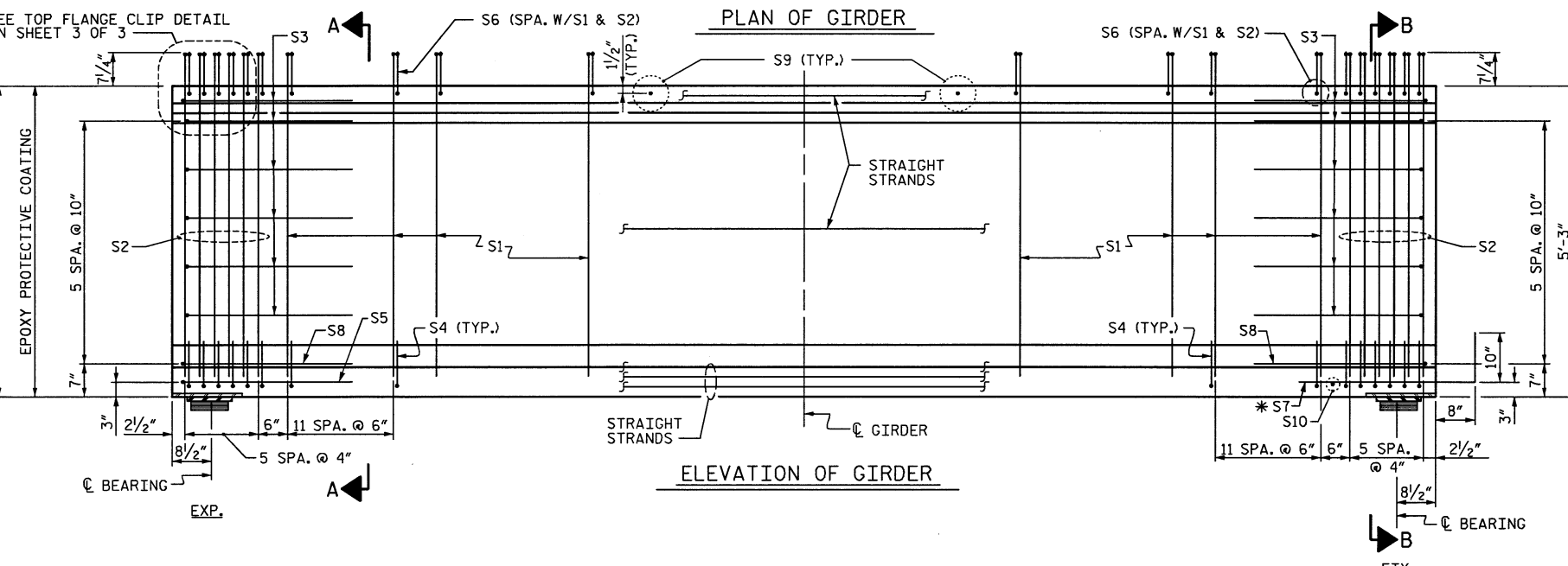
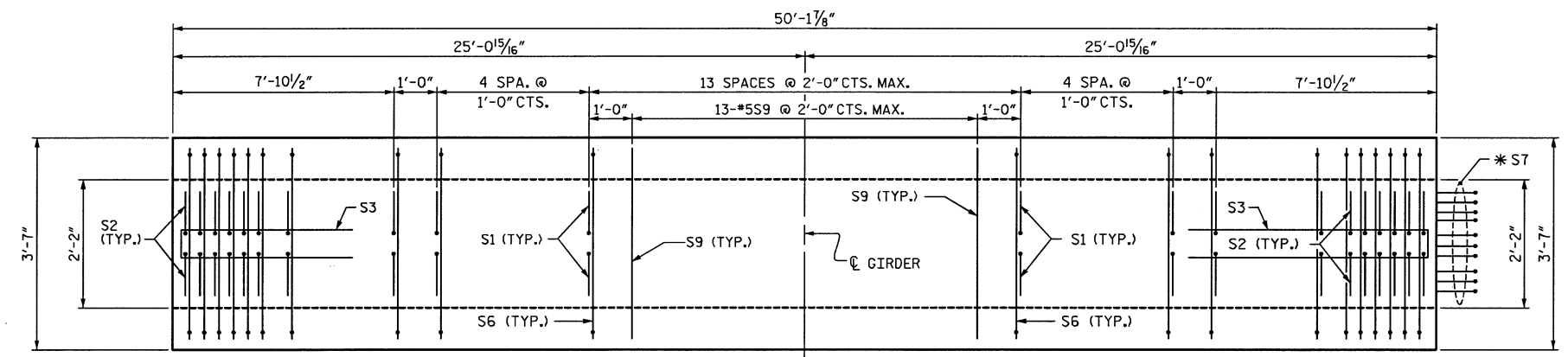
| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|-------------------------|--------------------------|---------------------------|
| | REINFORCING STEEL (LB.) | 8,000 PSI CONCRETE (CY.) | 0.6" Ø L.R. STRANDS (NO.) |
| EXTERIOR GIRDER | 1,458 | 10.0 | 12 |
| INTERIOR GIRDER | 1,542 | 10.0 | 12 |

| GIRDERS REQUIRED | | |
|------------------|------------|--------------|
| NUMBER | LENGTH | TOTAL LENGTH |
| 10 | 50'-1 1/8" | 501'-6 3/4" |

* FOR S7 BARS, SEE SECTION D-D ON SHEET 3 OF 3.

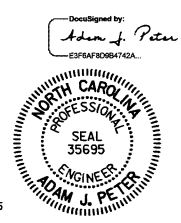


SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER 1 - 5



| | | | |
|------------------|-------------|---|-------------|
| DRAWN BY : CLG | DATE : 5-14 | DESIGN ENGINEER OF RECORD : T. TOWNSEND | DATE : 6-14 |
| CHECKED BY : PEK | DATE : 6-14 | | |

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 NC License Number F-0991



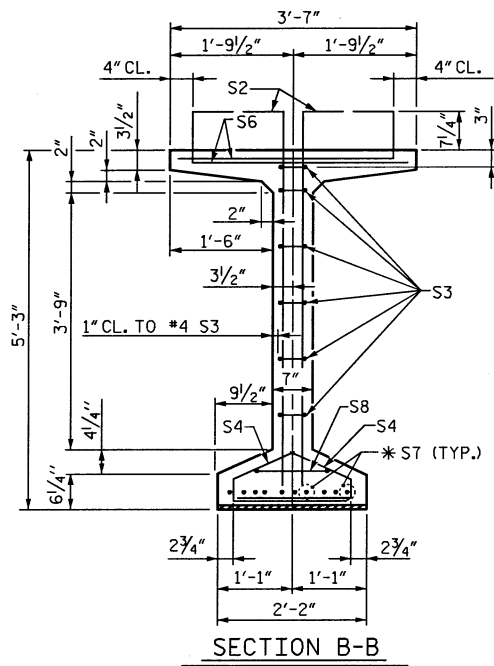
PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 526+71.12 -L-
 = 16+08.07 -Y6-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 SPANS A & C
 -LEFT LANE-

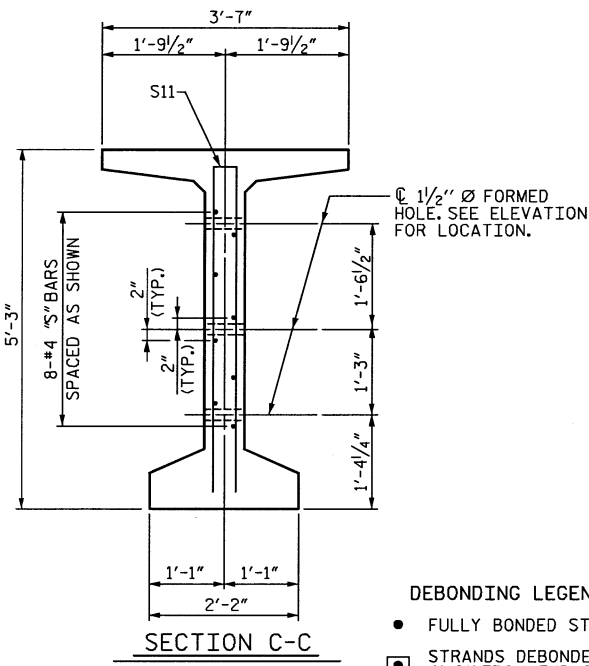
| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | | | 3 | |
| 2 | | | 4 | |

TOTAL SHEETS: 38

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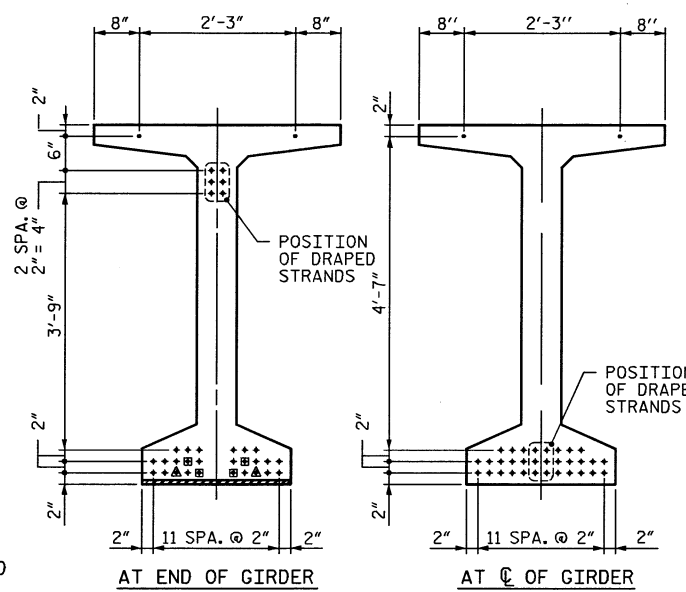
SECTION B-B



SECTION C-C
(S1 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◻ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

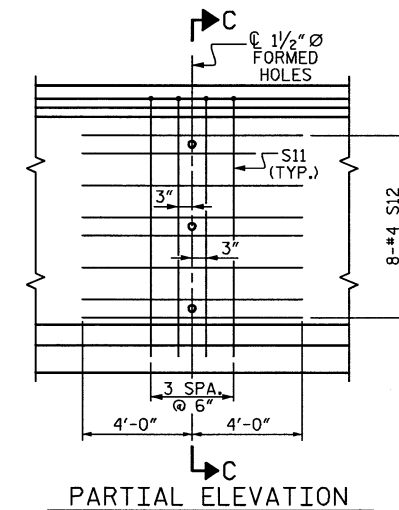


AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

* FOR S7 BARS, SEE SECTION D-D ON SHEET 3 OF 3.

NOTES:

1. FOR DIAPHRAGM HOLE LOCATIONS, SEE "FRAMING PLAN" SHEET.
2. FOR GIRDER DETAILS, SEE SHEET 3 OF 3.
3. FOR NOTES, SEE SHEET 3 OF 3.
4. THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 23 KIPS.



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDERS 1 - 5

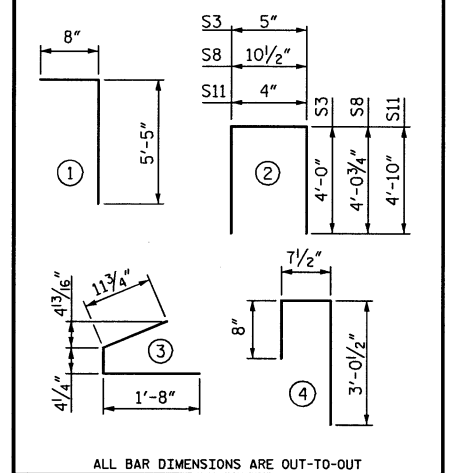
| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|--|--|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

REINFORCING STEEL FOR ONE GDR

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT | |
|---------------|--------|------|------|--------|--------|-----|
| S1 | 154 | #5 | 1 | 6'-1" | 977 | |
| S2 | 24 | #6 | 1 | 6'-1" | 219 | |
| S3 | 12 | #4 | 2 | 8'-5" | 67 | |
| S4 | 72 | #4 | 3 | 3'-0" | 144 | |
| S6 | 178 | #5 | 4 | 4'-4" | 805 | |
| * S7 | 20 | #5 | STR | 3'-8" | 76 | |
| S8 | 2 | #5 | 2 | 9'-0" | 19 | |
| S9 | 44 | #5 | STR | 3'-3" | 149 | |
| S10 | 2 | #3 | STR | 1'-10" | 1 | |
| EXTERIOR GDR. | S11 | 8 | #5 | 2 | 10'-0" | 83 |
| INTERIOR GDR. | S11 | 16 | #5 | 2 | 10'-0" | 167 |
| EXTERIOR GDR. | S12 | 16 | #4 | STR | 8'-0" | 86 |
| INTERIOR GDR. | S12 | 32 | #4 | STR | 8'-0" | 171 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

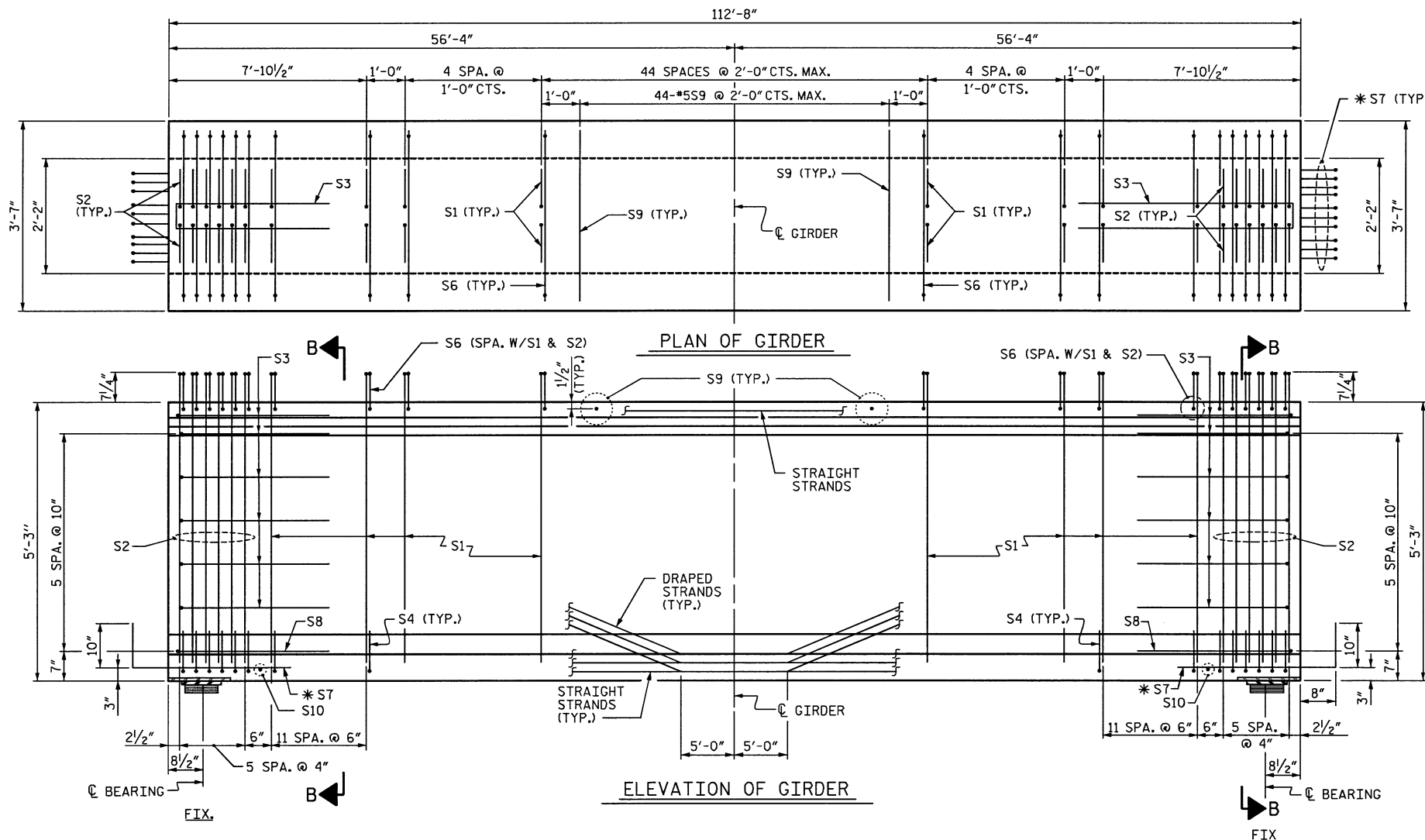
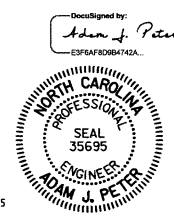
| | REINFORCING STEEL | | 8,000 PSI CONCRETE | | 0.6" Ø L.R. STRANDS | |
|-----------------|-------------------|------|--------------------|--|---------------------|--|
| | LB. | C.Y. | No. | | No. | |
| EXTERIOR GIRDER | 2,626 | 22.3 | 34 | | | |
| INTERIOR GIRDER | 2,795 | 22.3 | 34 | | | |

GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|--------|---------|--------------|
| 5 | 112'-8" | 563'-4" |

PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 526+71.12 -L-
 = 16+08.07 -Y6-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 SPAN B
 -LEFT LANE-



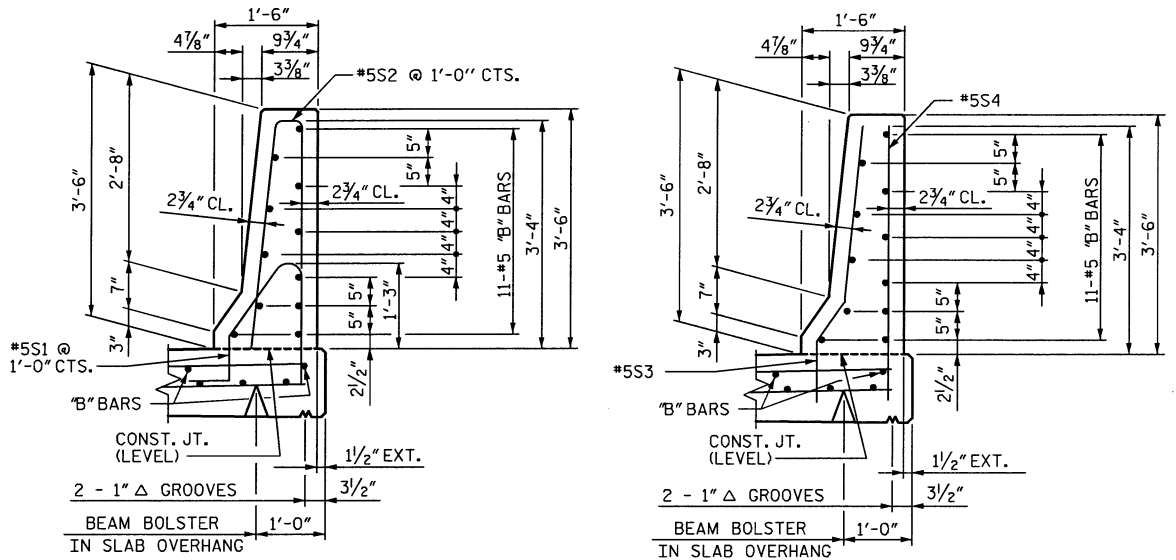
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|-----------------|------------|--|------------|
| DRAWN BY: CLG | DATE: 6-14 | DESIGN ENGINEER OF RECORD: T. TOWNSEND | DATE: 6-14 |
| CHECKED BY: PEK | DATE: 6-14 | | |

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 Charlotte, NC 28202
 NC License Number F-0991

| REVISIONS | | | | SHEET NO. |
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| 1 | | | 3 | |
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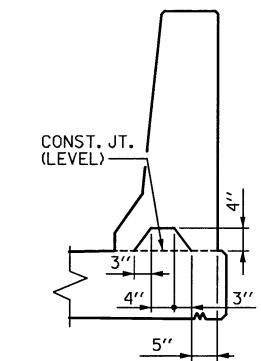
TOTAL SHEETS: 38

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TYPICAL SECTION THRU RAIL

TYPICAL SECTION AT JOINT



SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

NOTES

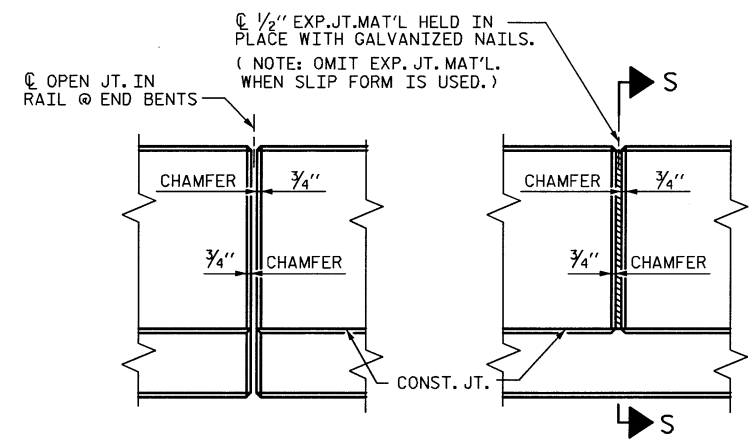
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

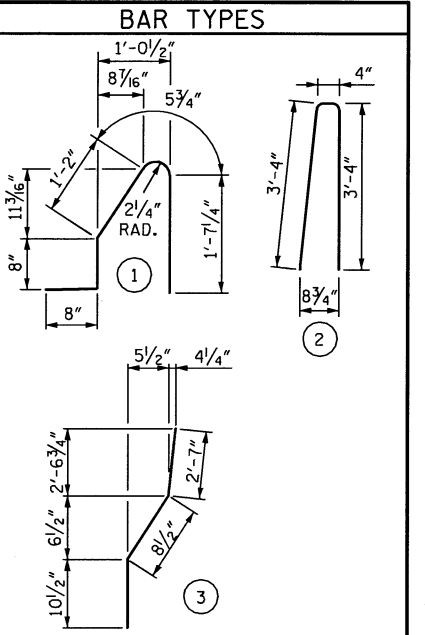
THE #5S3 AND #5S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM. THE YIELD LOAD FOR THE #5S3 AND #5S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

CONCRETE BARRIER RAIL ON APPROACH SLAB, LENGTH AND QUANTITIES, NOT INCLUDED. SEE "BRIDGE APPROACH SLAB DETAILS" SHEETS.

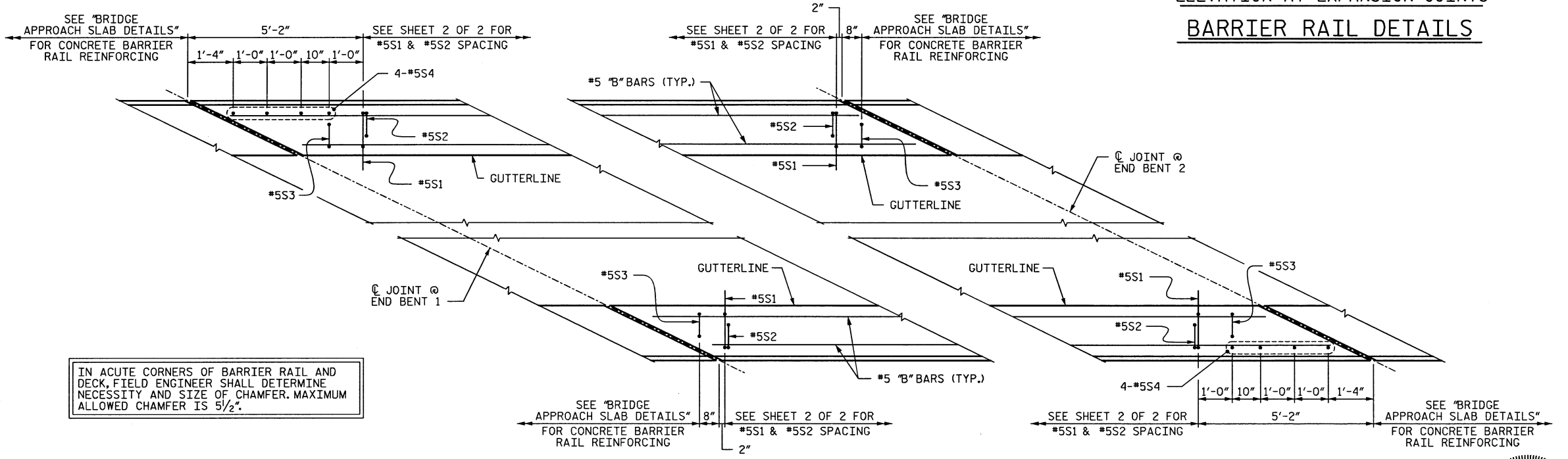


ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT

| BILL OF MATERIAL | | | | | |
|----------------------------------|-----|------|------|---------|----------------|
| FOR CONCRETE BARRIER RAIL ONLY | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| * B1 | 44 | #5 | STR. | 12'-10" | 589 |
| * B2 | 88 | #5 | STR. | 27'-11" | 2,562 |
| * B3 | 44 | #5 | STR. | 29'-7" | 1,358 |
| * B4 | 44 | #5 | STR. | 14'-7" | 669 |
| * S1 | 434 | #5 | ① | 4'-7" | 2,075 |
| * S2 | 434 | #5 | ② | 7'-0" | 3,169 |
| * S3 | 4 | #5 | ③ | 4'-2" | 17 |
| * S4 | 8 | #5 | STR. | 4'-0" | 33 |
| * EPOXY COATED REINFORCING STEEL | | | | | 10,472 LBS. |
| CLASS AA CONCRETE | | | | | 60.0 CU. YDS. |
| CONCRETE BARRIER RAIL | | | | | 441.2 L.N. FT. |

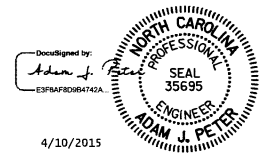


END BENT 1

END BENT 2

PLAN AT JOINTS

IN ACUTE CORNERS OF BARRIER RAIL AND DECK, FIELD ENGINEER SHALL DETERMINE NECESSITY AND SIZE OF CHAMFER. MAXIMUM ALLOWED CHAMFER IS 5/2".



PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 526+71.12 -L-
 = 16+08.07 -Y6-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE BARRIER RAIL
 -LEFT LANE-

| | | | |
|-----------------|------------|-------------------------------------|------------|
| DRAWN BY: CLG | DATE: 6-14 | DESIGN ENGINEER OF RECORD: A. PETER | DATE: 6-14 |
| CHECKED BY: AJP | DATE: 6-14 | | |

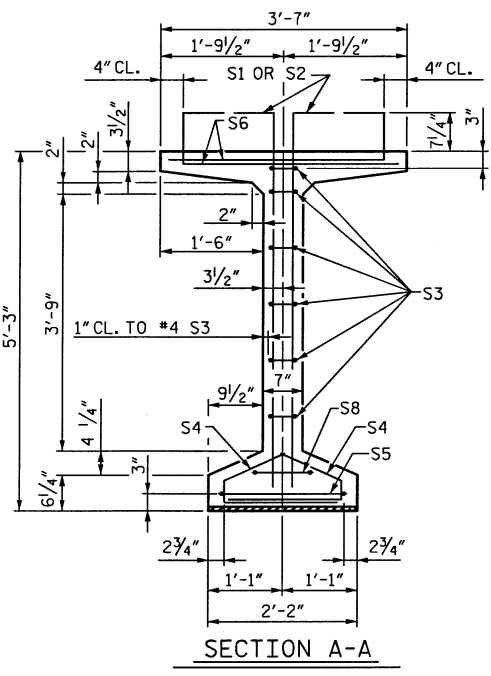
STV/ Ralph Whitehead Associates, Inc.
 900 West Trade Street, Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------|
| NO. | BY: | DATE: | NO. | DATE: |
| 1 | | | 3 | |
| 2 | | | 4 | |

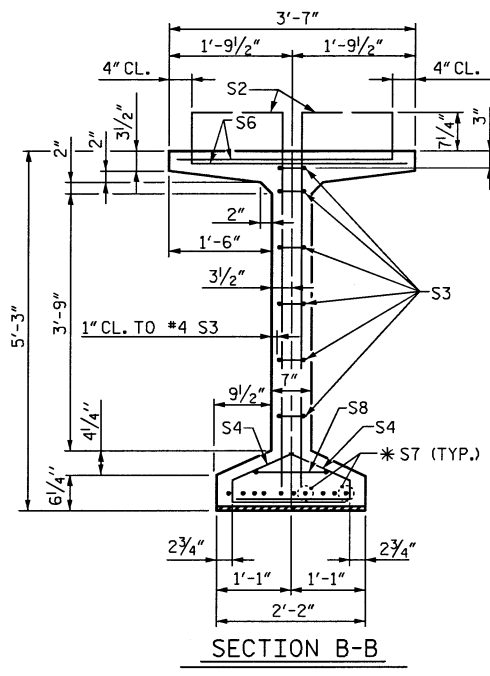
TOTAL SHEETS: 38

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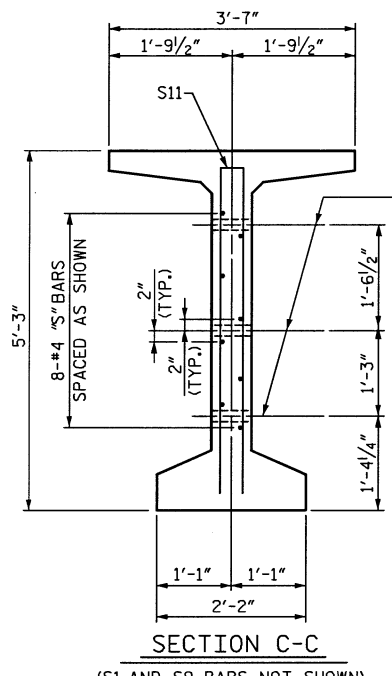
4/10/2015 9:49:59 AM



SECTION A-A



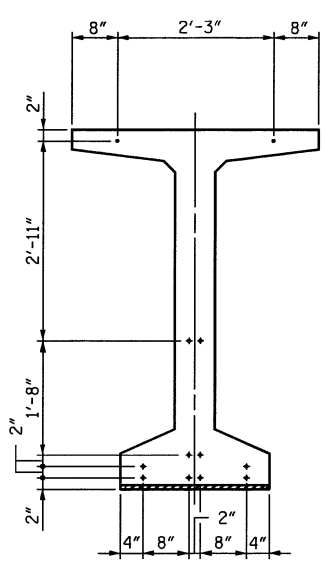
SECTION B-B



SECTION C-C
(S1 AND S9 BARS NOT SHOWN)

1/2" Ø FORMED HOLE, SEE ELEVATION FOR LOCATION.

DEBONDING LEGEND
● FULLY BONDED STRANDS



0.6" Ø LOW RELAXATION STRAND LAYOUT

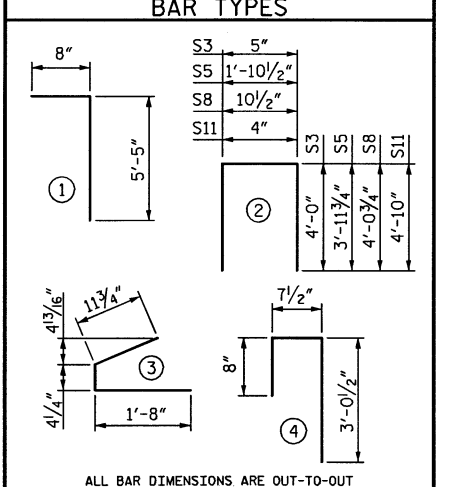
* FOR S7 BARS, SEE SECTION D-D ON SHEET 3 OF 3.

- NOTES:**
- FOR DIAPHRAGM HOLE LOCATIONS, SEE 'FRAMING PLAN' SHEET.
 - FOR GIRDER DETAILS, SEE SHEET 3 OF 3.
 - FOR NOTES, SEE SHEET 3 OF 3.

| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQUARE INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GDR | | | | | |
|-------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 92 | #4 | 1 | 6'-1" | 374 |
| S2 | 24 | #5 | 1 | 6'-1" | 152 |
| S3 | 12 | #4 | 2 | 8'-5" | 67 |
| S4 | 72 | #4 | 3 | 3'-0" | 144 |
| S5 | 1 | #5 | 2 | 9'-10" | 10 |
| S6 | 116 | #5 | 4 | 4'-4" | 524 |
| *S7 | 10 | #5 | STR | 3'-8" | 38 |
| S8 | 2 | #5 | 2 | 9'-0" | 19 |
| S9 | 13 | #5 | STR | 3'-3" | 44 |
| S10 | 1 | #3 | STR | 1'-10" | 1 |
| EXTERIOR GDR. S11 | 4 | #5 | 2 | 10'-0" | 42 |
| INTERIOR GDR. S11 | 8 | #5 | 2 | 10'-0" | 83 |
| EXTERIOR GDR. S12 | 8 | #4 | STR | 8'-0" | 43 |
| INTERIOR GDR. S12 | 16 | #4 | STR | 8'-0" | 86 |

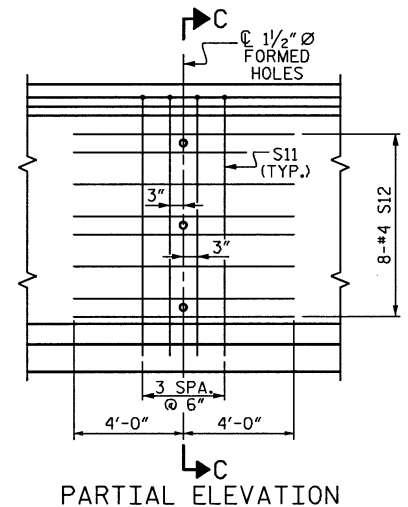
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



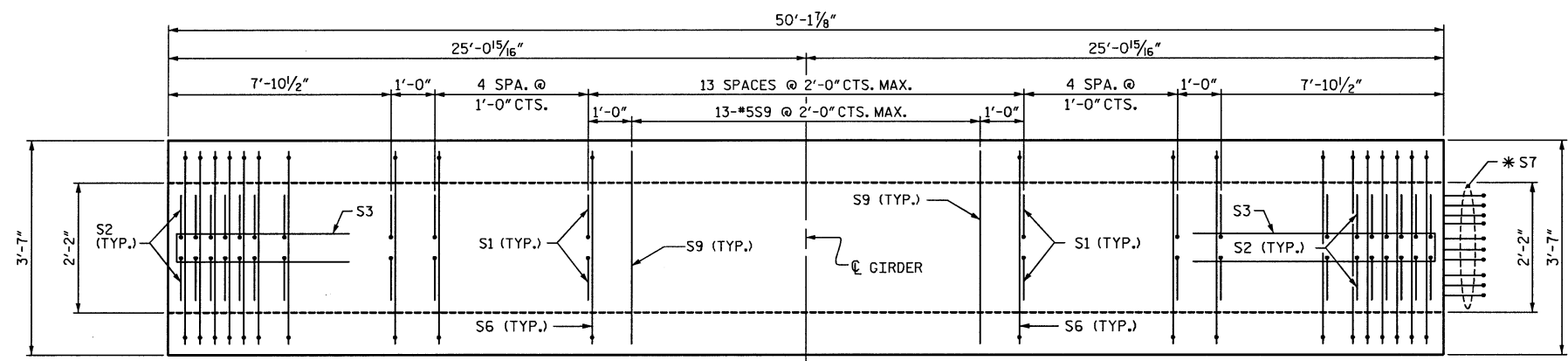
ALL BAR DIMENSIONS ARE OUT-TO-OUT

| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|-------------------|--------------------|---------------------|
| | REINFORCING STEEL | 8,000 PSI CONCRETE | 0.6" Ø L.R. STRANDS |
| | LB. | C.Y. | No. |
| EXTERIOR GIRDER | 1,458 | 10.0 | 12 |
| INTERIOR GIRDER | 1,542 | 10.0 | 12 |

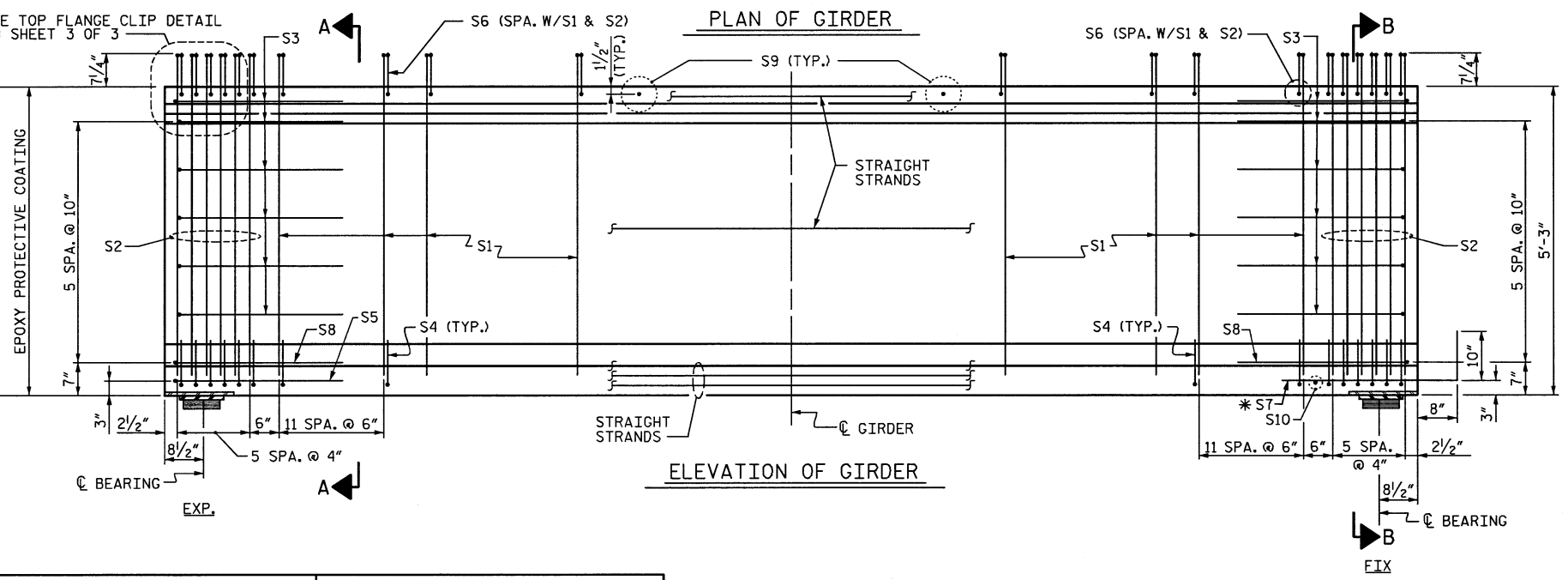
| GIRDERS REQUIRED | | |
|------------------|------------|--------------|
| NUMBER | LENGTH | TOTAL LENGTH |
| 10 | 50'-1 7/8" | 501'-6 3/4" |



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER 1 - 5



PLAN OF GIRDER



ELEVATION OF GIRDER

PROJECT NO. R-2514D
JONES & CRAVEN COUNTY
STATION: 526+71.12 -L-
= 16+08.07 -Y6-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPANS A & C
-RIGHT LANE-

DocuSigned by:
Adam J. Peter
ESR#FA8084742A

SEAL
35695
ENGINEER
ADAM J. PETER

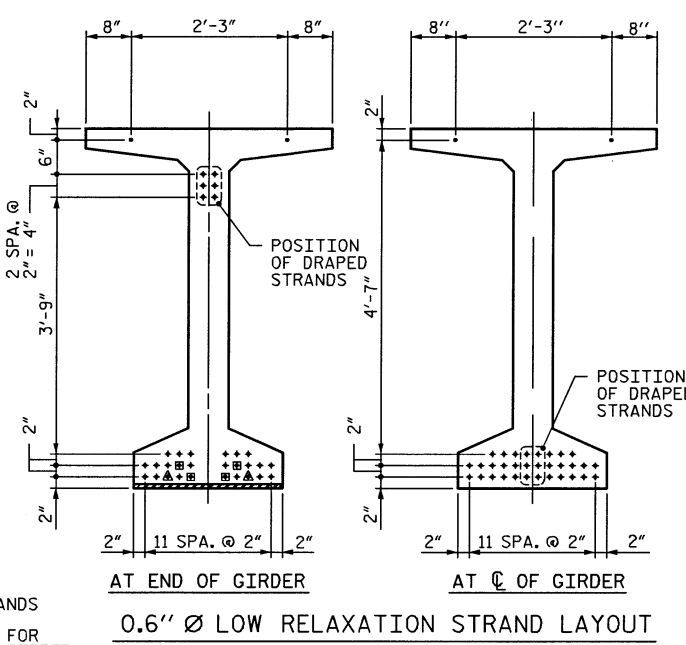
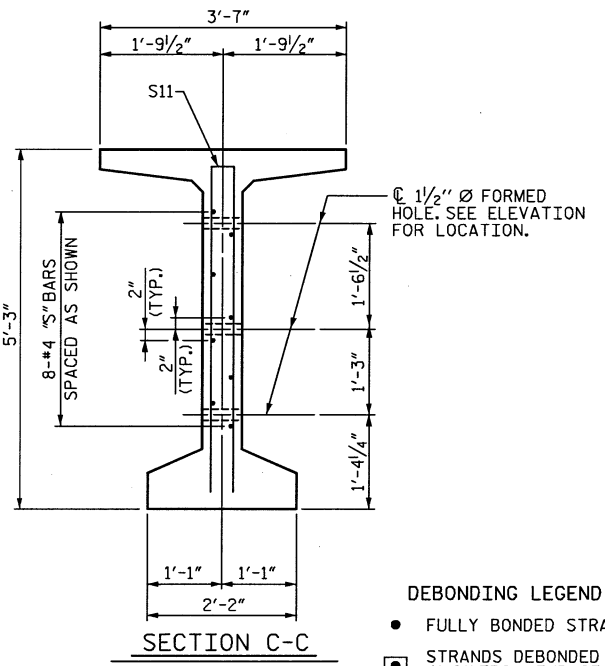
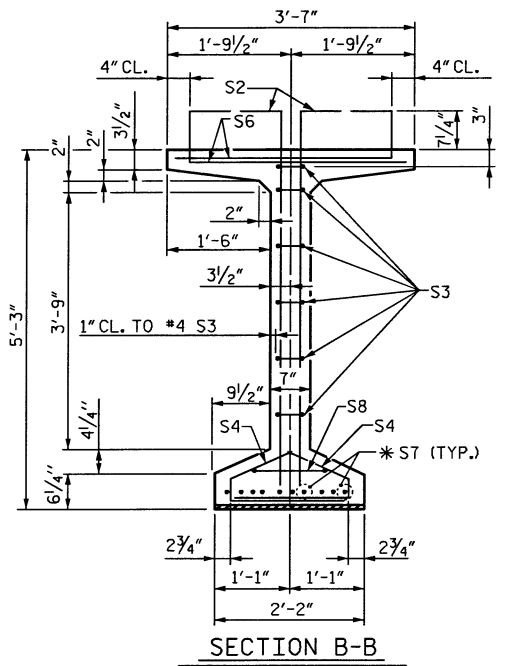
4/10/2015

| | | | |
|------------------|-------------|---|-------------|
| DRAWN BY : CLG | DATE : 5-14 | DESIGN ENGINEER OF RECORD : T. TOWNSEND | DATE : 6-14 |
| CHECKED BY : TJT | DATE : 6-14 | | |

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NC License Number F-0991

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-----|-----------------|
| NO. | BY: | DATE: | NO. | SHEET NO. |
| 1 | | | 3 | S12-11 |
| 2 | | | 4 | TOTAL SHEETS 38 |

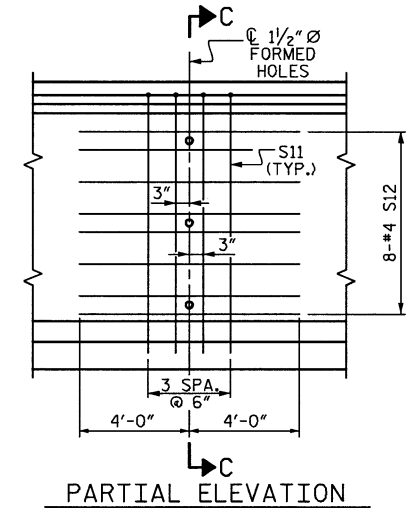
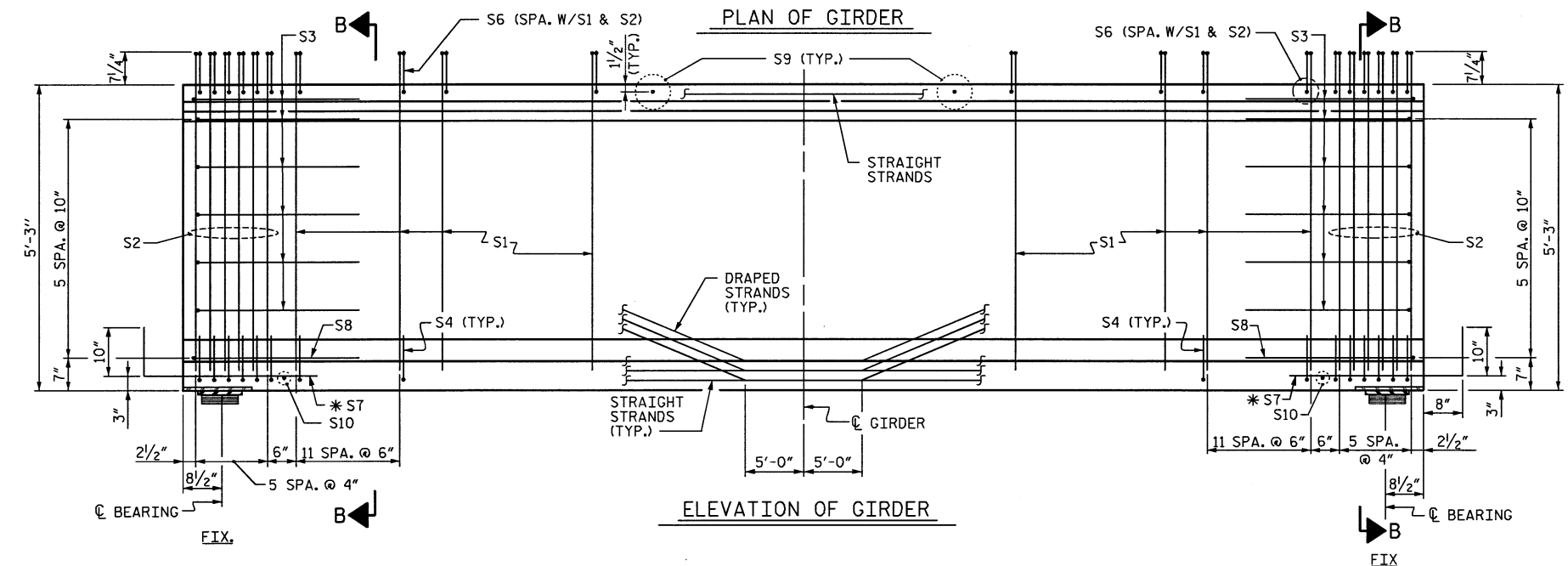
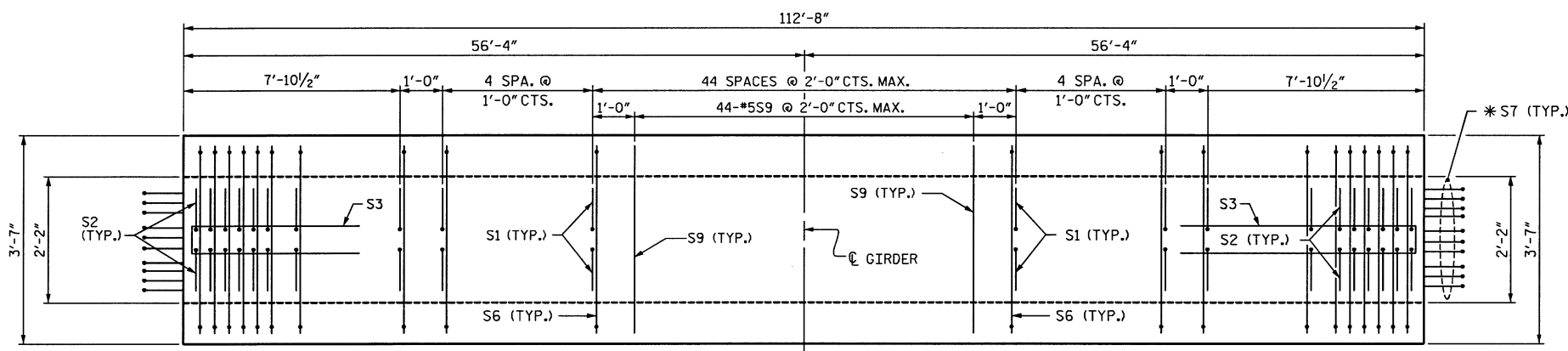
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- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

* FOR S7 BARS, SEE SECTION D-D ON SHEET 3 OF 3.

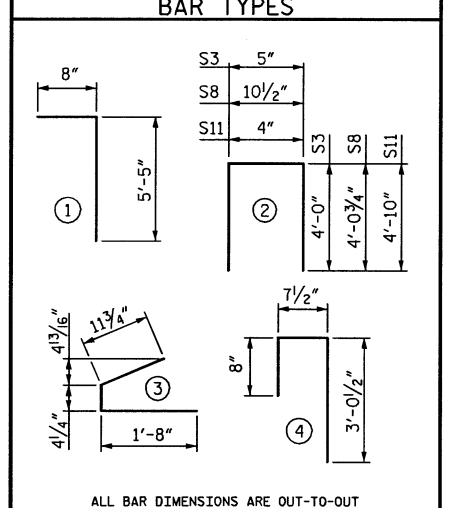
- NOTES:**
- FOR DIAPHRAGM HOLE LOCATIONS, SEE "FRAMING PLAN" SHEET.
 - FOR GIRDER DETAILS, SEE SHEET 3 OF 3.
 - FOR NOTES, SEE SHEET 3 OF 3.
 - THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 23 KIPS.



| 0.6" Ø L. R. GRADE 270 STRANDS | | |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQ. INCHES) | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217 | 58,600 | 43,950 |

| REINFORCING STEEL FOR ONE GDR | | | | | |
|-------------------------------|--------|------|------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1 | 154 | #5 | 1 | 6'-1" | 977 |
| S2 | 24 | #6 | 1 | 6'-1" | 219 |
| S3 | 12 | #4 | 2 | 8'-5" | 67 |
| S4 | 72 | #4 | 3 | 3'-0" | 144 |
| S6 | 178 | #5 | 4 | 4'-4" | 805 |
| *S7 | 20 | #5 | STR | 3'-8" | 76 |
| S8 | 2 | #5 | 2 | 9'-0" | 19 |
| S9 | 44 | #5 | STR | 3'-3" | 149 |
| S10 | 2 | #3 | STR | 1'-10" | 1 |
| EXTERIOR GDR. S11 | 8 | #5 | 2 | 10'-0" | 83 |
| INTERIOR GDR. S11 | 16 | #5 | 2 | 10'-0" | 167 |
| EXTERIOR GDR. S12 | 16 | #4 | STR | 8'-0" | 86 |
| INTERIOR GDR. S12 | 32 | #4 | STR | 8'-0" | 171 |

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

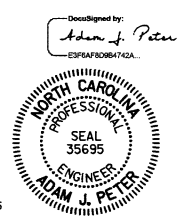


| QUANTITIES FOR ONE GIRDER | | | |
|---------------------------|-------------------|--------------------|---------------------|
| | REINFORCING STEEL | 8,000 PSI CONCRETE | 0.6" Ø L.R. STRANDS |
| | LB. | C.Y. | No. |
| EXTERIOR GIRDER | 2,626 | 22.3 | 34 |
| INTERIOR GIRDER | 2,795 | 22.3 | 34 |

| GIRDERS REQUIRED | | |
|------------------|---------|--------------|
| NUMBER | LENGTH | TOTAL LENGTH |
| 5 | 112'-8" | 563'-4" |

PROJECT NO. R-2514D
 JONES & CRAVEN COUNTY
 STATION: 526+71.12 -L-
 = 16+08.07 -Y6-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 SPAN B
 -RIGHT LANE-



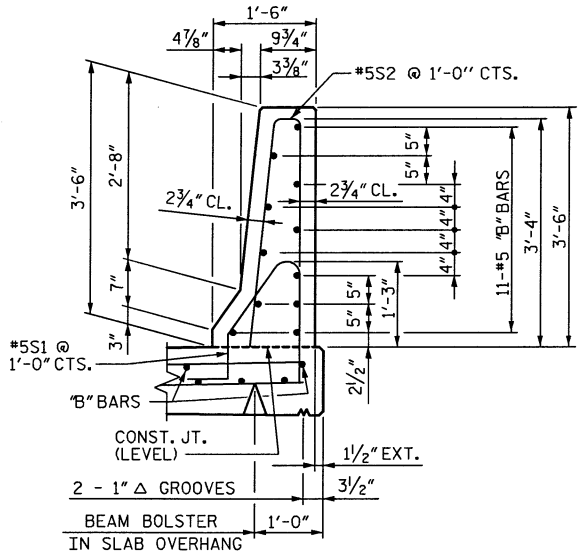
DRAWN BY: CLG DATE: 6-14
 CHECKED BY: TJT DATE: 6-14
 DESIGN ENGINEER OF RECORD: T. TOWNSEND DATE: 6-14

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 Charlotte, NC 28202
 NC License Number F-0991

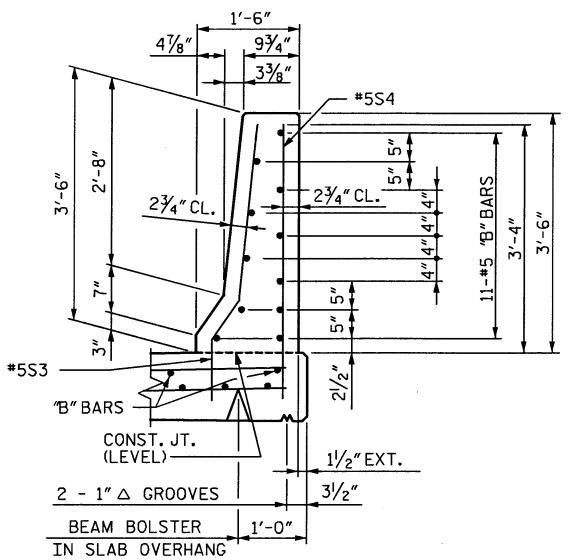
| REVISIONS | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----------|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

TOTAL SHEETS: 38

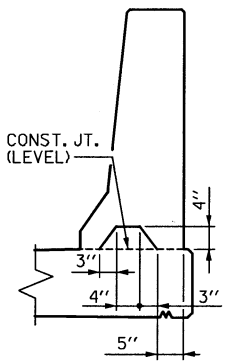
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TYPICAL SECTION THRU RAIL



TYPICAL SECTION AT JOINT



SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

NOTES

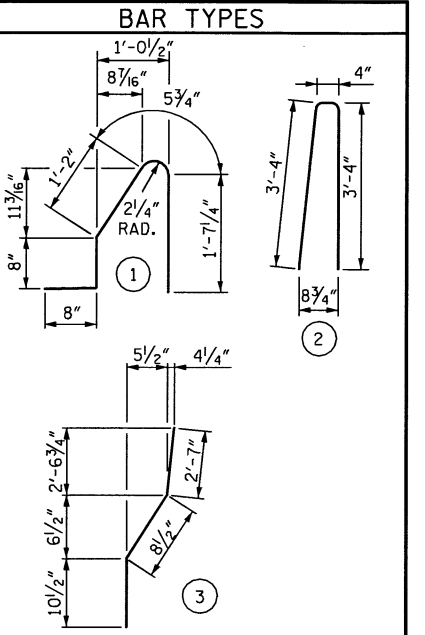
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5S3 AND #5S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM. THE YIELD LOAD FOR THE #5S3 AND #5S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

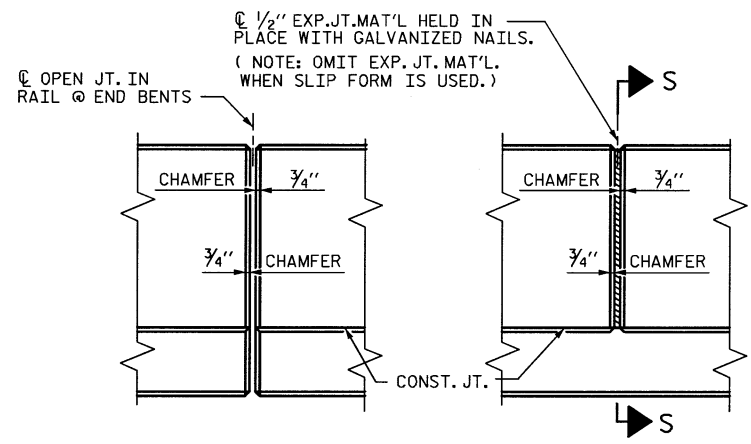
CONCRETE BARRIER RAIL ON APPROACH SLAB, LENGTH AND QUANTITIES, NOT INCLUDED. SEE "BRIDGE APPROACH SLAB DETAILS" SHEETS.



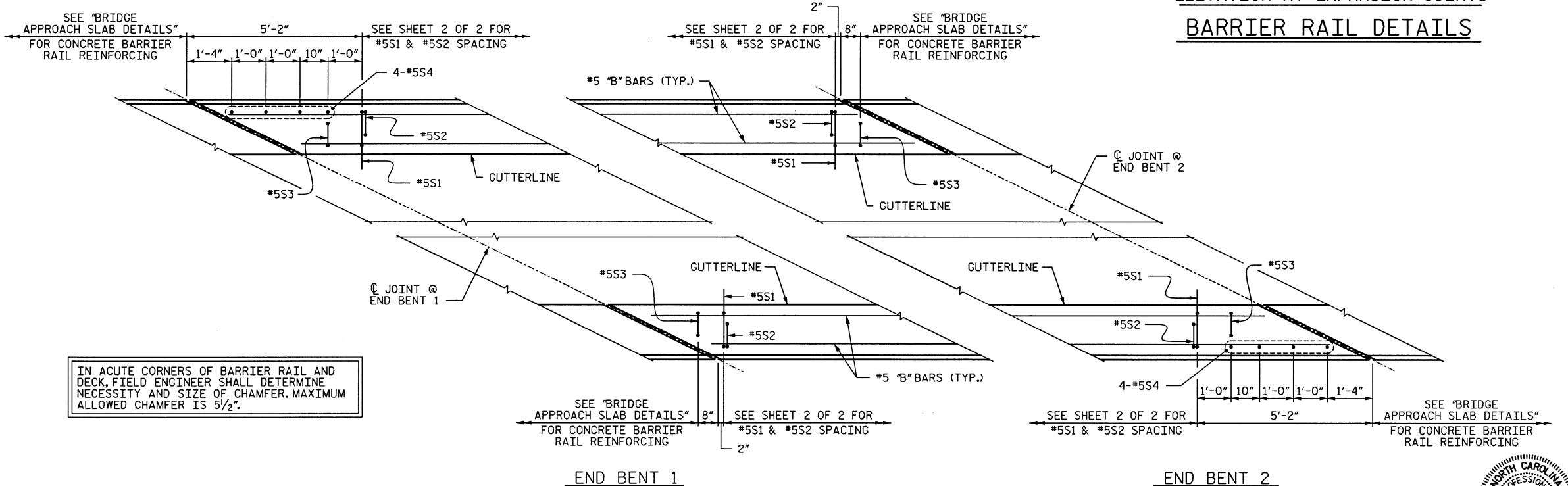
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|----------------------------------|-----|------|------|---------|-----------------|
| * B1 | 44 | #5 | STR. | 12'-10" | 589 |
| * B2 | 88 | #5 | STR. | 27'-11" | 2,562 |
| * B3 | 44 | #5 | STR. | 29'-7" | 1,358 |
| * B4 | 44 | #5 | STR. | 14'-7" | 669 |
| * S1 | 434 | #5 | ① | 4'-7" | 2,075 |
| * S2 | 434 | #5 | ② | 7'-0" | 3,169 |
| * S3 | 4 | #5 | ③ | 4'-2" | 17 |
| * S4 | 8 | #5 | STR. | 4'-0" | 33 |
| * EPOXY COATED REINFORCING STEEL | | | | | 10,472 LBS. |
| CLASS AA CONCRETE | | | | | 60.0 CU. YDS. |
| CONCRETE BARRIER RAIL | | | | | 441.2 L IN. FT. |



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

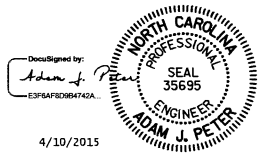


END BENT 1

END BENT 2

PLAN AT JOINTS

IN ACUTE CORNERS OF BARRIER RAIL AND DECK, FIELD ENGINEER SHALL DETERMINE NECESSITY AND SIZE OF CHAMFER. MAXIMUM ALLOWED CHAMFER IS 5/2".



PROJECT NO. R-25140
 JONES & CRAVEN COUNTY
 STATION: 526+71.12 -L-
 = 16+08.07 -Y6-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE BARRIER RAIL
 -RIGHT LANE-

DRAWN BY: CLG DATE: 6-14
 CHECKED BY: TJT DATE: 6-14
 DESIGN ENGINEER OF RECORD: A. PETER DATE: 6-14

STV/Ralph Whitehead Associates, Inc.
 900 West Trade Street, Suite 715
 Charlotte, NC 28202
 NC License Number F-0991

| REVISIONS | | | | SHEET NO. |
|-----------|-----|-------|-------|--------------|
| NO. | BY: | DATE: | DATE: | S12-17 |
| 1 | | | | TOTAL SHEETS |
| 2 | | | | 38 |