THE STATE OF DELAWARE

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SPECIFICATION AND CONSTRUCTION PLANS FOR:

REHABILITATION OF BRIDGE NO. 159
NEWPORT

CONTRACT NUMBER 85-074-01
FEDERAL AID PROJECT NUMBER BHOS-327(I)

ROADWAY LENGTH ___243.88___ FEET = __0.0462__ MILES
STRUCTURE LENGTH ___215.25___ FEET = __0.0408__ MILES
TOTAL LENGTH ___459.13___ FEET = __0.0870__ MILES

As Builts

DESIGN DESIGNATION

FUNCTIONAL CLASS _Local Urban_
TYPE OF CONSTRUCTION _Rehabilitation_
A.D.T. CURRENT ___731___
A.D.T. PROJECTED ___965 (2000)___
D.H.V. PROJECTED ___145 (2000)___
DESIGN SPEED ___N/A___
% TRUCKS ___10___
DIRECTION DISTRIBUTION % ___65___

SCALES

PLAN SHEET: 1" = ___ Feet
PROFILE SHEET:
  Horizontal: 1" = ___ Feet
  Vertical: 1" = ___ Feet
DETAIL SHEET: 1" = ___ Feet

INDEX OF SHEETS

GENERAL LOCATION OF CONTRACT

LOCATION MAP
N.T.S.

BR. 1-159

QUANTITIES

SECTION NO.	REFERENCE NO.	SECTION TITLE	UNIT	PROPOSAL	SECTION NO.	REFERENCE NO.	SECTION TITLE	UNIT	PROPOSAL
210	1	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	L.S.	L.S.	705	22	P.C.C. CURB (TYPE I)	L.F.	36
	2	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (STEEL STRUCTURES)	LBS.	75,000	708	23	P.C.C. SIDEWALK, 4"	S.F.	254
303	3	CRUSHER RUN BASE COURSE	S.Y.-IN.	2,000	736	24	REMOVAL OF EXIST. P.C.C. PAVEMENT, SW, ETC.	S.Y.	254
401	4	HOT-MIX, HOT LAID BITUMINOUS CONC. PAVT (TYPE C)	TONS	130	739	25	FIELD OFFICE	L.S.	L.S.
601	5	TIMBER STRUCTURES (TREATED)	MFBM	2.78					
602		PORTLAND CEMENT CONCRETE MASONRY							
	6	SUPERSTRUCTURE, CLASS D	C.Y.	15	S.P.	29	REPAIR EXISTING BRIDGE DECK	S.Y.-IN.	60
	7	PIER, CLASS B	C.Y.	42	S.P.	30	SAW CUTTING (CONC.)	L.F.	33.5
	8	REPAIRS, CLASS A	S.Y.-IN.	10	S.P.	31	BUTT JOINT	S.Y.	70
605	9	BAR REINFORCEMENT	LBS.	4315	606	32	CLEANING AND PAINTING EXIST. STEEL STRUCTURE	L.S.	L.S.
605A	10	BAR REINFORCEMENT (EPOXY COATED)	LBS.	1971					
606	11	STEEL STRUCTURES (APPROX. 72,000 lbs.)	L.S.	L.S.					
	12	STEEL STRUCTURES (REPLACE CORRODED ST. FASTENERS)	EA.	100	S.P.	34	PAINTING OF WHITE OR YELLOW LINE, 4"	L.F.	1800
					S.P.	35	MAINTENANCE OF TRAFFIC	L.S.	L.S.
	13	STEEL STRUCTURES (REPAIR WEB STIFFENERS)	EA.	15	S.P.	36	INITIAL EXPENSE	L.S.	L.S.
	14	STEEL STRUCTURES (MISCELLANEOUS REPAIRS)	LBS.	6,000	S.P.		STEEL GRID FLOORING AND SIDEWALK GRATING		
607	15	METAL BRIDGE RAILING (ALUMINUM)	L.F.	425		26	BASCULE SPAN SIDEWALK	S.F.	1250
608	16	REMOVAL OF EXISTING MASONRY (PIER)	C.Y.	12		27	5" STEEL GRID FLOORING	S.F.	1780
	17	REMOVAL OF EXISTING MASONRY (SUPERSTRUCTURE)	C.Y.	15		28	3" CONCRETE FILLED STEEL GRID FLOORING	S.F.	620
621	18	TIMBER PILES, 12", TREATED	L.F.	1610					
624	20	CAST IN PLACE CONCRETE PILES (16" DIA.), PROTECTED	L.F.	760					
624	21	STEEL SHELL TEST PILES (16" DIA.), PROTECTED	L.F.	120					

UTILITIES:

D.P.L. ELECTRICAL
D.P.L. GAS
DIAMOND STATE TELEPHONE D.S.T.
N.C.C.D.P.W SANITARY SEWER

DIVISION   OF   HIGHWAYS

RECOMMENDED	RECOMMENDED	RECOMMENDED	RECOMMENDED	APPROVED
C. Bashi	*Chas H. Hu*	*William Skroly*	*G. B. Harwood*	*John T. Davis*
PROJECT ENGINEER	BRIDGE DESIGN ENGINEER	DESIGN ENGINEER	DEPUTY DIRECTOR OF HIGHWAYS	DIRECTOR OF HIGHWAYS
RECOMMENDED 9-13 19 85	RECOMMENDED 9-13 19 85	RECOMMENDED 9/13 19 85	RECOMMENDED 9/16 19 85	APPROVED 9/16/ 19 85

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED _____ 19 __
DIVISION ADMINISTRATOR

GENERAL NOTES
LIST OF DRAWINGS

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº
85-074-01	N.C.	BHOS-327(I)

REHABILITATION OF
BRIDGE 159, NEWPORT

GENERAL NOTES

1. **EXISTING DRAWINGS**

   -This structure was built in 1929-1930.

   -The bascule span was refloored and new wearing surface placed on the approach spans in 1948-1950.

   -The concrete slab was replaced in 1966.

   -Contract and shop drawings defining the previous construction are on file in the Department of Transportation, Dover, Delaware and are available for reference, however the Department accepts no responsibility for the completeness or accuracy of the data and information contained in these drawings. It will be the Contractor responsibility to verify this information.

2. **SPECIFICATIONS**

   Design: Standard Specifications for Highway Bridges AASHTO 1983 and interim specifications to date.

   Construction: Delaware Dept. of Highways and Transportation Standard Specification 1974 and Delaware Department of Transportation Supplemental Specification, 1980.

   LIVE LOAD: HS 20-44

3. **CONCRETE**

   Concrete Sidewalk and Slab on Approach Span shall be Class A and shall have a minimum 28 day compressive strength (f'c) of 4,500psi. All other concrete shall be Class B and shall have a minimum 28 day compressive strength (f'c) of 3000psi. Minimum cover over reinforcing bars shall be 2" except shown otherwise. All exposed edges of concrete shall be chamfered 3/4 in.

4. **REINFORCING BARS**

   Bar reinforcement shall conform to ASTM A615, Grade 60. If field splices are required, the minimum length of splice shall be 40 times the bar diameter.

5. **STEEL STRUCTURES**

   a) Unless otherwise noted all structural steel shall be ASTM A572 and painted.

   b) All welding shall be in accordance with the current Structural Welding Code of the American Welding Society and Standard Specification for Welding of Structural Steel Highway Bridges published by AASHTO.

   c) All damaged rivets (50% or greater loss of head) should be replaced by the Contractor with equal size friction - type ASTM A 325 bolts. Where a group of rivets is being replaced, one rivet at a time shall be removed and immediately replaced with a high strength bolt before the next rivet is removed. All new bolts specified in these plans are 7/8 in. A 325 with open holes 15/16 Dia. unless otherwise noted. All bolts, nuts and washers shall conform to or be compatible with ASTM A 325, and mechanically galvanized in accordance with ASTM B 354.

6. **DATUM**

   All elevations are based on the original contract elevations. It shall be the Contractor responsibility to verify the elevations before the preparation of shop drawings.

7. **EXISTING DIMENSIONS**

   Unless otherwise noted, dimensions shown for the existing structure are taken from the original contract plans. The Contractor is responsible for verifying the accuracy of this information and shall notify the department of all deviation, if any, before work begins.

8. **REPAIR SEQUENCE**

   a) A suggested repair sequence is shown throughout these plans. The Contractor may propose an alternative sequence.

   b) The Contractor shall submit for approval his proposed repair sequence before beginning work. The proposed sequence shall take into account the effects or damage on the existing structure and members not to be remaining.

   c) It is planned to detour roadway traffic away from the structure during repair work.

   d) During construction period raising the span will be necessary for the replacement of the rest pier. The Contractor shall make his own arrangements for these openings, see Special Provisions.

---

   b) The existing aluminum railing located in front of the operator's house shall be salvaged. Payment for this work shall be incidental to the contract.

   c) Payment for raising bascule span and jacking of South Approach span during reconstruction of the rest pier shall be incidental to Section 606 - Steel Structures.

   d) The existing NGS Control located on top of parapet near the operator's house (see sheet #3) shall not be disturbed during construction.

   e) All drains on the bridge deck and expansion joints shall be thoroughly cleaned. Payment to be included in various bid items.

10. **MAINTENANCE OF TRAFFIC**

   The contractor shall perform all work in a manner that will ensure the least practicable obstruction to traffic consistent with safety and shall comply with the manual entitled, "Delaware Traffic Controls for Street and Highway Construction and Maintenance Operations" (as revised January 1984).

   e) Suggested Repair Sequence:

   1) Detour traffic.

   2) Follow steps indicated in Bascule Span Drawings to remove and replace members of the superstructure.

   3) Remove and place new piles of the north fender system after removal of all stringers from the span 4.

   4) Remove concrete sidewalk and slab indicated in replacement of concrete floor South Approach Slab sheet #21.

   5) Open bascule span.

   6) Follow steps indicated in the Rest Pier Drawing (Sheet #22).

   7) Remove hydraulic jacks and reset main girder.

   8) Follow steps indicated in floorbeam F/0 Drawings (Sheet #18) to remove members of the superstructure.

   9) Remove temporary floorbeam support from the South Approach.

   10) Remove and place new piles of the south fender system.

   11) Close bascule span.

   12) Place new concrete sidewalk and slab at the South Approach Slab.

   13) Remove all railing (concrete and steel) and replace with new aluminum railing. Replace pedestrian sidewalk on bascule span

   14) Concrete sidewalks and concrete deck repair.

   15) Reopen to highway traffic.

   16) Complete finish painting and clean up site.

9. **MISCELLANEOUS**
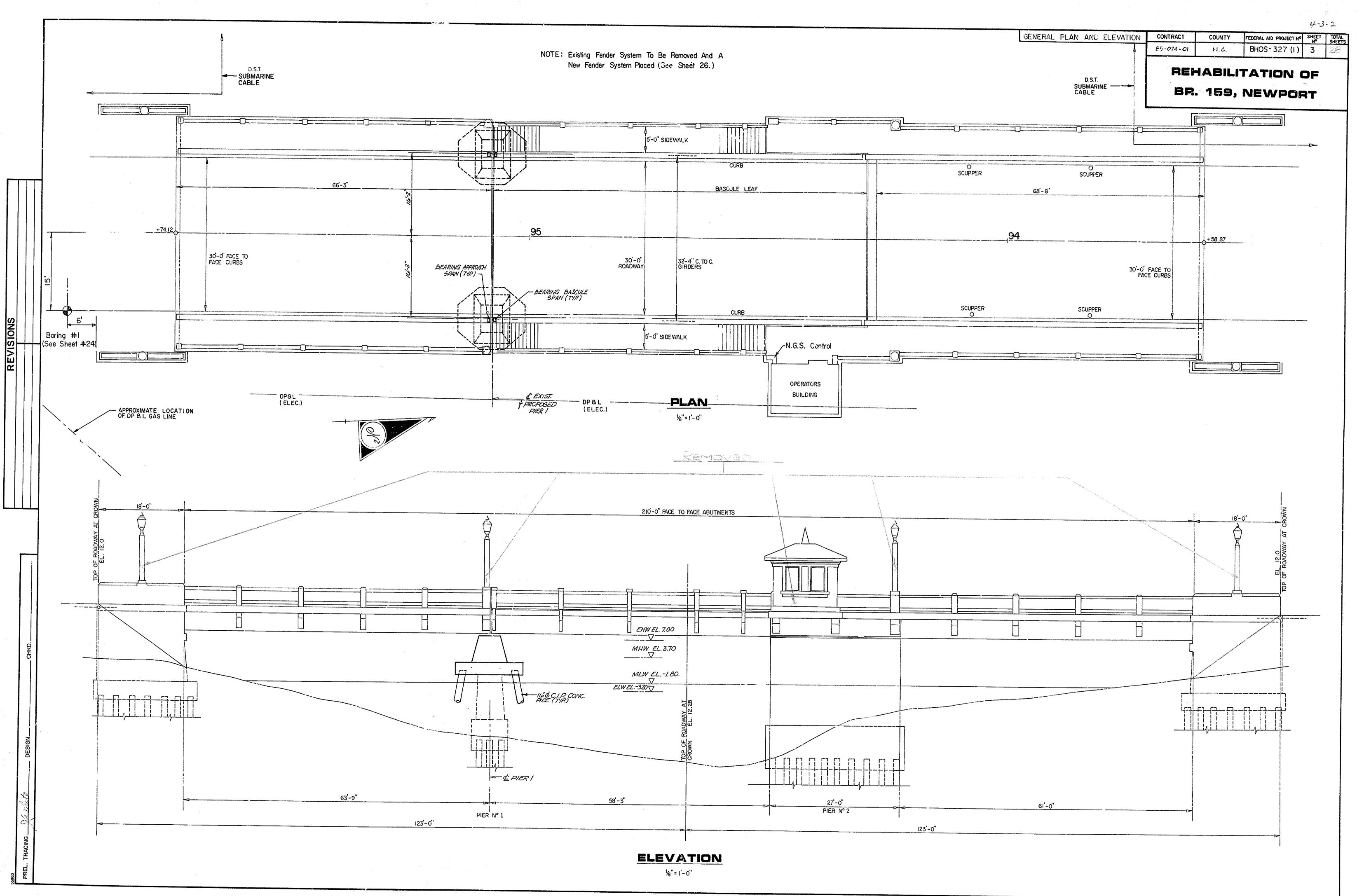
   a) The existing operator's house shall be sealed shut by nailing plywood sheets to all openings. Payment for this will be incidental to the contract.

REVISIONS

CH'KD

DESIGN

PREL. TRACING

GENERAL PLAN AND ELEVATION

CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
84-074-01	N.C.	BHOS-327 (1)	3	31

4-3-2

REHABILITATION OF
BR. 159, NEWPORT

NOTE: Existing Fender System To Be Removed And A
New Fender System Placed (See Sheet 26.)

D.S.T.
SUBMARINE
CABLE

D.S.T.
SUBMARINE
CABLE

5'-0" SIDEWALK

CURB

SCUPPER   SCUPPER

BASCULE LEAF

66'-3"   68'-8"

95   94

+74.12   +58.87

30'-0" FACE TO
FACE CURBS

30'-0"
ROADWAY

32'-4" C. TO C.
GIRDERS

30'-0" FACE TO
FACE CURBS

15'

BEARING APPROACH
SPAN (TYP.)

BEARING BASCULE
SPAN (TYP.)

CURB

SCUPPER   SCUPPER

6'

Boring #1
(See Sheet #24)

5'-0" SIDEWALK

N.G.S. Control

DP&L
(ELEC.)

OPERATORS
BUILDING

APPROXIMATE LOCATION
OF DP & L GAS LINE

℄ EXIST.
℄ PROPOSED
PIER 1

DP & L
(ELEC.)

PLAN
1/8" = 1'-0"

18'-0"   18'-0"

210'-0" FACE TO FACE ABUTMENTS

TOP OF ROADWAY AT CROWN
EL. 12.0

TOP OF ROADWAY AT CROWN
EL. 12.0

EHW EL. 7.00

MHW EL. 3.70

MLW EL. -1.80

ELW EL. -3.20

16"Ø C.I.P. CONC.
PILE (TYP.)

TOP OF ROADWAY AT
CROWN EL. 12.28

℄ PIER 1

63'-9"   58'-3"

PIER N° 1

27'-0"
PIER N° 2

61'-0"

123'-0"   123'-0"

ELEVATION
1/8" = 1'-0"

D   C   B   A

REHABILITATION OF BRIDGE 159, NEWPORT

PLAN
¼" = 1'-0"

FLOORBEAM F/1 BRACKET B/1
FLOORBEAM F/2 BRACKET B/2
FLOORBEAM F/3 BRACKET B/3
FLOORBEAM F/4 BRACKET B/4
BRACKET FB/5 AND B/5
FLOORBEAM F/5

SPAN 1   SPAN 2   SPAN 3   SPAN 4   SPAN 5

MAIN GIRDER

BASIN CORNER

5" OPEN FLOOR

MAIN GIRDER

WOOD SIDEWALK

3" CONC. FILLED FLOOR

NEWPORT

LEGEND

F/-	FLOORBEAM	F/-
B/-	SIDEWALK BRACKET	B/-
C/-	CONNECTING PLATE	C/-
S/-	STRINGER	S/-
L/-	BRACING	L/-
FB/-	BRACKET	FB/-

BASCULE SPAN REPAIRS

SPANS 1 THRU 4

STEP 1 — REMOVE 5" OPEN BRIDGE FLOOR.
[2] STEP 2 — REMOVE ALL STRINGERS WITH 4" I FILLS (14 TOTAL).
STEP 3 — REMOVE THE TWO BRACINGS AND THE THREE CONNECTING PLATES.
[1] STEP 4 — REMOVE WOOD SIDEWALK FLOOR.
[2][11] *STEP 5 — FOLLOW STEPS INDICATED ON FLOORBEAM PLANS, REMOVE AND REPLACE THE SOUTH MOST FLOORBEAM OF THE SPAN.
[2][11] *STEP 5A — THIS STEP APPLIES ONLY TO SPAN 4. FOLLOW STEPS INDICATED ON THE BRACKET B/5 PLANS TO REMOVE AND REPLACE THIS BRACKET.

FOLLOW STEPS BELOW AFTER 2 ADJACENT FLOORBEAMS ARE PLACED.

[11] *STEP 6 — PLACE CONNECTING PLATES ON MAIN GIRDER AND PLACE BRACINGS.
STEP 7 — PLACE STRINGERS.
[27] STEP 8 — PLACE NEW 5" OPEN BRIDGE FLOOR.

SPAN 5

FOLLOW STEPS INDICATED ON FLOORBEAM F/5.

[32] *CLEANING AND APPLICATION OF A PRIMER ON EXISTING STRUCTURE SHALL BE DONE BEFORE ANY NEW CONNECTION IS MADE.

EXISTING LONGITUDINAL SECTION
¼" = 1'-0"

75'-7 ½"
64'-4 ½"
6'-10 ½"
64'-4 ½"

5 PANELS AT 14'-1"= 70'-5"(EXIST.) 1 PANEL AT 14'-⅞", 3 PANELS AT 14'-1", 1 PANEL AT 14'-1⅛" (PROPOSED)

56'-11 ½" OUT TO OUT (5" OPEN FLOOR)(EXIST) 57'-4" (PROPOSED)

C 10 x 20 # x 1'-0" SPC EACH STRINGER [2]

S 4 x 7.7 # x 13'-0" EACH STRINGER [2]

C 10 x 20# x 0'-6" SPC EACH STRINGER [2]

5" OPEN FLOOR (S BEAMS TRANSVERSE TO TRAFFIC) [2]

[2] S 6 x 12.5

S 4 x 77 # x 12'-9" EACH STRINGER [2]

BALANCE BLOCKS

C'W'T POCKET

6'-3"   7'-10"   5'-2 ½"
20'-11 ½" OUT TO OUT (3" CONC.-FILLED FLOOR) EXISTING

REHABILITATION OF BRIDGE 159, NEWPORT

LEGEND
FLOORBEAM-SIDEWALK BRACKET CONNECTION

2 EXISTING MEMBER TO BE REMOVED

DESIGNATION	NO.	DESCRIPTION
P/1e	2x1	℞ 4 ½"x⅜"x3'-2 ½"
A/1e	2x4	L 5"x 3 ½"x⅜"x1'-1 ¼"
R/1Ae	2x1	℞ 5 ½"x ⅜"x2'-7 ¼"
R/1Be	2x1	℞ 5 ½"x ⅜"x5 ¼"
E/1e	2x2	L 6"x ½"x6'-5 ½"
F/1e	1	FLOORBEAM

II PROPOSED MEMBER TO BE PLACED

DESIGNATION	NO.	DESCRIPTION
P/1p	2x1	℞ 4 ½"x½"x3'-2 ½"
A/1p	2x2	L 5"x 3 ½"x... x1'-1 ¼"
R/1Ap	2x1	℞ 5 ½"x⅝"x2'-7 ¼"
R/1Bp	2x1	℞ 5 ½"x⅝"x7"
E/1p	2x2	L 6"x6"x ½"x6'-5 ½"
F/1p	1	FLOORBEAM W 36x135x31'-11 ½"

REPAIRS
FLOORBEAM-SIDEWALK BRACKET CONNECTION

2 *STEP 1 REMOVE MEMBERS A/1e TO RELEASE P/1e.
*STEP 2 REMOVE P/1e THROUGH SLOT IN GIRDER.
*STEP 3 REMOVE ONE E/1e FROM EACH MAIN GIRDER. REMOVE FILLS R/1Ae AND R/1Be. REMOVE FLOORBEAM F/1e.
II STEP 4 REPLACE EACH E/1e REMOVED WITH E/1p IN EACH MAIN GIRDER.
2 *STEP 5 REMOVE REMAINING E/1e IN EACH MAIN GIRDER.
II STEP 6 PLACE FILLS R/1Ap AND R/1Bp. PLACE FLOORBEAM F/1p AND PLACE E/1p.
II STEP 7 PLACE MEMBERS P/1p AND A/1e.

32 *CLEANING AND APPLICATION OF A PRIMER ON EXISTING STRUCTURE SHALL BE DONE BEFORE ANY CONNECTION IS MADE.

ELEVATION
NTS

P/1p DETAIL II
1 ½"=1'-0"

A/1p DETAIL II
3"=1'-0"

ELEVATION

TOP

SECTION A-A
NTS

SECTION B-B II
NTS

SEE SIDEWALK DETAILS
WOOD SIDEWALK (EXIST.) 1
2-C10x20
C 9x15
EXISTING S4x7.7 FILL 2
5" OPEN FLOOR 2 27
EXISTING C10x20 2
℞ 9"x⅜"x7" (TYP.)
W 12x26 STRINGERS (TYP.)
SEE CENTERING DEVICE (SHEET #14)
FLOORBEAM W 36x135x31'-11 ½" (TYP.)
STIFFENER ℞ 6"x⅜"x2'-10" (TYP.)
7 STRINGERS AT 2'-3"=13'-6"
31'-0" OUT TO OUT (5" OPEN FLOOR)
30'-0" CURB TO CURB
SYMMETRICAL ABOUT ℄
℄ MAIN GIRDER
℄ S/2L (STRINGER)
EXISTING STRINGER (TYP.)
TYP. 5/16
5/16

½" TH. PLATE

2-C10x20
℞ 5"x⅜"x3'-5 ½"
TYP. 5/16

REHABILITATION OF BRIDGE 159, NEWPORT

LEGEND
FLOORBEAM-SIDEWALK BRACKET CONNECTION

[2] EXISTING MEMBER TO BE REMOVED

DESIGNATION		NO.	DESCRIPTION
P/2Ae	(P/2A)	2×2	℞ 4"×⅝"×2'-5"
P/2Be	(P/2B)	2×1	℞ 11"×⅝"×1'-9"
F/2e	(F/2)	1	FLOORBEAM

[11] PROPOSED MEMBER TO BE PLACED

DESIGNATION		NO.	DESCRIPTION
P/2Ap	(P/2A)	2×2	℞ 4"×½"×2'-5½"
P/2Cp	(P/2C)	2×2	℞ 7"×1⅝"×8"
F/2p	(F/2)	1	FLOORBEAM W 36×135×31'-11½"

REPAIRS
FLOORBEAM-SIDEWALK BRACKET CONNECTION

- *STEP 1 — REMOVE MEMBER P/2Be TO RELEASE P/2Ae.
- *STEP 2 — REMOVE MEMBERS P/2Ae THROUGH SLOTS IN MAIN GIRDER.
- *STEP 3 — REMOVE FLOORBEAM F/2e.
- STEP 4 — DRILL ¹³/₁₆" ⌀ HOLE IN F/2e AS SHOWN.
- STEP 5 — PLACE FLOORBEAM F/2p.
- STEP 6 — PLACE P/2Ap THROUGH SLOT IN MAIN GIRDER AND CONNECT TO SIDEWALK BRACKET AND FLOORBEAM.

[32] *CLEANING AND APPLICATION OF A PRIMER ON EXISTING STRUCTURE SHALL BE DONE BEFORE ANY CONNECTION IS MADE

FLOORBEAM-SIDEWALK BRACKET [11] CONNECTION DETAIL
1½" = 1'-0"

FLOORBEAM END DETAIL [11]
NTS

** TYPICAL DETAIL FOR ALL PROPOSED FLOORBEAMS EXCEPT F/1p.

DETAIL B
NTS

ELEVATION
NTS

SEE SIDEWALK DETAILS

ℂ MAIN GIRDER

ℂ S/2L AND S/2R

WOOD SIDEWALK (EXIST.) [1]

SEE STEP 4

7 STRINGERS AT 2'-3" = 13'-6"

31'-0" OUT TO OUT (5" OPEN FLOOR)

30'-0" CURB TO CURB

SYMMETRICAL   ABOUT ℂ

℞ 9"×⅜"×7" (TYP) [11]

EXISTING S4×7.7 FILL

5" OPEN FLOOR [2][27]

EXISTING C10×20 [2]

EXISTING STRINGER (TYP)

C 9×15

2-C10×20

2-℞ 5"×⅜"×1'-3½" SEE DETAIL B

W 36×135×31'-11½"

SECTION A-A
NTS

SEE FLOORBEAM-SIDEWALK BRACKET CONNECTION DETAIL

SEE REPAIRS, STEP 4

ℂ MAIN GIRDER

SPAN 5
PLAN & DETAILS

REVISIONS

CHKD.
DESIGN
PREL. TRACING

SPAN 5 - PLAN
SCALE ~ 1/8" = 1'-0

12'-9 3/8
8'-9
8'-3 3/16

FACE OF COUNTERWEIGHT
₵ - MAIN GIRDER
PL - 2'-8 x 2'-0 x 3/8
DETAIL "A"
1/2" NEOPRENE BEARING PAD (TYP)
DETAIL "B"
1'-6 1/2
6 SPACES @ 2'-3 = 13'-6
4-8x4x1x31'-0
4-6x6x3/8
4-4x4x1/2
PL-10x8x3/8 (TYP)
₵ ~ W16x26 STRINGERS
PL-1'-11 3/4 x 4'-11 x 3/8
4-7x4x3/8x6 (TYP)
SYMMETRICAL ABOUT ₵ OF BRIDGE
₵ ~ NEW FLOORBEAM 5
DETAIL "D"
→ C
→ C

DETAIL "A"
SCALE ~ 1/8" = 1

MAIN GIRDER WEB (5/8 THK)
6 SPACES @ 2 1/4 = 1'-6
5 1/2
1 1/2
7/16
2 1/2
8 7/16
1
3
3 1/4
3 3/16
1 3/54
3
1 1/2
4 SPA @ 2-8 = 1'
1 1/2
EXISTING ₵ TO BE REMOVED PLACE NEW L-8x6x1/2 x 1'-9
1 3/8
W16x26 (TOP FLANGE REMOVED FOR CLARITY)
1 3/8
PL-2'-2 1/2 x 6 1/2 x 3/8
NEW FLOORBEAM 5 WEB (5/8 THK)
PL-2'-8 x 2'-0 x 3/8
FILLER PL-2'-2 1/2 x 5 3/8 x 7/16
L-4x4x1/2
1 1/2
1
1 3/4
3 3/4

DETAIL "B"
SCALE ~ 1/8" = 1

W16x26 (TOP FLANGE REMOVED FOR CLARITY)
2 1/2
1 3/8
1 3/8
PL-10x8x3/8
L-4x4x1/2

SECTION "C-C"
SCALE ~ 1/8" = 1

MAIN GIRDER WEB (5/8 THK)
W16x26
PL-5 1/2 x 3/8 W/ SLOT
REMOVE EXISTING B10x28.5 FLUSH WITH COUNTERWEIGHT
1/2" NEOPRENE BEARING PAD
PL-5 1/2 x 6 x 3/8
6
3
38- 3/4 Ø ADHESIVE ANCHOR BOLTS @ 10" SPACING
4-6x6x3/8

DETAIL "D"
SCALE ~ 1/8" = 1

FACE OF COUNTERWEIGHT
4-6x6x3/8
2 1/2
4-4x4x1/2
1 1/2
1/2
1 3/8
W16x26 (TOP FLANGE REMOVED FOR CLARITY)
6 SPACES @ 1 3/4 = 10 1/2
4 SPA @ 3 1/2 = 1'-0
2 1/2
1 3/54
2'-5 1/2
PL-1'-11 3/4 x 4'-11 x 3/8
₵ OF BRIDGE (SYM. ABOUT ₵)
3/4
1/2
2 3/4
4
1'-11 3/4
1 3/8

NEW MATERIALS LIST

ITEM	QUANTITY	DESCRIPTION
W 16 x 26 x 20'-11-3/8"	14	STRINGERS
L 6 x 6 x 3/8 x 31'-4"	1	CONNECTION TO COUNTERWEIGHT
L 4 x 4 x 1/2 x 18'-3-1/2"	4	CROSS BRACING
✳ L 8 x 6 x 1/2 x 1'-9"	2	MAIN GIRDER TO GUSSET PL. CONNECTION
L 8 x 4 x 1 x 51'-0"	1	CLOSURE ANGLE
PL. 1/2 x 5 x 32'-2-1/4"	1	CLOSURE PL.
PL. 3/8 x 5-1/2 x 6	12	FILLER PL. (STRINGER)
PL. 3/8 x 5-1/2 x 9'-9-11/16"	14	FLANGE PL.
PL. 3/8 x 10 x 8	4	FILLER PL. (CROSS BRACING)
PL. 5/8 x 2'-0 x 2'-8"	2	GUSSET PL.
PL. 7/16 x 2'-2-1/2" x 5-3/8"	2	FILLER PL. (GUSSET)
PL. 3/8 x 1'-11-3/4" x 4'-11"	1	GUSSET PL.
3/4" Ø ADHESIVE ANCHOR BOLTS	94	
1/2" x 6" x 6" NEOPRENE BEARING PAD	28	

✳ ~ USE ⓗ SEE SHEET #9

NOTES:
1. NEOPRENE BEARING PAD SHALL BE BONDED TO THE TOP OF CONCRETE WITH A SUITABLE EPOXY BONDING COMPOUND.
2. THE ELASTOMER USED FOR THE BEARING PAD SHALL HAVE A DUROMETER HARDNESS OF 50 TO 60.

TYPICAL STRINGER ELEVATION
SCALE: $\frac{1}{2}$" = 1'-0"

- ℄ FLOORBEAM 5
- FACE OF COUNTERWEIGHT
- 3" CONCRETE FILLED STEEL GRID FLOORING
- 12'-9⅛"
- 8'-3 3/16"
- ℄ BEARING
- ℄ BEARING
- 7'-5"
- 5" OPEN GRID FLOOR
- 3" CONCRETE FILLED GRID FLOOR
- PROPOSED W16 × 26
- W36 × 135
- DETAIL A
- DETAIL B
- DETAIL C
- 8'-9"
- COUNTERWEIGHT

SECTION A-A
SCALE: $1\frac{1}{2}$" = 1'-0"

- ℄ STRINGER
- 3" CONCRETE FILLED STEEL GRID FLOORING
- W16 × 26
- 15¾"
- TYP.
- 3/16
- ℄ ⅜" × 5½" WITH ½" × 1'-6" SLOT TO FIT SNUGGLY TO WEB OF W16 × 26
- ⅜" × 5½" × 6" FILLER ℄
- ⅜"
- L 6×6×⅜"×31'-4"
- 1⅜" 1⅜"
- 3' 3"

SECTION B-B
SCALE: $1\frac{1}{2}$" = 1'-0"

- ℄ STRINGER
- 3" CONCRETE FILLED STEEL GRID FLOORING
- CUT W16 × 26
- ⅜" × 5½" FLANGE ℄
- 7⅜"
- 3/16
- C
- C
- ⅜"
- ½" NEOPRENE BEARING PAD
- ¾" ∅ ADHESIVE ANCHOR BOLT
- 1⅜" 1⅜"
- 3" 3"

SECTION C-C
SCALE: $1\frac{1}{2}$" = 1'-0"

- 1¼" ×1 3/16" SLOTTED HOLE (FLANGE ℄ ONLY)
- 3"
- 6"
- 2¾"
- 6"
- NEOPRENE BEARING PAD

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

- 6 × 3½ × 1× 31'-11/2"
- ℄ FLOORBEAM 5
- ⅛"
- 3½"
- 1"
- 5/16
- 5"
- ℄ ½" × 5" × 32'-2¼"
- 3"
- 1/4"
- ½"
- ½"
- 5/16
- W16 × 26
- 1¾"
- 3"
- 2~ L 7 × 4 ×⅜ × 6"
- W36 × 135
- 2⅝"
- 2½"

DETAIL B
SCALE: 1" = 1'-0"

- A
- 3" CONCRETE FILLED STEEL GRID FLOORING
- W16 × 26
- ½" 6"
- ½"
- 1'-6"
- ℄ ⅜" × 5½" × 6"
- L 6 × 6 ×⅜× 31'-4"
- 3" 6"
- A

DETAIL C
SCALE: 1" = 1'-0"

- B
- 1"
- 5/16
- ℄ BEARING
- 1" ℄
- 3/16
- CUT W16 × 26
- L 8 × 4 × 1× 31'-0"
- 10"
- B

FLOORBEAMS F/3 AND F/4 BRACKETS B/3 AND B/4 DETAILS AND REPAIRS	CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
	85-074-01	N C	BHOS - 327 (1)	7	

REHABILITATION OF
BRIDGE 159, NEWPORT

LEGEND
FLOORBEAM-SIDEWALK BRACKET CONNECTION

[2] EXISTING MEMBER TO BE REMOVED

DESIGNATION	NO.	DESCRIPTION
P/3Ae (P/3A)	2 x 2	℞ 4"x⅜"x2'-5"
P/3Be (P/3B)	2 x 1	℞ 11"x⅝"x1'-9"
F/3e (F/4)	1	FLOORBEAM

[11] PROPOSED MEMBER TO BE PLACED

DESIGNATION	NO.	DESCRIPTION
P/3Ap (P/3A)	2 x 2	℞ 4"x½"x2'-5½"
P/3Cp (P/3C)	2 x 2	℞ 7"x1 15⁄16"x8"
F/3p (F/4)	1	FLOORBEAM W 36x135x31'-11½"

REPAIRS
FLOORBEAM-SIDEWALK BRACKET CONNECTION

[2] STEP 1 — REMOVE MEMBER P/3Be TO RELEASE P/3Ae.
    STEP 2 — REMOVE MEMBERS P/3Ae THROUGH SLOTS IN MAIN GIRDER.
    STEP 3 — REMOVE FLOORBEAM F/3e.
[11] STEP 4 — DRILL ⁹⁄16" ⌀ HOLE IN E/3e AS SHOWN.
    STEP 5 — PLACE FLOORBEAM F/3p
    STEP 6 — PLACE P/3Ap THROUGH SLOT IN MAIN GIRDER AND CONNECT TO SIDEWALK BRACKET AND FLOORBEAM.

[32] *CLEANING AND APPLICATION OF A PRIMER ON EXISTING STRUCTURE SHALL BE DONE BEFORE ANY CONNECTION IS MADE
**APPLIES ALSO TO FLOORBEAM F/4 AND BRACKET B/4.

FLOORBEAM-SIDEWALK BRACKET [11]
CONNECTION DETAIL
1½"=1'-0"

DETAIL B [11]
NTS

ELEVATION
NTS

SECTION A-A
NTS

DETAIL C [11]
NTS

REHABILITATION OF BRIDGE 159, NEWPORT

LEGEND
BRACKET-SIDEWALK BRACKET CONNECTION

EXISTING MEMBER TO BE REMOVED [2]

DESIGNATION	NO.	DESCRIPTION
PB/5Ae	2 x 1	PL 7½"x⁹⁄₁₆"x 2'-½"
EB/5e	2 x 2	L 4"x3½"x2'-9½"
FB/5e	2 x 1	BRACKET

PROPOSED MEMBER TO BE PLACED [11]

DESIGNATION	NO.	DESCRIPTION
PB/5Ap	2 x 1	PL 7½"x1"x2'-½"
EB/5p	2 x 2	L 4"x4"x 2' 8"
FB/5p	2 x 1	BRACKET W 36x135
PB/5Bp	2 x 2	PL 3¼"x1⁹⁄₁₆"x7"
H/8p	2 x 2	L 4"x4"x⁵⁄₁₆"x9"

REPAIRS
BRACKET - SIDEWALK BRACKET CONNECTION

*STEP 1   REMOVE MEMBER PB/5Ae THROUGH SLOT IN GIRDER. [2]
*STEP 2   REMOVE ONE EB/5e FROM EACH MAIN GIRDER. [2]
STEP 3   REPLACE EACH EB/5e REMOVED WITH EB/5p IN EACH MAIN GIRDER. [11]
*STEP 4   REMOVE REMAINING EB/5e IN EACH MAIN GIRDER. [2]
STEP 5   PLACE BRACKET FB/5p. [11]
STEP 6   PLACE MEMBERS PB/5Ap AND PB/5Bp. [11]

*CLEANING AND APPLICATION OF A PRIMER ON EXISTING STRUCTURE SHALL BE DONE BEFORE ANY CONNECTION IS MADE. [32]

ELEVATION
NTS

SIDEWALK DETAILS
NTS

DETAIL B [11]
1"=1'-0"

SECTION A-A
NTS

SECTION C-C
NTS

RAILING POST CAP [15]
1½"=1'-0"

PB/5Ap DETAIL
NTS

FLOORBEAM F/5
DETAILS AND REPAIRS

CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
85-074-01	N.C.	BHOS-327(1)	9	

REHABILITATION OF BRIDGE 159, NEWPORT

LEGEND
SPAN 5

2 EXISTING MEMBER TO BE REMOVED

DESIGNATION	NO.	DESCRIPTION
F/5e	1	FLOORBEAM
SW/1e	2×1	SIDEWALK PLATE
ST/1e	2	S6×12.5×21'-0"

PROPOSED MEMBER TO BE PLACED

DESIGNATION	NO.	DESCRIPTION
F/5p	1	W36×135
SW/1p	2×1	CHK ℞ 30×5/16"×5'-6"
H/2p	1	L8×4×1×32-1/4"
ST/1p	2	S6×12.5×19'-10 1/2"

REPAIRS
SPAN 5

- STEP 1 REMOVE 3" CONCRETE-FILLED BRIDGE FLOOR AND C9×15 CURB.
- STEP 2 CUT 7-S6×12.5 AT A DISTANCE OF 10" FROM F/5p ℄ AND REMOVE (SEE SECTION A-A).
- *STEP 3 OPEN 15/16"ø HOLES ON MAIN GIRDER FOR 7/8"ø BOLTS TO ATTACH H/1p AND H/2p.
- *STEP 4 OPEN 2-15/16"ø HOLES FOR 7/8"ø BOLTS ON TOP OF EXPOSED STRINGERS TO ATTACH H/2p.
- STEP 5 PLACE H/2p ON TOP OF STRINGERS.
- STEP 6 REMOVE ANGLES THAT CONNECT STRINGERS TO FLOORBEAM F/5e.
- STEP 7 DISCONNECT BRACINGS AND CORRESPONDING MOUNTING PLATES FROM FLOORBEAM F/5e.
- *STEP 8 REMOVE FLOORBEAM F/5e.
- STEP 9 OPEN 15/16"ø HOLE IN E/5e AS SHOWN.
- STEP 10 PLACE FLOORBEAM F/5p.
- STEP 11 PLACE PROPOSED 5" OPEN AND 3" CONCRETE-FILLED BRIDGE FLOORS.

32 *CLEANING AND APPLICATION OF A PRIMER ON EXISTING STRUCTURE SHALL BE DONE BEFORE ANY CONNECTION IS MADE.

ELEVATION
NTS

DETAIL C 11
NTS

H/2p DETAIL
NTS

SECTION B-B
1/2" = 1'-0"

4 REVISED - SEE SHEET 9B

SECTION A-A
NTS

BASCULE SPAN MAIN GIRDER DETAILS AND REPAIRS AND SIDEWALK SUPPORT (1)

CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
85-Q74-01	N.C.	BROS-327(1)	10	

REHABILITATION OF BR. 159 , NEWPORT

NOTE: Cleaning and application of a primer shall be done before any connection is made. 32

Sidewalk Support

No.		Members to be placed 11
2 X 1	SA 1	L 3½ x 3½ x ⅜ x 4'-2"
2 X 6	SA 2	L 3½ x 3½ x ⅜ x 4'-3½"
2 X 1	SA 3	L 3½ x 3½ x ⅜ x 4'-3½"
2 X 1	SF 3	℄ 3½ x ⅜ x 3'-5¼"
2 X 1	SA 4	L 3½ x3½ x ⅜ x 4'-4½"
2 X 1	SF 4	℄ 3½ x ⅜ x 3'-9¾"
2 X 3	SA 5	L 3½ x 3½ x ⅜ x 3'-3½"
2 X 1	SA 6	L 3½ x 3½ x ⅜ x 1'-4½"

Connection Plate Support
By Floorbeam F 2 Location

No.		Members to be placed 11
2 X 1	MA 2A	L 4 x 4 x ⅜ x 1'-3¼"
2 X 1	MA 2B	L 4 x 4 x ⅜ x 1'-3½"
2 X 1	MP 2A	℄ 6 x ⅜ x 1'-3¼"
2 X 1	MP 2B	℄ 6 x ⅜ x 1'-3½"

No.		Members to be removed 2
2 X 1	MA 2A	L 4 x 4 x ⅜ x 1'-3¼"
2 X 1	MA 2B	L 4 x 4 x ⅜ x 1'-3½"

Connection Plate Support
By Floorbeam F 3 Location

No.		Members to be placed 11
2 X 1	MA 3	L 4 x 4 x ⅜ x 1'-4¾"
2 X 1	MP 3	℄ 6 x ⅜ x 1'-4¾"

No.		Members to be removed 2
2 X 1	MA 3	L 4 x 4 x ⅜ x 1'-4¾"

BASCULE GIRDER DETAIL
¾" = 1'-0"

BEARING

No.	Members To Be Removed 2
2 x 1	sole plate 13" x ¾ x 1'-2"

	Members To Be Placed
2 x 1	(see bearing details)

SECTION A-A

SECTION B-B

**BASCULE SPAN MAIN GIRDER DETAILS AND
REPAIRS AND SIDEWALK SUPPORT (2)**

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
85-074-01	N.C.	BHOS-327 (I)	11	28

REHAB. OF BR. 159
NEWPORT

SECTION F-F

Stringers Supporting ⌐ At Span 5

No.		Members to be placed	11
2 x I	H	L 8 x 8 x½" x 8"	
2 x I	HP	⌐ 8 x½" x 8"	

BASCULE GIRDER DETAIL
¾" = 1'-0"

SECTION C-C

SECTION D-D

Connecting Plate Supports
By Floorbeam F Location
4

No.		Members to be removed	2
2 x I	MA 4	L 4 x 4 x⅜ x 1'-2¾"	
		Members to be placed	11
2 x I	MA 4	L 4 x 4 x⅜ x 1'-2¾"	
2 x I	MP 4	⌐ 6 x⅜ x 1'-2¾"	

SECTION Z-Z 4

MAIN GIRDER

8 x 6 x½ x 1'-9"

8 @ 2¼" = 1'-6"

REMOVE EXISTING ⌐ AND PLACE
NEW ⌐ 8 x 6 x½ x 1'-9"

SPAN 5 14'-1" (14'-1½" Proposed)

14'-1" c.c. (14'-1" Proposed) SPAN 4

REHAB. OF BR. 159
NEWPORT

BASCULE SPAN STRINGERS AND CONNECTING PLATES

Main Girder

Detail Of Connecting Plate ⑤
scale : ¾" = 1'-0"

1-Pl. 25½"x ⅜"x 2'-8" ⑤
Main Girder
Existing L's

Stringers

Rotate around for
Bottom Flange

W12 x 26

Typical Stringer

Rotate 180° around this axis for ⑤ ⑤ ⑤ ⑤
Bottom Flange - Stringer

W12 x 26

1-Pl. 17"x ⅜"x 1'-8½" ⑤
1-Pl. 15"x ⅜"x 3'-3½" ⑤
Rotate 180° around this axis for bracing ⑤

Detail Of Bracing ⑤
scale : ¾" = 1'-0"

Stringer ⑤

REQUIRED LIST (NEW MEMBERS) Ⅱ

No.	Description	Designation	Size
4	Connecting Plates	⑤	Pl-15"x ⅜"x 3'-3½"
8	Connecting Plates	⑤	Pl-17"x ⅜"x 1'-8½"
2	Connecting Plates	⑤	Pl-25½"x ⅜"x 2'-8"
4	Bracings	⑤	L3½"x 3½"x ⅜"x 19'-5¾"
4	Bracings	⑤	L3½"x 3½"x ⅜"x 19'-5¾"
22	Stringers	⑤	W12 x 26 x 14'-0"
3	Stringers	⑤	W12 x 26 x 14'-0"
3	Stringers	⑤	W12 x 26 x 14'-0"
4	Stringers	⑤	W12 x 26 x 14'-0"
4	Stringers	⑤	W12 x 26 x 14'-0"
4	Stringers	⑤	W12 x 26 x 14'-0"
4	Stringers	⑤	W12 x 26 x 14'-0"
4	Stringers	⑤	W12 x 26 x 14'-0"
4	Stringers	⑤	W12 x 26 x 14'-0"
1	Stringers	⑤	W12 x 26 x 9'-7⅜"
1	Stringers	⑤	W12 x 26 x 9'-7⅜"
2	Stringers	⑤	W12 x 26 x 4'-3⅜"
2	Stringers	⑤	W12 x 26 x 14'-0"
16	Plates On Bracings (under stringer)	⑩	Pl-3½"x ¾"x 1'-3"

Note: Holes are 15/16" ⌀ for ⅞" ⌀ ASTM, A325 bolts.

BASCULE SPAN FLOORBEAM AND STRINGER CONNECTION
FLOORBEAMS F/1, F/2, F/3, F/4, AND F/5 DETAILS

CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
85-074-01	N.C.	BHOS-327 (1)	13	28

REHAB. OF BR. 159
NEWPORT

REQUIRED LIST (NEW MEMBERS) [1]

No.	Description	Designation	Size
24	connecting angles	H/3	7 x 4 x 3/8 x 6"
1	floorbeam	F/1	36 x 135 x 31'-11½"
1	floorbeam	F/2	36 x 135 x 31'-11½"
1	floorbeam	F/3	36 x 135 x 31'-11½"
1	floorbeam	F/4	36 x 135 x 31'-11½"
1	floorbeam	F/5	36 x 135 x 31'-11½"

Typical Floorbeam F And Stringer S Connection [1]
scale: 1½" = 1'-0"

Typical Floorbeam F/2 F/3 F/4 To Stringer S Connection [1]
scale: 1½" = 1'-0"

Typical Floorbeam F/5 To Stringer Connection [1]
scale: 1½" = 1'-0"

MEMBER SS/1 [1]

MEMBER CC/2 [1]

MEMBER P/1 [1]

MEMBER CC/3 [1]

ELEVATION
PLAN
Floorbeam F/1 [1]
scale: ¾" = 1'-0"

ELEVATION
PLAN
Floorbeams F/2 F/3 F/4 [1]
scale: ¾" = 1'-0"

ELEVATION
PLAN
Floorbeam F/5 [1]
scale: ¾" = 1'-0"

REVISED - SEE SHEET 6B

REVISIONS

CENTERING DEVICE AND WELD DETAILS

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
85-074-01	N.C.	BHOS-327 (1)	14	

REHABILITATION OF BRIDGE 159, NEWPORT

PLAN
N.T.S.

3"
15/32" SHIM
₵ REST PIER
8"   8"
M J L
5/16"
5/16"
WEAR ℞
CL
1/16"   1/2"   4 1/2"
8"   7 1/2"   5/8"
4"   4"
7 7/8"
M
TYP
3/8" DIAPHRAGM
2 ANGLES 6x4x7/8
2 L4x3x5/8
WEAR ℞ 1 1/4" x 3" x 1'-6"
FORGED ALLOY STEEL
A.S.T.M. A237 - HARDENED
(4 REQUIRED)
2 L4x3x5/8
1/2" SHIM
3/8" DIAPHRAGM
2 ANGLES 4x3x5/8
SYMMETRICAL ABOUT ₵
K
M
BRIDGE
TYP   5/16
2 STIFF. ℞ 1/2" x 3"
3/8" DIAPHRAGM
M
5/8"   4"
W33 x 152
℞ 1"
℞ 7/8"
F/O M J L F/T
K

SECTION K-K
SCALE: 1 1/2" = 1'-0"

℞ 2 3/16" x 1"
℞ 7 3/4" x 1"
CP GROUND SMOOTH
1"   @ 68° F
₵ JOINT
℞ 7" x 1"
2 3/4"
GROUND CP
SMOOTH
5" OPEN GRID FLOOR
L4x3x5/8
CP
1'-6"
L4x3x5/8
℞ 1" CONT.
2 L6x4x1
2 STIFF. ℞ 1/2" x 3"
WEAR ℞
W33 x 152
3/8" DIAPHRAGM
6"
4"
5/16"
₵ JOINT
₵ 1" ∅ COUNTERSUNK HD. TURNED BOLTS
W36 x 135
3/8" DIAPHRAGM
8 5/16"   7 11/16"
F/O   F/T
₵ REST PIER

SECTION L-L
SCALE: 1 1/2" = 1'-0"

℞ 2 3/16" x 1"
CF
₵ BRIDGE
℞ 7" x 1"
OPEN GRID FLOOR
5"
6"
5/16
2 3/4"
1'-8"
℞ 20" x 7/8" x 6'-9"
L4x3x5/8
W36x135
5 5/8" x 3/8" x 34"
DIAPHRAGM
3 3/4" x 3/8" x 34"
DIAPHRAGM
6"   1'-1 1/2"
2'-3"
SYMMETRICAL ABOUT ₵ BRIDGE

SECTION J-J
SCALE: 1 1/2" = 1'-0"

1 1/8" ∅ TURNED BOLTS
DRILL IN FIELD
₵ BRIDGE
R=10 5/8"
WEAR ℞
L6x4x7/8
PC W8x67
L6x4x7/8
1'-6"
R=3'-8"
SYMMETRICAL ABOUT ₵ BRIDGE

SECTION M-M
SCALE: 1 1/2" = 1'-0"

₵ BRIDGE
4 3/16"
CP
W33x152
7 3/4" CONC. FLOOR
6"
L4x3x5/8
3 3/4" x 3/8" x 32"
DIAPHRAGM
℞ 18" x 1" x 6'-9"
2'-1"   6"
3'-4 1/2"
SYMMETRICAL ABOUT ₵ BRIDGE

WELD DETAIL
N.T.S.

BEAM FLANGE OR THICKER ℞
TACK WELDS PERMITTED IN THESE CORNERS.
BACK UP BAR
CP
WELD EITHER CORNER, WELD TO BE CONTINUOUS.

PROCEDURE: USE TEMPORARY BRACINGS OR DIAPHRAGMS TO INSURE ALL MEMBERS REMAIN TRUE.

REVISIONS
CHKD
DESIGN
PREL. TRACING

D   C   B   A

GRID FLOORING DETAILS

CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
85-Q74-01	N.C.	BHOS-327 (1)	15	28

REHABILITATION OF
BRIDGE 159 , NEWPORT

5" OPEN FLOOR [27]　　　3" CONCRETE FLOOR [28]

LONGITUDINAL SECTION
3/8" = 1'-0"

CROSS BAR

SUPPLEMENTARY BAR

MAIN BAR

TYPICAL SUPPLEMENTARY WELD
FOR ROADWAY GRATING [27]
NOT TO SCALE

NOTE:
WELDING SHOWN ABOVE IS IN ADDITION TO
MANUFACTURERS STANDARD WELDING
INCLUDING PUDDLE WELDS

DETAIL A
1½" = 1'-0"

TYPICAL TRANSVERSE FIELD SPLICE
N.T.S.

W 12 x 26

DETAIL OF 5" OPEN FLOOR [27]
N.T.S.

LEGEND

[28] EXISTING MEMBER TO BE REMOVED

DESIGNATION	NO	DESCRIPTION
CT/16	1	C8X11.5X30'-0"

DESIGNATION	NO	DESCRIPTION
ST/CP		S6X12.5 X 31'-0"
CT/16	1	C8 X 11.5 X 31'-0"

[11] PROPOSED MEMBER TO BE PLACED

DETAIL B
1½" = 1'-0"

DETAIL C
1½" = 1'-0"

[4] REVISED - SEE SHEET 9B

REMOVE THIS PORTION [2]

CONCRETE FLOOR DETAIL
N.T.S.

TYPICAL SECTION
3/8" = 1'-0"
STRUCTURE SYMM. ABOUT CENTER LINE

SIDEWALK AND RAILING DETAILS BASCULE SPAN	CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
	85-074-01	N.C.	BHOS-327 (I)	16	28

REHABILITATION OF
BRIDGE 159 , NEWPORT

SIDEWALK PLAN
1"= 1'-0"

NOTE
FOR MEMBER'S 24 SEE SIDEWALK SUPPORTS SHEET #10

RUBBER JOINT SEALANT 26

SIDEWALK GRATING 26

MAIN GIRDER

EXISTING C10x20

MEMBERS TO BE PLACED 11

SIDEWALK PLAN
1"= 1'-0"

REVISIONS

PREL. TRACING

DESIGN

CHKD.

GENERAL ARRANGEMENT AND MAIN GIRDER
REPAIRS OF SOUTH APPROACH SLAB

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
85-074-01	N.C.	BHOS-327(1)	17	28

REHABILITATION OF
BRIDGE 153, NEWPORT

© Main Girder

1'-7" 4'-2" 4'-2" 2'-1"

6"
₤ 7 ¾" x 1" x 31'-0"
7 ¾"

2'-1" 4'-2" 4'-2" 1'-7" © Main Girder

6"
5½" (TYP)

4 ⅝"
3"
3"

₤ 5 x ⅜" x 32'-0"

For more details- See Centering Device

₤ 3¾" x ⅜" x 32'-0"

NORTH SIDE ———— SOUTH SIDE

32'-0"

33"

2" 1½ 2"

SOUTH SIDE

11 ⁵⁄₈"

₤ 7 ¾" x 1" x 31'-0"

W33 x152

NORTH SIDE

FLOORBEAM (F/O) (17)

SOUTH APPROACH SLAB
SCALE: 1/4" = 1'-0"

Conc. floor to be removed (17)
Conc. sidewalk to be removed (17)

FLOORBEAM F/O (B/O) (F/O) (B/O)

© EXIST. FLOORBEAM

64'-4½" c.c. Bearings

13'-6½"

12'-10½" C.C. FLOORBEAMS

© REST PIER

© BEARING

2 ¼" 4'-3½" 4'-3½" 4'-5¾" 8" 6½" 1½"

7 ¾"

EXIST. 2 L's 5 x 3 ½ (TYP)

TOP FLOORBEAMS

EXISTING SLOTS 5"

BOTTOM STRINGERS

WE 3 ⅜"

Member removed from Bascule Span

6'-6½"

9'-0½" 9 ⅛" 4'-6"

ELEVATION

₤ 7¾" x 1" x 31'-0"
₤ 5 ½" x ⅜" x 30 ⅞"
Existing Stringer to Remain
2- L-7 x 4 x ⅜" x 9"
(H/CA)

33"

1'-2⅛"
L 7 x 4 x ⅜" x 9"
Existing Stringer
(H/OA)

PROPOSED MEMBERS TO BE PLACED (17)

Designation	No.	Description
(H/OA)	16	Connecting angles L 7" x 4" x ⅜" x 9"
(F/O)	1	W 33 x 152

Stringers Supporting Members

NO.		Members to be Placed (17)
2 x 1	(H/O)	L 6" x 6" x ½" x 1'-6 ⅝"
2 x 1	(HP/O)	₤ 6 x ½ " x 1'- 6 ⅝"
1	(F/I)	Floorbeam removed from Bascule Span

NOTE: PLACEMENT OF TEMPORARY SUPPORT WILL BE
INCIDENTAL TO STEEL STRUCTURES (17)

© Main Girder

PLAN

FLOORBEAM F/O DETAILS AND REPAIRS

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
85-074-01	N.C.	BHOS-327(1)	18	

REHABILITATION OF BRIDGE 159, NEWPORT

LEGEND
FLOORBEAM-SIDEWALK BRACKET CONNECTION

EXISTING MEMBER TO BE REMOVED [2]

DESIGNATION		NO.	DESCRIPTION
P/Oe	P/Oe	2×1	℞ 4 ½"×⅜"×3'-2 ½"
A/Oe	A/Oe	2×4	L 5"×3 ½"×⅜"×1'-¼"
R/OAe	R/OAe	2×1	℞ 5 ½"×⅜"×2'-7 ¼"
R/OBe	R/OBe	2×1	℞ 5 ½"×⅜"×5 ¼"
E/Oe	E/Oe	2×2	L 6"×6"×½"×6'-5 ½"
F/Oe	F/Oe	1	FLOORBEAM

PROPOSED MEMBER TO BE PLACED [11]

DESIGNATION		NO.	DESCRIPTION
P/Op	P/Op	2×1	℞ 4 ½"×½"×3'-2 ½"
A/Op	A/Op	2×2	L 5"×3 ½"×⅜"×1'-¼"
R/OAp	R/OAp	2×1	℞ 5 ½"×⅝"×2'-7 ¼"
R/OBp	R/OBp	2×1	℞ 5 ½"×⅝"×6 ½"
E/Op	E/Op	2×2	L 6"×6"×½"×6'-5 ½"
F/Op	F/Op	1	FLOORBEAM W 36×135×31'-11½"

REPAIRS
FLOORBEAM-SIDEWALK BRACKET CONNECTION

[2] *STEP 1 REMOVE MEMBERS A/Oe TO RELEASE P/Oe.
*STEP 2 REMOVE P/Oe THROUGH SLOT IN GIRDER.
*STEP 3 REMOVE ONE E/Oe FROM EACH MAIN GIRDER. REMOVE FILLS R/OAe AND R/OBe. REMOVE FLOORBEAM F/Oe.

[11] STEP 4 REPLACE EACH E/Oe REMOVED WITH E/Op IN EACH MAIN GIRDER.

[2] *STEP 5 REMOVE REMAINING E/Oe IN EACH MAIN GIRDER.

STEP 6 PLACE FILLS R/OAp AND R/OBp. PLACE FLOORBEAM F/Op AND PLACE E/Op.

[11] STEP 7 PLACE MEMBERS P/Op AND A/Op.

[32] *CLEANING AND APPLICATION OF A PRIMER ON EXISTING STRUCTURE SHALL BE DONE BEFORE ANY CONNECTION IS MADE.

ELEVATION
NTS

P/Op DETAIL [11]
1½"=1'-0"

A/Op DETAIL [11]
3"=1'-0"

ELEVATION

TOP

SECTION A-A
NTS

SECTION B-B [11]
NTS

CONC. RAILING TO BE REMOVED [11]

½" TH. PLATE

REVISIONS

D C B A

CONTRACT	COUNTY	FED NO PROJ NO	SHT	TOTAL
85-074-01	N.C.	BHOS-9C7(1)	18A	26

ADDITIONAL DETAILS ON
SIDEWALK AND SPAN 5

THIS SHEET IS A REVISION

EXISTING STRINGER SECTION SPAN 5
SCALE: 1½" = 1'-0"

- EXISTING S6x12.5
- EXISTING B10x28.5
- COUNTERWEIGHT

PROPOSED SECTION A-A
SCALE: 1½" = 1'-0"

CUT AND REMOVE FLANGES ON BOTH SIDES
L 6x6x5/16 (CRIMPED)
HVA⅞" Ø ADHESIVE ANCHOR BOLTS

LONGITUDINAL SIDEWALK SECTION
SCALE: ¾" = 1'-0"

12" TYPICAL
18" NORTH END
SOUTH APPROACH SPAN
12'-10½"
SIDEWALK
W 10 x 15
EXISTING BRACKETS
NOTE DETAIL A

LONGITUDINAL SECTION ON SPAN 5
SCALE: ¾" = 1'-0"

- PROPOSED 2-L 6x6x5/16 x12'-9" LONG
- 50 SPACES @ 3"
- ⅞" Ø A325 TYPE I WITH HEX NUT AND WASHERS MECHANICALLY GALVANIZED
- EXISTING S6x12.5
- EXISTING B10x28.5
- PROPOSED L6x6x5/16 x 3'-4"
- HVA⅞" Ø A325 ADHESIVE ANCHOR BOLTS (L = 10")
- 18 SPACES @ 9"
- COUNTERWEIGHT
- 3'-9"

DETAIL A
SCALE: 1½" = 1'-0"

- 6" TYPICAL
- 18" NORTH END
- SOUTH APPROACH SPAN
- SIDEWALK
- ⅝" PLATE
- TYP
- 9½" INTERMEDIATE
- 12½" END
- ⅞" Ø ASTM A325 TYPE I MECHANICALLY GALVANIZED
- 13" INTERMEDIATE
- 16" NORTH END SOUTH APPROACH SPAN

SECTION B-B
(S6x12.5 NOT SHOWN)
SCALE: ¾" = 1'-0"

- ⅞" Ø A325 TYPE I
- EXISTING B10x28.5
- L6x6x5/16
- 37 SPACES @ 10"
- HVA⅞" Ø A325 ADHESIVE ANCHOR BOLTS (L = 10")
- COUNTERWEIGHT
- 18'-2"

SECTION C-C
SCALE: 1½" = 1'-0"

- W10x15
- ⅞" Ø ASTM A325 TYPE I MECHANICALLY GALVANIZED
- L3x2x1/4
- EXISTING B10x20 (TO REMAIN)
- L3x2x1/4

LONGITUDINAL SIDEWALK SECTION NEXT TO BASCULE PIER 2
(NORTH APPROACH SPAN)
SCALE: ¾" = 1'-0"

- C BEARING
- APPROX. 11'-8½"
- EXISTING SIDEWALK
- W10x15
- BASCULE PIER NO. 2
- BEARING PLATE TO BE ADJUSTED IN THE FIELD (APPROX. ½")

SIDEWALK REPAIR

MEMBER	NO.	SIZE	LOCATION
W10x15	8	11'-8½"	SOUTH APPROACH SPAN
W10x15	8	11'-8½"	NORTH APPROACH SPAN
W10x15	2	11'-5½"	SOUTH APPROACH SPAN
W10x15	2	11'-2½"	NORTH APPROACH SPAN
⅝" PLATE	36	9½" x 13"	SOUTH & NORTH APPROACH SPAN
⅝" PLATE	2	9¾" x 18	SOUTH APPROACH SPAN
½" PLATE	2	6x12	NORTH APPROACH SPAN
L3x2x1/4	76	6"	SOUTH & NORTH APPROACH SPAN
L3x2x1/4	72	9½"	SOUTH & NORTH APPROACH SPAN
L3x2x1/4	4	12½"	SOUTH APPROACH SPAN
⅞" Ø BOLTS	152		SOUTH & NORTH APPROACH SPAN

SPAN 5 STRINGERS REPAIR

MEMBER	NO.	SIZE	LOCATION
L6x6x5/16	28	12'-9"	ALONG STRINGERS
L6x6x5/16		3'-4"	UNDER STRINGERS
⅞" Ø BOLTS	742		
HVA ADHESIVE ANCHOR BOLTS	346		

4 REVISED - SEE SHEET 9B

4 REVISED - SEE SHEET 9B

APPROACH ROADWAY AND REPAIR OF CONCRETE DECK AND SIDEWALK

CONTRACT	COUNTY	FEDERAL AID PROJECT Nº	SHEET Nº	TOTAL SHEETS
85-074-01	N.C.	BHOS-327(1)	19	28

ROADWAY ℄

Existing Ground

6'-0"   15'-0"   15'-0"   6'-0"

Existing Ground

Existing Pavement

2" Type 'C' HOT-MIX, HOT LAID BIT. CONC. OVERLAY

6" CRUSHER RUN BASE COURSE

6" CRUSHER RUN BASE COURSE

* Superelevation and transition to be set in the field by the Engineer.

TYPICAL SECTION
STA. 95 74.12 TO STA. 98 00
N.T.S.

4" P.C.C. SIDEWALK OVER 4" CRUSHER RUN BASE COURSE

P.C.C. CURB TYPE I

2" TYPE 'C' HOT-MIX, HOT-LAID BITUMINUS CONCRETE OVERLAY OVER EXISTING PAVEMENT

2" TYPE 'C' HOT-MIX, HOT-LAID BITUMINUS CONCRETE PAVEMENT OVER 6" CRUSHER RUN BASE COURSE

END CONSTRUCTION STA. 98+00 (Match existing roadway butt joint)

Remove Existing P.C.C. Sidewalk And P.C.C. Curb (Sec. 210)

BEGIN CONSTRUCTION STA. 93+40.87

P.C.C. Curb Type I

STA. 93+58.87

4" P.C.C. Sidewalk Over 4" Crusher Run Base Course

N.14 30' 28 W. ℄ Exist. Basin Rd.

STA. 95+74.12

NOTE: Excavation for the placement of the Crusher Run Base Course shall be incidental to Sec. 303.

TO NEW CASTLE

Sidewalk

Bascule Leaf

Sidewalk

Operators House

Curb

Butt Joint (Hot-Mix)

TO NEWPORT

Curb

30'-0" face—face of curb

10'-0"

REMOVED

PLAN
N.T.S.

REPAIR EXISTING BRIDGE DECK

NOTES

1) All concrete shall have a minimum 28 day compressive strength of 4,000 psi. Allowable fc = 1,600 psi, n = 8 (Class A Concrete).

2) Deck Repairs: Designated areas of deck shall be saw cut and removed. After the deteriorated concrete has been removed and the surfaces cleaned, the Engineer shall inspect these areas for cracks and soundness of concrete. If any part or parts of the exposed deck are found to be deteriorated, cracked or unsound, they shall be removed to a depth of 5". If the cracks seem to persist or the concrete quality remains poor beyond 5" depth, full depth of slab shall be removed. All removal over 2" depth shall be directed by the Engineer.

3) All exposed faces of concrete shall be treated with a bonding agent before pouring fresh concrete (AASHTO M235, Class III).

4) Perimeters of the areas to be repaired shall be saw cut at an angle approximately 10 degrees from a plan normal to the slab surface to secure an undercut face. Depths of saw cuts shall not exceed 1 inch. Pneumatic chisel tools shall be used to attain any remaining depth. The bottom surface of the repair area may be irregular. The minimum depth of the repair shall be two (2) inches.

5) Any damage done to the existing facilities (utilities, guardrail, deck, roadway, sidewalk, curb, etc.) shall be repaired or replaced at the contractor's expense.

6) If existing bar reinforcement is cut or badly damaged during concrete removal, it shall be either cut out and spliced or replaced with new bar of the same size and lapped or field welded to ends of existing bar at the contractor's sole expense.

7) All steelwork surfaces exposed due to full depth removal or partial depth removal at expansion joints shall be thoroughly cleaned by sand blasting.

8) All exposed reinforcing steel shall be cleaned by sand blasting.

9) The contractor shall take all necessary precautions to prevent fall of any chipped concrete into the creek or beneath the bridge. However, if any material does fall down, it shall be removed to the satisfaction of the Engineer.

DECK REPAIR
scale: 3" = 1'-0"
The top mat of deck reinforcement is estimated to be 1½" below the original concrete surface.

Unsound Concrete

10°

8"

Varies

REVISIONS

PREL. TRACING

DESIGN

CHKD.

RAILING DETAILS

CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
85-074-01	N.C.	BHOS-327(1)	20	

REHABILITATION OF
BRIDGE 159 , NEWPORT

NOTE 1

BASCULE SPAN RAILING
N.T.S.

DETAIL B

DETAIL C

¾" ALUM. PLATE (TYP)

APPROACH SPAN RAILING
N.T.S.

NOTE 3

PANEL C (SEE SH. 20A)
PANEL A (SEE SH. 20A)
TYPICAL PANEL

SECTION B-B
1½"=1'-0"

H5 x 6.41 ALUM.
ALLOY 6061-T6
½" ALUMINUM PLATE

DETAIL A
HALF SIZE
THREAD FOR ¾"ø NUT

NOTE 2

DETAIL B
1½"=1'-0"

⁵⁄₁₆" ALUM. FLANGE, ⅛" PREFORMED PAD,
AND ⁷⁄₁₆" SIDEWALK BRACKET FLANGE

ALUM. POST

DETAIL C
1½"=1'-0"

SECTION A-A
1½"=1'-0"

DETAIL D

C4 x 3.32
H5x6.41 (alum.)
L 3x3 (alum.)
adjust
Parapet (exist.)
preformed pad

SECTION A-A

⅜"ø shoulder bolt w/ ⅜"ø
alum. hex. head & alum washers
preformed pad
⅜"ø adhesive anchor bolts
with stainless steel rod
assembly (Hilti or approved equal)

See Detail D

PLAN OF NEW RAILING
N.T.S.

SOUTH APPROACH   BASCULE LEAF   NORTH APPROACH
RAILING SYMM. ABOUT ₵

SEE SHEET 20A FOR RAILING PLAN

NOTES

1. AT THE INDICATED LOCATIONS THE 3 x 2 TUBE SHALL BE CONTINUOUS.
PLACE OVER POST CAP BEFORE ASSEMBLING PANEL

2. ¾" ALUMINUM PLATE (ALL x 6061-T6). REMOVE FLANGE AT H.S. POST
AND WELD PLATE TO REMAINING FLANGE AND WEB.

3. ADHESIVE ANCHOR WITH STAINLESS STEEL (ASTM A504) ROD ASSEMBLY
5/8" x 5" AS MANUFACTURED BY HILTI, INC. OR APPROVED EQUAL.

SEE SHEET #8 FOR RAILING POST DETAILS

4. ALUMINUM TO STEEL AND ALUMINUM TO CONCRETE SURFACES
SHALL BE SEPERATED BY ⅛" PREFORMED PAD (TYP)

RAILING DETAILS

CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
85-074-01	N.C.	BHOS-327(1)	20A	28

15

REHABILITATION
OF BRIDGE 159, NEWPORT

Note: Proposed Railing Symmetrical
About ₵ of Bridge

DETAIL A

5 Panel A @ 12'-10½" = 64'-4½"

Bascule Span Railing
(see details sheet 20)

DETAIL C

DETAIL D

2 Panel B @ 12'-1" = 24'-2"

1 Panel C @ 12'-8½"

4 Panel A @ 12'-10½" = 51'-6"

DETAIL B

5'-7" (Existing)
5'-7³⁄₁₆" (Proposed)
6'-7" (Proposed Existing)
5'-7" (Existing)
5'-7³⁄₁₆" (Proposed)

DETAIL A

₵ Maingirder

Plan
¼" = 1'-0"

A

₵ Post 1'-3½"
3"
11"
1'-5"   Existing Concrete Post & Rails To Be Removed
L 3x3 (Alum.) (See Detail)
2"
4"
6"
12"
1'-5" Backwall
9"
6" 6"
9½"
C4x3.32 (Alum.) (See Detail)
Proposed Aluminum Railing
See Note 1 (Sheet 20)
₵ Bearing
Expansion Joint
Abutment Wingwall

A

DETAIL A
¾" = 1'-0"

Note: See sheet 20 for ⅝"⌀ Aluminum shoulder bolt.

₵ Bearing   ₵ Bearing
2" 9" 9" 1"
2"
6"
4"
8"
2"
₵ Post
7/16"
3/8" Alum. ℞
3/4"
5¼"
10"
5¹³⁄₁₆"   5³⁄₁₆"
Existing Concrete ₵ Rails To Be Removed
Proposed Aluminum Railing (Typ.)
Approach Span
Bascule Span

DETAIL B
1½" = 1'-0"

Existing Concrete Post & Rails To Be Removed
2'-0"
4"
2"
Proposed Bascule Railing
3/8" Alum. ℞
See Note 1, sheet 20
8"
8"
1'-0"
30"x 5/16" Checkered Plate
2"
4"
Proposed Approach Railing

DETAIL C
¾" = 1'-0"

₵ Hole
C4x3.32 (Alum.)
3/4"⌀ Hole (6) (Angle)
3/4" x 1½" Slotted Hole (Channel)
11³⁄₁₆"
L 3x3 (Alum.)
₵ Hole

ALUM. L & CHANNEL DETAIL
NTS

11³⁄₁₆"
1"/ (Typ.)
¼"
5/8" Shoulder Bolt w/ 3/8" Alum. Hex Head nut & washers.
6" Embedment (min)
HS x 6.41 Alum. Post
3'-2"
3½"
3/8"⌀ Adhesive Anchor bolts with stainless steel rod assembly @ wingwall (Hilti or approved equal)

SECTION A-A
N.T.S.

₵ Post
Existing Concrete Post & Rails To Be Removed.
4"
2"
8"
4"
8"
2"
4"
8"
2'-0"
Proposed Approach Railing

DETAIL D
½" = 1'-0"

6" (Typ.)
3'-10½"
5/8"
Note 3
1/8" Preformed Pad (Typ.) Concrete Sidewalk
B   B
6'-0½"   6'-0½"
Typical Panel
Panel B (see sh 20)

Approach Span Railing
N.T.S.

* See Sheet 20 For Section B-B

D C B A • A B C D
1 5 10

REPLACEMENT OF CONC. FLOOR SOUTH APPROACH SLAB	CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
	85-074-01	N.C.	BHOS-327(1)	21	

REHABILITATION OF BRIDGE
159, NEWPORT

SIDEWALK PLAN
1/2" = 1'-0" SHALL BE REMOVED 17 AND REPLACE 6

SAW CUTTING

12'-10 1/2"
6'-9"
3 ES405 TOP
5 S407 BOTTOM
8-D501 @ 12"±
8-ES410 @ 12"±
15-ES402 @ 6"±
5 S403 BOTTOM
26 ES401 @ 6"±
9"-ES410 @ 12"±

East sidewalk is shown
Rotate 180° for west sidewalk

A

SECTION A-A
1/2" = 1'-0"

SAW CUTTING
D501
3 ES401
23 ES401 @ 6"
3 ES405
ES410
2 7/8" CL.
5 1/2"
EXIST. SLAB TO REMAIN
10"
12"
5 S403
ES402
5 S407
L 3 1/2 x 3 1/2 x
ES410
6"
5 13/16"

DOWEL DETAIL
N.T.S.

DRILL, GROUT AND INSERT D601 INTO EXISTING SLAB, CURB AND SIDEWALK
2'-6" 2'-6"
ROUGHEN CONTACT SURFACE TO BOND WITH FRESH CONCRETE

TYPICAL SECTION-SOUTH APPROACH
1/4" = 1'-0"

66'-3"± OUT TO OUTCONCRETE ROADWAY SLAB
1'-4"
3 PANELS @ 12'-10 1/2" = 38'-7 1/2"
12'-10 1/2"
12'-10 1/2"
5 13/16"
9"
1/4"
1/4" TYP.
9"
MAIN GIRDER
SOUTH ABUT.
EXISTING STRINGER
EXISTING FLOOR BEAM
5 PANELS @ 12'-10 1/2" = 64'-4 1/2"

SOUTH APPROACH
1/4" = 1'-0"

66'-2 1/4"± OUT TO OUT CONCRETE ROADWAY SLAB
1'-4"
3 PANELS @ 12'-10 1/2" = 38'-7 1/2"
12'-10 1/2"
12'-10 1/2" NEW CONCRETE SLAB AND CONCRETE CURB 6
5 13/16"
FACE OF CURB
4'-2"
Ç ROADWAY
SAW CUT JOINT
34 D601 @ 12" DRILL HOLES IN EXISTING SLAB
33 ES401 @ 12" (TOP)
33 S401 @ 12" (BOTTOM)
28-ES501 @ 6" (TOP)
28-S501 @ 6" (BOTTOM)
FACE OF CURB
15'-0"
15'-0"
30'-0" CURB TO CURB
THIS PORTION SHALL BE 9 10 REMOVED 17 AND REPLACE 6

TYPICAL HALF SECTION-CONCRETE APPROACH SLABS 6

1'-2"
15'-0"
SYMMETRICAL ABOUT Ç
16-ES402
3 SPCS. @ 4'-2" = 12'-6"
2'-1"
5 1/2"
7" (*)
EP501
ES401 @ 12"
D601
ES501
9"
9"(*)
EP502
2 1/2" COVER
2" CL.
C10x20
ES401
S401 @ 12"
S501
STRINGER (TYP.)
FLOOR BEAM
(*) MATCH STEEL CURB ON BASCULE SPAN

PERMANENT STEEL FORM 6
N.T.S.

ES501 @ 6"
ES401 @ 12"
DECK FORM MIN. THICKNESS GA. 20
2" (TYP.)
2 3/4" (TYP.)
9"
2" COVER
2" NOMINAL DEPTH
FLOOR BEAM
STRINGER (TYP.)
6"
6"
FLANGE

REINFORCING BAR LIST

STRAIGHT BARS

MARK	SIZE	LENGTH	No.
ES401	4	13'-0"	33
S401	4	13'-0"	33
ES402	4	13'-7"	2x5
S403	4	6'-6"	2x5
S407	4	7'-0"	2x5
D501	5	4'-0"	2x8
EP501	5	13'-0"	4
ES501	5	29'-8"	28
S501	5	29'-8"	28
D601	6	5'-0"	34

BENT BARS

MARK	SIZE	LENGTH	No.
ES401	4	7'-6"	2x26
ES405	4	8'-0"	2x3
ES410	4	4'-3"	2x17
EP502	5	3'-6"	28

BENDING DIAGRAM

6"
3"
6'-6" ES401
7'-0" ES405
6"
8"
6 1/2"
6 1/2"
1"
ES410

D C B A • A B C
1 5 10

Suggested Const. Sequence

Ref. No.	
1	Remove existing south fender system.
1	Remove existing reinforced concrete beam between east & west rest piers.
20 21	Place new 16" C.I.P. concrete piles (See details sh. 21).
7 9	Place new reinf. conc. "collar" around existing piers.
16	Jack approach span main girders from bridge bearings (see details sheet 24).
16	Remove existing pier masonry as shown on the plans.
7 9	Place new reinforced conc. "pier caps."
11	Place new bridge bearings (see details sheet 23).

BAR SCHEDULE

MARK	SIZE	NO.	LENGTH	TYPE
P500	5	10	4'-2" & 7'-2"	STR.
P501	5	10	15'-2"	BENT
P502	5	12	13'-10"	BENT
P503	5	20	5'-10"	BENT
P504	5	16	6'-1"	BENT
P505	5	20	5'-10" & 9'-0"	STR.
P506	5	10	8'-11"	BENT
P600	6	24	11'-6"	STR.
P601	6	40	10'-0" & 5'-0"	STR.
P602	6	4	13'-8"	STR.
P603	6	32	4'-10" & 11'-2"	STR.
P604E	6	10	4'-7"	STR.
P604W	6	10	5'-0"	STR.
P605E	6	10	3'-7"	STR.
P605W	6	10	3'-2"	STR.
P606	6	16	5'-6"	STR.
D600	6	16	3'-0"	STR.

BENDING DIAGRAM

* P606 used to tie new column to collar at corners of column (not shown on views)

Notes

1. Existing pier location dimensions are noted by use of an asterisk (*). These dimensions are only approximate and should be verified by the contr. prior to construction.

2. The existing pier concrete shall be removed to elev. 2.70, and replaced with a new reinforced concrete "pier cap." The prepared chipped surface shall be coated with an approved epoxy bonding compound prior to placing new concrete.

3. Existing reinforcement clear cover is 3".

4. Proposed reinforcement clear cover is 2" unless otherwise noted.

5. All drilled dowel bars shall be anchored with high strength, non-shrink grout prior to placing new concrete.

PLAN

SECTION A-A

SECTION B-B

SECTION C-C

NOTES

1. All components of the bearings, excluding hardware, shall be made using steel conforming to ASTM A588.
2. Self lubricating bronze plates shall conform to the requirements of ASTM B22, cast Bronze, alloy no.911. Both the top and bottom contact surfaces shall be lubricated and machine finished to a smoothness of 125 micro-inch root mean square.
3. All contact surfaces of steel components shown thus √‾ shall also be machine finished to a smoothness of 125 micro-inch root mean square.
4. All swedge anchor bolts, hex nuts, and oversize washers shall conform to ASTM A307 and shall be hot-dipped galvanized conforming to ASTM A153.
5. All ⅞"Ø ASTM A325 type 3 bolts (including the compatible nuts and washers) used to connect the 1⅝" plate with the bottom flange of the existing main girders shall be mechanically galvanized. Use two washers per bolt, one each under bolt and nut heads.
6. In the double-nut system, the first nut shall be appropriately tightened and the second nut shall be used to lock the first nut.
7. All exposed surfaces of the bearings shall be painted with inorganic zinc.
8. Existing sole plates and ⅞"Ø rivets used in connecting the sole plate to the bottom flange of the main girder, shall be removed, with payment to be included under section 210, Removal Of Structions And Obstructions. (Steel Structures)

ELEVATION
SCALE: 1½" = 1'-0"

SECTION B-B
SCALE: 1½" = 1'-0"

SECTION A-A
SCALE: 1½" = 1'-0"

EXPANSION BEARING AT APPROACH GIRDER

ELEVATION
SCALE: 1½" = 1'-0"

SECTION B-B
SCALE: 1½" = 1'-0"

SECTION A-A
SCALE: 1½" = 1'-0"

EXPANSION BEARING AT BASCULE GIRDER

REHAB. OF BR. 159

NEWPORT

BORING NO. 1 Contract 85-074-01 Bridge No. 159 (Newport Bascule Bridge)

BORING LOCATION 6' South of southeast corner of south abutment, 15' from ℄ bridge deck

SAMPLE			SAMPLE DESCRIPTION
No.	Depth	Blows/6"	
1	1.0'	3	Moist firm brown clayey course to fine sandy silt and gravel.
		4	
		3	
	3.0'	4	14" Recovery
2	4.0'	3	Moist firm brown clayey silt w/some fine sand, trace of gravel.
		2	
		3	
	6.0'	4	8" Recovery
3	9.0'	7	Wet stiff brown fine to course sandy silt w/trace of gravel, trace of organic matter.
		6	
		5	
	11.0'	4	11" Recovery
4	14.0'	2	Saturated firm brown silty fine to course sandy clay w/organic matter.
		2	
		3	
	16.0'	3	12" Recovery
5	19.0'	2	Saturated soft gray clayey course to fine sandy silt, w/trace of gravel, trace of organic matter.
		1	
		2	
	21.0'	1	
6	24.0'	1	Saturated soft gray silty organic clay w/trace of fine sand.
		1	
		1	
	26.0'	1	23" Recovery
7	29.0'	1	Saturated firm gray silty fine to course sandy clay w/trace of gravel, trace of organic matter.
		1	
		2	
	31.0'	6	
8	34.0'	13	Moist dense brown and gray course to fine sand and gravel w/trace of silt.
	35.5'	18	
		15	
			18" Recovery
9	39.0'	11	Moist very stiff multicolored silty fine to course sandy clay.
		9	
	40.5'	20	
			18" Recovery
10	44.0'	7	Moist very stiff multicolored clayey fine to course sandy silt.
		5	
		11	
	46.0'	10	23" Recovery
11	49.0'	6	Moist hard multicolored clayey fine to course sandy silt w/trace of gravel.
		10	
		21	
	51.0'	31	20" Recovery
	END		

STANDARD PENETRATION TEST INFORMATION

Wt. of sample hammer	140 lbs.
Average fall	30.0 in.
Type of D-Sampler	Split Spoon
O.D. of Sampler	2 in.
Casing Size	3¼ in.

TYPICAL C.I.P. CONCRETE PILES
N.T.S.

2" MIN. CL.(USE SPACERS TO MAINTAIN CLEARANCES)
16" C.I.P. CONC. PILE
6-#6 x LONG EQUALLY SPACED
#3 TIES @ 1'-0" 13-REQ'D./PILE
BOTTOM OF CONC. FOOTING
BURN 4 EQ. SPACED NOTCHES IN LOWER SECTION BEFORE INSERTING EXTENSION
PILE SHELL 7 GAUGE FLUTED OR 5 GAUGE PLAIN NOMINAL 16" DIA. TAPER 0.40 IN./FT.

MIN. SAFE BEARING CAPACITY = 55 TONS ESTIMATED LENGTH = 50 FT., 60 FT. FOR TEST PILES.

JACKING DETAIL
Scale: ¾" = 1'-0"

Typical Floorbeams

DETAILS FOR REMOVAL OF CONCRETE RAILING
N.T.S.

All exposed faces of concrete shall be treated with bonding agent before pouring fresh concrete. (AASHTO M235 CLASS III.)
The contractor shall take all necessary precautions to prevent fall of any chipped concrete into the creek or beneath the bridge. However, if any material does fall down, it shall be removed to the satisfaction of the Engineer.

REVISIONS

DESIGN.   CHK'D.   PREL. TRACING.

REHAB. OF BR. 159
NEWPORT

MEMBER	NO.	WEIGHT LBS./EA.	H	M_H	SPAN
5" OPEN FLOOR (ONE SPAN)	1	9,100	75.54	687,414	1
			61.46	559,286	2
			47.37	431,067	3
			33.29	302,939	4
WOOD SIDEWALK (ONE SPAN)	2	745	75.54	112,555	1
			61.46	91,575	2
			47.37	70,581	3
			33.29	49,602	4
(S)	14	400	75.54	423,024	1
			61.46	344,176	2
			47.37	265,272	3
			33.29	186,424	4
(S)	14	364	75.54	384,952	1
			61.46	313,200	2
			47.37	241,397	3
			33.29	169,646	4
(C/1) OR (C/1)	1	67	81.96	5,491	1
			55.05	3,688	2
			40.96	2,744	3
			26.88	1,801	4
(C/2) OR (C/2)	2	40	69.21	5,537	1
			67.79	5,423	2
			53.71	4,297	3
			39.62	3,170	4
(L/1) OR (L/1)+(P/10)	2	189	75.54	28,554	1
			61.46	23,232	2
			47.38	17,910	3
			33.30	12,587	4
S 4 X 7.7 (FILL)	14	99	75.54	104,698	1
			61.46	85,184	2
			47.37	65,655	3
			33.29	46,140	4
C 10 X 20 (FILL)	14	23	82.58	26,591	1
			68.50	22,057	2
			54.42	17,523	3
			40.33	12,986	4

MEMBER	NO.	WEIGHT LBS./EA.	H	M_H
(F/1) + CA	1	4642	82.58	383,336
(F/1) + C + CP + D	1	6437	82.58	531,567
(F/2) + CA	1	4694	68.50	321,539
(F/2) + CP	1	4549	68.50	311,607
(F/3) + CA	1	4722	54.42	256,971
(F/3) + CP	1	4574	54.42	248,917
(F/4) + CA	1	4722	40.33	190,438
(F/4) + CP	1	4574	40.33	184,469
(F/5) + CA	1	4752	26.25	124,740
(F/5) + CA + CP	1	5140	26.25	134,925
(FB/5) + CA	2	386	20.58	15,888
(FB/5) + CA + CP	2	337	30.62	20,638
(SW/1) OR (SW/1)	2	226	26.41	11,937
(H/2) + (H/1) + (H/P)	1	1248	25.49	31,812
3" CONC. FLOOR	1	30566	15.77	482,026
BASCULE SIDEWALK + SP	2	12024	54.42	1,308,692
STEEL RAILING	2	3650	54.10	394,930
ALUMINUM RAILING	2	950	54.10	102,790
(C/3) OR (C/4)	2	93	25.19	4,685

C_2 = CENTERING DEVICE

CA= FLOORBEAM - STRINGERS - CONNECTING ANGLES
　　FLOORBEAM - BRACINGS - CONNECTING ANGLES

D = DIAPHRAMS

CP= FLOORBEAM - STRINGERS - CONNECTING PLATES
　　FLOORBEAM - BRACINGS - CONNECTING PLATES

SP = SUPPORTING ANGLES (SA) + (SB) + (SC)
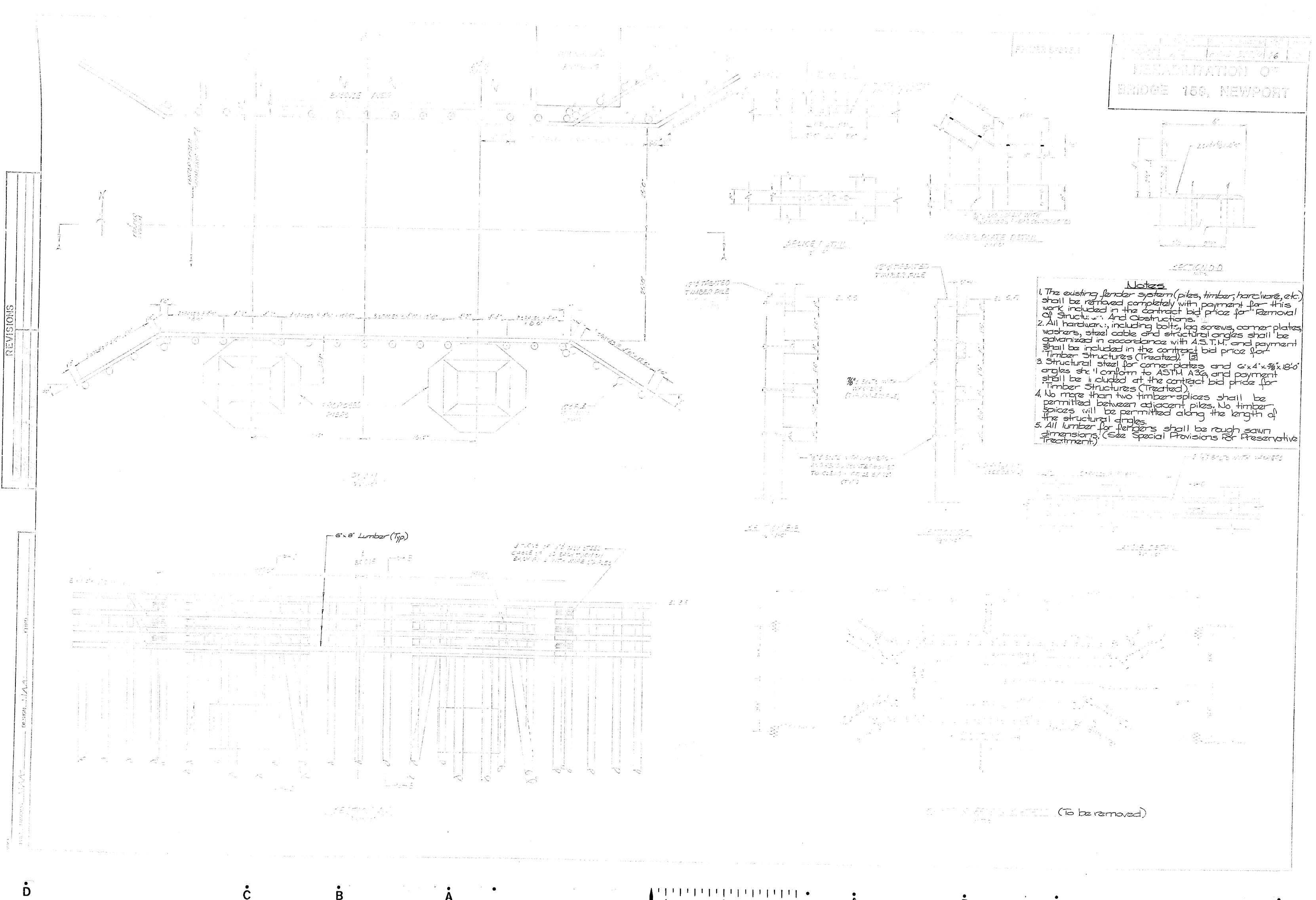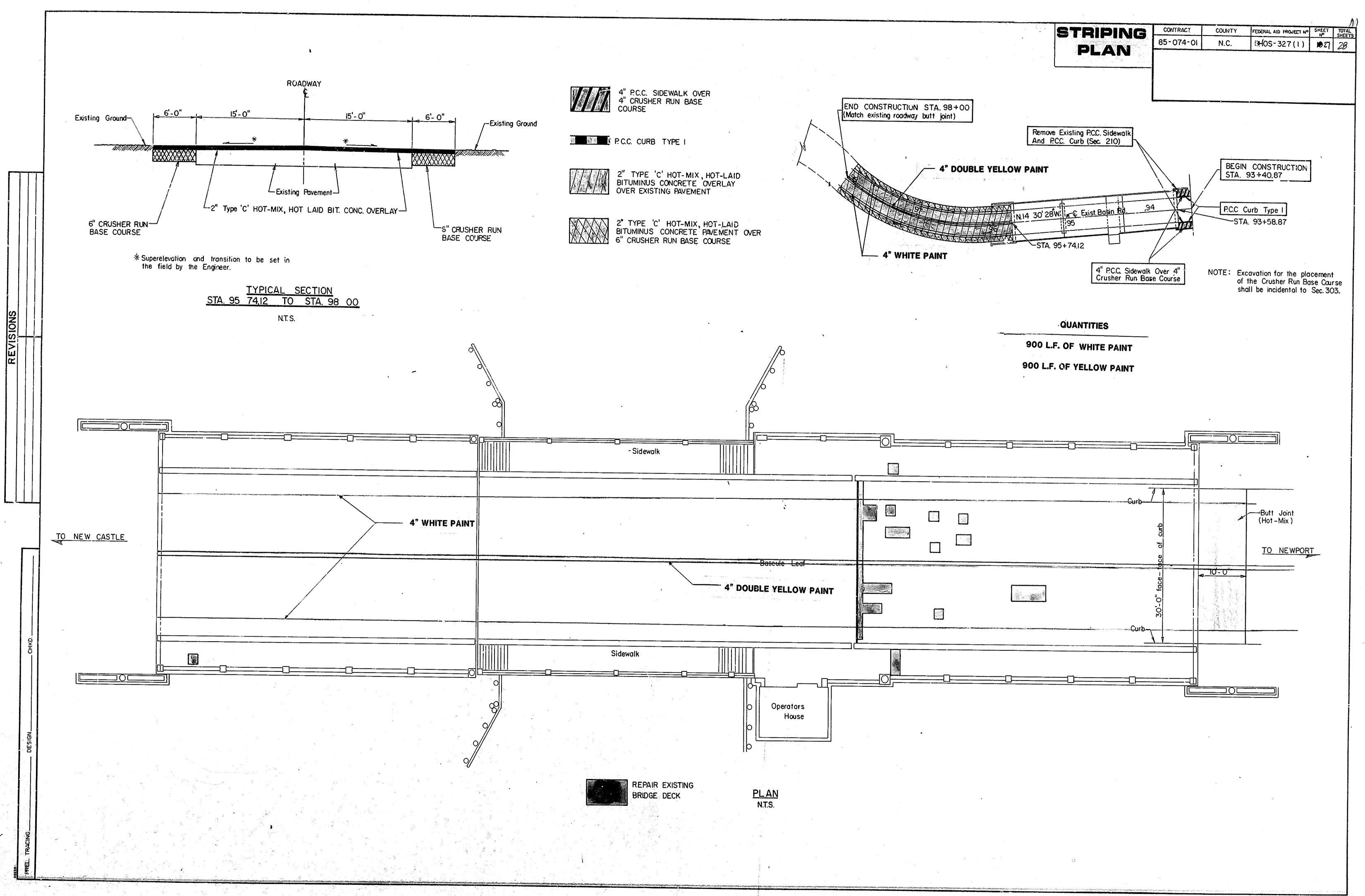
4 Panels @ 14'-1" = 56'-4"

6'-3"　7'-10"　15'-2¼"　12'-2¼"

20'

Center of Moments Elev. 17.08

Elev. 7.08'

261832#

430920#

17.6'　10.7'

6'-6" to ℄ of Bearing

16'-2"

8'-9"

FRONT VIEW

SECTION A-A

COUNTERWEIGHT
SCALE: 1/4" = 1'-0"

NOTES

WEIGHTS AND MOMENTS OF SEVERAL MEMBERS IN THE BASCULE SPAN ARE LISTED FOR CONTRACT INFORMATION ONLY. EXISTING MEMBERS DATA HAVE BEEN TAKEN FROM PREVIOUS CONTRACTS. THE DEPARTMENT ACCEPTS NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE DATA. IT WILL BE CONTRACTOR RESPONSIBILITY TO VERIFY THIS INFORMATION AND REBALANCE THE BASCULE SPAN DURING AND AFTER CONSTRUCTION. METHODS USED TO REBALANCE THE BASCULE SPAN SHALL BE SUBMITTED FOR APPROVAL TO THE DEPARTMENT.

Notes

1. The existing fender system (piles, timber, hardware, etc.) shall be removed completely with payment for this work included in the contract bid price for "Removal Of Structures And Obstructions."
2. All hardware, including bolts, lag screws, corner plates, washers, steel cable and structural angles shall be galvanized in accordance with A.S.T.M. and payment shall be included in the contract bid price for "Timber Structures (Treated)."
3. Structural steel for corner plates and 6"x4"x⅜"x18'-0" angles shall conform to ASTM A36, and payment shall be included at the contract bid price for "Timber Structures (Treated)."
4. No more than two timber splices shall be permitted between adjacent piles. No timber splices will be permitted along the length of the structural angles.
5. All lumber for fenders shall be rough sawn dimensions. (See Special Provisions for Preservative Treatment.)

6"x 8" Lumber (Typ)

(To be removed)

STRIPING PLAN

CONTRACT	COUNTY	FEDERAL AID PROJECT N°	SHEET N°	TOTAL SHEETS
85-074-01	N.C.	BHOS-327(1)	27	28

ROADWAY ℄

Existing Ground

6'-0" | 15'-0" | 15'-0" | 6'-0"

Existing Ground

Existing Pavement

2" Type 'C' HOT-MIX, HOT LAID BIT. CONC. OVERLAY

6" CRUSHER RUN BASE COURSE

6" CRUSHER RUN BASE COURSE

*Superelevation and transition to be set in the field by the Engineer.

TYPICAL SECTION
STA. 95 74.12 TO STA. 98 00
N.T.S.

4" P.C.C. SIDEWALK OVER 4" CRUSHER RUN BASE COURSE

P.C.C. CURB TYPE I

2" TYPE 'C' HOT-MIX, HOT-LAID BITUMINUS CONCRETE OVERLAY OVER EXISTING PAVEMENT

2" TYPE 'C' HOT-MIX, HOT-LAID BITUMINUS CONCRETE PAVEMENT OVER 6" CRUSHER RUN BASE COURSE

END CONSTRUCTION STA. 98+00 (Match existing roadway butt joint)

Remove Existing P.C.C. Sidewalk And P.C.C. Curb (Sec. 210)

BEGIN CONSTRUCTION STA. 93+40.87

4" DOUBLE YELLOW PAINT

P.C.C. Curb Type I
STA. 93+58.87

N 14 30' 28" W Exist Basin Rd. .34
.95
.96

STA. 95+74.12

4" WHITE PAINT

4" P.C.C. Sidewalk Over 4" Crusher Run Base Course

NOTE: Excavation for the placement of the Crusher Run Base Course shall be incidental to Sec. 303.

QUANTITIES
900 L.F. OF WHITE PAINT
900 L.F. OF YELLOW PAINT

TO NEW CASTLE

Sidewalk

4" WHITE PAINT

Bascule Leaf

4" DOUBLE YELLOW PAINT

Sidewalk

Operators House

Curb

Butt Joint (Hot-Mix)

TO NEWPORT

30'-0" face-face of curb

10'-0"

Curb

REPAIR EXISTING BRIDGE DECK

PLAN
N.T.S.

D C B A