



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
PO BOX 778
DOVER, DELAWARE 19903

JACK MARKELL
GOVERNOR

JENNIFER COHAN
SECRETARY

VIA WEBSITE POSTING

(302) 760-2030
FAX (302) 739-2254

March 4, 2016

Contract No. T201330009.01
Federal Aid Project No. ESTP-N061(01)
Industrial Track Greenway Phase III
New Castle County

Ladies and Gentlemen:

Enclosed is Addendum No. 3 for the referenced contract consisting of the following:

1. The date for the receipt of bids has been moved to Tuesday, **March 29, 2016** at 2:00 p.m.
2. The Bid Proposal Cover, revised, to be substituted for the same page in the Proposal.
3. Two (2) pages, Special Provision 601536-Prefabricated Glued Laminated Timber Arch, pages 75 and 78, revised, to be substituted for the same pages in the Proposal.
4. One (1) page, Special Provision 606701-Galvanized Steel Woven Wire Mesh Infill Panel Railing, page 95, revised, to be substituted for the same page in the Proposal.
5. Two (2) pages, Plan Sheets 39 and 160, revised, to be substituted for the same pages in the Proposal.

Please note the revision listed above and submit your bid based upon this information.

Sincerely,

signature on file

James H. Hoagland
Contract Services Administrator

:jhh
Enclosure

STATE OF DELAWARE



DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T201330009.01

FEDERAL AID PROJECT NO. ESTP-N061(01)

INDUSTRIAL TRACK GREENWAY PHASE III

NEW CASTLE COUNTY

ADVERTISEMENT DATE: February 8, 2016

**PROSPECTIVE BIDDERS ARE ADVISED THAT THERE WILL BE A PRE-BID MEETING
WEDNESDAY, FEBRUARY 24, 2016 AT 2:00 P.M. IN THE DelDOT ADMINISTRATION BUILDING,
800 BAY ROAD, DOVER, DELAWARE, 19903.**

COMPLETION TIME: 488 Calendar Days

SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
DELAWARE DEPARTMENT OF TRANSPORTATION
AUGUST 2001

Bids will be received in the Bidder's Room at the Delaware Department of Transportation's Administration Building, 800 Bay Road, Dover, Delaware until 2:00 P.M. local time ~~March 15, 2016~~ **March 29, 2016**

601536 - PREFABRICATED GLUED-LAMINATED TIMBER ARCH

Description:

This item consists of the design, fabrication, supply, and erection of a prefabricated, glued-laminated timber arch pedestrian bridge as shown and described on the Plans, as directed by the Engineer, and as required by these Special Provisions.

Materials:

1. Glued Laminated Timber

The glulam members shall be West Coast Douglas Fir, or approved equal, supplied in the grade(s) as specified by the design. All glulam materials shall conform to the requirements of ANSI/AITC A190.1 and shall be stamped with an AITC quality mark or an APA-EWS trademark. The stamp shall be placed on surfaces that will not be exposed to view in the completed structure. The Contractor shall submit certificates of conformance indicating that the glulam members conform to the requirements of ANSI/AITC 190.1. The appearance of the glulam shall be Industrial in accordance with the American Institute of Timber Construction's Design Standards AITC 110-2001, "Standard Appearance Grades for Structural Glued Laminated Timber" except where indicated otherwise.

2. Adhesives

Adhesives used in the glulam manufacturing process shall be capable of developing a shear strength in excess of the wood capacity and conform to the Voluntary Product Standard PS-56-73 of the U.S. Department of Commerce, National Bureau of Standards and AITC 405-2008, "Standard for Adhesives for Use in Structural Glued Laminated Timber" for wet use adhesives. All milling and gluing shall be performed prior to treating.

3. Steel and Hardware

The manufacturer shall supply all necessary steel and hardware necessary to assemble the bridge. All steel plating shall be ASTM A304 stainless steel and all hardware (bolts, nuts, washers) shall be ASTM A193 B8 Class 2 stainless steel. All cable shall be AISI 316 Stainless steel. Any required welding shall be performed by certified welders in accordance with D1.5 of the AWS Specifications.

4. Preservatives

All glue laminated members shall be incised and fully fabricated prior to applying a preservative treatment. All holes shall be factory drilled to the extent possible. All glue laminated arch members shall be treated with 5% Pentachlorophenol Type 'A' preservative to a minimum net retention of 0.6 pcf in accordance with the American Wood Protection Association's (AWPA) U1-15 User Specification for Treated Wood and T1-14 Processing and Treatment Standard. All timber wearing surface deck planks shall be treated with 5% Pentachlorophenol Type 'C' preservative to a minimum net retention of 0.5 pcf in accordance with the AWPA U1-15 User Specification for Treated Wood and T1-14 Processing and Treatment Standard. All glue laminated deck panels shall be treated with a Copper Naphthenate Preservative to a minimum net retention of 0.075 pcf in accordance with AWPA U1-15 User Specification for Treated Wood and T1-14 Processing and Treatment Standard. Preservatives used in the pressure treatment process shall conform to AWPA Standard P35 (Pentachlorophenol) and P36 (Copper Naphthenate) and shall conform to Best Management Practices (BMP'S). The manufacturer shall supply a certificate that each glue laminated member has been properly treated in accordance with this Special Provision and the requirements of AWPA UC4B. Any field cuts and/or bores shall be treated with a Copper Naphthenate preservative per AWPA M4.

5. Handrails

Reference the Special Provisions elsewhere for requirements of the handrail system to be installed on the prefabricated, glued-laminated timber arch pedestrian bridge. Working drawings of the proposed hand railing shall be submitted to the Engineer for review and approval.

Contract No. T201330009.01

equipment and incidentals necessary to construct structures associated with the arch (including but not limited to bearings, arch tie, arch suspenders, deck panel, railings, etc.) as specified on the Plans. If the pier design and detailing is revised by the Contractor, costs associated with this revision, including preparing the design calculations and any increase in material and/or labor costs will be incidental to the Contract lump sum price for Item 601536.

3/3/16 ~~11/24/15~~

606701 - GALVANIZED STEEL WOVEN WIRE MESH INFILL PANEL RAILING

Description:

This work includes furnishing, fabricating, and delivering to the project site all components necessary to construct a galvanized steel woven wire mesh infill panel railing with stainless steel posts, rails, and spacers and a galvanized steel woven wire mesh infill panel top rail, galvanized steel posts, bottom rails and spacers, and a galvanized steel woven wire mesh infill panel as indicated on the Plans, these Special Provisions and as may be directed by the Engineer. Installation and erection of the entire railing system is also included under this item.

This work shall also include furnishing and installing all hardware required for erection and assembly of the railing in conformance with the requirements of the Plans and these Special Provisions.

Materials:

~~Material specified for the structural elements of the railing system, including top and bottom tube rails, rail posts, and rail connection plates shall meet the requirements of AISI 316 Stainless Steel. The woven wire mesh inset panel shall consist of 8 gauge wire material meeting the requirements of ASTM A 853 and galvanized in accordance with A 123.~~

~~Bolts shall conform to A 307, unless otherwise noted. All bolts and nuts (except dome-head bolts) shall have washers. Dome-head bolts need not have washers under the head, unless otherwise noted. Plates and washers shall be A 709, Grade 36 steel. Bolts, nuts, washers and plates shall be galvanized in conformance with ASTM A 153.~~

Material specified for the structural elements of the railing system, consisting of the bottom tube rails, rail posts, and rail connection plates shall meet the requirements of ASTM A36 or approved equal and be galvanized in accordance with A 123. The woven wire mesh inset panel shall consist of 8 gauge wire material meeting the requirements of ASTM A 853 and galvanized in accordance with A 123. Material specified for the top tube rails shall be Type 304 stainless steel conforming to ASTM A 269 or approved equal.

Bolts shall be stainless steel conforming to ASTM A193 B8, Class 2 or approved equal unless otherwise noted. All bolts and nuts (except dome-head bolts) shall have washers. Dome-head bolts need not have washers under the head, unless otherwise noted. Plates, washers, and all miscellaneous fasteners used for railing connections shall be Type 304 stainless steel or approved equal.

Construction Methods:

The railing system shall be constructed in accordance with the fabricators recommendations and applicable portions of Section 606 of the Standard Specifications.

Method of Measurement:

The item will not be measured for payment. The quantity of Galvanized Steel Woven Wire Mesh Infill Panel Railing will be measured by the linear foot. The quantity will be determined from the actual length of the finished railing system completed and accepted.

Basis of Payment:

The item Galvanized Steel Woven Wire Mesh Infill Panel Railing will be paid for at the Contract unit price bid per linear foot, which price and payment will constitute full compensation for furnishing, fabricating, and installing all materials; for touch up of damaged coatings; and for all labor, equipment, tools, and incidentals required to complete the work.

3/3/16 08/11/2015

PROJECT NOTES:

- LOCATION
PROPOSED NEW PEDESTRIAN STRUCTURE CARRYING THE INDUSTRIAL TRACK TRAIL (PHASE 3) AT THE FOLLOWING LOCATION:
- GLULAM TIMBER TIED ARCH WITH GLULAM TIMBER BEAM APPROACH SPANS OVER THE CHRISTINA RIVER
- ELEVATIONS
VERTICAL DATUM IS REFERENCED TO NAVD 88.
- DESIGN CRITERIA
2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SEVENTH EDITION, INCLUDING 2015 INTERIM REVISIONS.
2009 AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, INCLUDING 2015 INTERIM PROVISIONS.
2005 DELDOT BRIDGE DESIGN MANUAL
WELDS SHALL CONFORM TO AWS D1.5.

- LOADING
VEHICLE LIVE LOAD IS H-10 FOR THIS PROJECT.
PEDESTRIAN LIVE LOAD IS 90 PSF FOR THIS PROJECT.
COLLISION DESIGN VESSEL (CV) PER AASHTO LRFD 7TH EDITION, 2014 = JUMBO OPEN HOPPER BARGE (EMPTY). LOADED DISPLACEMENT = 200 KIP. DESIGN COLLISION FORCE = 99 KIP. STREAM FLOW VELOCITY = 2 FPS BASED ON 2-YR FLOOD. (CV) LOADING APPLIES ONLY TO DESIGN OF SUBSTRUCTURE UNITS (PIERS).
- FOUNDATIONS
FOR FOUNDATION REQUIREMENTS SEE DWG. NOS. PL-101 THRU PL-103.
- ARCH BEARING REACTIONS
WIND LOADING ASSUMES MAXIMUM 15" PURLIN DEPTH AND MAXIMUM 48" DEEP ARCH MEMBERS.
THE PIER AND PIER FOUNDATION DESIGNS PROVIDED IN THE CONTRACT DOCUMENTS ARE BASED ON THE REACTIONS SHOWN IN THE TABLE BELOW. PER THE SPECIAL PROVISIONS FOR ITEM 601536 - PREFABRICATED GLUED LAMINATED TIMBER ARCH, THE CONTRACTOR SHALL SUPPLY CALCULATIONS AND WORKING DRAWINGS FOR ANY STRUCTURE SUPPLIED THAT DOES NOT CONFORM TO THE REACTIONS SHOWN ABOVE AND/OR THE GEOMETRIC DIMENSIONS AND/OR DETAILS OF THE PIER OR PIER FOUNDATIONS SHOWN IN THESE PLANS.

ARCH BEARING REACTIONS ON PIER		
LOAD	VERTICAL (UNFACTORED)	HORIZONTAL THRUST (UNFACTORED)
DL	31.5 KIP/BEARING	0.0 KIP/BEARING
LL (PEDESTRIAN)	45.0 KIP/BEARING	0.0 KIP/BEARING

ARCH PURLIN REACTIONS ON PIER	
LOAD	VERTICAL (UNFACTORED)
DL	0.5 KIP/BEARING
LL (PEDESTRIAN)	2.0 KIP/BEARING

- PORTLAND CEMENT CONCRETE
ALL CONCRETE PROPERTIES SHALL BE IN ACCORDANCE WITH SECTION 812 OF THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.
CLASS A - ABUTMENT STEMS, BACKWALLS, AND PIER WALLS (F'c = 4,500 PSI)
CLASS B - ABUTMENT FOOTINGS, PIER FOOTINGS (F'c = 3,500 PSI)
ALL EXPOSED EDGES SHALL BE CHAMFERED 3#4" UNLESS NOTED OTHERWISE.
- REINFORCING STEEL
ALL REINFORCING STEEL SHALL CONFORM TO AASHTO M 31 (ASTM A 615), GRADE 60. EPOXY COATED REINFORCING STEEL SHALL BE PROTECTED WITH FUSION BONDED EPOXY, CONFORMING TO AASHTO M 284 (ASTM A 775).
EPOXY COATED REINFORCING STEEL SHALL BE USED IN THE FOLLOWING LOCATIONS:
- ABUTMENT STEMS AND BACKWALLS
- PIER WALLS
ALL REINFORCING STEEL HAS BEEN DETAILED FOR A MAXIMUM LENGTH OF 60 FT.
ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER THE AASHTO BRIDGE DESIGN SPECIFICATIONS.
MINIMUM CONCRETE COVER FOR REINFORCING STEEL, UNLESS NOTED OTHERWISE, SHALL BE 3" FOR FOOTINGS AND 2" ELSEWHERE.
- STRUCTURAL STEEL
ALL STRUCTURAL STEEL SHALL BE AASHTO M 270 (ASTM A 709) GRADE 50, AND HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A 123, INCLUDING THE ADDITIONAL REQUIREMENTS FOR CHARPY V-NOTCH TESTING OF AASHTO M 270 FOR PRIMARY LOAD CARRYING MEMBERS UNDER TENSILE STRESS.
- THE FOLLOWING ELEMENTS OF THE GLUE-LAMINATED ARCH SHALL BE DESIGNED, DETAILED, AND FURNISHED BY THE GLUE-LAMINATED ARCH FABRICATOR:
- GLUE-LAMINATED ELEMENTS: ARCH RIBS, STRINGERS FLOORBEAMS, DECK PANELS
- PRESSURE TREATED LUMBER: 1"x 6" TIMBER PLANK DECKING
- STAINLESS STEEL ELEMENTS: ARCH TIE, ARCH SUSPENSION CABLES, ARCH CABLE HANGERS, ARCH BEARINGS AND BEARING PINS, ALL CONNECTION HARDWARE

- TIMBER
STRUCTURAL TIMBER SHALL BE GLUE LAMINATED TIMBER CONFORMING TO THE FOLLOWING MINIMUM ALLOWABLE DRY UNIT STRESSES:
GLUE LAMINATED BEAMS AND GLUE LAMINATED LONGITUDINAL DECK PANELS FOR SPANS 1 AND 3 CONFORM TO AASHTO COMBINATION SYMBOL 20F-V2, SOUTHERN PINE:
- BENDING (Fbxo) = 2,000 PSI
- BENDING (Fbyo) = 1,450 PSI
- HORIZONTAL SHEAR (Fvxo) = 300 PSI
- HORIZONTAL SHEAR (Fvyo) = 260 PSI
- MODULUS OF ELASTICITY (Exo) = 1,500,000 PSI
- MODULUS OF ELASTICITY (Eyo) = 1,400,000 PSI
GLUE LAMINATED STRUCTURAL ARCH MEMBERS SHALL CONFORM TO AASHTO COMBINATION SYMBOL 20F-V3, WEST COAST DOUGLAS FIR-LARCH OR APPROVED EQUAL:
- BENDING (Fbxo) = 2,000 PSI
- AXIAL COMPRESSION (Fco) = 1,550 PSI
- HORIZONTAL SHEAR (Fvo) = 265 PSI
- MODULUS OF ELASTICITY (Eo) = 1,600,000 PSI
LUMBER FOR 1"x6" DECK PLANKS SHALL BE SOUTHERN YELLOW PINE SELECT STRUCTURAL
TREAT GLUE LAMINATED BEAMS AND ARCH MEMBERS WITH 5% PENTACHLOROPHENOL TYPE 'A' TO A MINIMUM NET RETENTION OF 0.6 PCF PER AWP USER SPECIFICATION U1-15, USE CATEGORY 4B, & DELDOT SPECIFICATION SECTION 814. TREAT GLUE LAMINATED DECK PANELS WITH A COPPER NAPHTHENATE OILBORNE PRESERVATIVE TO A MINIMUM NET RETENTION OF 0.075 PCF PER AWP USER SPECIFICATION U1-15, USE CATEGORY 4B, & DELDOT SPECIFICATION SECTION 814. TREAT 1"x6" TIMBER DECK PLANKS WITH 5% PENTACHLOROPHENOL TYPE 'C' TO A MINIMUM RETENTION OF 0.5 PCF PER AWP USER SPECIFICATION U1-15, USE CATEGORY 4B, & DELDOT SPECIFICATION SECTION 814.
PRESERVATIVES FOR PRESSURE TREATMENT PROCESS SHALL CONFORM TO AWP STANDARD P35 (PENTACHLOROPHENOL) AND P36 (COPPER NAPHTHENATE). ALL TREATED WOOD SHALL CONFORM TO BEST MANAGEMENT PRACTICES (BMP'S). ISSUE CERTIFICATIONS OF TREATMENT.
TIMBER STOCKPILED AT THE JOB SITE MUST BE NEATLY STACKED IN DRY, LEVEL AREAS THAT ARE CLEAR OF PLANT GROWTH AND DEBRIS. THE BOTTOM LAYER OF MATERIAL IN ANY STOCKPILE SHOULD BE AT LEAST 8 INCHES ABOVE GROUND LEVEL AND SUPPORTED ON SPACER BLOCKS SPACED NOT MORE THAN 10 FEET IN ANY DIRECTION OF THE STOCKPILE. IF MATERIAL SAGGING BETWEEN SPACER BLOCKS IS EVIDENT, ADDITIONAL SPACER BLOCKS MUST BE ADDED TO REMOVE SAGGING. STICKERS SPACED NOT MORE THAN 6 FEET IN ANY DIRECTION OF THE STOCKPILE SHALL BE ADDED BETWEEN LAYERS OF STOCKPILED MATERIAL. STICKERS SHALL BE SPACED AT REGULAR INTERVALS TO EXTEND ACROSS THE FULL WIDTH OF THE STOCKPILE IN ANY DIRECTION AND MUST BE ALIGNED VERTICALLY.
TIMBER STOCKPILED IN HOT DRY CLIMATES SHALL BE PROTECTED WITH A PLYWOOD OR MATERIAL COVERING.
- ELASTOMERIC BEARINGS
FOR REQUIREMENTS OF THE ELASTOMERIC BEARINGS SEE DWG. NO. BM-101.
- STEEL PILES
STEEL H-SHAPE PILES SHALL CONFORM TO AASHTO M 270 (ASTM A 709), GRADE 50.
- MSE WALLS
FOR MSE WALL NOTES, SEE DWG. AB-104.
- CONSTRUCTION JOINTS
KEYED CONSTRUCTION JOINTS SHALL BE 2"x4" OR UNLESS NOTED OTHERWISE. ALL EXPOSED CONSTRUCTION JOINT EDGES SHALL HAVE A 3/4" V-NOTCH UNLESS NOTED OTHERWISE.
- STABILIZING STRUCTURAL EXCAVATIONS
IN LIEU OF A 2:1 SLOPE, THE CONTRACTOR MAY USE SHORING FOR EXCAVATIONS EXCEEDING 5 FEET IN HEIGHT. THE COST OF SHORING SHALL BE INCIDENTAL TO ITEM 207000 - EXCAVATION AND BACKFILL FOR STRUCTURES.
- HYDRAULIC DATA
DRAINAGE AREA = 234.0 SQ. MI.
25-YR FLOOD ELEVATION = 7.2 (TIDALLY INFLUENCED BACKWATER ELEVATION)
DESIGN FREQUENCY = 50-YEAR
DESIGN DISCHARGE = 22,900 CFS
DESIGN HEADWATER ELEVATION = 7.9 (FEMA, TIDALLY INFLUENCED BACKWATER ELEVATION)
DESIGN VELOCITY, CHANNEL = 5.0 FPS
AVAILABLE FLOW AREA OF PROPOSED OPENING = 8800 SQ. FT.
NOTE: SEE REPORT TITLED, "NEW CASTLE COUNTY INDUSTRIAL TRACK TRAIL, PHASE 3, HYDROLOGIC AND HYDRAULIC REPORT FOR PEDESTRIAN BRIDGE OVER THE CHRISTINA RIVER AND FOR THE BOARDWALK OVER LITTLE MILL CREEK," DATED MARCH 2015
SCOUR DATA
STRUCTURE HAS BEEN ANALYZED FOR THE EFFECTS OF SCOUR IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN FHWA'S HEC-18 MANUAL, "EVALUATING SCOUR AT BRIDGES" (2112).
DESIGN STORM EVENT = 100 YEAR FLOOD
DESIGN STORM DISCHARGE = 27,600 CFS
DESIGN STORM VELOCITY, CHANNEL = 7.09 FPS
DESIGN STORM MAXIMUM DEPTH OF FLOW = 23.72 FT
DESIGN STORM HEADWATER ELEVATION = 9.0 (FEMA, TIDALLY INFLUENCED BACKWATER ELEVATION)
CHECK STORM EVENT = 500 YEAR FLOOD
CHECK STORM DISCHARGE = 41,700 CFS
CHECK STORM VELOCITY, CHANNEL = 8.87 FPS
CHECK STORM MAXIMUM DEPTH OF FLOW = 25.32 FT
CHECK STORM HEADWATER ELEVATION = 10.6 (FEMA, TIDALLY INFLUENCED BACKWATER ELEVATION)
- UTILITIES
BEFORE BEGINNING WORK, THE CONTRACTOR SHALL GIVE NOTIFICATION BY TELEPHONE BY CALLING "MISS UTILITY" AT 1-800-282-8555 A MINIMUM OF 48 HOURS PRIOR TO THE START OF WORK. VERIFY AND LOCATE ALL UTILITIES PRIOR TO STARTING WORK.
COORDINATE THE REQUIREMENTS FOR PROTECTION OF ANY UTILITY WITH THE UTILITY OWNER PRIOR TO STARTING WORK.
CONDUCT OPERATIONS IN A MANNER WHICH ENSURES THAT THE UTILITIES WILL NOT BE DISTURBED OR ENDANGERED. ANY DAMAGE INCURRED TO THESE UTILITIES OR ANY OTHER UTILITIES, SHOWN OR NOT SHOWN ON THE PLANS, DUE TO THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE APPROPRIATE UTILITY COMPANY. THE DEPARTMENT DOES NOT ASSUME RESPONSIBILITY FOR REIMBURSEMENT, PARTICIPATION IN DESIGN AND/OR REVISIONS, OR LIABILITY FOR ACCURACY OF TYPE, SIZE, AND LOCATION OF ANY UTILITY.

CHRISTINA RIVER CROSSING STRUCTURES INDEX OF SHEETS		
SHEET NO.	DWG. NO.	TABLE OF CONTENTS
39	PN-101	PROJECT NOTES CHRISTINA RIVER CROSSING
40	TS-101	TYPICAL SECTIONS
41	PE-101	SOUTH TRAIL RETAINING STRUCTURE GENERAL PLAN AND ELEVATION - 1
42	PE-102	CHRISTINA RIVER BRIDGE GENERAL PLAN AND ELEVATION - 2
43	PE-103	NORTH TRAIL RETAINING STRUCTURE GENERAL PLAN AND ELEVATION - 3
44	FT-101	GEOMETRIC AND FOOTING LAYOUT PLAN - 1
45	FT-102	GEOMETRIC AND FOOTING LAYOUT PLAN - 2
46	FT-103	GEOMETRIC AND FOOTING LAYOUT PLAN - 3
47	PL-101	MSE WALL GRADE BEAM AND SOUTH MAT PILE LAYOUT
48	PL-102	CHRISTINA RIVER BRIDGE ABUTMENT AND PIER PILE LAYOUT
49	PL-103	MSE WALL NORTH MAT PILE LAYOUT
50	AB-101	ABUTMENT A PLAN AND ELEVATION
51	AB-102	ABUTMENT B PLAN AND ELEVATION
52	AB-103	ABUTMENT A AND B TYPICAL SECTIONS
53	AB-104	TRAIL RETAINING STRUCTURES TYPICAL SECTIONS - 1
54	AB-105	TRAIL RETAINING STRUCTURES TYPICAL SECTIONS - 2
55	AB-106	ABUTMENT A REINFORCEMENT DETAILS - 1
56	AB-107	ABUTMENT A REINFORCEMENT DETAILS - 2
57	AB-108	ABUTMENT A REINFORCEMENT DETAILS - 3
58	AB-109	ABUTMENT B REINFORCEMENT DETAILS - 1
59	AB-110	ABUTMENT B REINFORCEMENT DETAILS - 2
60	AB-111	ABUTMENT B REINFORCEMENT DETAILS - 3
61	AB-112	MSE WALL GRADE BEAM REINFORCEMENT DETAILS
62	AB-113	MSE WALL SOUTH MAT FOUNDATION REINFORCEMENT DETAILS
63	AB-114	MSE WALL NORTH MAT FOUNDATION REINFORCEMENT DETAILS
64	PR-101	PIER 1 PLAN AND ELEVATIONS
65	PR-102	PIER 2 PLAN AND ELEVATIONS
66	PR-103	PIER 1 REINFORCEMENT DETAILS - 1
67	PR-104	PIER 1 REINFORCEMENT DETAILS - 2
68	PR-105	PIER 2 REINFORCEMENT DETAILS - 1
69	PR-106	PIER 2 REINFORCEMENT DETAILS - 2
70	RB-101	ABUTMENT REINFORCEMENT LIST
71	RB-102	PIER REINFORCEMENT LIST
72	BM-101	GLULAM BEAM ELEVATION, CAMBER, AND BEARING DETAILS
73	BM-102	CROSS FRAME DETAILS
74	FR-101	CHRISTINA RIVER BRIDGE FRAMING PLAN
75	DK-101	GLULAM DECK
76	FD-101	FINISHED BRIDGE DECK ELEVATIONS
77	EX-101	TRANSVERSE JOINT DETAILS
78	RL-101	RAILING DETAILS - 1
79	RL-102	RAILING DETAILS - 2
80	BO-101	BORING LOG - 1

THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY SUPPORTING, PROTECTING, OR RELOCATING ANY UTILITIES DURING CONSTRUCTION. WHERE NECESSARY, THE COST FOR THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT.

19. STAGING AREAS
ANY STAGING AREAS OUTSIDE OF THOSE SHOWN ON THESE CONTRACT PLANS AND/OR OUTSIDE OF THE LIMITS OF CONSTRUCTION (LOC) DEPICTED HEREON SHALL HAVE EROSION AND SEDIMENT CONTROLS IMPLEMENTED TO PREVENT DISCHARGE OF SEDIMENT-LADEN RUNOFF FROM ANY SUCH AREAS. THE CONTRACTOR SHALL SUBMIT PLANS DEPICTING EROSION AND SEDIMENT CONTROLS AROUND AND WITHIN ANY SUCH STAGING AREAS TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

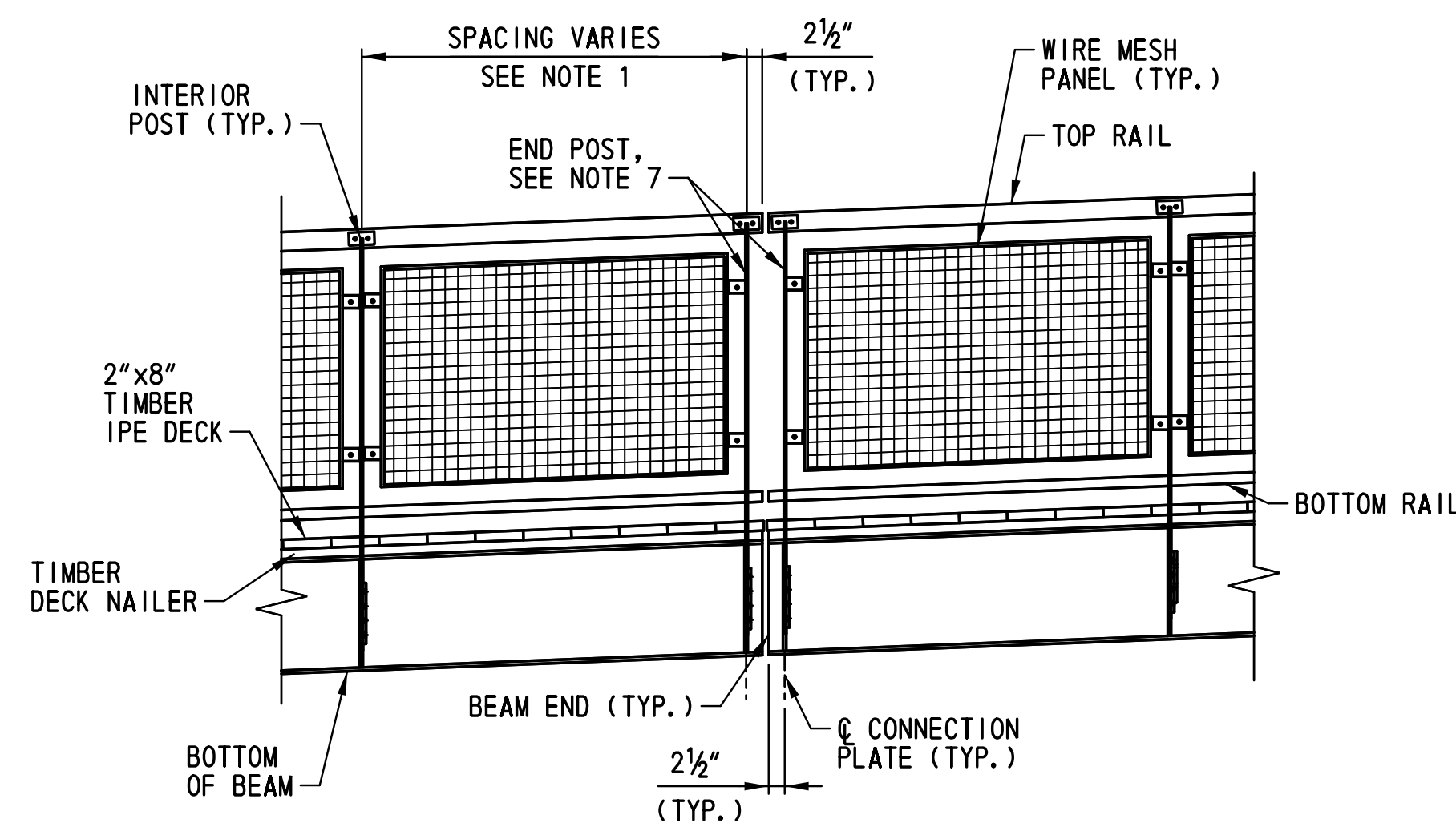
THERE SHALL BE NO STOCKPILING OF CONSTRUCTION MATERIALS OR TEMPORARY FILLS IN WETLANDS OR SUBAQUEOUS LANDS UNLESS OTHERWISE SPECIFIED ON PROJECT PLANS AND APPROVED BY PERMITTING AGENCIES THAT GOVERN THEM. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND SECURE THOSE ADDITIONAL PERMITS/AMENDMENTS IF DEVIATING FROM THE PLANS.

20. CONSTRUCTION ACCESS
VEHICLES MAY USE THE IN-PLACE CHRISTINA RIVER AND WETLAND BOARDWALK STRUCTURES TO ACCESS THE CONSTRUCTION SITE. ALL VEHICLES SHALL MAINTAIN AN ABSOLUTE MAXIMUM SPEED OF (3.0) M.P.H. WHEN CROSSING ANY STRUCTURE. THE MAXIMUM GROSS (LOADED) WEIGHT OF ANY VEHICLE SHALL NOT EXCEED 10 TONS. ALL VEHICLE WEIGHTS SHALL BE CONFIRMED BY USE OF AN ON-SITE PORTABLE SCALE PRIOR TO CROSSING ANY STRUCTURE. ALL PORTABLE SCALES MUST SHOW PROOF OF CALIBRATION CERTIFIED BY A WEIGHTS AND MEASURES INSPECTOR CERTIFIED IN THE STATE OF DELAWARE. TRUCK DELIVERIES PRESENTING A CERTIFIED WEIGHT TICKET CONFIRMING A MAXIMUM GROSS (LOADED) WEIGHT OF 10 TONS WILL NOT REQUIRE A SECOND WEIGHING AT THE JOB SITE.

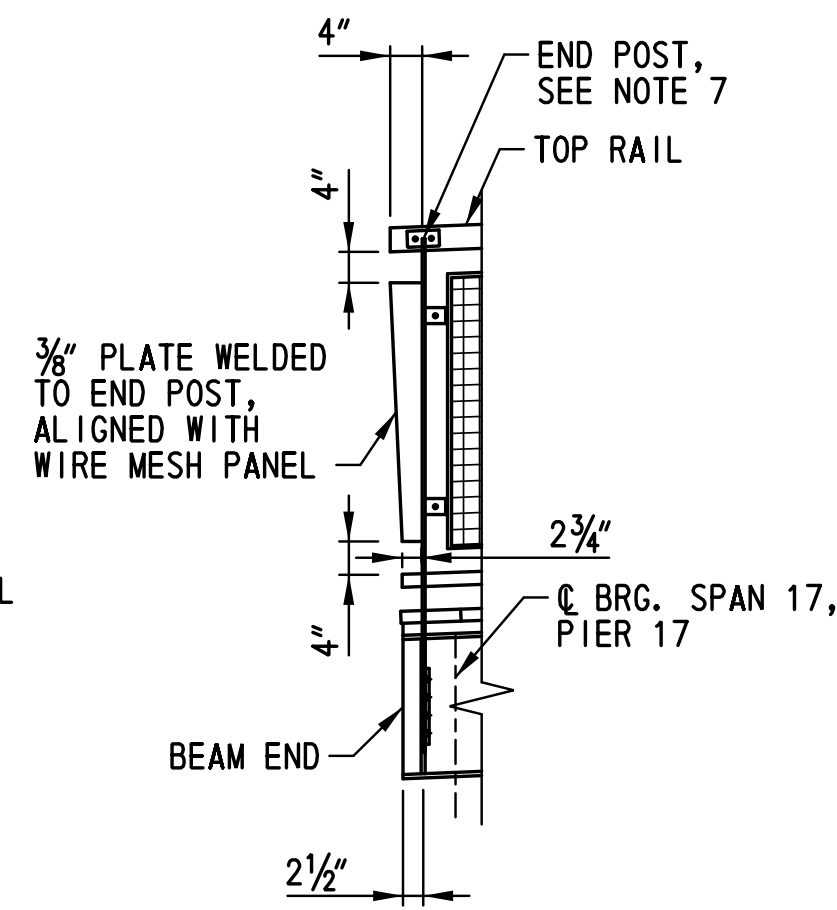
THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL DOCUMENTING ALL PROPOSED METHODS AND SEQUENCES FOR CONSTRUCTION ACCESS. THESE WORKING DRAWINGS SHALL INCLUDE ALL MEANS AND METHODS NECESSARY TO PROTECT ALL IN-PLACE STRUCTURES IF USED FOR CONSTRUCTION ACCESS. ANY TEMPORARY MATERIALS PROPOSED SHALL BE INSTALLED PRIOR TO THE USE OF ANY STRUCTURE FOR CONSTRUCTION ACCESS. THE TEMPORARY MATERIALS SHALL PROTECT AGAINST ANY DAMAGE DUE TO CONSTRUCTION ACTIVITIES AS WELL AS PREVENT THE SPILLAGE OF MATERIALS ONTO ANY STRUCTURE OR INTO THE SURROUNDING ENVIRONMENT. DAMAGE INCURRED TO ANY STRUCTURE BY THE CONTRACTOR OR ANY SPILLAGE OF MATERIAL BY THE CONTRACTOR INTO THE SURROUNDING ENVIRONMENT SHALL BE REPAIRED OR REMOVED TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

	ADDENDUMS / REVISIONS		SCALE: NONE	NEW CASTLE INDUSTRIAL TRACK TRAIL, PHASE 3	CONTRACT	BRIDGE NO.	X	PROJECT NOTES CHRISTINA RIVER CROSSING	SHEET NO.
	△ REVISED PROJECT NOTE 4: D.D./J.N. 02/16/16 △ REVISED PROJECT NOTE 11: A.D./J.N. 03/02/16				T201330009				39
					COUNTY	DESIGNED BY: NAH			TOTAL SHTS.
					NEW CASTLE	CHECKED BY: WAG			207

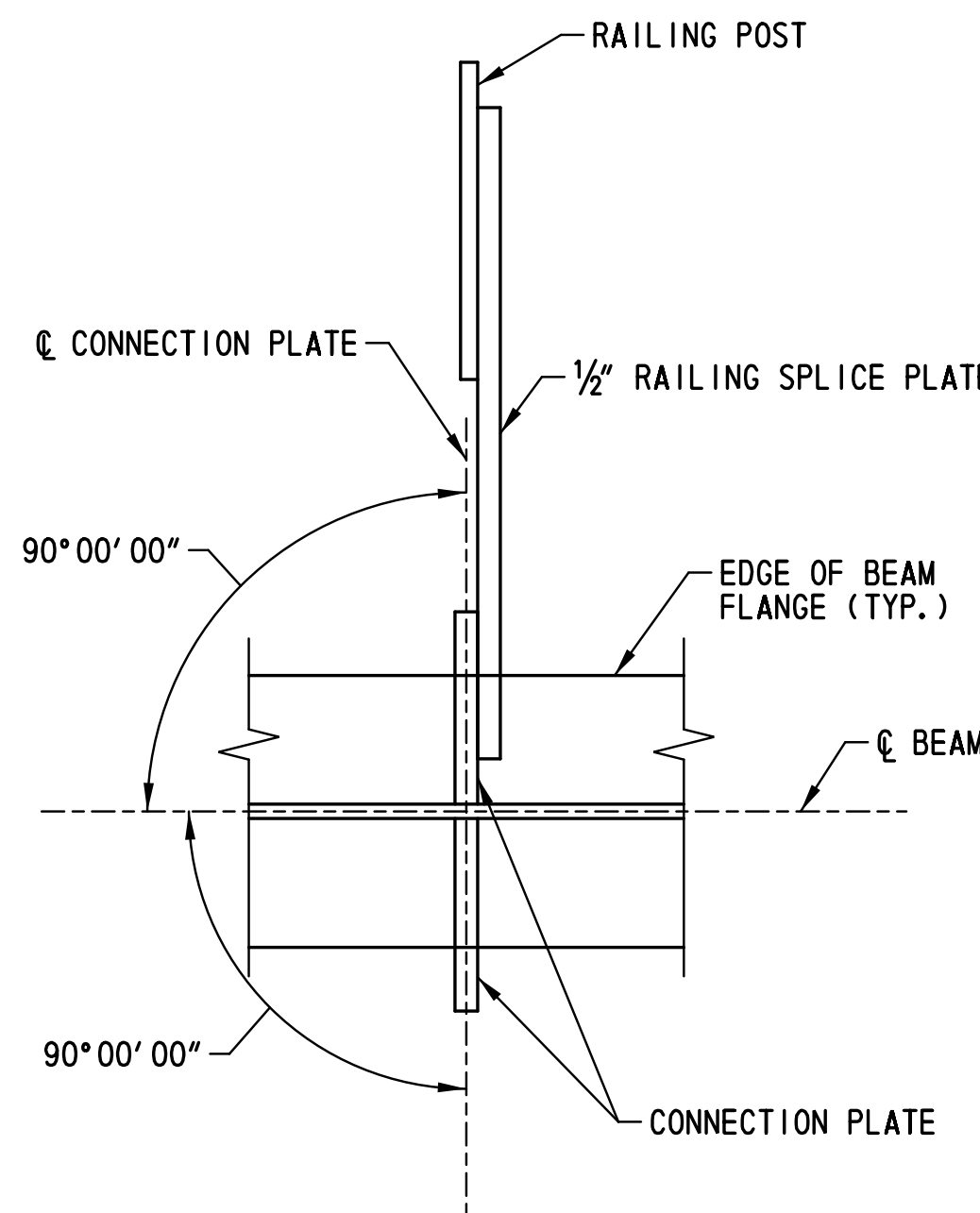
N:\31896-002\CADD\BRIDGE\MARCH 2016_ADDENDUM SHEETS\PN101_ITG.DGN



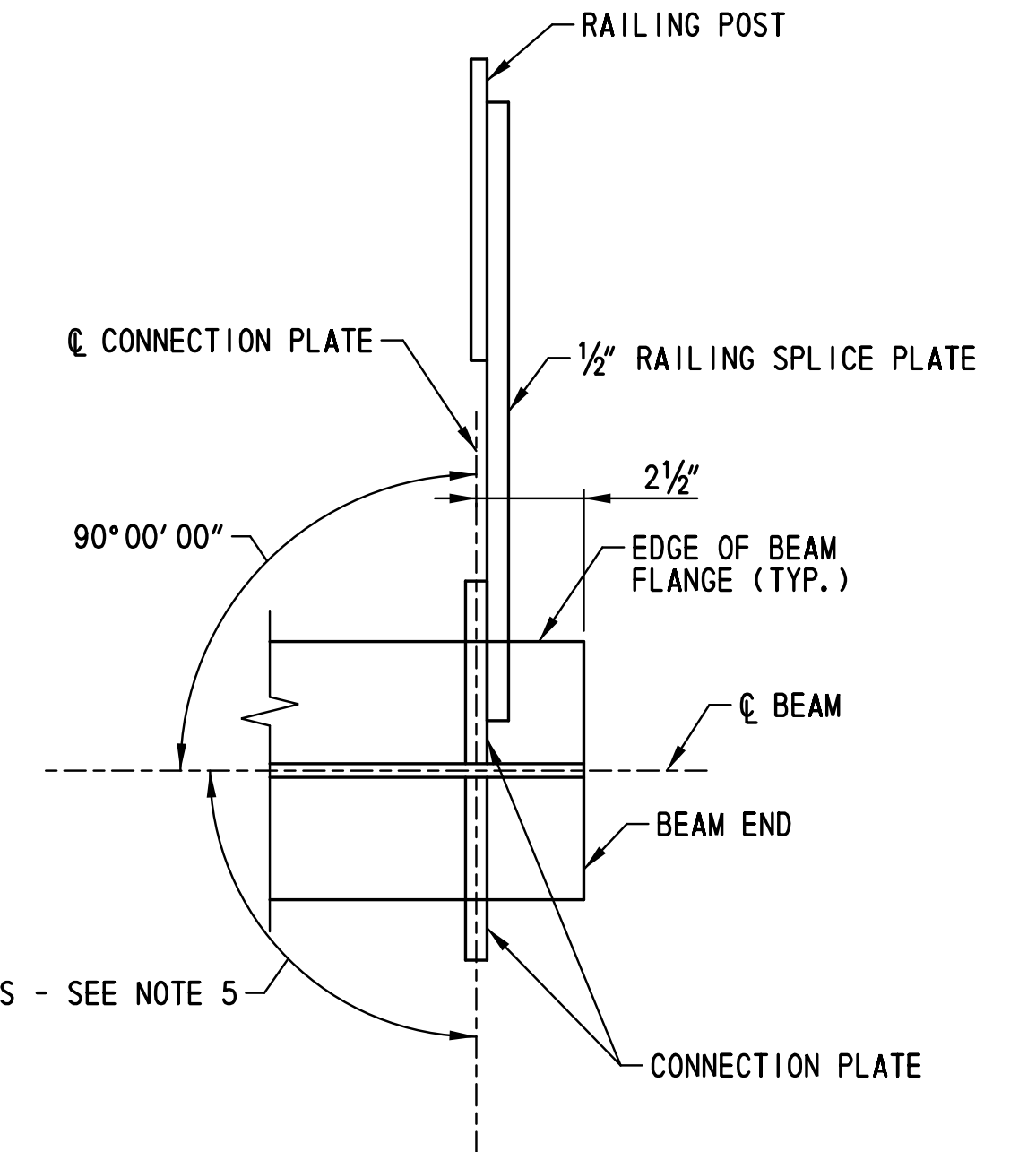
TYPICAL RAILING LAYOUT - ELEVATION
SCALE: 1/2" = 1' - 0"



DETAIL A
SCALE: 1/2" = 1' - 0"



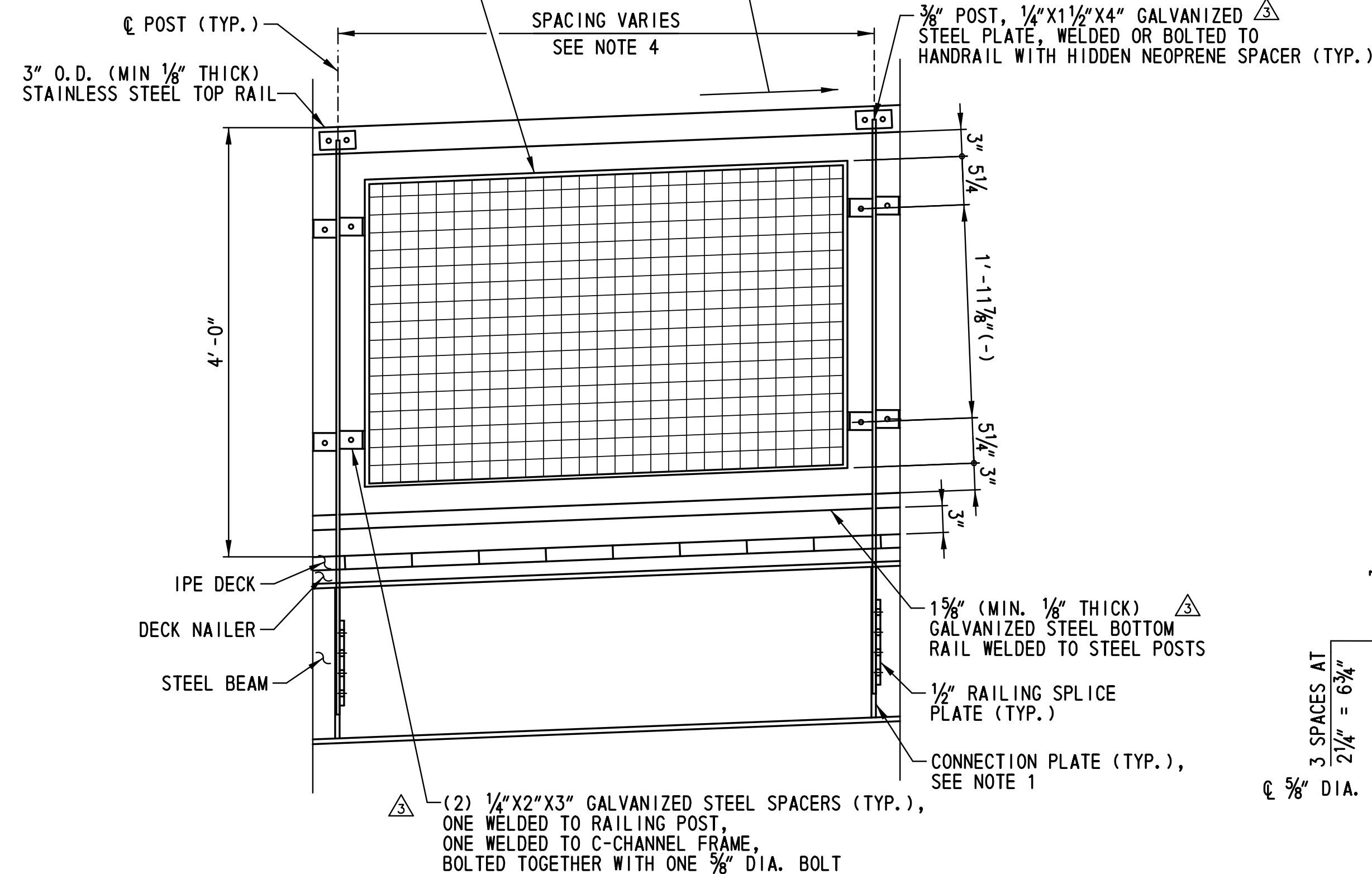
INTERIOR POST CONNECTION PLATE - PLAN
SCALE: 3" = 1' - 0"



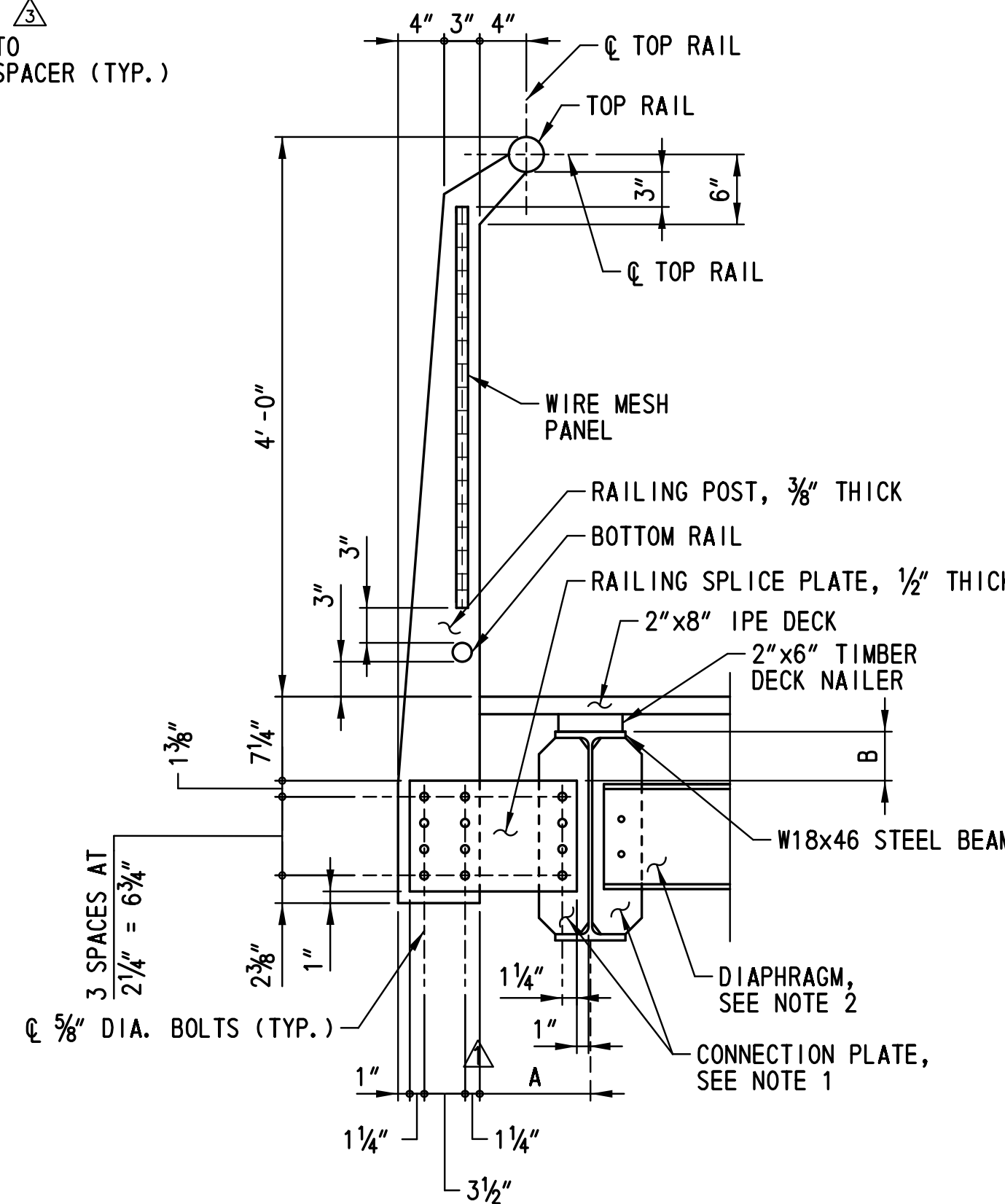
END POST CONNECTION PLATE - PLAN
SCALE: 3" = 1' - 0"

△ GALVANIZED STEEL WIRE MESH PANEL:
NO. 8 GAUGE, 1 1/2" WOVEN WIRE
MESH CINCHED AND CENTERED TO 1" X 1/2" X 1/8"
C-CHANNEL FRAME, PREFABRICATED (TYP.)

SLOPE OF TOP AND BOTTOM
RAILS, TOP AND BOTTOM
EDGES OF WIRE MESH PANEL
TO MATCH DECK, SEE NOTE 8 -



RAILING DETAIL ELEVATION
SCALE: 1" = 1' - 0"



TYPICAL RAILING SECTION
SCALE: 1" = 1' - 0"

NOTE:
TYPICAL RAILING SECTION FOR SPANS 1-14 IS SHOWN.
TYPICAL RAILING SECTION FOR SPANS 15 AND 17 IS
SIMILAR.

DIMENSION REFERENCE TABLE						
SPAN	A (MIN./MAX.) NORTH RAILING	A (MIN./MAX.) SOUTH RAILING	B (MIN./MAX.) NORTH RAILING SEE NOTE 6	B (MIN./MAX.) SOUTH RAILING SEE NOTE 6	SLOPE NORTH RAILING	SLOPE SOUTH RAILING
1-4	9 1/2" / 9 1/2"	9 1/2" / 9 1/2"	4 1/4" / 4 1/4"	4 1/4" / 4 1/4"	3.9%	3.9%
5-8	8 1/4" / 11 3/8"	7 5/8" / 10 3/4"	4 1/4" / 4 1/4"	4 1/4" / 4 1/4"	3.9%	3.9%
9-14	7 5/8" / 11 3/8"	7 3/8" / 11 3/8"	4 1/4" / 4 1/4"	4 1/4" / 4 1/4"	3.9%	3.9%
15	8 1/2" / 8 1/2"	8 1/2" / 8 1/2"	4 1/4" / 4 1/4"	4 1/4" / 4 1/4"	3.9%	3.9%
17	8 1/2" / 8 1/2"	8 1/2" / 8 1/2"	2 7/8" / 3 1/4"	3 3/8" / 3 3/8"	2.52% ±	1.41% ±

NOTES:

- TWO CONNECTION PLATES SHALL BE PROVIDED AT EACH RAILING POST CONNECTION LOCATION, INCLUDING LOCATIONS WITHOUT DIAPHRAGMS. FOR CONNECTION PLATE DETAILS, SEE DWG. NOS. BM-301 THRU BM-303.
- POST SPACING VARIES. FOR LOCATION OF RAILING CONNECTION PLATES, SEE DWG. NOS. BM-301 THRU BM-303.
- RAILING SPLICE PLATE LENGTH VARIES, SEE TABULATED VALUES.
- THE ANGLE BETWEEN THE CONNECTION PLATE AND BEAM WEB FOR END DIAPHRAGMS VARIES. FOR ADDITIONAL DETAILS, SEE DWG. NO. BM-304.
- DIMENSION "B" IS APPROXIMATE AND PROVIDED FOR INFORMATION ONLY. DIMENSION "B" SHALL BE ADJUSTED IF NECESSARY TO ENSURE THAT THE TOP OF THE TOP RAIL IS 4'-0" ABOVE THE TOP OF DECK.
- END POST LAYOUT AND DETAILS SHOWN IN "TYPICAL RAILING LAYOUT - ELEVATION", THIS SHEET, APPLIES TO ALL END POSTS EXCEPT THE END POSTS AT SPAN 17, PIER 17. FOR END POST DETAILS AT SPAN 17, SEE DETAIL A.
- SEE TABULATED VALUES FOR SLOPE OF TOP AND BOTTOM RAILS, TOP AND BOTTOM EDGES OF WIRE MESH PANEL, WHICH SHALL BE SLOPED TO MATCH BRIDGE DECK. ALL OTHER RAILING ELEMENTS SHALL BE PLACED PLUMB.
- ALL BOLTS SHALL BE 5/8" DIA. STAINLESS STEEL CONFORMING TO ASTM A193 B8 CLASS 2. ALL HOLES SHALL BE 1/8" DIA. MISCELLANEOUS FASTENERS USED FOR SPACER AND RAILING CONNECTIONS SHALL BE TYPE 304 STAINLESS STEEL.
- RAILING POST AND PLATE MATERIALS SHALL BE ASTM A36 STEEL OR APPROVED EQUAL AND GALVANIZED IN ACCORDANCE WITH ASTM 123. ALL STAINLESS STEEL TUBE SHALL BE TYPE 304 STAINLESS STEEL, CONFORMING TO ASTM A269 OR APPROVED EQUAL. WOVEN WIRE MESH INFILL PANELS SHALL CONSIST OF NO. 8 GAUGE WIRE MATERIAL MEETING THE REQUIREMENTS OF ASTM A 853 AND GALVANIZED IN ACCORDANCE WITH A 123.
- THE CONTRACTOR SHALL COORDINATE WITH THE SPAN 16 TRUSS FABRICATOR FOR DESIGN OF STEEL WIRE MESH PANELS BETWEEN TRUSS VERTICALS AND DIAGONALS INCLUDING CONNECTION OF WIRE MESH PANELS TO TRUSS MEMBERS. THE WIRE MESH PANELS BETWEEN TRUSS VERTICALS AND DIAGONALS SHALL MEET THE REQUIREMENTS OF ASTM A 853 AND BE GALVANIZED IN ACCORDANCE WITH ASTM 123. STEEL WIRE MESH PANELS SHALL BE NO. 8 GAUGE, 1 1/2" WOVEN WIRE MESH CINCHED AND CENTERED TO 1" X 1/2" X 1/8" C-CHANNEL FRAME. SEE DWG. PN-301 FOR PREFABRICATED TRUSS DESIGN NOTES.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF RAILING SYSTEM FOR APPROVAL BY THE ENGINEER.

N:\31896-002\CADD\BRIDGE\MARCH 2016 ADDENDUM SHEETS\RL301.ITG.DGN

ADDENDUMS / REVISIONS	
△	REV. DETAIL NOTE: A.D./J.N. 03/02/16
	REV. SHEET NOTES: A.D./J.N. 03/02/16

SCALE: AS NOTED

CONTRACT	BRIDGE NO.	X
T201330009	DESIGNED BY:	NAH
COUNTY	CHECKED BY:	WAG
NEW CASTLE		

RL-301
SHEET NO.
160
TOTAL SHTS.
207