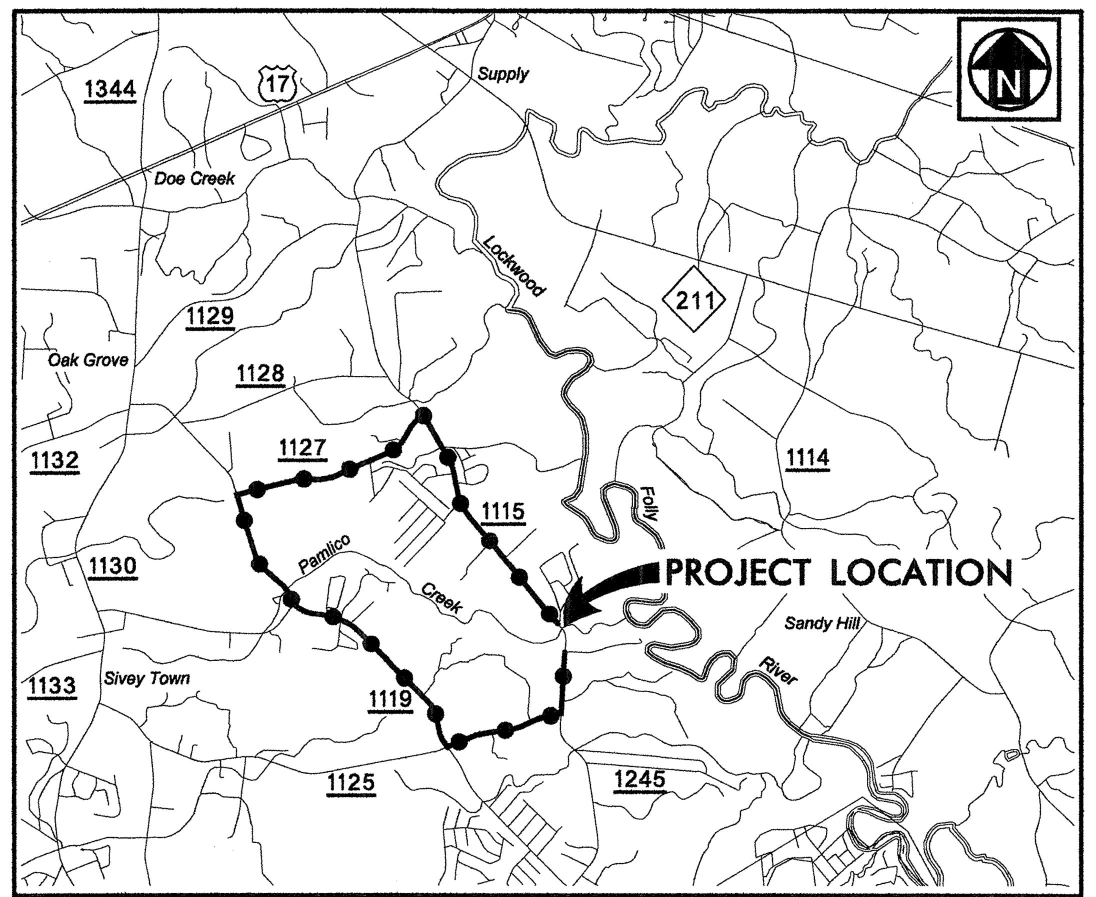
CONTRACT # DO000040 BRUNSWICK #58 B-5216

STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5216	1	34

STATE PROJECT NO.	F. A. PROJ. NO.	DESCRIPTION
42813	NA	P.E.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
BRUNSWICK COUNTY

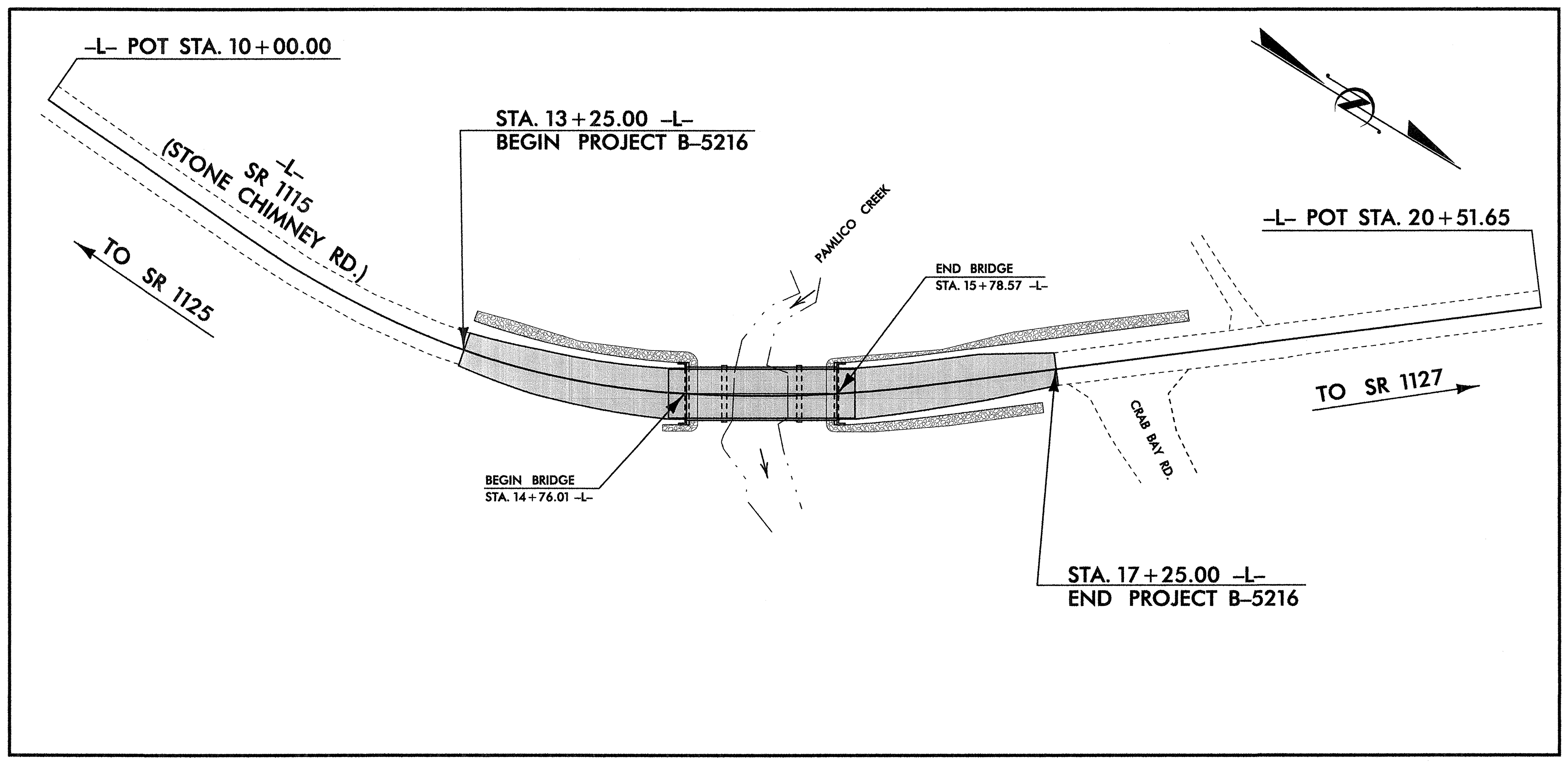


VICINITY MAP
(NOT TO SCALE)

DETOUR ROUTE

LOCATION: BRIDGE NO. 58 OVER PAMLICO CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



LOCATION SKETCH
(NOT TO SCALE)

MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

DESIGN DATA

ADT 2007 = 3400

FUNCTIONAL CLASS = LR / NONFA

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-5216 = 0.057 MILE

LENGTH STRUCTURE PROJECT B-5216 = 0.019 MILE

TOTAL LENGTH PROJECT B-5216 = 0.076 MILE

Prepared In the Office of:

Mulkey Engineers & Consultants

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 24, 2010

L. KEVIN AUSTIN, PE
MULKEY E & C
STRUCTURES ENGINEER

NCDOT CONTACT: MIKE SUMMERS
BRIDGE MAINTENANCE - PROJECT MANAGER

STRUCTURES ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/11/10

SIGNATURE: L. Kevin Austin PE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PE
STATE HIGHWAY ENGINEER - DESIGN

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED FOR
DIVISION ADMINISTRATOR DATE

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PROJECT REFERENCE NO.	SHEET NO.
B-5216	1-A

3/15/06

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

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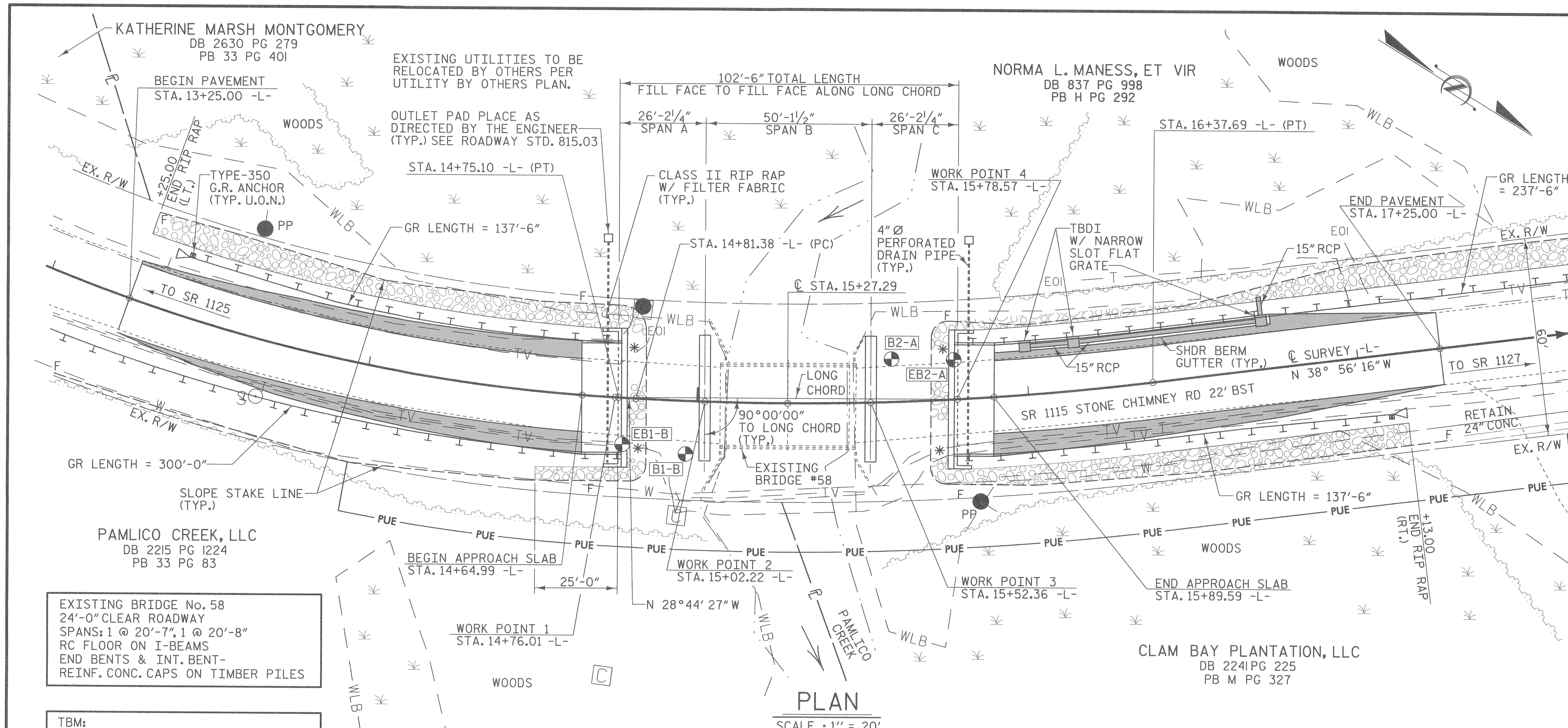


EXISTING BRIDGE No. 58
24'-0" CLEAR ROADWAY
SPANS: 1 @ 20'-7", 1 @ 20'-8"
RC FLOOR ON I-BEAMS
END BENTS & INT. BENT-
REINF. CONC. CAPS ON TIMBER PILES

TBM:
'BENCHLITE' NAIL SET IN TREE
54.58' RIGHT OF -L- STA. 14+82.21
ELEV. 5.83

PLAN
SCALE : 1" = 20'

DENOTES GEO-TECH BORE HOLE LOCATIONS.

* DENOTES B-77 GUARDRAIL CONNECTION REQ'D. SEE "GUARDRAIL ANCHORAGE FOR BARRIER RAIL" SHEET.

NOTE: GUARDRAIL LENGTHS AS SHOWN INCLUDE ANCHOR UNITS.

U.O.N. - UNLESS OTHERWISE NOTED

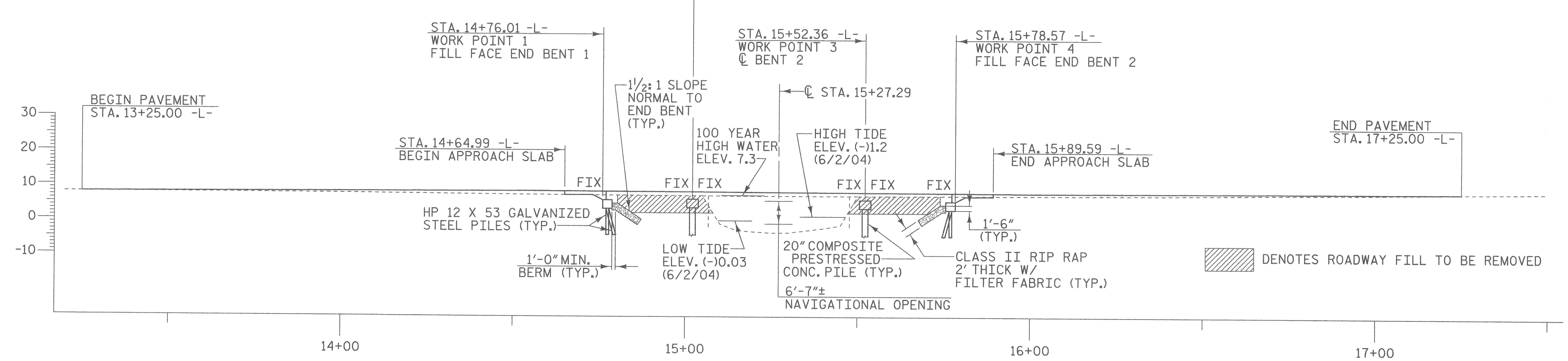
HYDROGRAPHIC DATA:

DESIGN DISCHARGE -	500 CFS
FREQUENCY OF DESIGN FLOOD -	25 YEAR
DESIGN HIGH WATER ELEVATION -	5.7
DRAINAGE AREA -	2.8 SQ. MI.
BASIC DISCHARGE (Q 100) -	850 CFS
BASIC HIGH WATER ELEVATION -	7.3

(+) 0.4370 (-) 0.3000 (+) 0.2539

STA. 13+25.00	STA. 14+55.00	STA. 16+00.00	STA. 17+25.00
ELEV. 7.92	ELEV. 8.49	ELEV. 8.05	ELEV. 8.37

GRADE DATA
-L- (SR 1115)



PROFILE ALONG ℄ SURVEY
SCALE : 1" = 20'

NOTES

SPAN 'A' & SPAN 'C' HAVE BEEN DESIGNED FOR TOP DOWN CONSTRUCTION.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR THE DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1, OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE."

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY 2001.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR SEISMIC DESIGN OF HIGHWAY BRIDGES FOR SEISMIC CATEGORY A.

DRIVE PILES AT END BENTS NO. 1 AND 2 TO A REQUIRED BEARING CAPACITY OF 90 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT END BENTS NO. 1 AND 2 IS 45 TONS.

DRIVE PILES AT BENTS NO. 1 AND 2 TO A REQUIRED BEARING CAPACITY OF 140 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO PLUS ANY ADDITIONAL CAPACITY TO ACCOUNT FOR SCOUR.

THE ALLOWABLE BEARING CAPACITY FOR PILES AT BENTS NO. 1 AND 2 IS 60 TONS.

INSTALL THE CONCRETE SECTION OF PILES AT BENTS NO. 1 AND 2 TO A TIP ELEVATION NO HIGHER THAN -26 FEET.

GALVANIZED STEEL PILES ARE REQUIRED AT END BENTS NO. 1 AND 2 IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

GALVANIZED STEEL PILE SECTIONS ARE REQUIRED AT BENTS NO. 1 AND 2 IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

STEEL H-PILE POINTS ARE REQUIRED FOR H-PILES AT END BENTS NO. 1 AND 2, AND BENTS NO. 1 AND 2. FOR STEEL PILE POINTS, SEE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR INTERIOR BENTS No. 1 AND 2 IS -14 FT. THE SCOUR CRITICAL ELEVATIONS ARE FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE COMPOSITE PILE LENGTHS PROVIDED IN THE PLAN ARE FOR ESTIMATING PURPOSES ONLY. ACTUAL PILE LENGTHS SHALL BE DETERMINED BASED ON TEST PILES MONITORED BY THE DEPARTMENT USING PILE DRIVING ANALYZER (PDA).

PILE HAMMER ENERGY REQUIREMENTS FOR DRIVING COMPOSITE PILES TO THE MINIMUM TIP ELEVATIONS SHOULD BE DETERMINED BASED ON TEST PILES MONITORED BY THE DEPARTMENT USING PILE DRIVING ANALYZER (PDA).

ADT = 3400 FOR YEAR 2007

FOR ADDITIONAL NOTES SEE "ROADWAY DETAILS" SHEET.

PROJECT NO. 42813
BRUNSWICK COUNTY
STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON SR 1115 OVER PAMLICO CREEK BETWEEN SR 1125 & SR 1127

33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER 19661 L. KEVIN AUSTIN 5/12/10

PLANS PREPARED BY:
MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
RALEIGH, N.C. 27636
(919) 851-1912
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : W. B. ALLEN DATE : 12/09
CHECKED BY : L. K. AUSTIN DATE : 2/10

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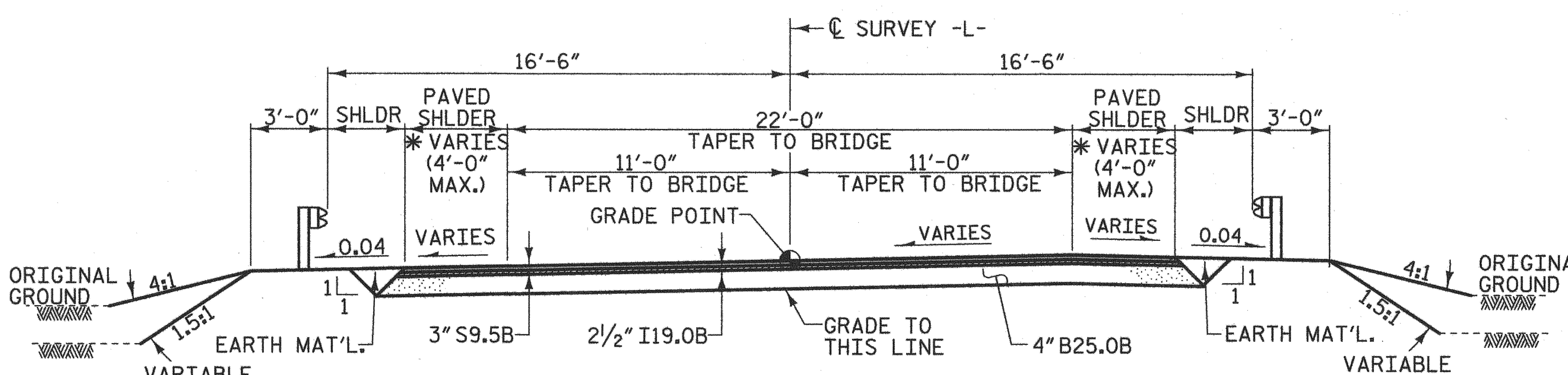
HORIZONTAL CURVE DATA

PI STA. 12+01.14	PI STA. 13+67.44	PI STA. 15+59.74
Δ = 7°53′ 41″ (LT)	Δ = 23°52′ 41″ (LT)	Δ = 10°11′ 49″ (LT)
D = 7°06′ 47″	D = 10°55′ 34″	D = 6°31′ 24″
L = 110.99′	L = 218.54′	L = 156.32′
T = 55.58′	T = 110.88′	T = 78.36′
R = 805.51′	R = 524.39′	R = 878.32′

PAVEMENT LAYOUT DETAIL

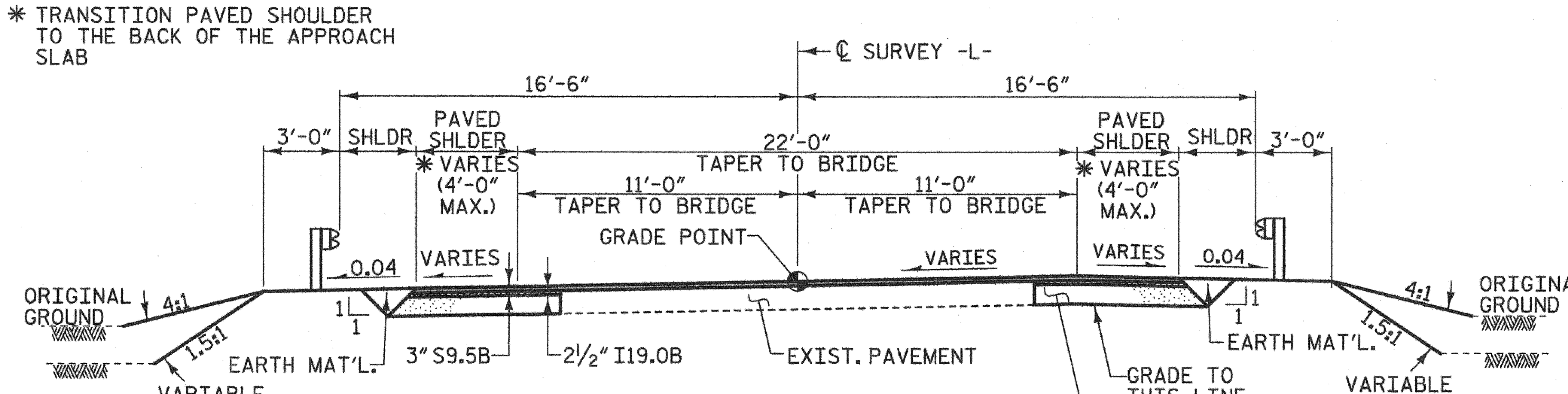
SCALE : 1″ = 20′



FULL DEPTH PAVEMENT

FROM -L- STA. 14+50 TO BEGIN BRIDGE
FROM END BRIDGE TO -L- STA. 16+00

* TRANSITION PAVED SHOULDER TO THE BACK OF THE APPROACH SLAB



WIDENING PAVEMENT

FROM -L- STA. 13+25 TO -L- STA. 14+50
FROM -L- STA. 16+00 TO -L- STA. 17+25

TYPICAL ROADWAY SECTION

WITHIN CONSTRUCTION LIMITS

NOTES

ROADWAY APPROACH EMBANKMENT SHALL BE WIDENED AS NECESSARY FOR GUARDRAIL INSTALLATION.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE

CLASS AA (4500 PSI) CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE BENT CAPS, END BENT CAPS AND WING WALLS AND SHALL AND CONTAIN CALCIUM NITRATE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL BAR SUPPORTS USED IN THE BENT CAPS, END BENT CAPS AND WING WALLS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRESTRESSED CONCRETE CORED SLAB UNITS AND 20″ COMPOSITE PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE PILES OF BENTS NO. 1 & 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFEY, SEE SPECIAL PROVISIONS.

THE QUANTITY OF RIP RAP TO BE PAID FOR WILL BE THE ACTUAL NUMBER OF TONS OF EACH CLASS OF RIP RAP WHICH HAS BEEN INCORPORATED INTO THE COMPLETED AND ACCEPTED WORK. THE RIP RAP WILL BE MEASURED BY BEING WEIGHED IN TRUCKS ON CERTIFIED PLATFORM SCALES OR OTHER CERTIFIED WEIGHING DEVICES. THE QUANTITY OF RIP RAP WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON:

PLAIN RIP RAP CLASS II (2′-0″ THICK)

END BENT No. 1	180 TONS
END BENT No. 2	310 TONS
TOTAL	490 TONS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "MA3001B-101"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 80932.240(ft) EASTING: 2224080.959(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.00012497
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MA3001B-101" TO -L- STATION 14+75.10
S 36°11′10″ E 643.91′
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

PROJECT NO. 42813
BRUNSWICK COUNTY
STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROADWAY DETAILS

33′ CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER 19661 KEVIN AUSTIN 5/14/10

PLANS PREPARED BY:
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B-5216	8

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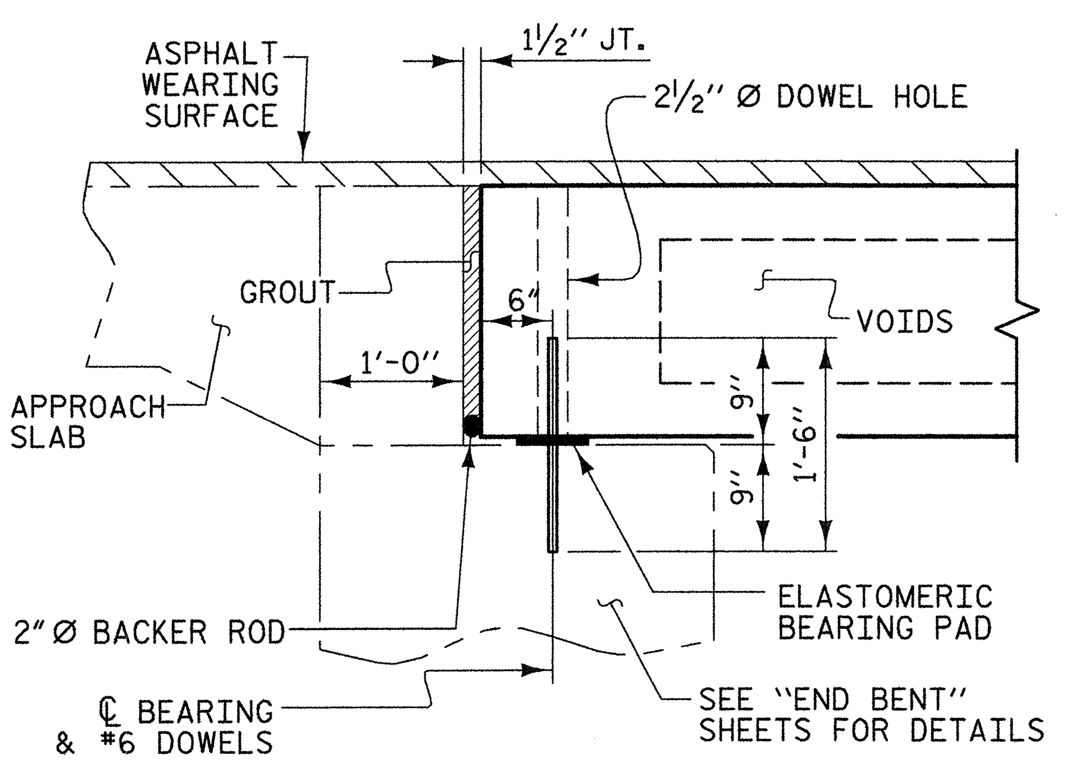
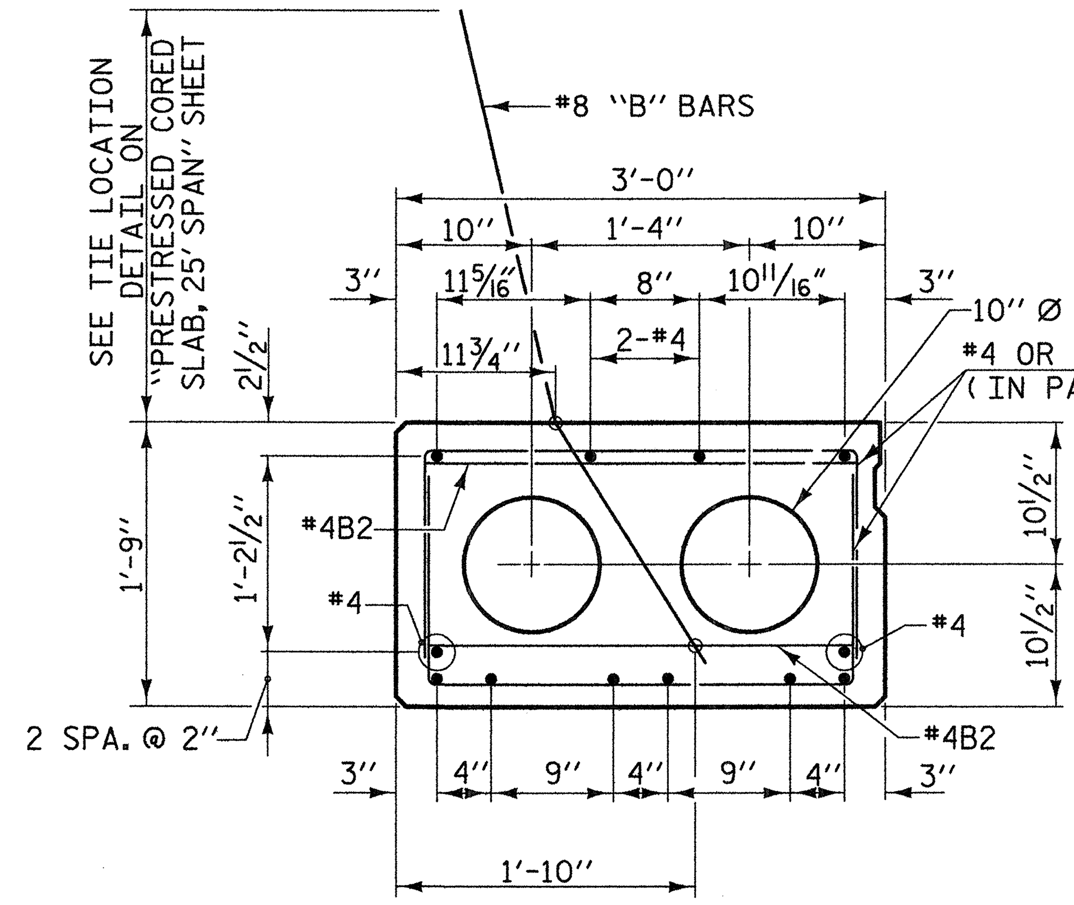
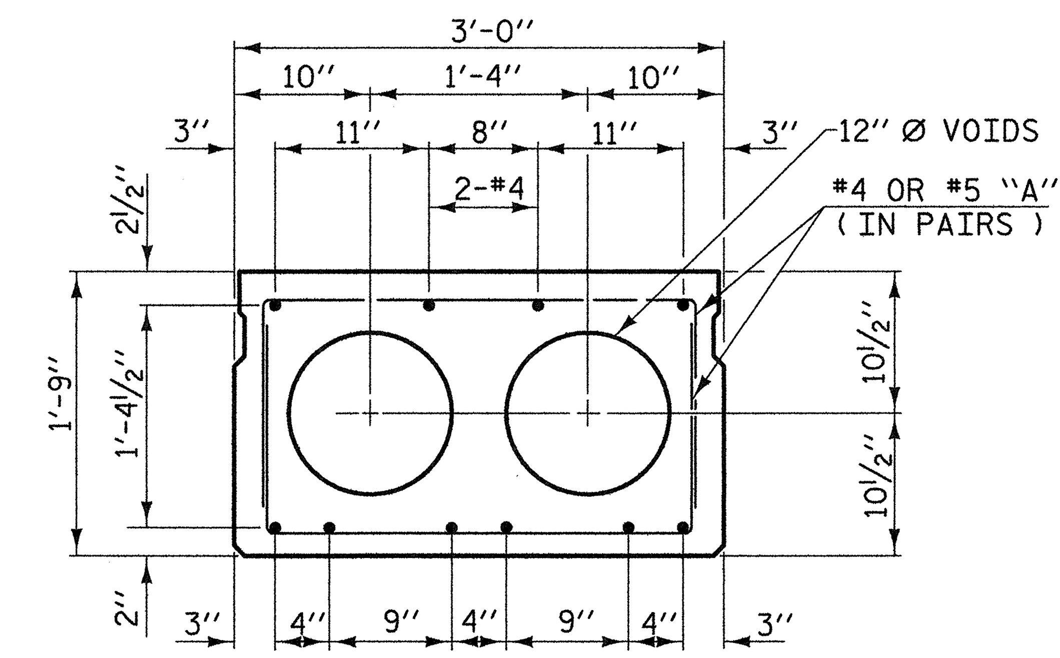


SECTION AT END BENT



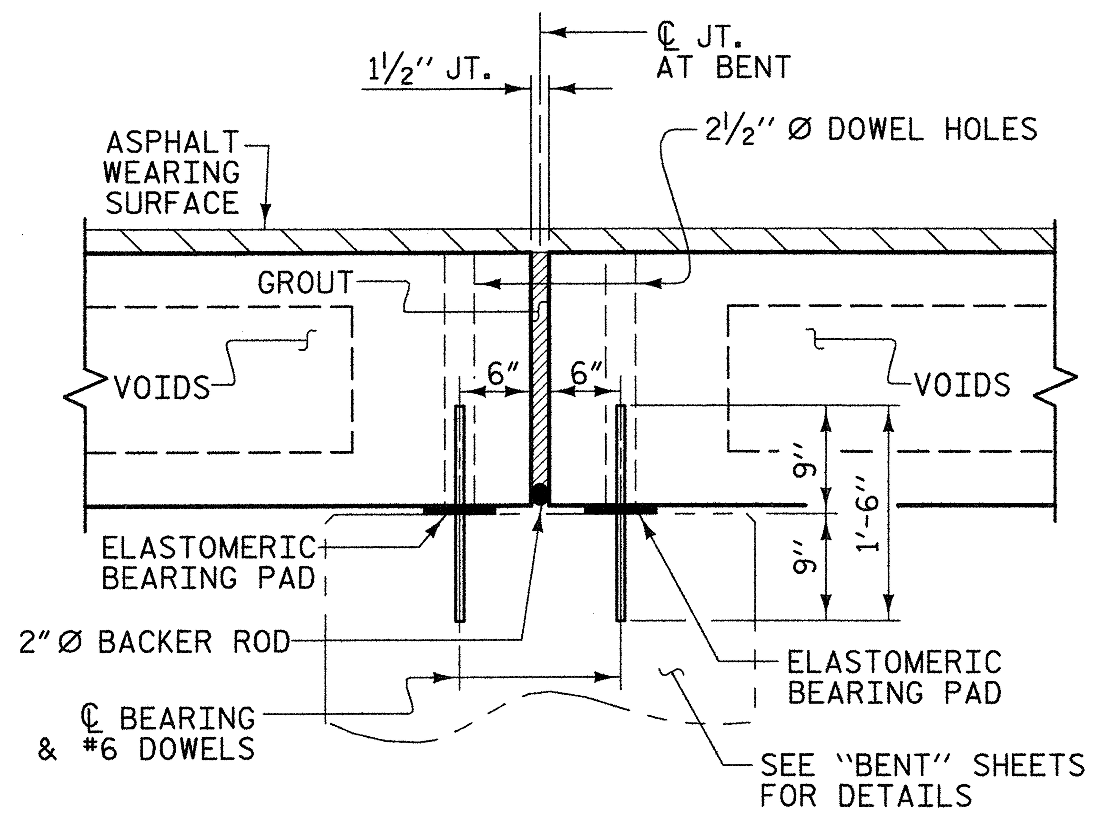
25' SPAN

8 - ½" Ø H.S. STRANDS
EXTERIOR SLAB SECTIONS

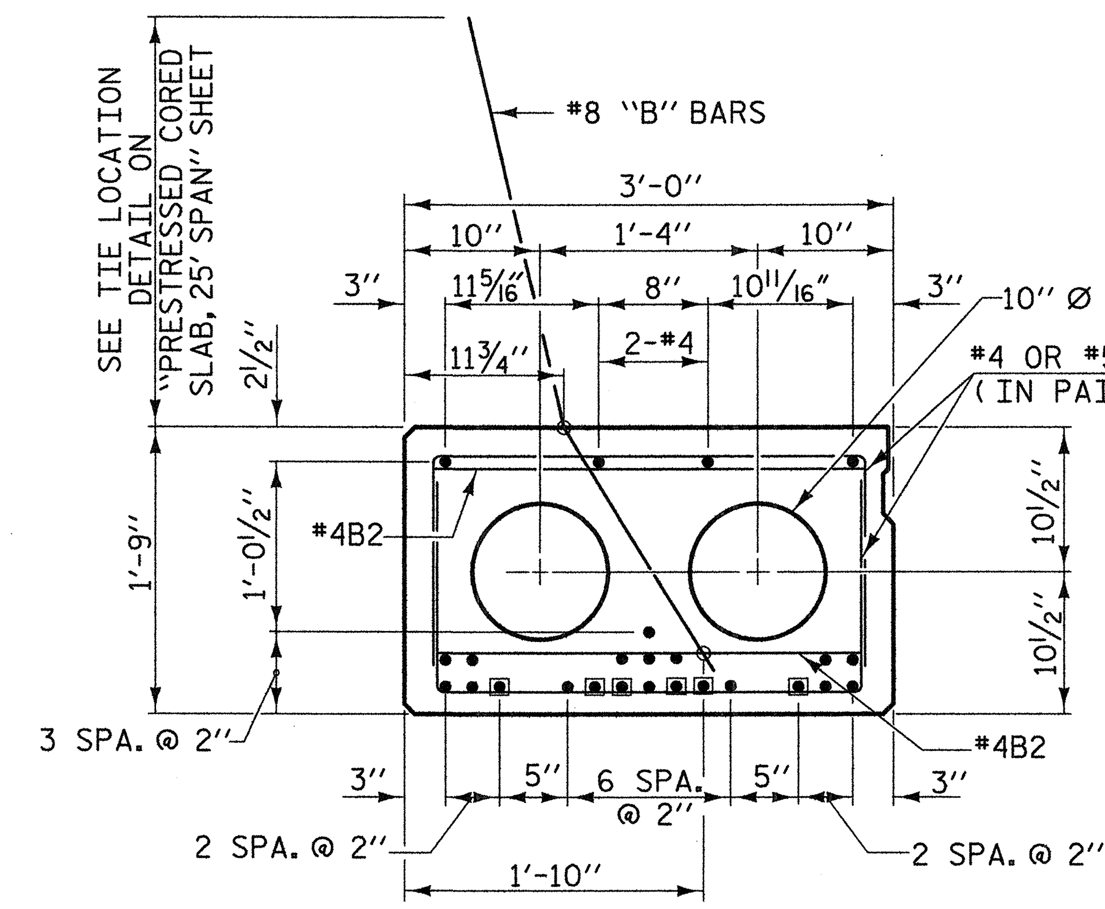


25' SPAN

8- ½" Ø H.S. STRANDS
INTERIOR SLAB SECTIONS



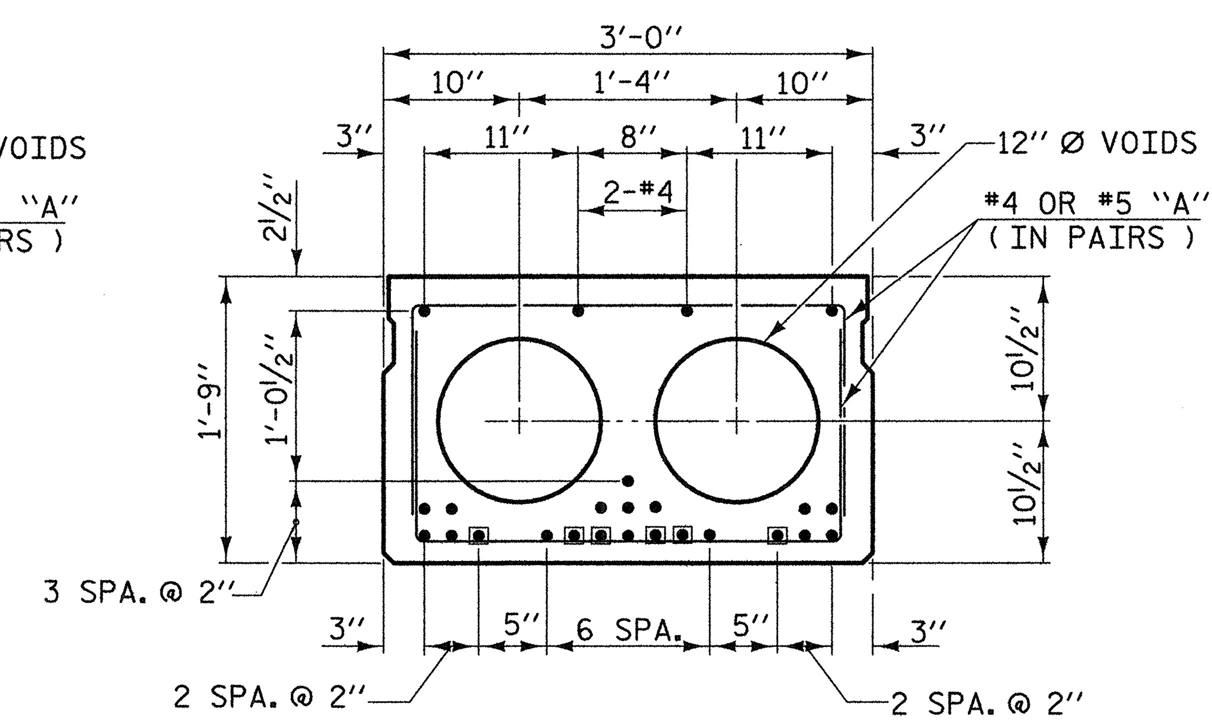
SECTION AT BENT



50' SPAN

23 - ½" Ø H.S. STRANDS
EXTERIOR SLAB SECTIONS

▣ DENOTES SHEATHED STRAND
(SEE SHEATH CHART)



50' SPAN

23 - ½" Ø H.S. STRANDS
INTERIOR SLAB SECTIONS

GENERAL NOTES

ASSUMED LIVE LOAD = HS 20 OR ALTERNATE LOADING, EXCEPT THAT CORED SLAB UNITS IN SPANS A AND C HAVE BEEN DESIGNED FOR HS 25. CORED SLAB UNITS IN SPAN B HAVE BEEN DESIGNED FOR HS 20.

PRESTRESSED CONCRETE CORED SLABS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

CONCRETE = f'c - 5000psi 25' SPAN ONLY. (MIN. COMP. STRENGTH @ 28 DAYS).
f'ci - 4000psi 25' SPAN ONLY (MIN. COMP. STRENGTH @ TRANSFER OF STRESSING FORCE).

CONCRETE = f'c - 7000psi 50' SPAN ONLY. (MIN. COMP. STRENGTH @ 28 DAYS).
f'ci - 5000psi 50' SPAN ONLY (MIN. COMP. STRENGTH @ TRANSFER OF STRESSING FORCE).

SIZE	TYPE	AREA	ULTIMATE STR.	APPLIED FORCE
½" Ø	HIGH STR.	0.153 SQ. IN. PER CABLE	41,300 LBS.	30,980 LBS. PER CABLE

STRUCTURAL STEEL ITEMS SHALL BE OF A GRADE CONFORMING TO EITHER ASTM A36 OR A373, EXCEPT HIGH STRENGTH BOLTS. HIGH STRENGTH BOLTS SHALL BE ASTM A325. ALL STRUCTURAL STEEL SHALL BE GALVANIZED AS PER THE SPECIFICATION.

ALL MATERIAL AND WORKMANSHIP SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES OF THE NC DEPARTMENT OF TRANSPORTATION DATED JULY 2006 AND WITH THE SPECIAL PROVISIONS.

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 CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF SUPERSTRUCTURE.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER . SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS. THE JOINT SHALL BE FILLED WITH GROUT.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

#8 "B" BARS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

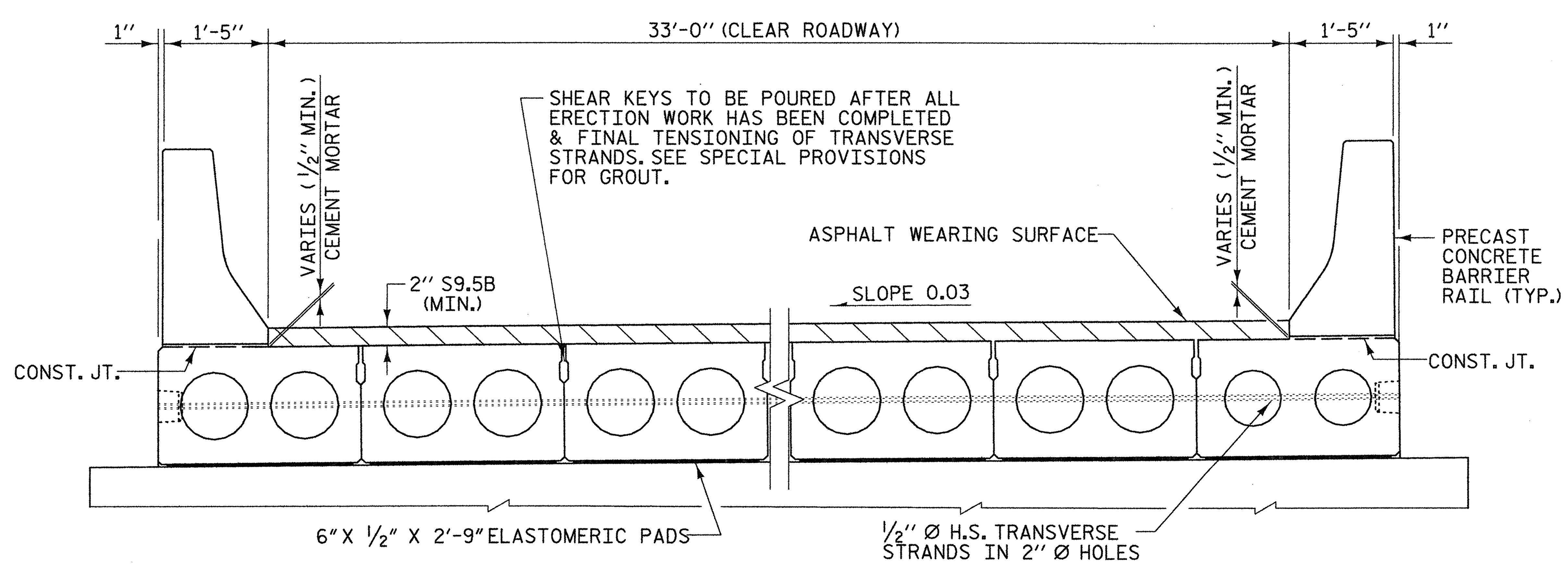
APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾".

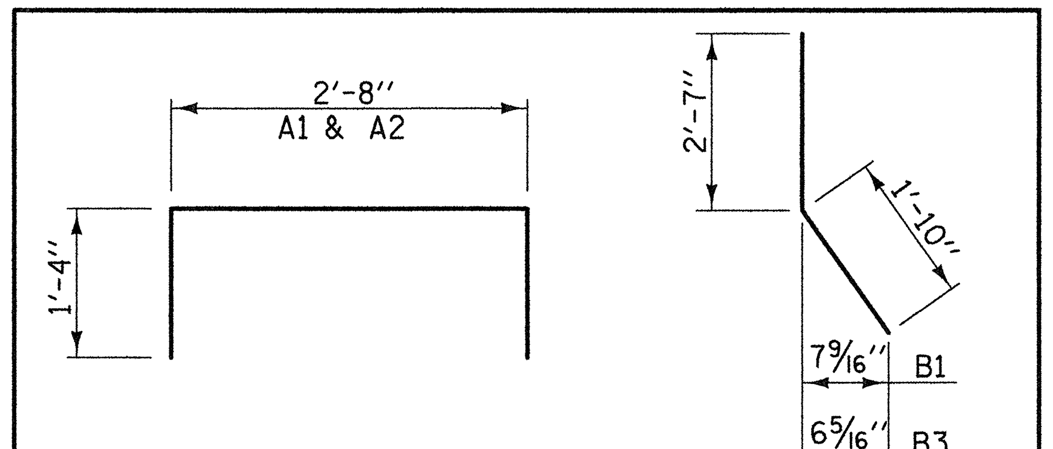
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

FOR DEFLECTION TABLE, SEE "PRECAST CONCRETE BARRIER RAIL SECTIONS 25' & 50' SPANS" SHEET.



TYPICAL SECTION



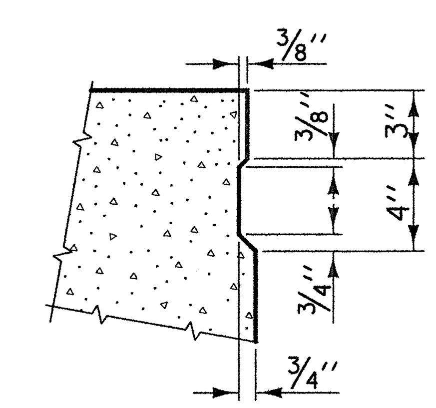
REINFORCING BAR TYPES

BAR DIMENSIONS ARE OUT TO OUT

SHEATH CHART

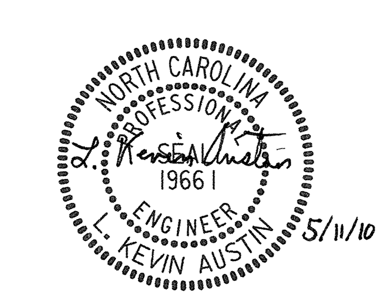
SPAN LENGTH	NUMBER OF SHEATHED STRANDS PER EXTERIOR SLAB SECTIONS	NUMBER OF SHEATHED STRANDS PER INTERIOR SLAB SECTIONS
25'	0	0
50'	6	6

BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 5'-0" FROM END OF SLAB



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE OF EXTERIOR CORED SLAB



PLANS PREPARED BY:

MULKEY ENGINEERS & CONSULTANTS
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(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

PRESTRESSED CORED SLAB
25' & 50' SPANS

33' CLEAR ROADWAY - 90° SKEW

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			9
1			3					TOTAL SHEETS
2			4					34

DRAWN BY : W. B. ALLEN DATE : 12/05
CHECKED BY : L. K. AUSTIN DATE : 2/10

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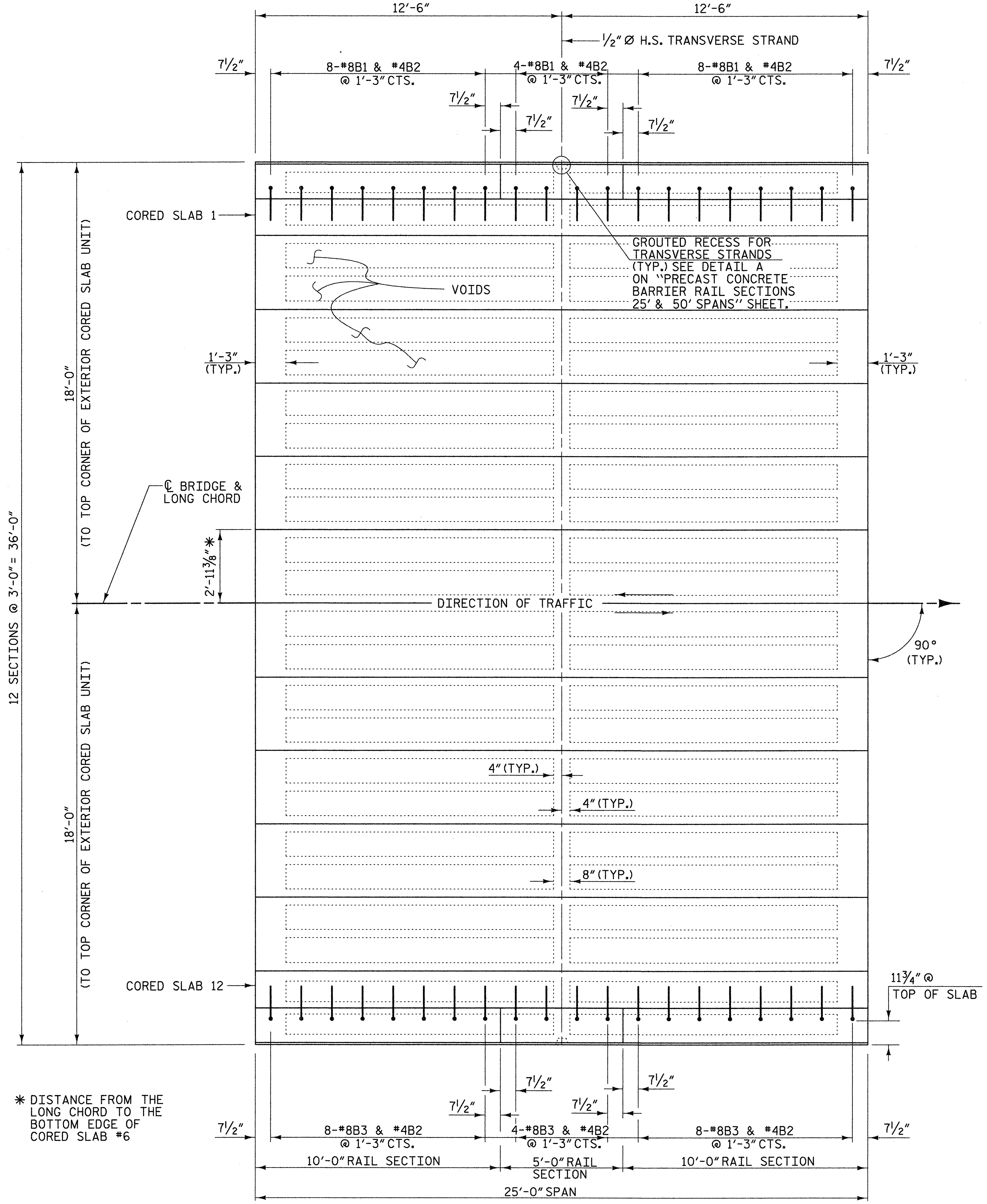
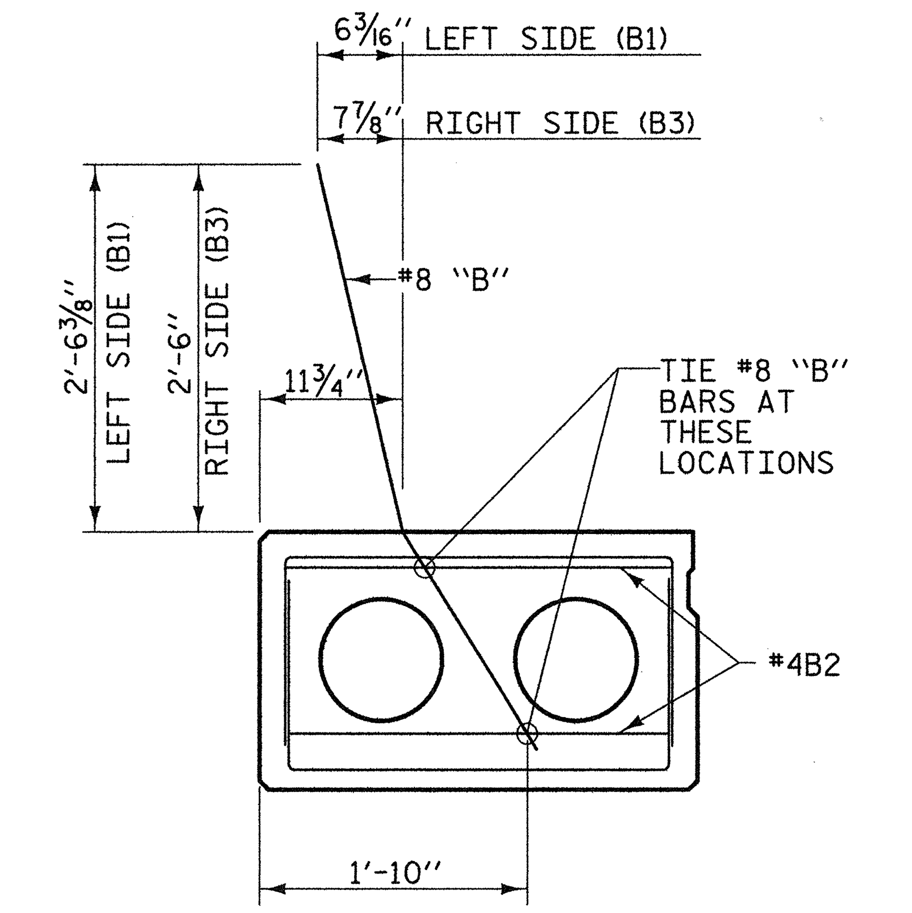
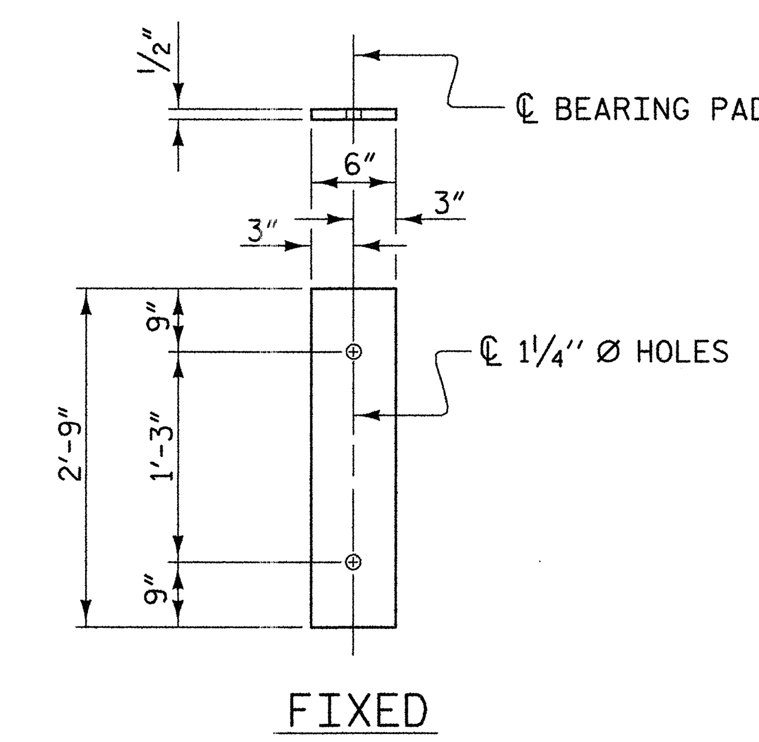


* DISTANCE FROM THE LONG CHORD TO THE BOTTOM EDGE OF CORED SLAB #6

PLAN OF SPAN



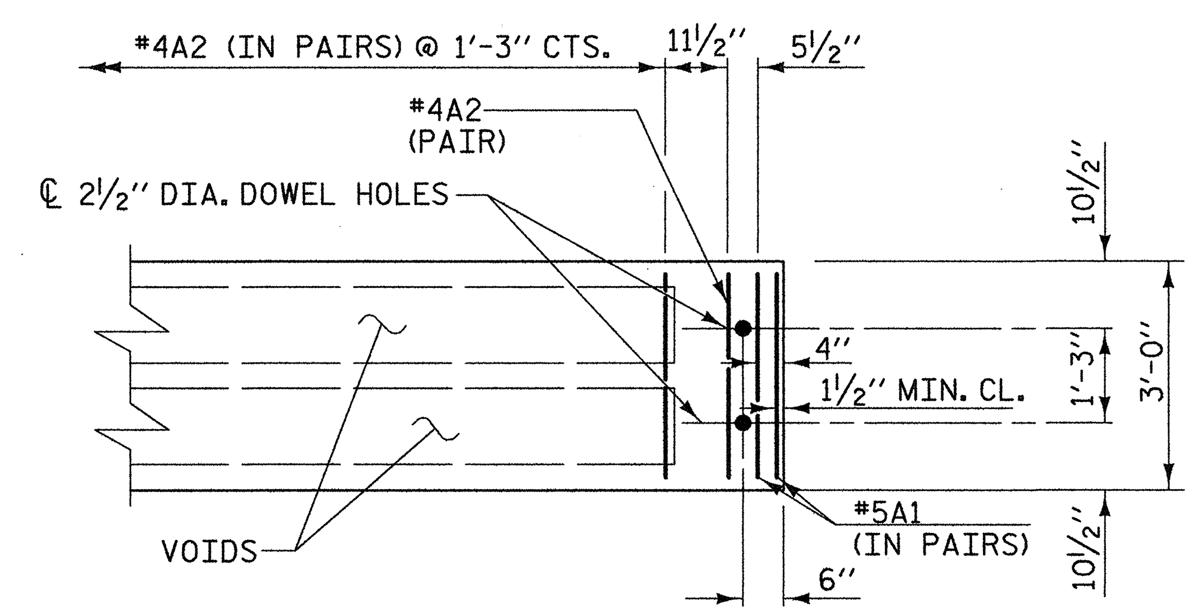
TIE LOCATION FOR #8 "B"



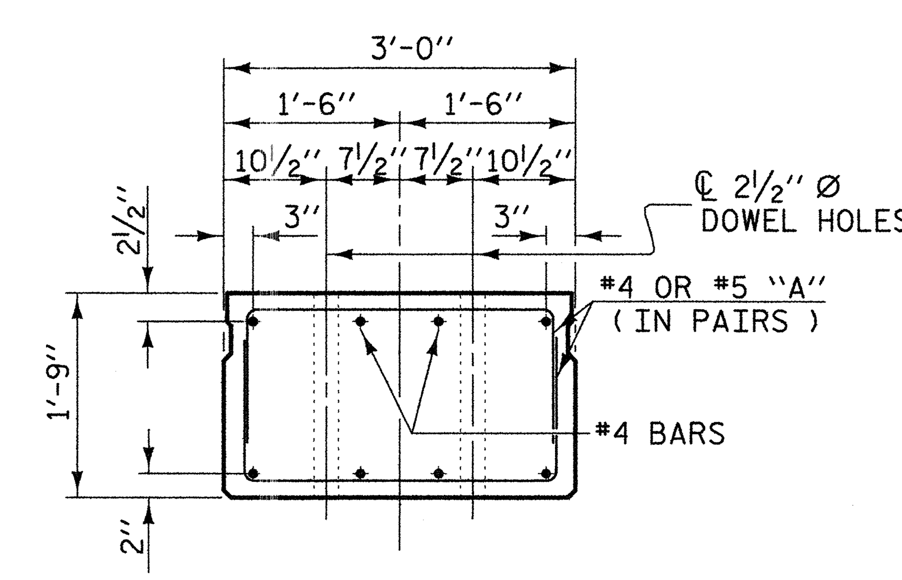
FIXED
(TYPE I - 72 REQ'D)

ELASTOMERIC BEARING DETAILS

NOTE: ELASTOMER HARDNESS SHALL BE 50 DUROMETERS.



PART PLAN - SLAB SECTION



SLAB END ELEVATION

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH GROUT, SEE SPECIAL PROVISIONS.

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

NORTH CAROLINA PROFESSIONAL SEAL 19661 ENGINEER L. KEVIN AUSTIN 5/11/10

PLANS PREPARED BY:

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CORED SLAB
25' SPAN

33' CLEAR ROADWAY - 90° SKEW

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

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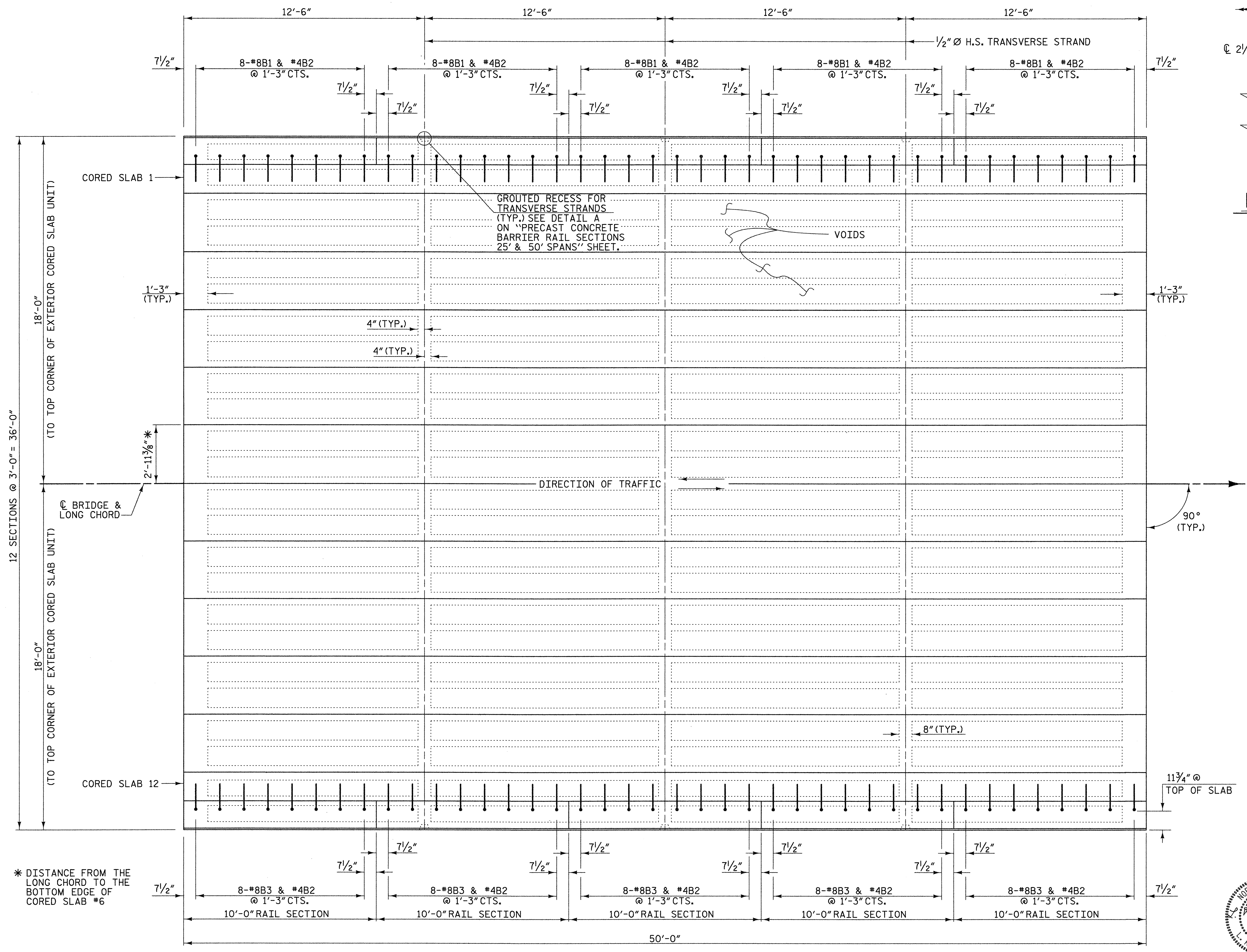
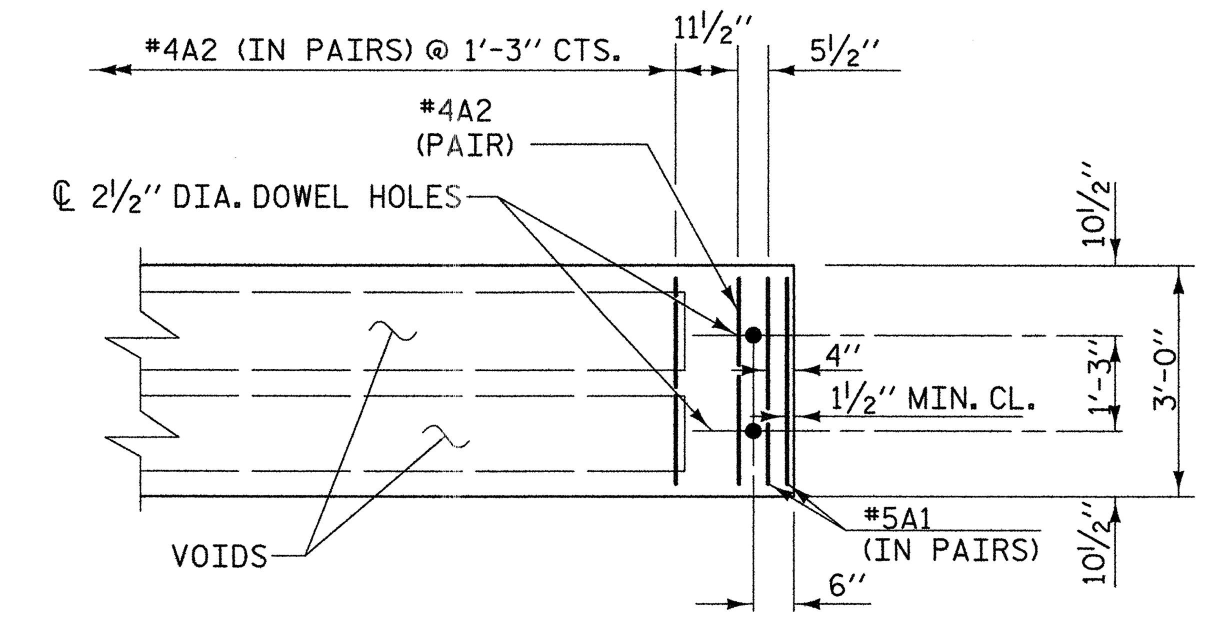


PLAN OF SPAN



PART PLAN - SLAB SECTION

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

PRESTRESSED CORED SLAB
50' SPAN

33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/11/10

PLANS PREPARED BY:
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NO.	BY:	DATE:	NO.	BY:	DATE:	11
1			3			TOTAL SHEETS
2			4			34

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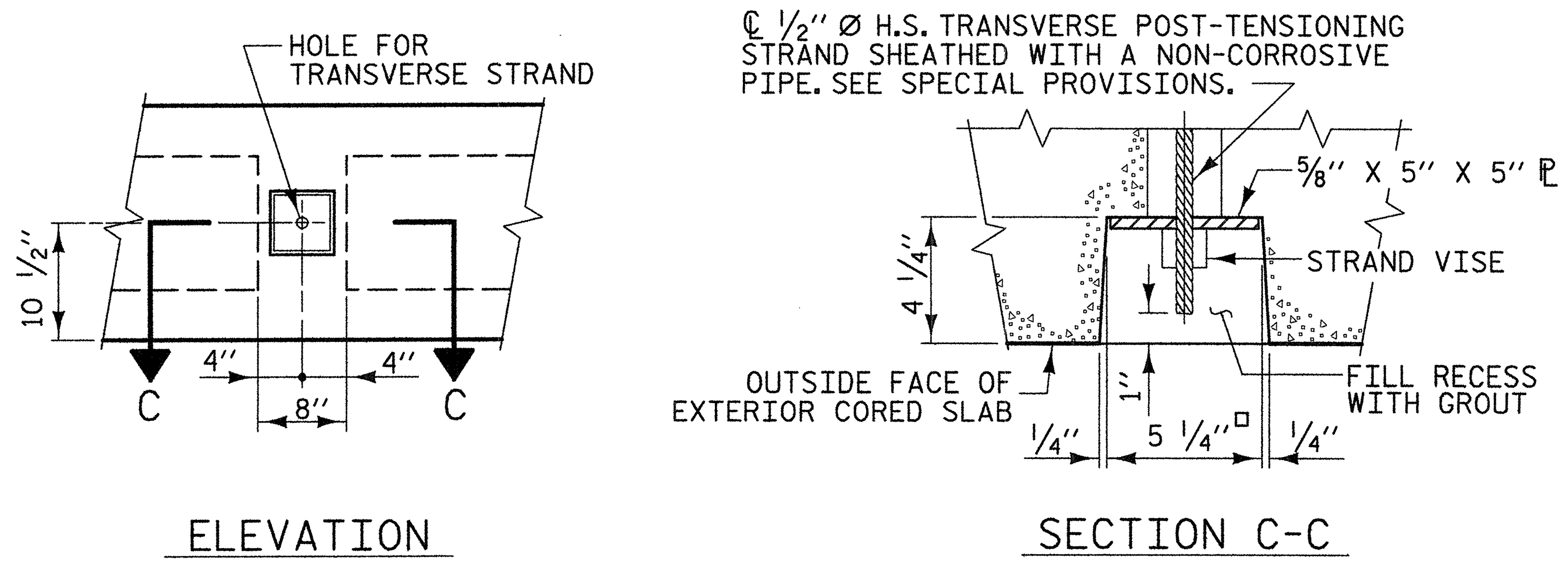


DETAIL A
GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLAB

NOTES

EACH PRECAST RAIL UNIT SHALL BE CAST WITH CLASS AA CONCRETE.

RAIL TO BE FLUSH WITH CORED SLAB UNITS AT EACH END OF SPAN.

GROUT SHALL BE 5" ABOVE THE BOTTOM OF THE RAIL BETWEEN RAIL SECTIONS AND THE JOINTS AT THE BENTS.

EACH PRECAST RAIL UNIT SHALL BE SUPPLIED WITH LIFTING DEVICE(S). NO CABLES ARE TO BE WRAPPED AROUND THE RAIL UNITS FOR LIFTING.

CONCRETE CHAMFERS:
UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE ON PLANS.

NO DECK DRAINS ALLOWED.

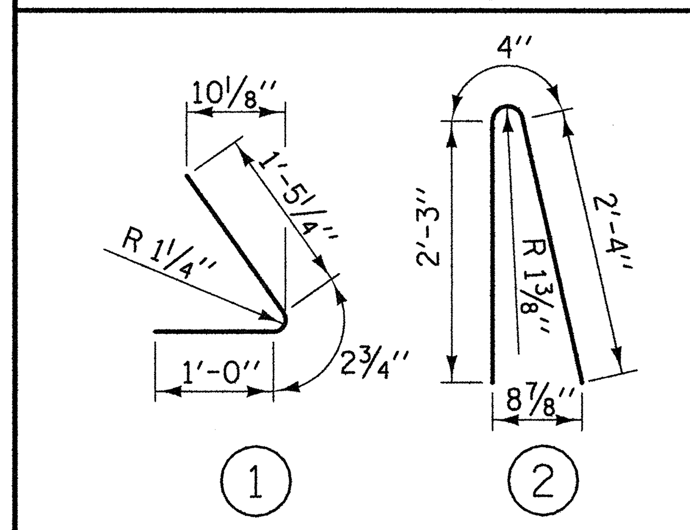
BILL OF MATERIAL FOR ONE 5'-0" RAIL SECTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	5	#5	1	2'-8"	14
B4	5	#5	2	4'-11"	26
B5	5	#5	STR.	4'-7"	24
REINFORCING STEEL LBS. =					64
CLASS AA CONCRETE CU. YDS. =					0.5

BILL OF MATERIAL FOR ONE 10'-0" RAIL SECTION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	9	#5	1	2'-8"	25
B4	9	#5	2	4'-11"	46
B6	5	#5	STR.	9'-7"	50
REINFORCING STEEL LBS. =					121
CLASS AA CONCRETE CU. YDS. =					1.0

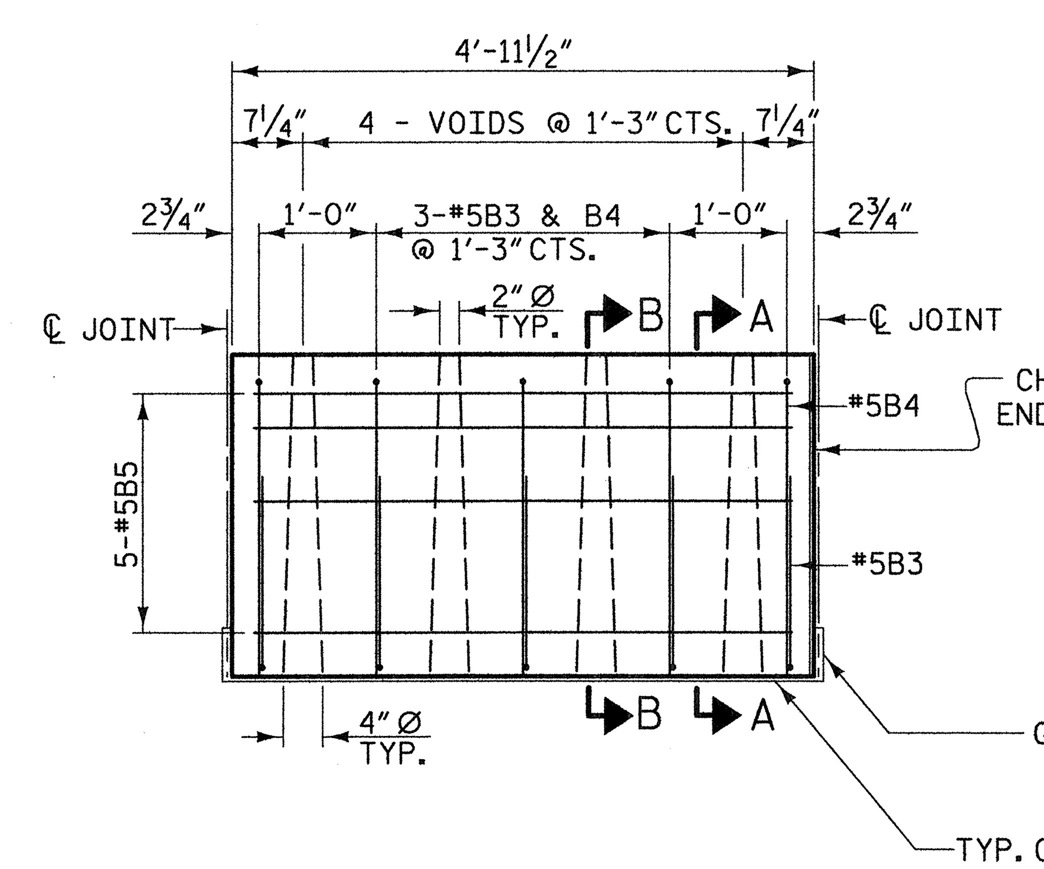
BAR TYPES



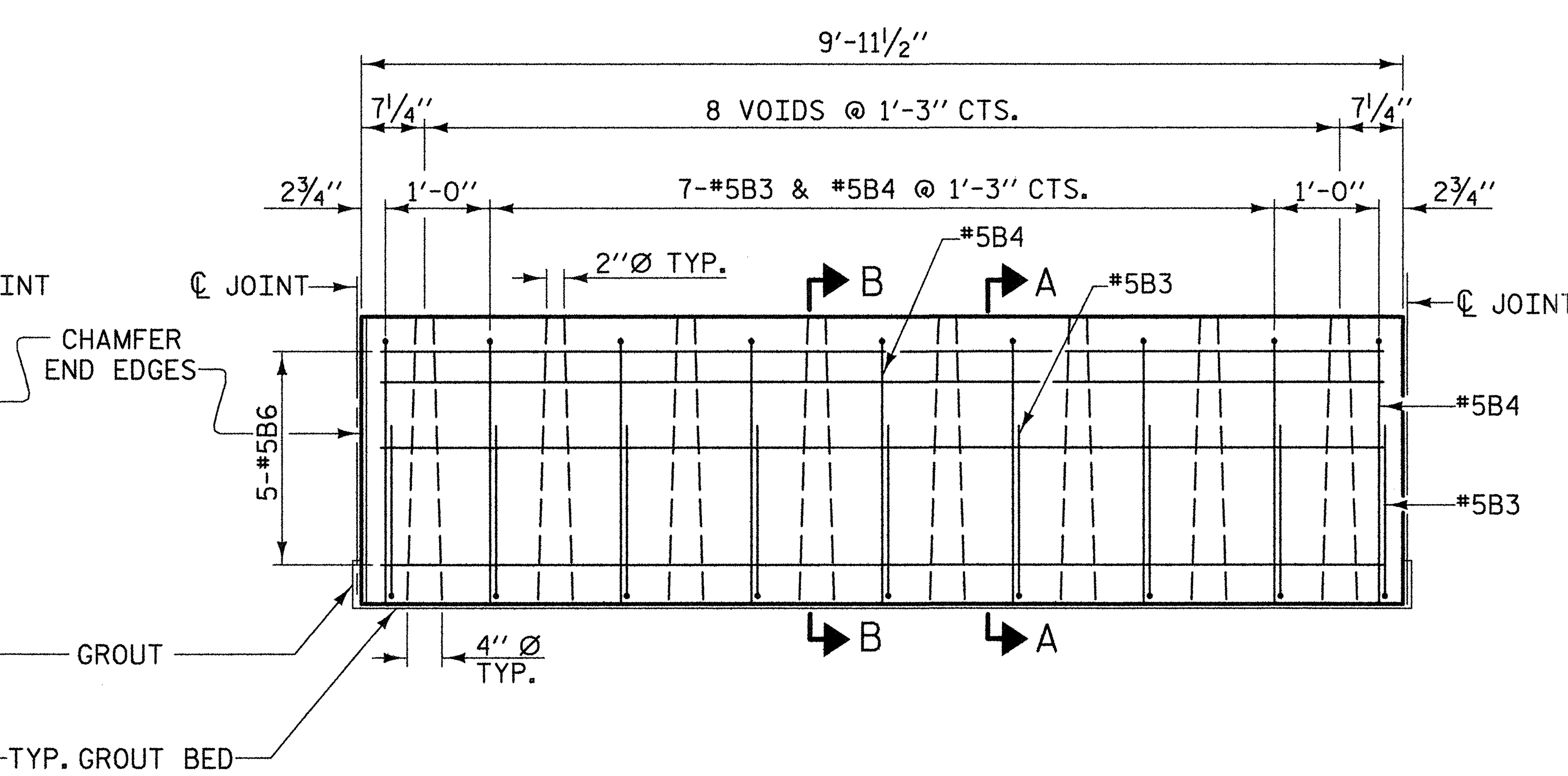
ALL BAR DIMENSIONS ARE OUT TO OUT

EXTERIOR SLAB UNIT	25'	50'
CAMBER (SLAB UNIT ALONE IN PLACE)	1/8" (UP)	1 15/16" (UP)
DEFLECTION (SUPERIMPOSED DEAD LOAD)	* 0"	1/4" (DOWN)
FINAL DEFLECTION	1/8" (UP)	1 11/16" (UP)
* INCLUDES FUTURE WEARING SURFACE		

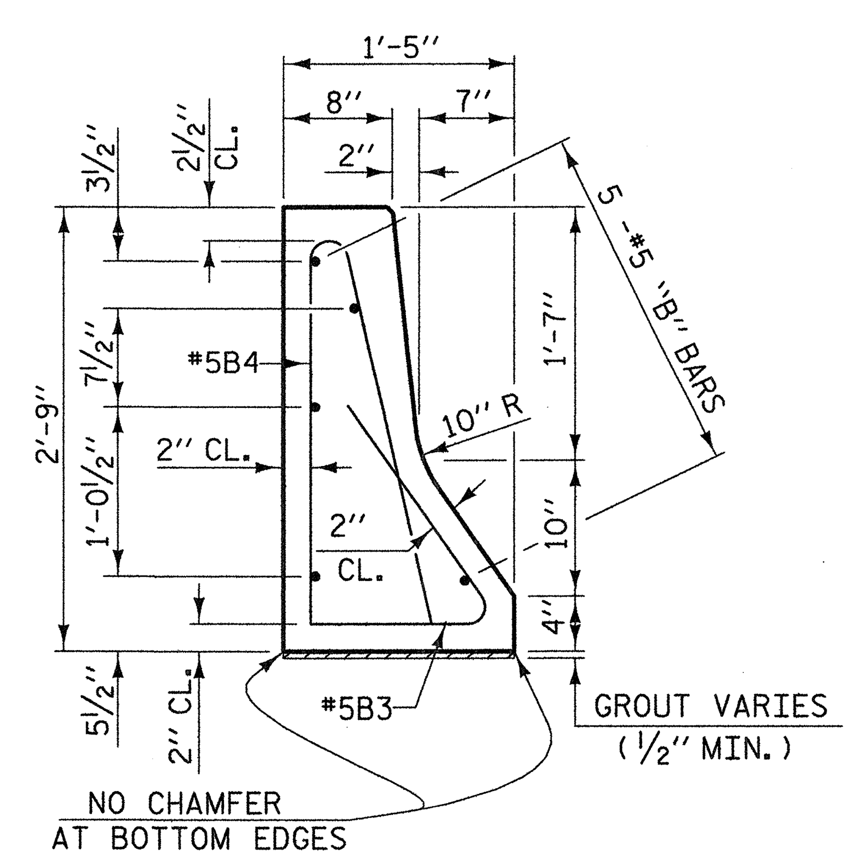
INTERIOR SLAB UNIT	25'	50'
CAMBER (SLAB UNIT ALONE IN PLACE)	1/8" (UP)	2 3/16" (UP)
DEFLECTION (SUPERIMPOSED DEAD LOAD)	* 0"	* 1/4" (DOWN)
FINAL DEFLECTION	1/8" (UP)	1 15/16" (UP)
* INCLUDES FUTURE WEARING SURFACE		



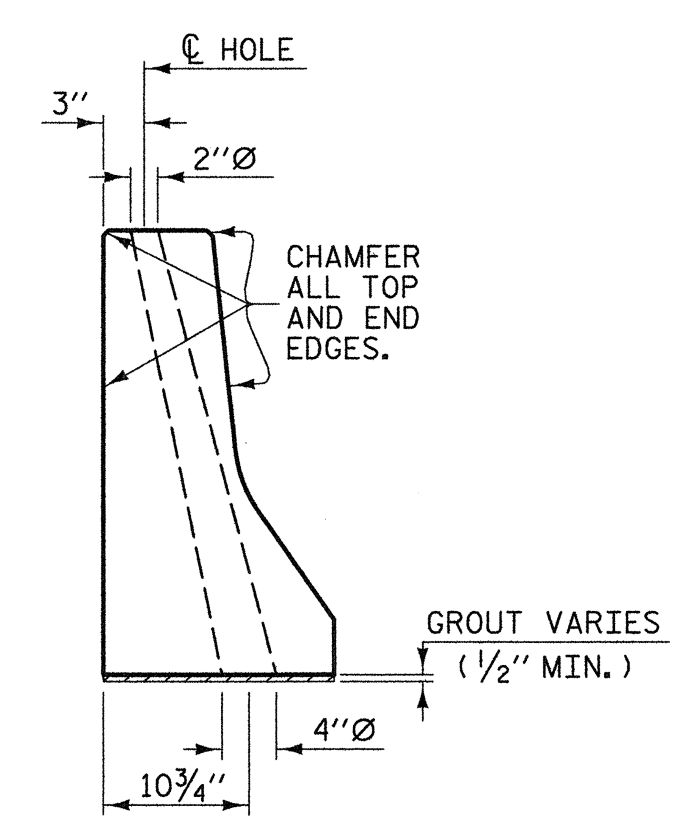
TYPICAL 5'-0" PRECAST UNIT



TYPICAL 10'-0" PRECAST UNIT



SECTION A-A



SECTION B-B

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
PRECAST CONCRETE BARRIER RAIL SECTIONS
25' & 50' SPANS
33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/11/10

PLANS PREPARED BY:
MULKEY ENGINEERS & CONSULTANTS
PO Box 33127 Raleigh, N.C. 27636 (919) 851-1912 (919) 851-1918 (FAX) WWW.MULKEYINC.COM

REVISIONS						SHEET NO. 12
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1			3			
2			4			

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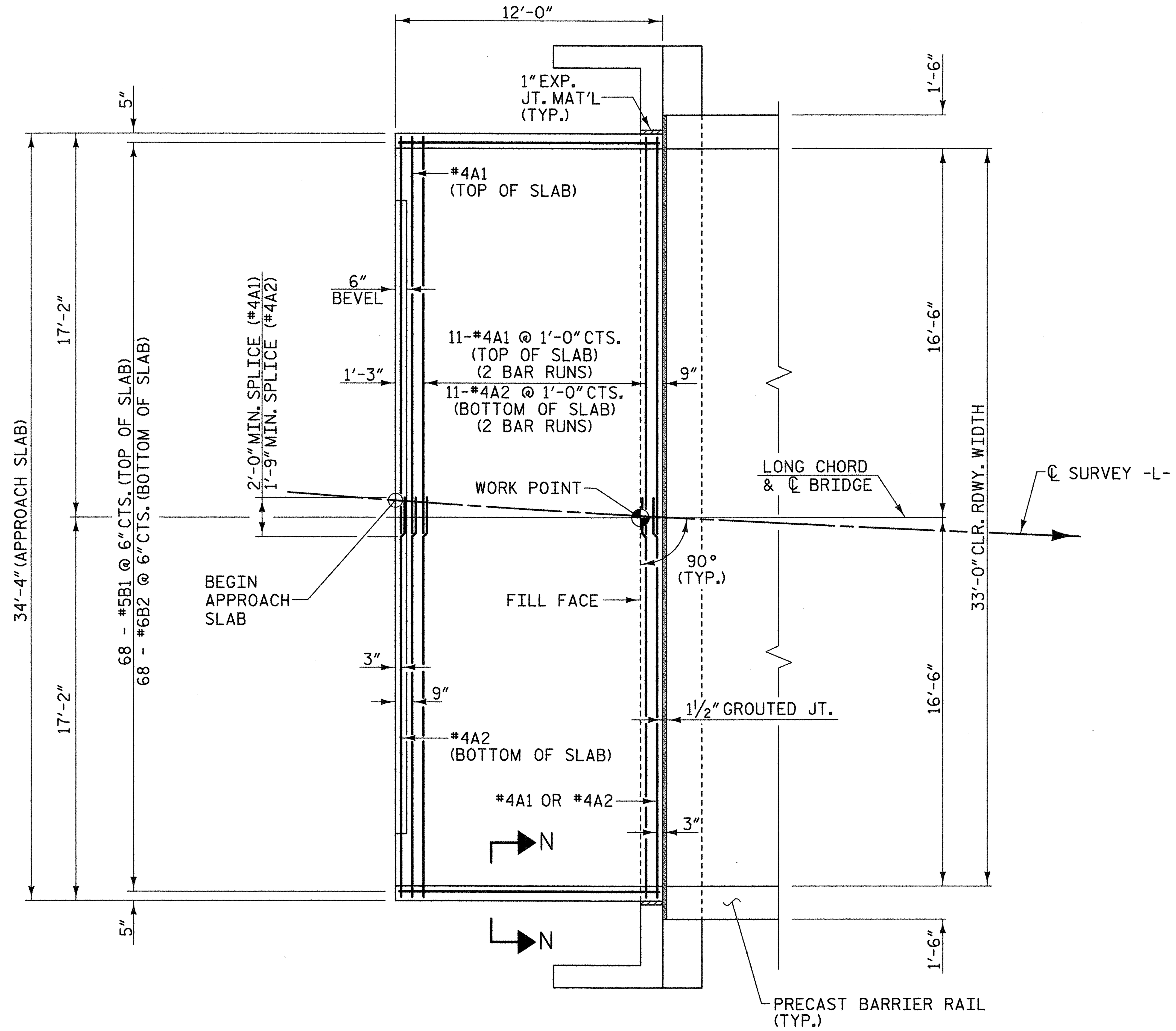
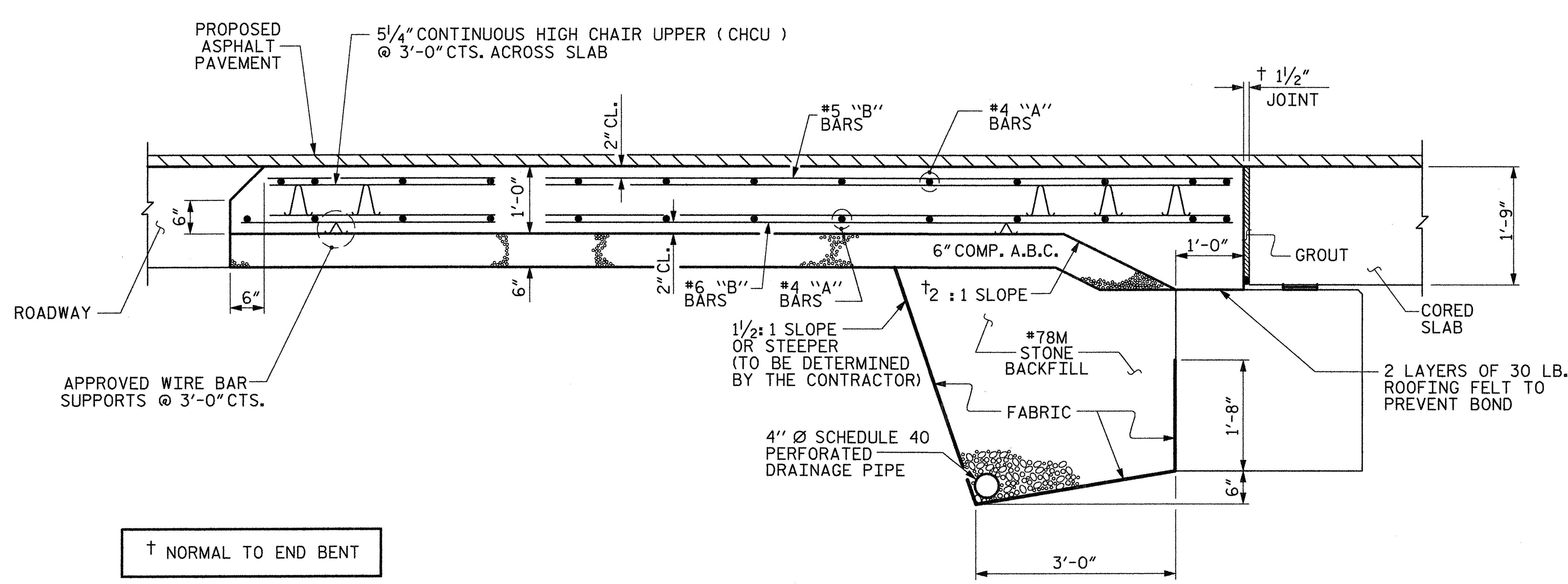


PLAN OF APPROACH SLAB

END BENT 1 APPROACH SLAB SHOWN
END BENT 2 APPROACH SLAB SIMILAR



† NORMAL TO END BENT

SECTION THRU SLAB

NOTES

REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SHALL BE INCLUDED IN THE LUMP SUM CONTRACT BID PRICE FOR BRIDGE APPROACH SLABS.

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED.

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

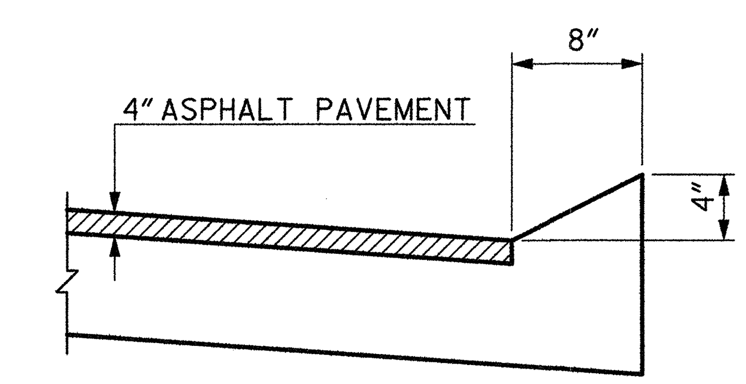
THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

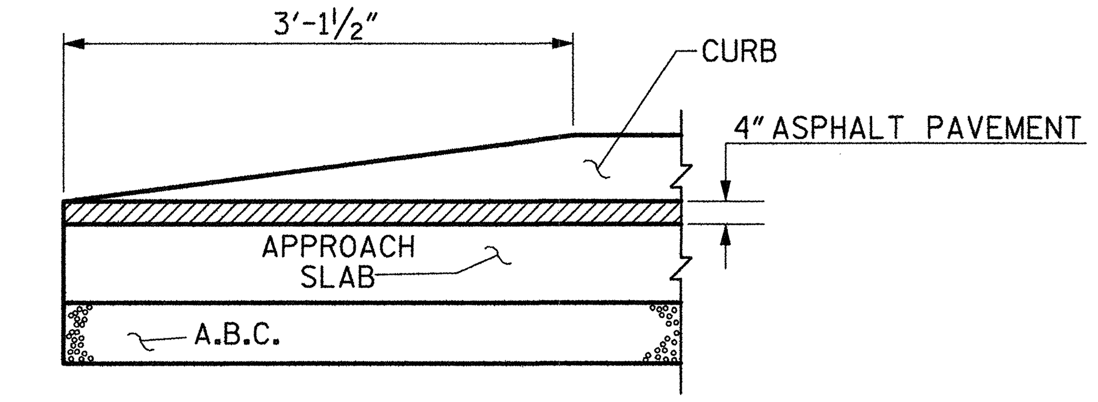
FOR JOINT DETAILS, SEE "PRESTRESSED CORED SLAB, 25' & 50' SPANS" SHEET.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

BILL OF MATERIAL

APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	18'-0"	313
A2	26	#4	STR	17'-11"	311
* B1	68	#5	STR	11'-3"	798
B2	68	#6	STR	11'-8"	1192
REINFORCING STEEL				LBS.	1503
* EPOXY COATED REINFORCING STEEL				LBS.	1111
CLASS AA CONCRETE				C. Y.	16.3

APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	18'-0"	313
A2	26	#4	STR	17'-11"	311
* B1	68	#5	STR	11'-3"	798
B2	68	#6	STR	11'-8"	1192
REINFORCING STEEL				LBS.	1503
* EPOXY COATED REINFORCING STEEL				LBS.	1111
CLASS AA CONCRETE				C. Y.	16.3

PROJECT NO. 42813
BRUNSWICK COUNTY
STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
CORED SLAB UNIT
(SUB-REGIONAL TIER)
STD. NO. BAS13

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			13
1			3					TOTAL SHEETS
2			4					34

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/11/10

PLANS PREPARED BY:
MULKEY ENGINEERS & CONSULTANTS
PO BOX 33127
RALEIGH, N.C. 27636
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(919) 851-1918 (FAX)
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ASSEMBLED BY : W. B. ALLEN	DATE : 12/09	
CHECKED BY : L. K. AUSTIN	DATE : 2/10	
DRAWN BY : KMM 3-08		
CHECKED BY : GM 3-08		

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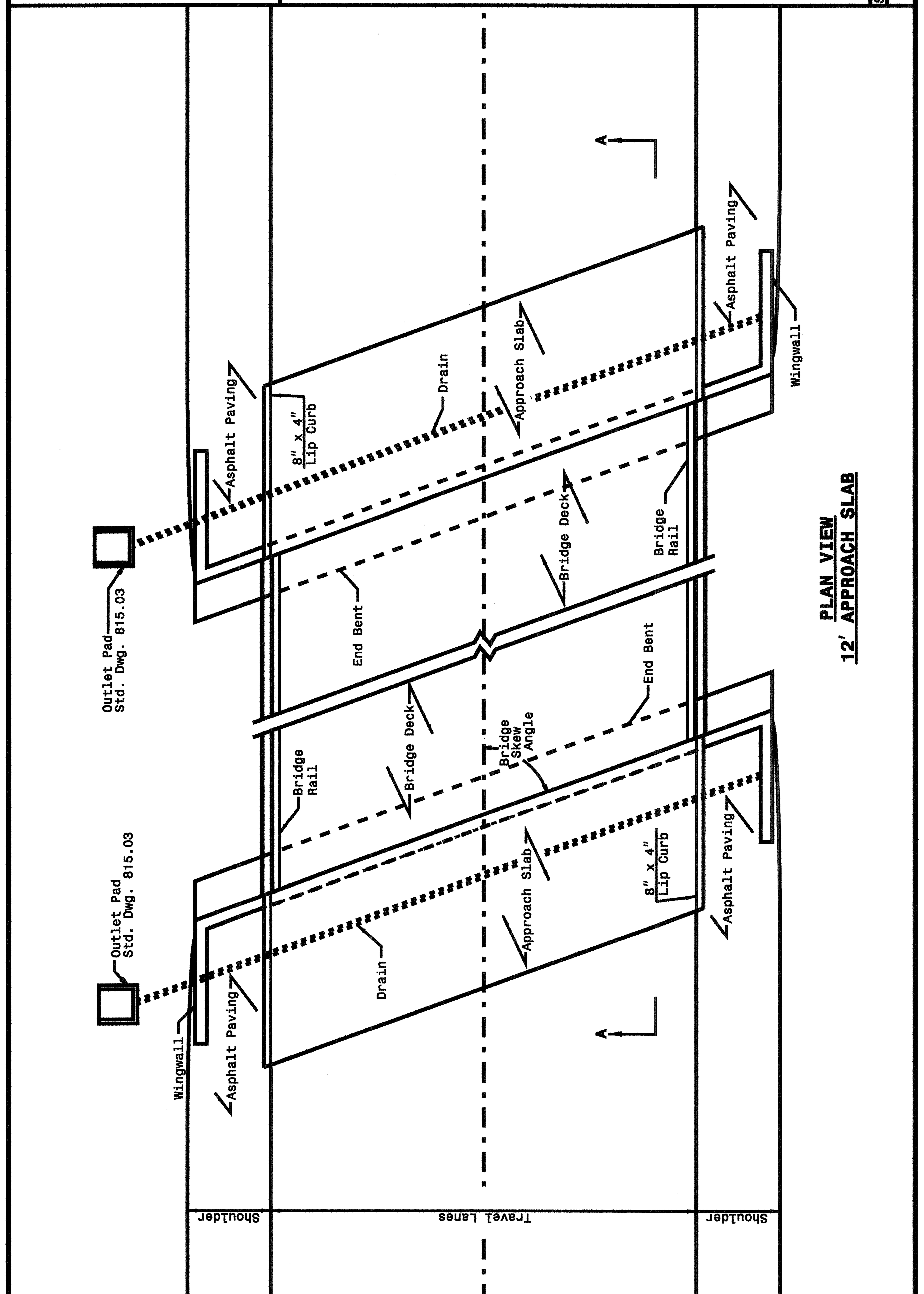
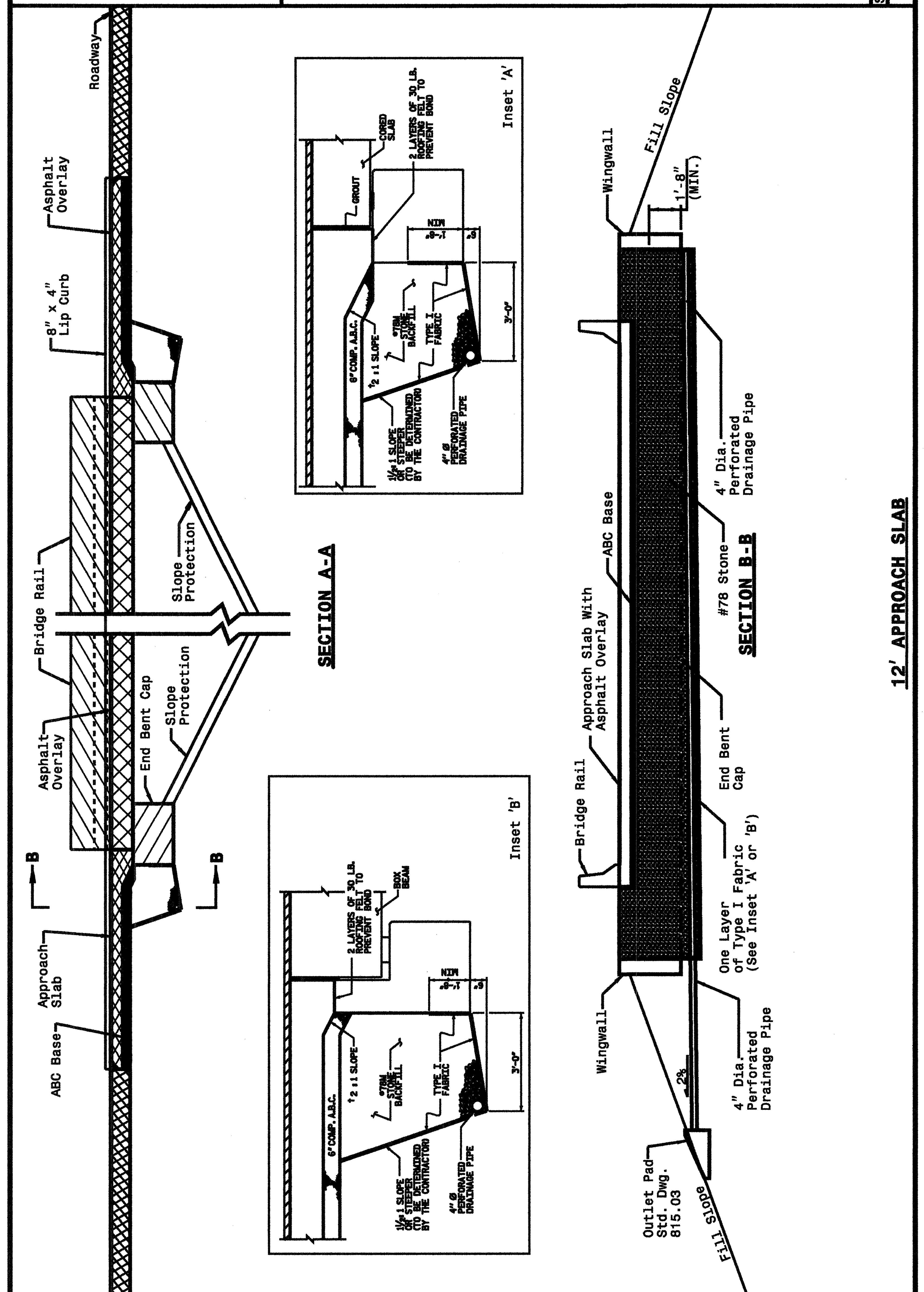
PROJECT REFERENCE NO.	SHEET NO.
B-5216	14



STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

SHEET 1 OF 2
422D11



STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

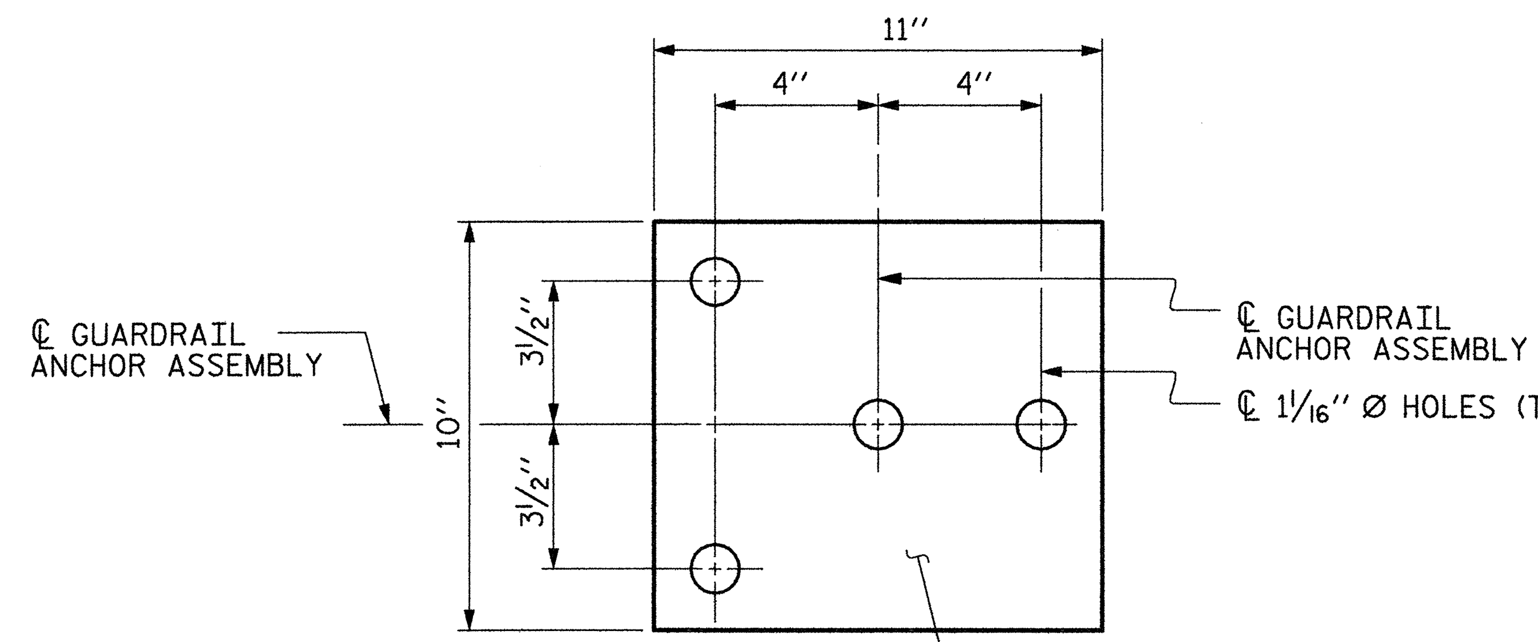
ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

SHEET 2 OF 2
422D11

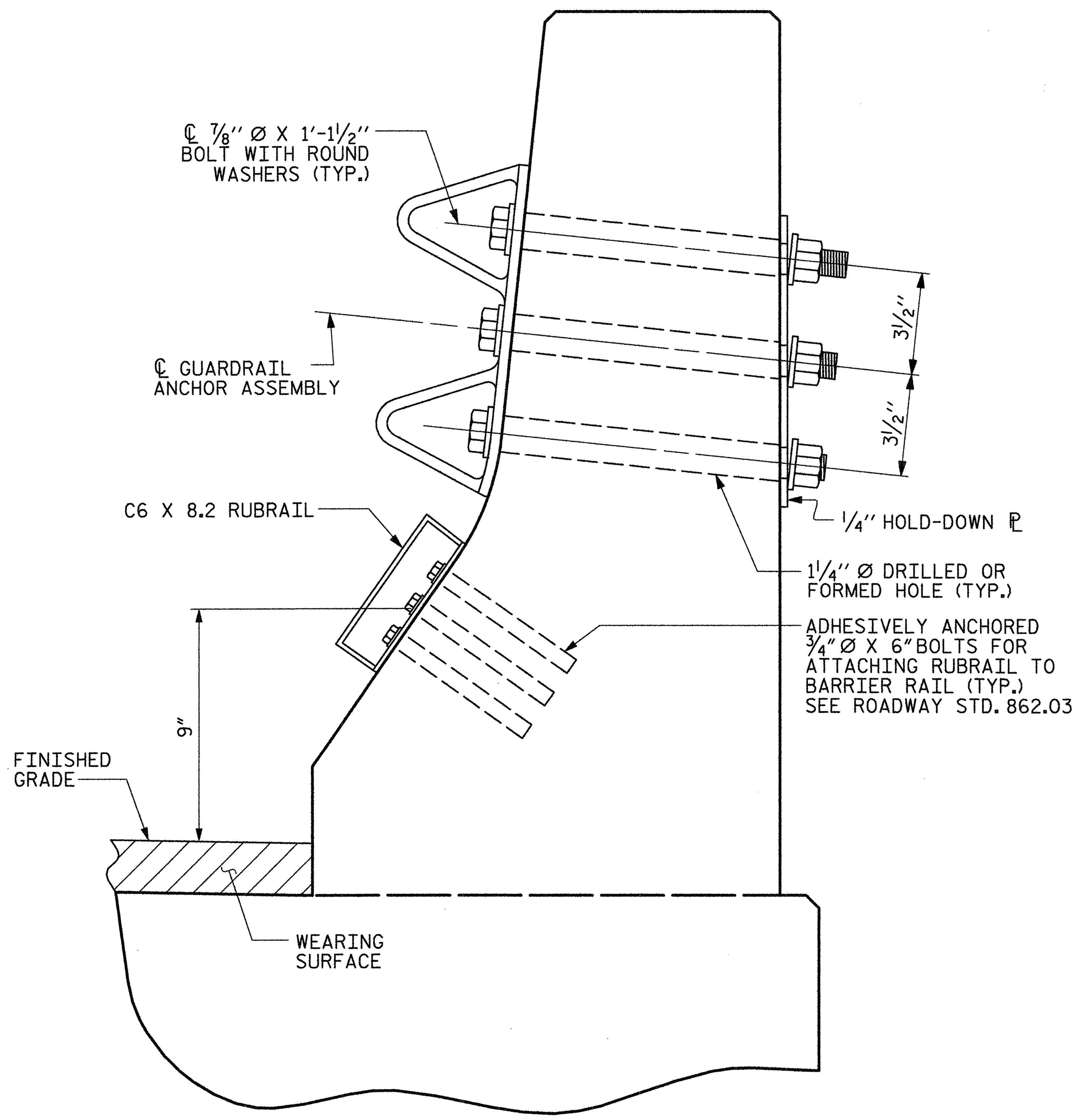
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

BRIDGE APPROACH FILLS
CORED SLAB & BOX BEAM BRIDGES
SUB REGIONAL TIER

ORIGINAL BY: K. A. Kempf DATE: 6-10-08
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: kkempf\english\bridge approach fills.dgn

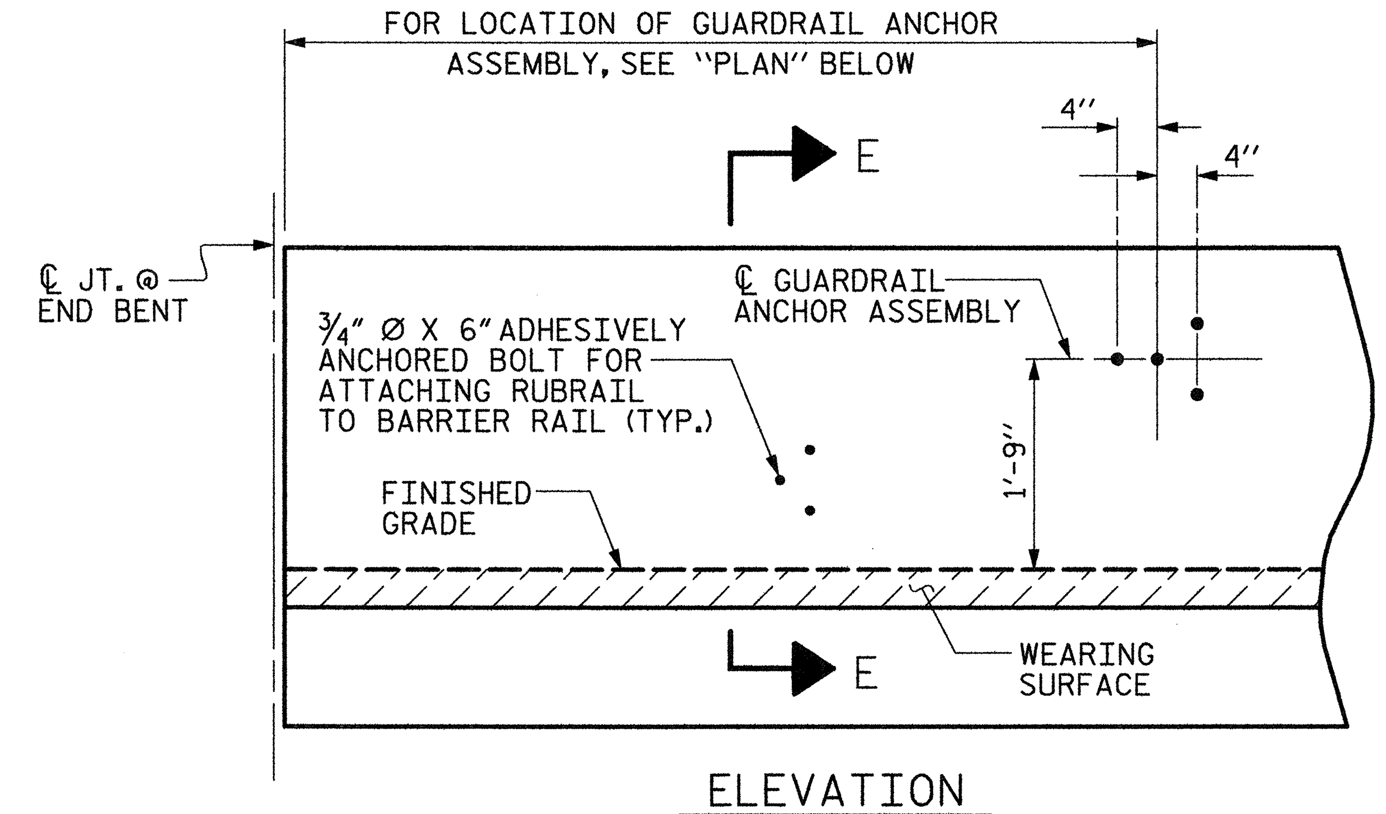


PLAN



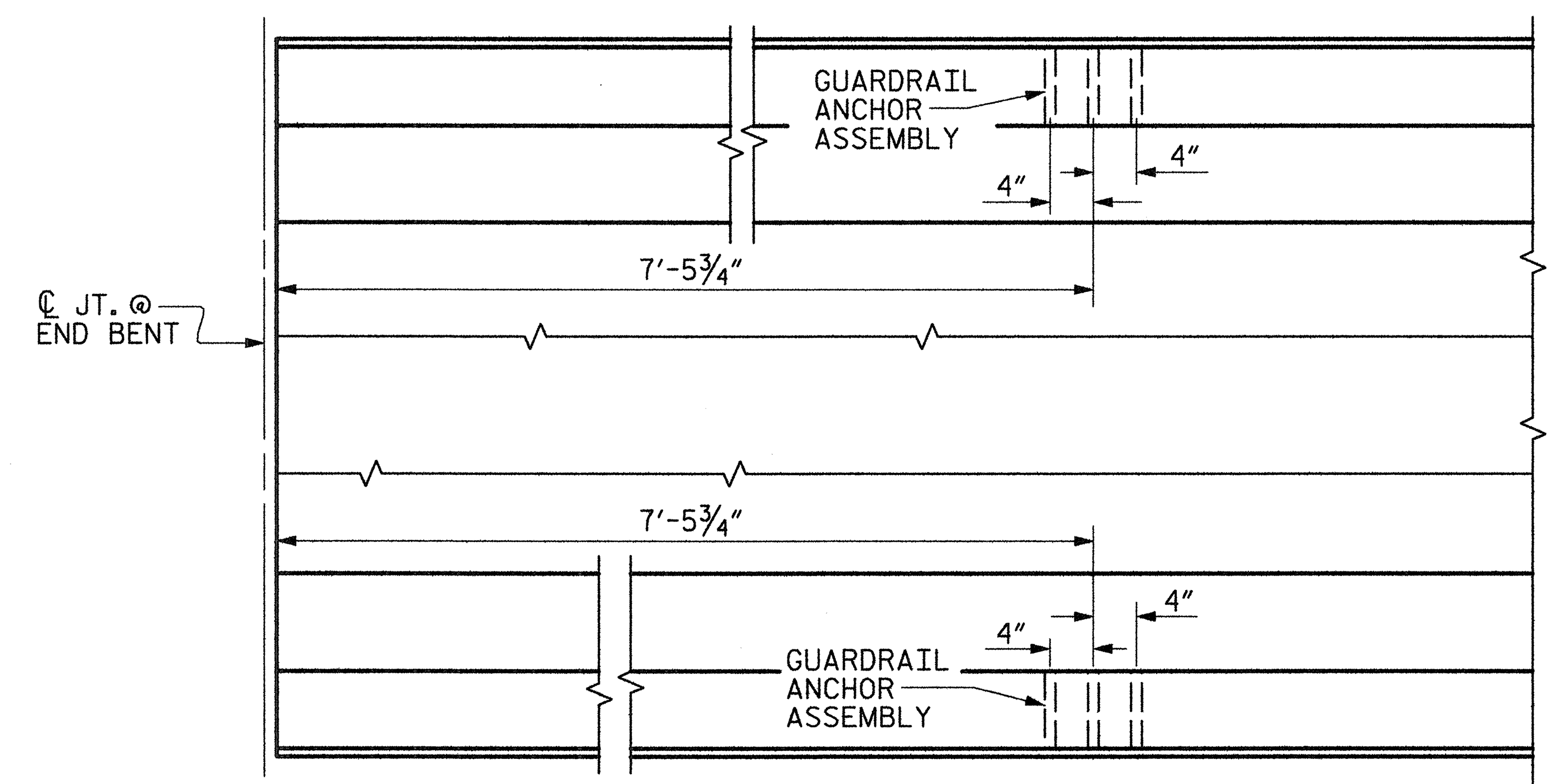
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



ELEVATION

FOR LOCATION OF RUBRAIL, SEE ROADWAY STD. 862.03



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4 " HOLD DOWN PLATE AND 4 - 7/8 " Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8 " Ø GALVANIZED BOLTS,

NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

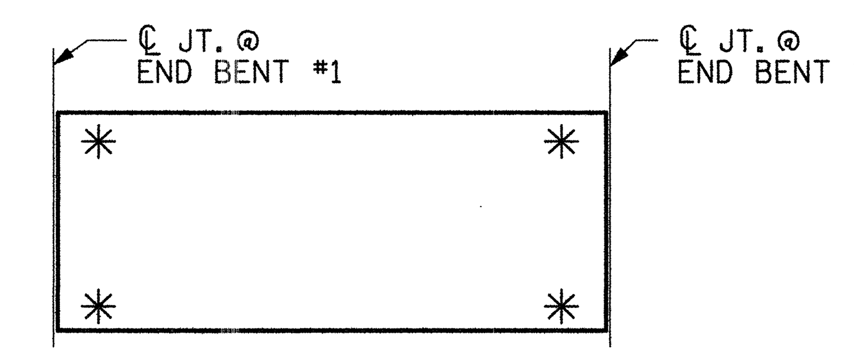
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR STEEL BEAM GUARDRAIL.

THE 1 1/4 " Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4 "Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4 "Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

STD. NO. GRA2

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

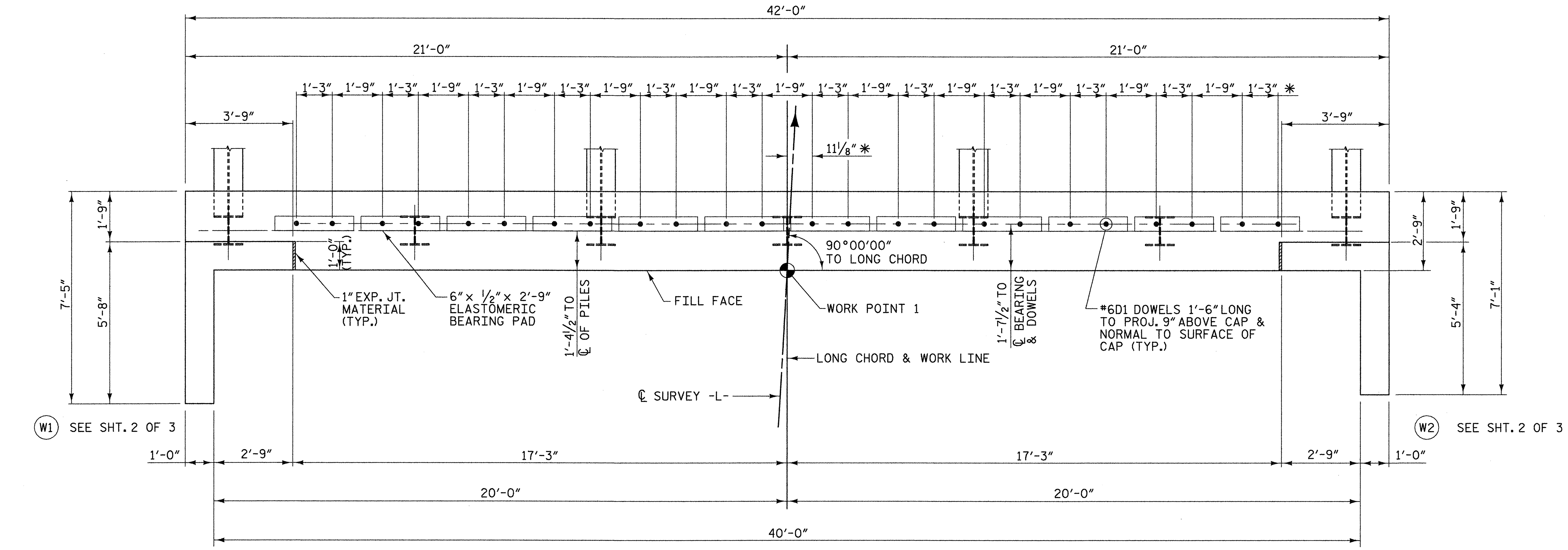
NORTH CAROLINA PROFESSIONAL ENGINEER 19661 L. KEVIN AUSTIN 5/11/10

PLANS PREPARED BY:
MULKEY ENGINEERS & CONSULTANTS
PO Box 33127 Raleigh, N.C. 27636 (919) 851-1912 (919) 851-1918 (FAX) WWW.MULKEYINC.COM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	15
1			3			TOTAL SHEETS
2			4			34

ASSEMBLED BY : W. B. ALLEN DATE : 12/09
CHECKED BY : L. K. AUSTIN DATE : 2/10
DRAWN BY : TLA 5/06
CHECKED BY : GM 5/06
ADDED 5/1/06R KMM/GM

5/10/2010 4:29:29 PM R:\Structures\B596_SD_GR_0.dgn



PLAN

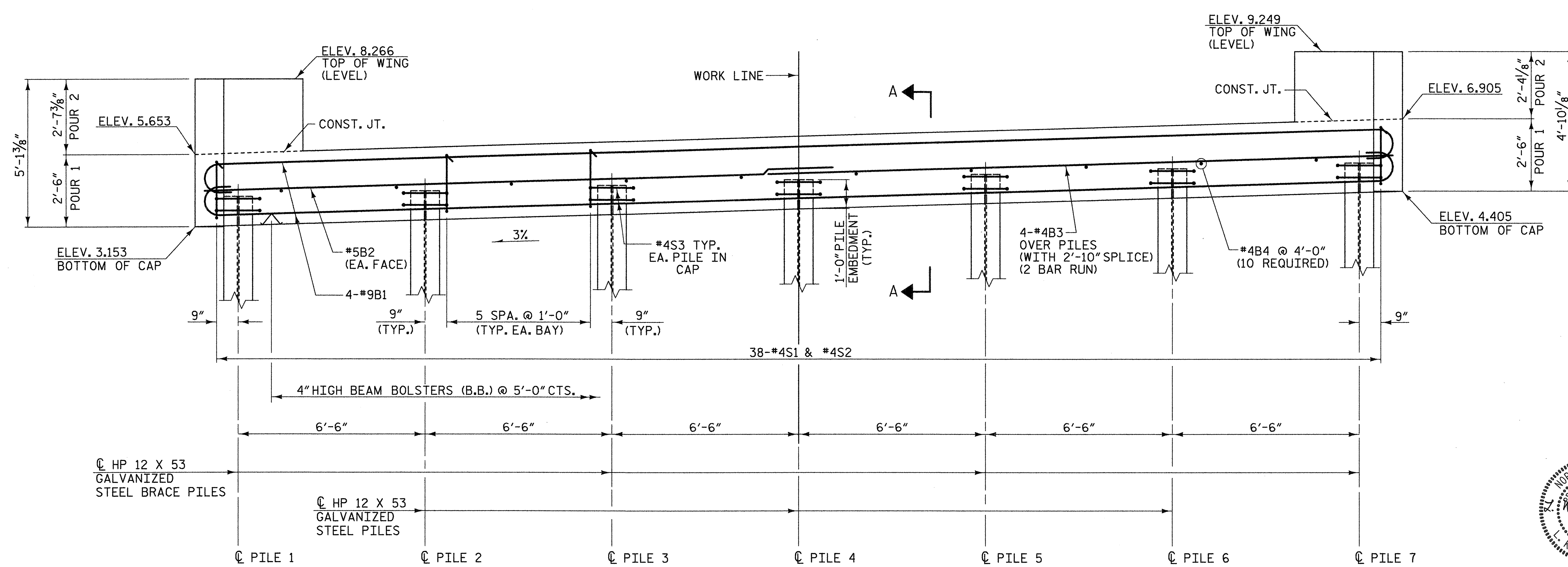
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR DOWEL DETAIL, SEE SHEET 3 OF 3.

✱ MEASURED ALONG SURFACE OF CAP



ELEVATION

PILE CUT OFF ELEVATIONS	
PILE	ELEVATION
1	4.205
2	4.400
3	4.595
4	4.790
5	4.985
6	5.180
7	5.375

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/11/10

PLANS PREPARED BY:
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REVISIONS					
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1			3		
2			4		

SHEET NO. 16
TOTAL SHEETS 34

DRAWN BY : W. B. ALLEN DATE : 1/10
CHECKED BY : L. K. AUSTIN DATE : 2/10

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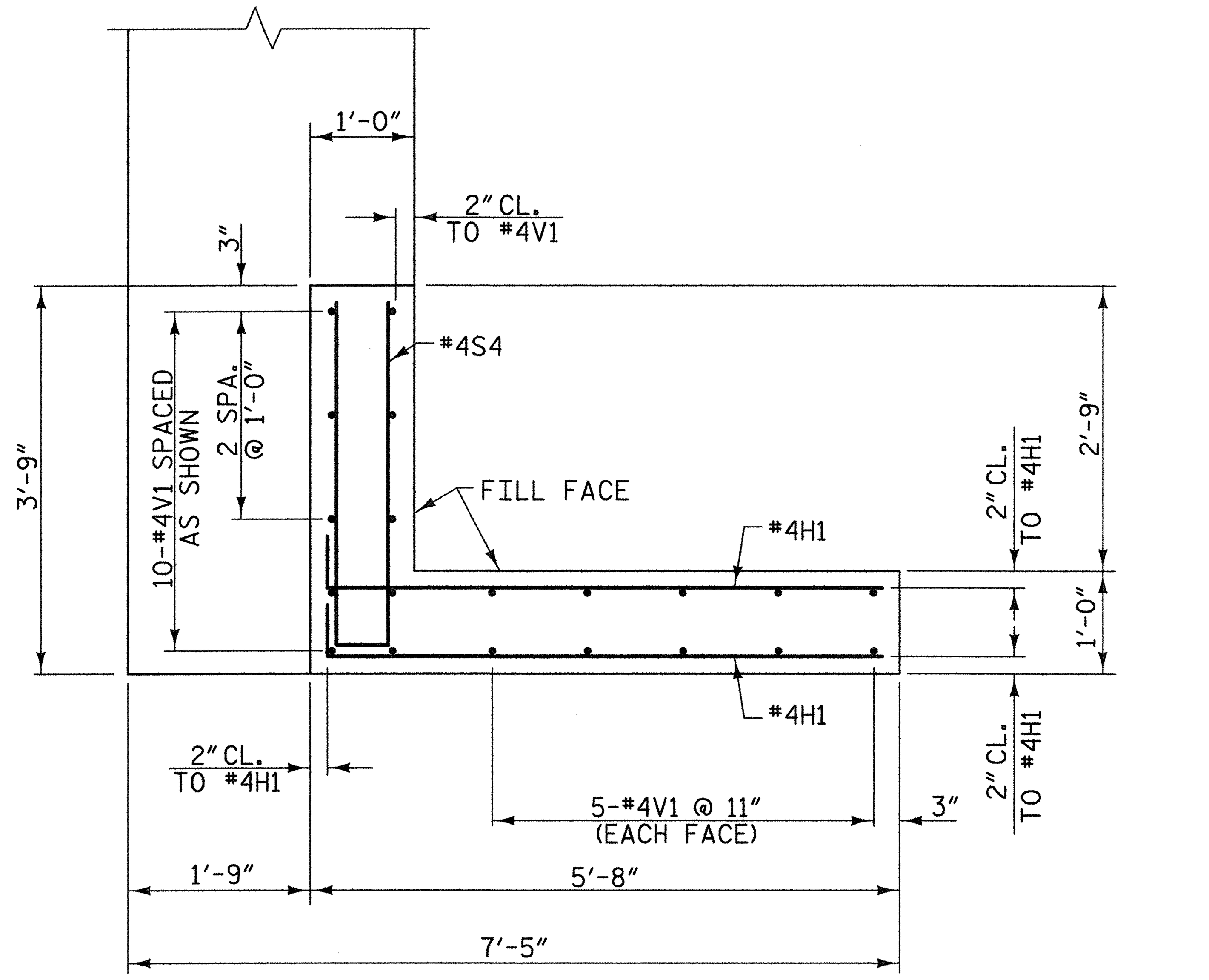
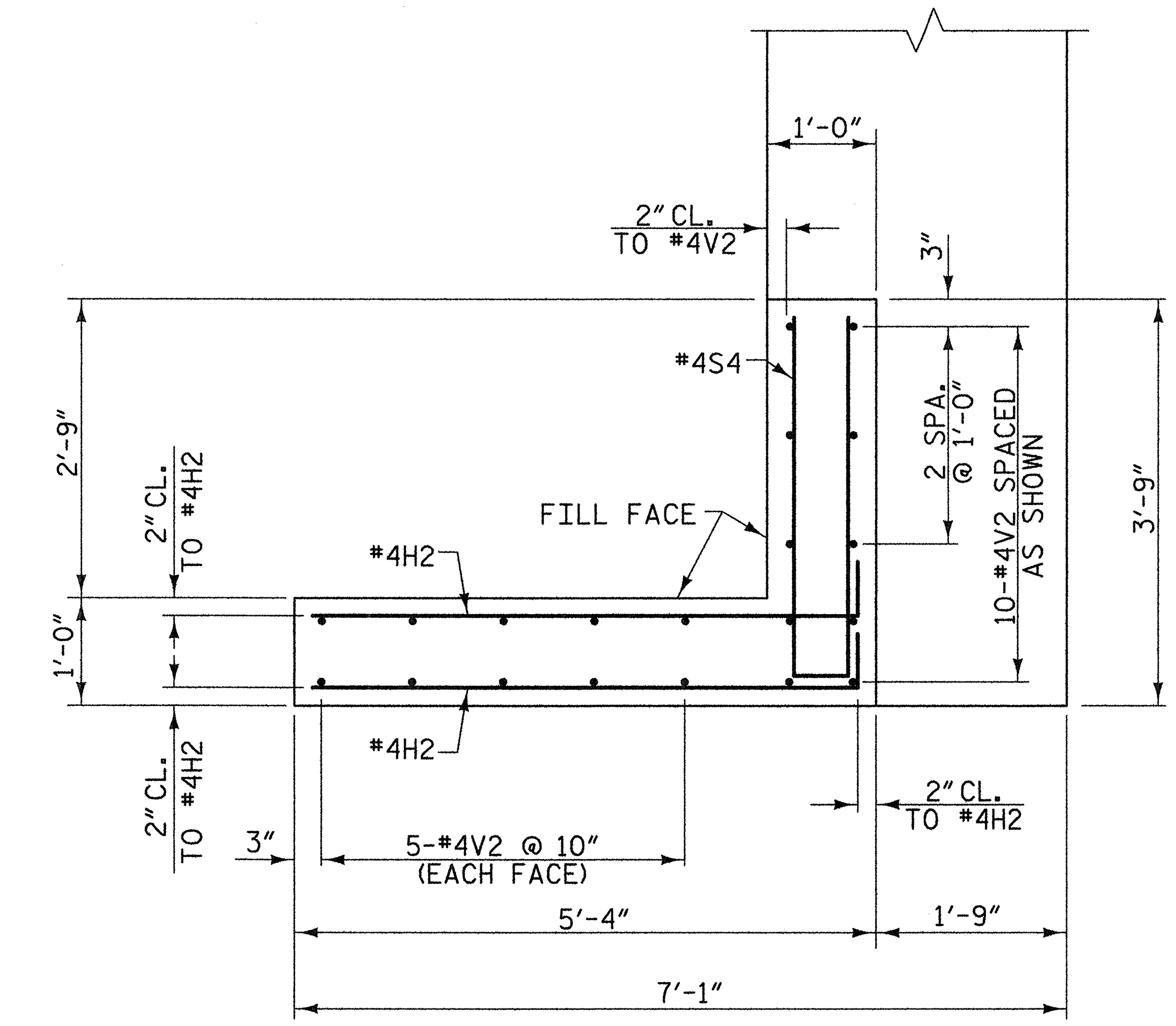
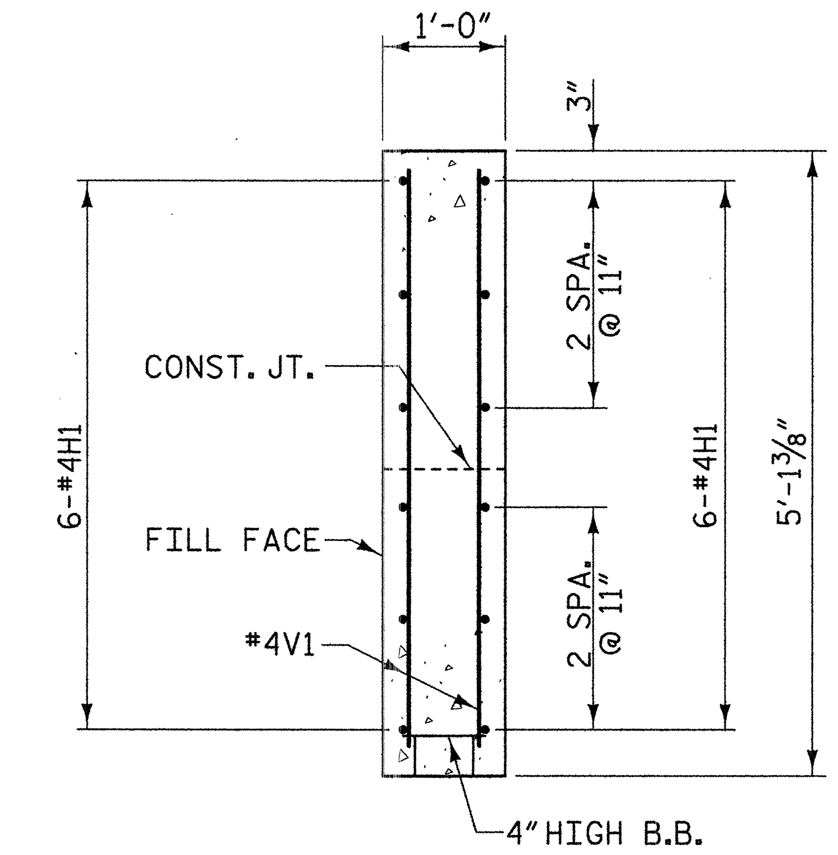


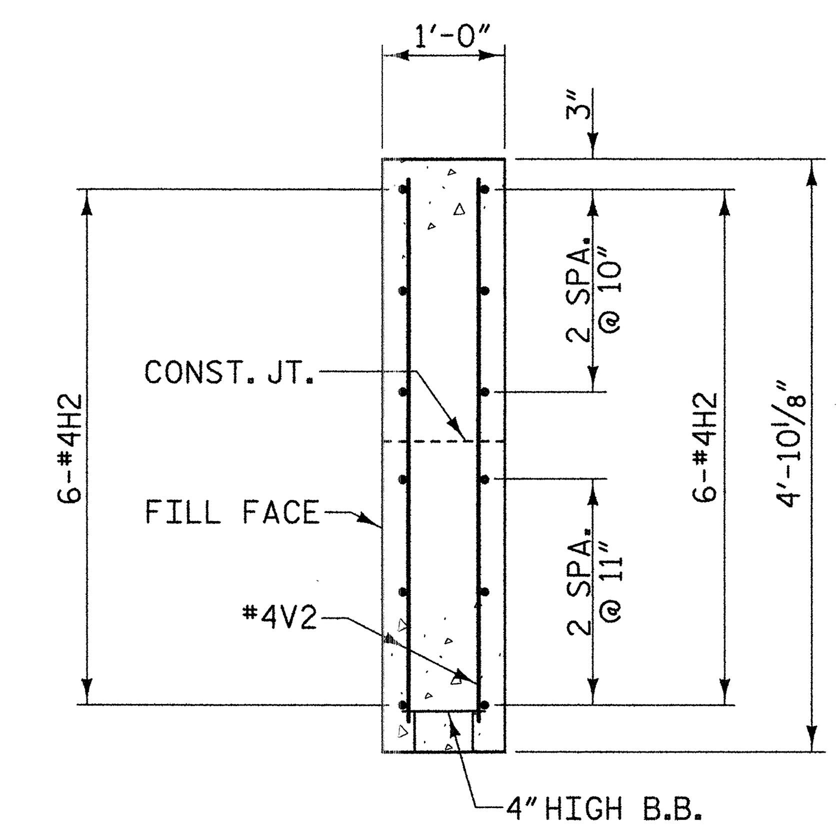
W1 PLAN OF LEFT WING



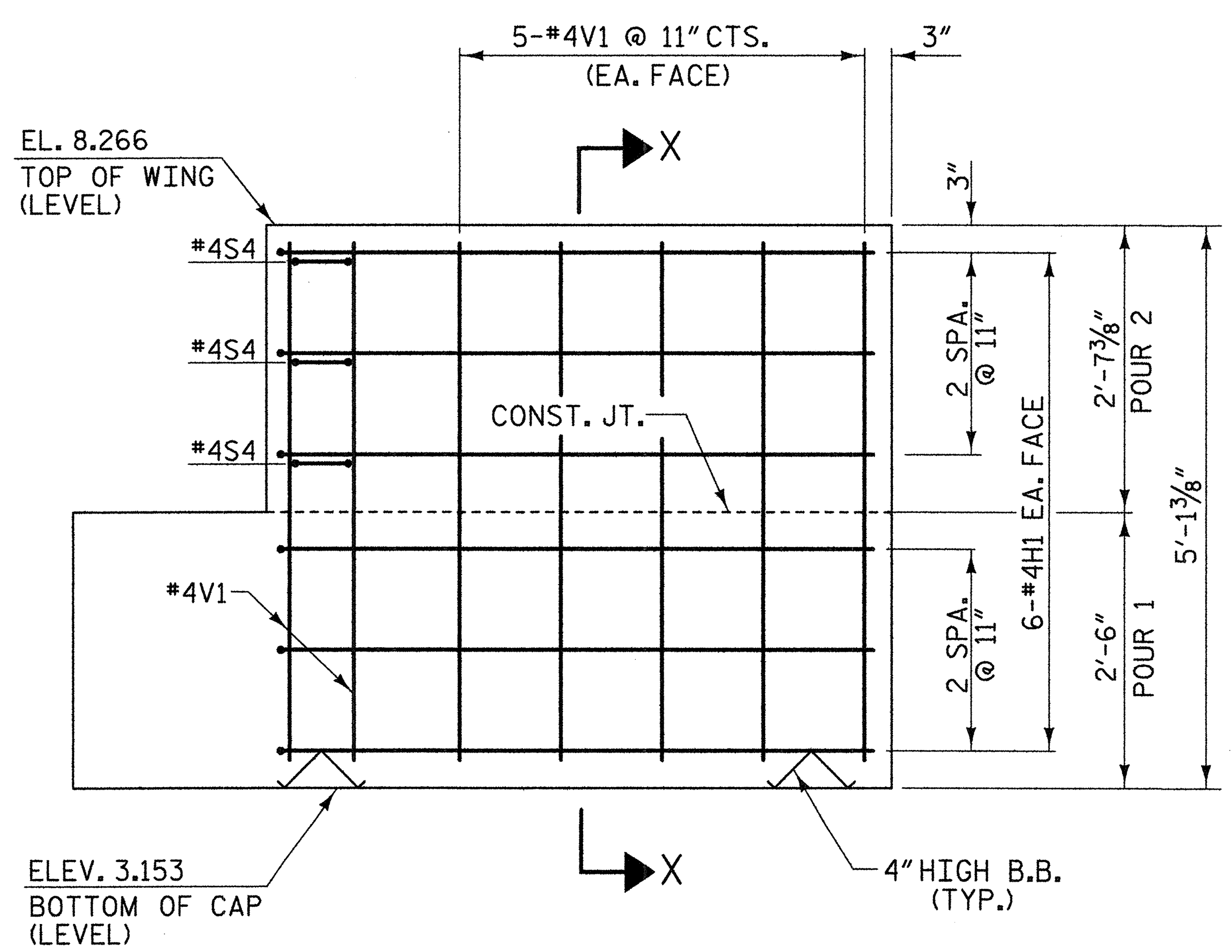
W2 PLAN OF RIGHT WING



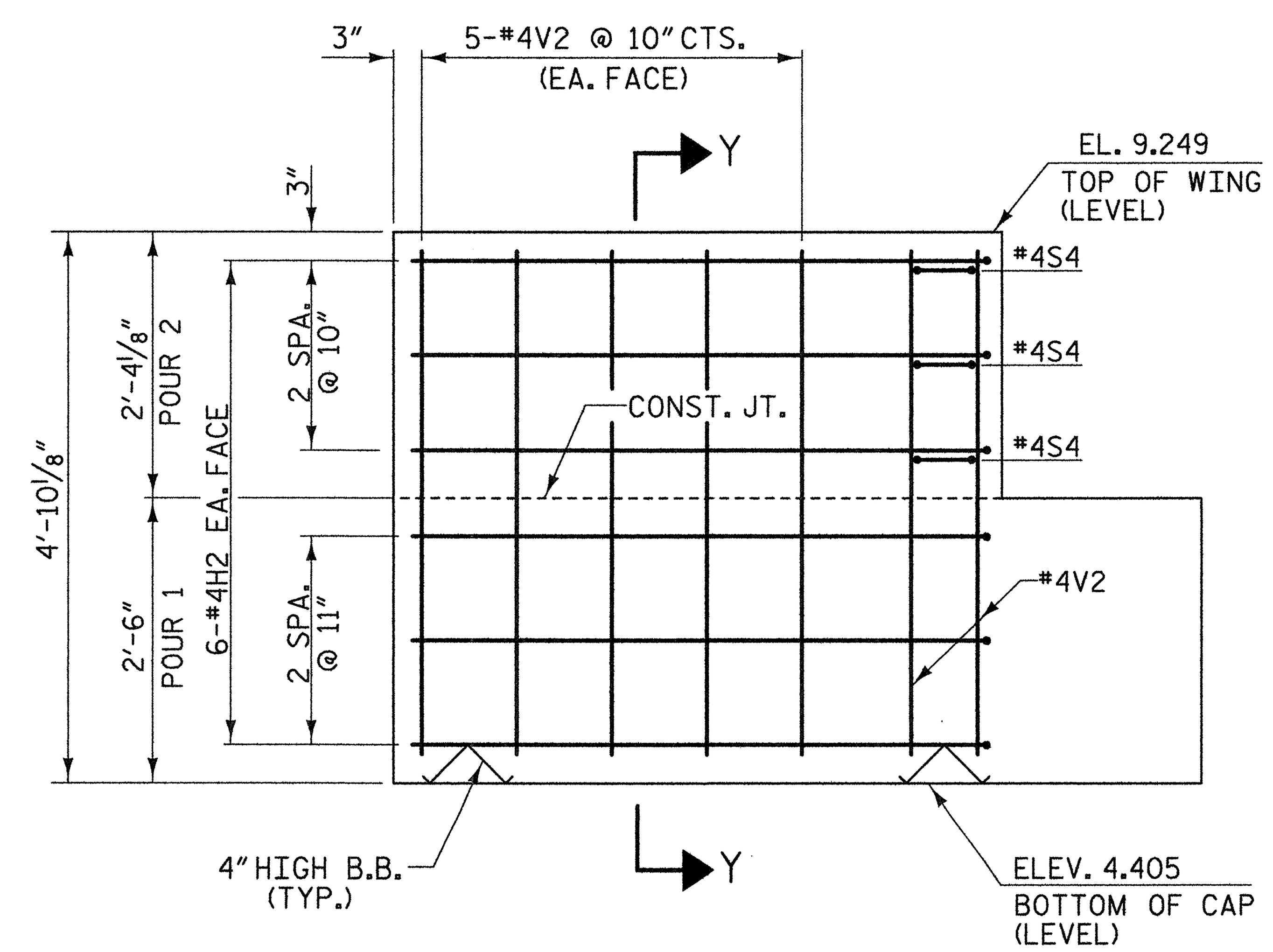
SECTION X-X



SECTION Y-Y



W1 ELEVATION OF LEFT WING



W2 ELEVATION OF RIGHT WING

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/11/10

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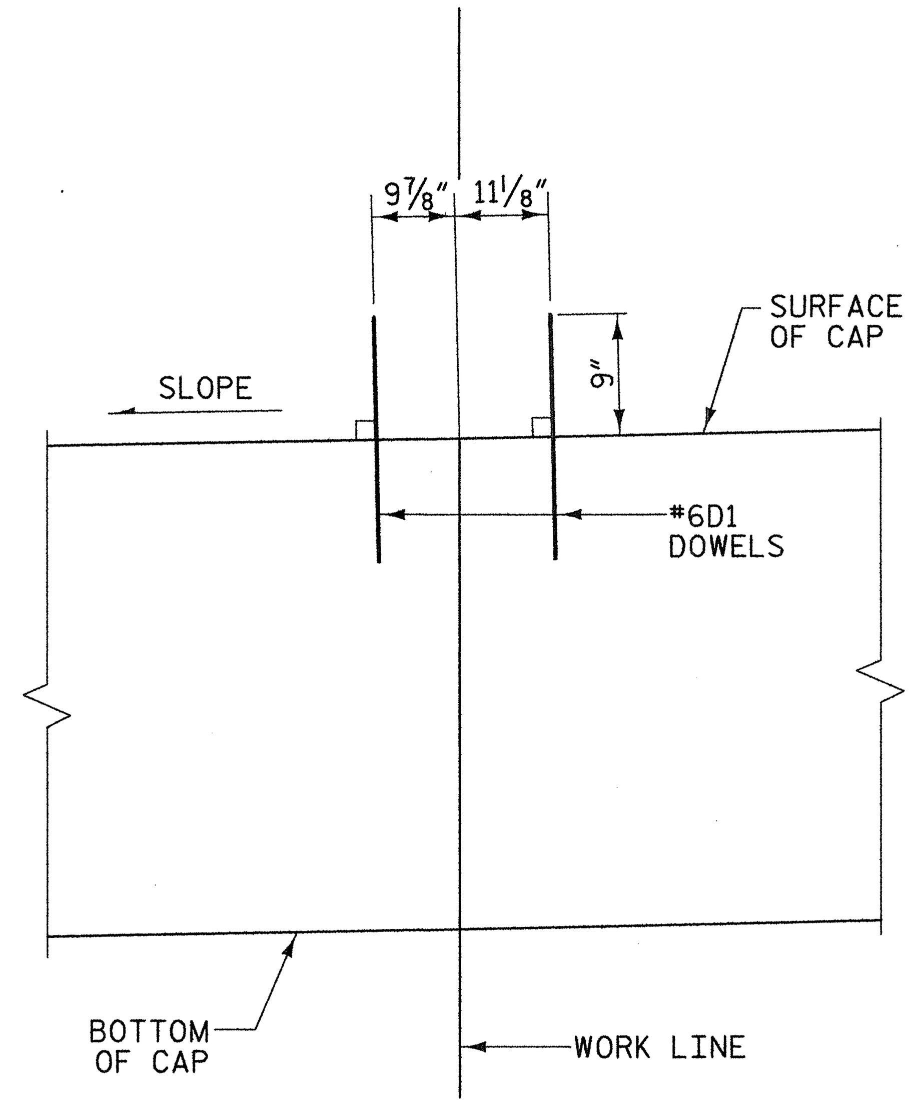
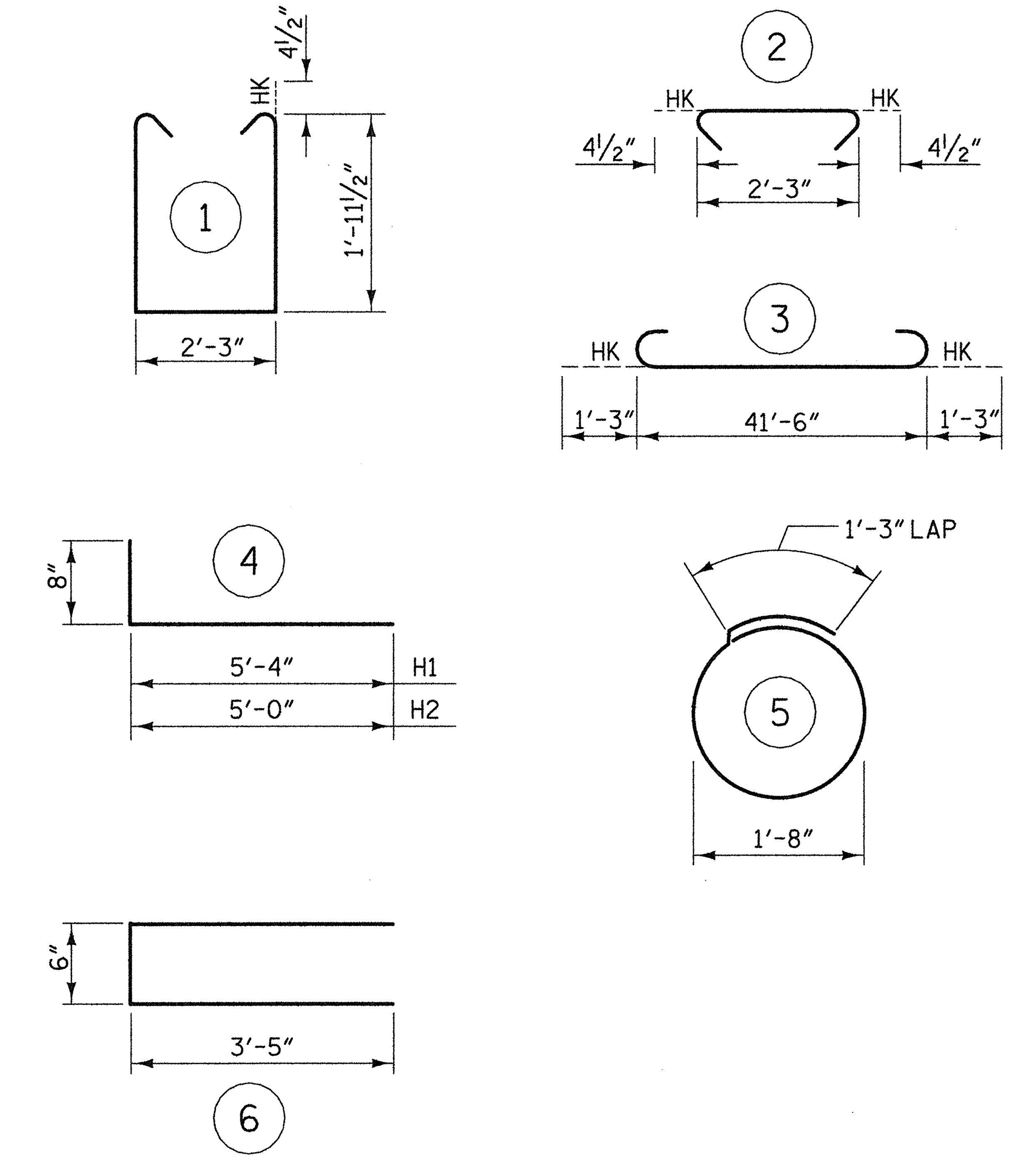
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	17
1			3			TOTAL SHEETS
2			4			34

DRAWN BY :	W. B. ALLEN	DATE :	1/10
CHECKED BY :	L. K. AUSTIN	DATE :	2/10



DOWEL DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	3	44'-0"	1197
B2	2	#5	STR	41'-6"	87
B3	8	#4	STR	22'-2"	118
B4	10	#4	STR	2'-3"	15
D1	24	#6	STR	1'-6"	54
H1	12	#4	4	6'-0"	48
H2	12	#4	4	5'-8"	45
S1	38	#4	1	6'-11"	176
S2	38	#4	2	3'-0"	76
S3	14	#4	5	6'-6"	61
S4	6	#4	6	7'-4"	29
V1	20	#4	STR	4'-9"	63
V2	20	#4	STR	4'-6"	60

TOTAL EPOXY COATED REINFORCING STEEL = 2029 lbs.

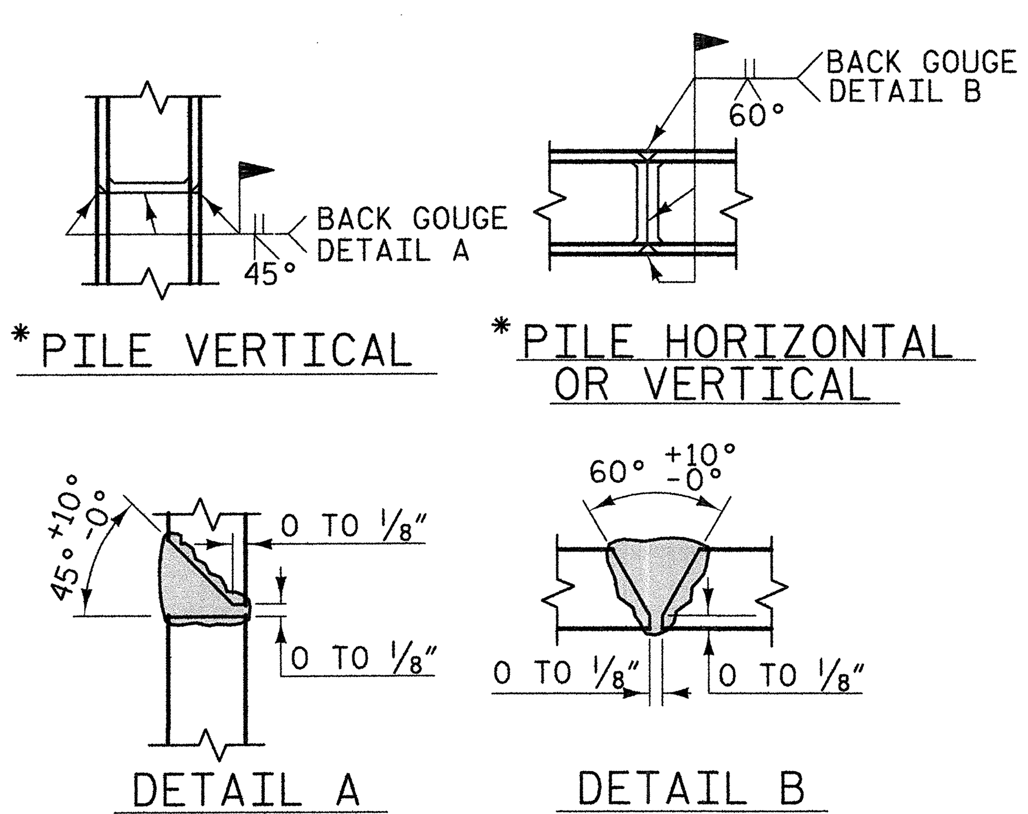
CLASS "A" CONCRETE - CU. YARDS

POUR 1	11.5 cu. yds.
POUR 2	1.5 cu. yds.
TOTAL	13.0 cu. yds.

HP 12 X 53 GALVANIZED STEEL PILES

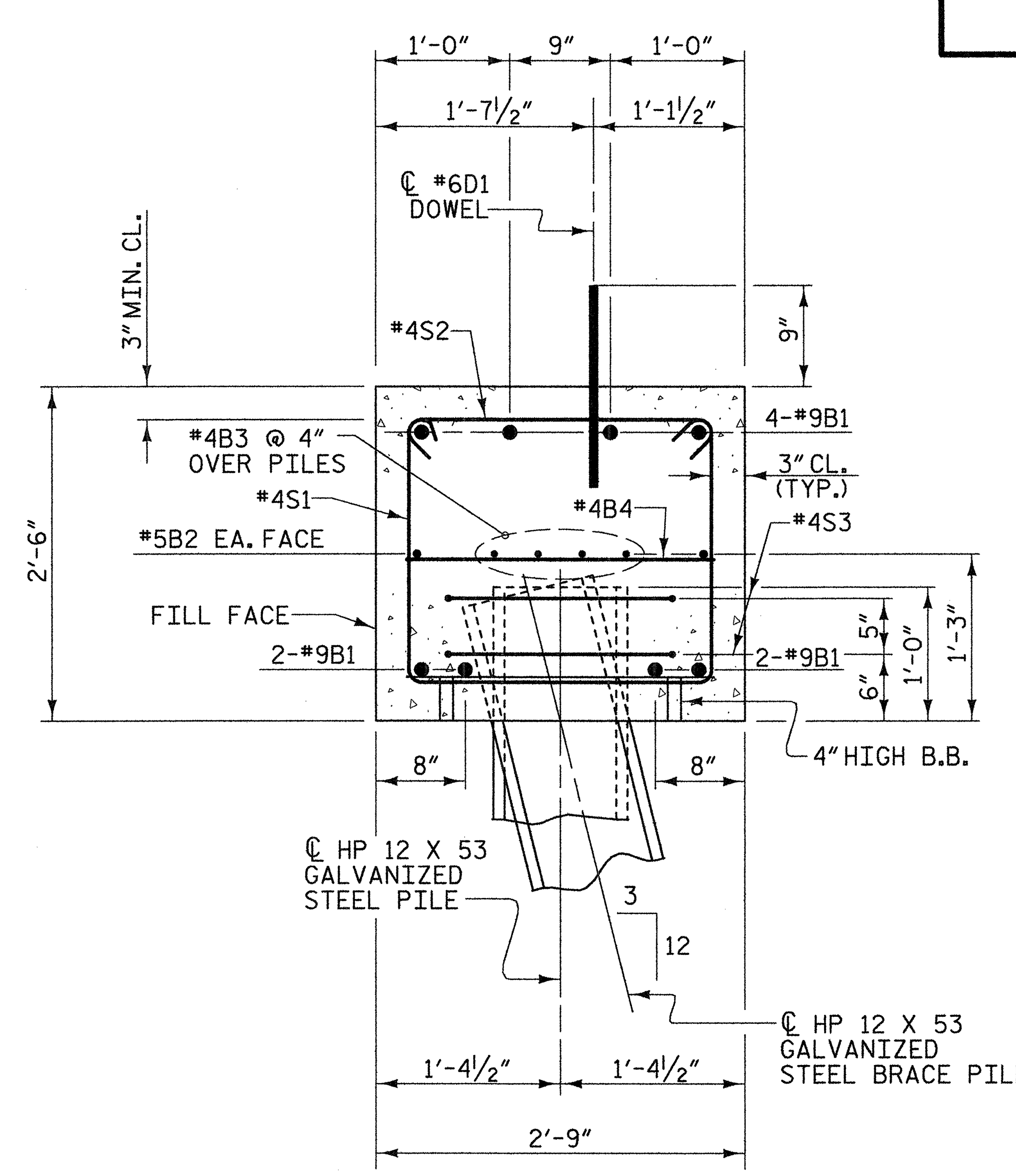
7 PILES REQUIRED - LIN. FEET 385

STEEL PILE POINTS 7 EA.



PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING.



SECTION A-A

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

SHEET 3 OF 3

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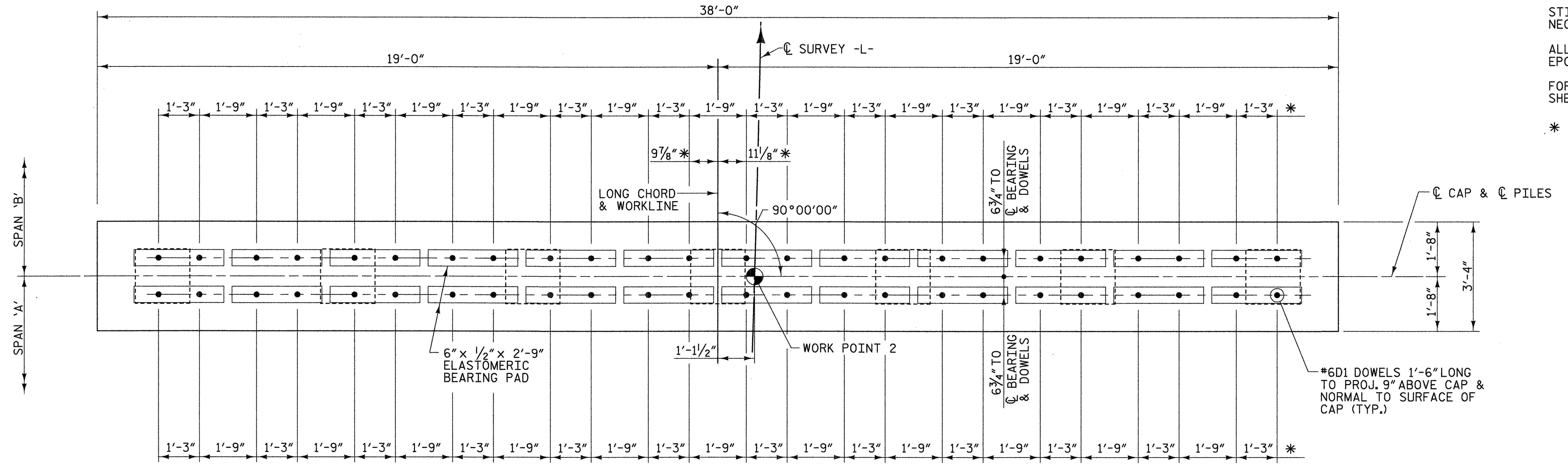
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 1

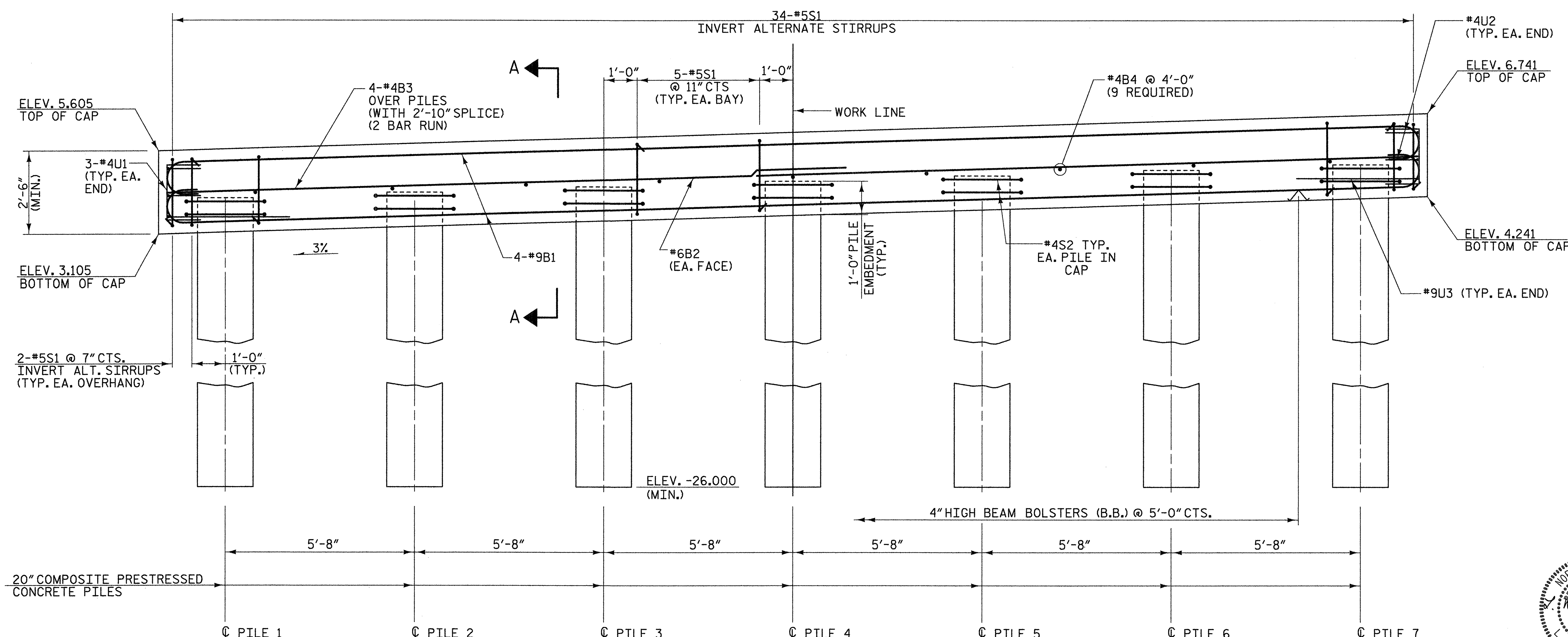
33' CLEAR ROADWAY - 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	18
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : W. B. ALLEN DATE : 12/09
CHECKED BY : L. K. AUSTIN DATE : 2/10



PLAN



ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR DOWEL DETAIL, SEE END BENT 1 SHEET 3 OF 3.

✱ MEASURED ALONG SURFACE OF CAP

PILE CUT-OFF ELEVATIONS	
PILE NO.	ELEV.
1	4.186
2	4.356
3	4.526
4	4.696
5	4.866
6	5.036
7	5.206

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1

33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER 19661 L. KEVIN AUSTIN 5/11/10

PLANS PREPARED BY:
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	19
1			3			TOTAL SHEETS
2			4			34

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CHECKED BY : L. K. AUSTIN DATE : 2/10

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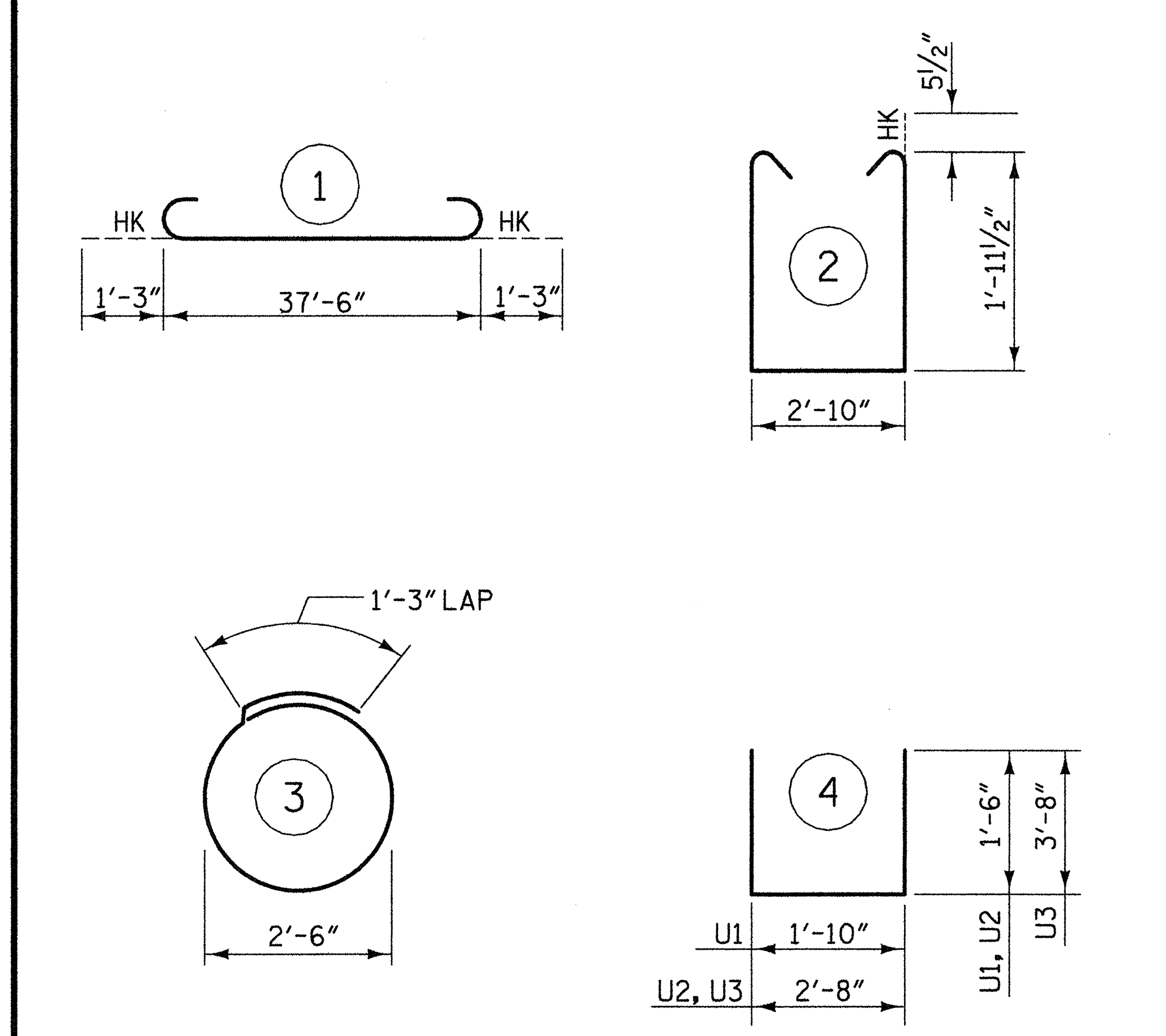
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR BENT 1

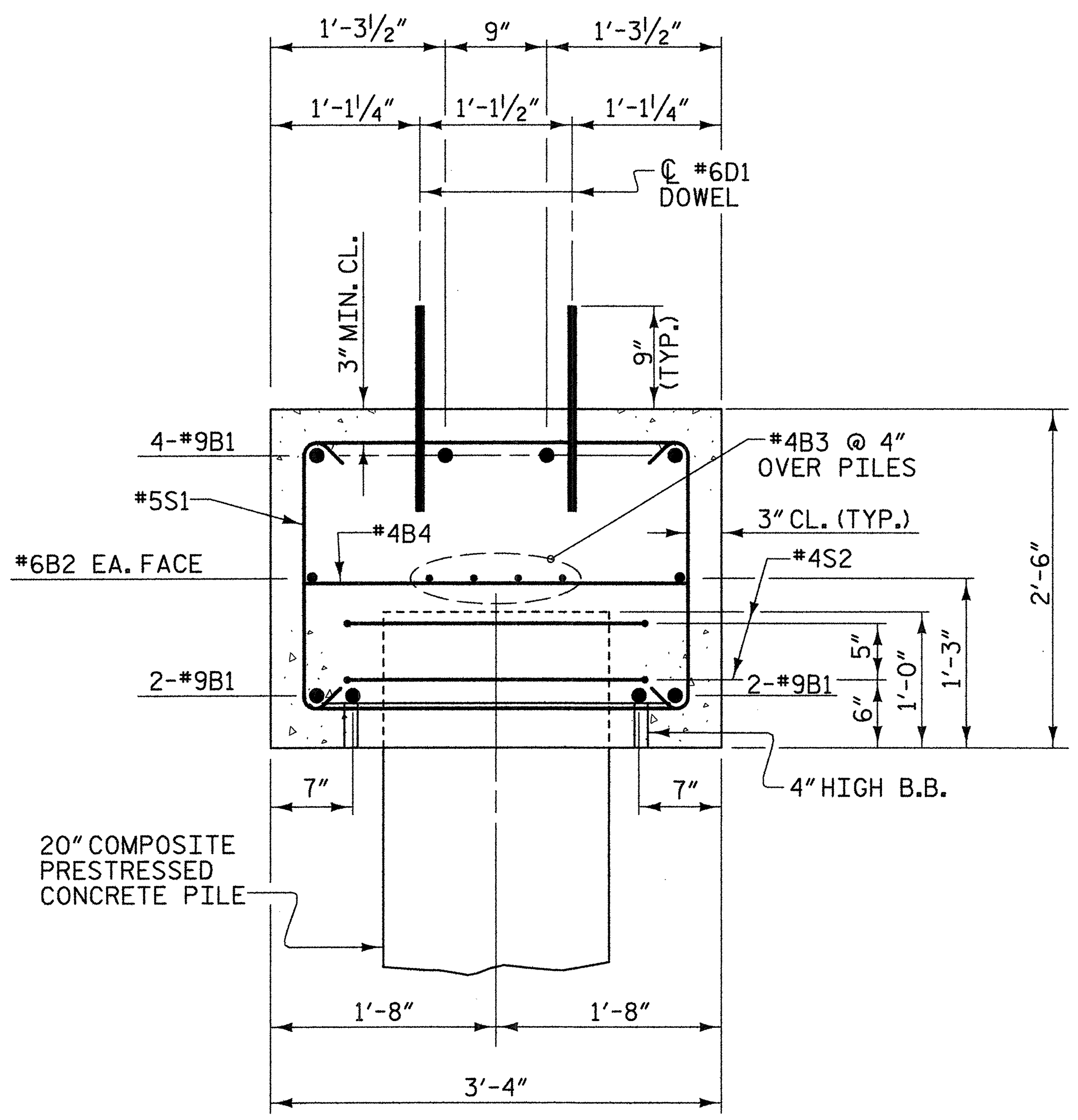
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	40'-0"	1088
B2	2	#6	STR	37'-6"	113
B3	8	#4	STR	20'-2"	108
B4	9	#4	STR	2'-10"	17
D1	48	#6	STR	1'-6"	108
S1	34	#5	2	7'-8"	272
S2	14	#4	3	9'-2"	86
U1	6	#4	4	4'-10"	19
U2	4	#4	4	5'-8"	15
U3	2	#9	4	10'-0"	68

TOTAL EPOXY COATED REINFORCING STEEL = 1894 lbs.

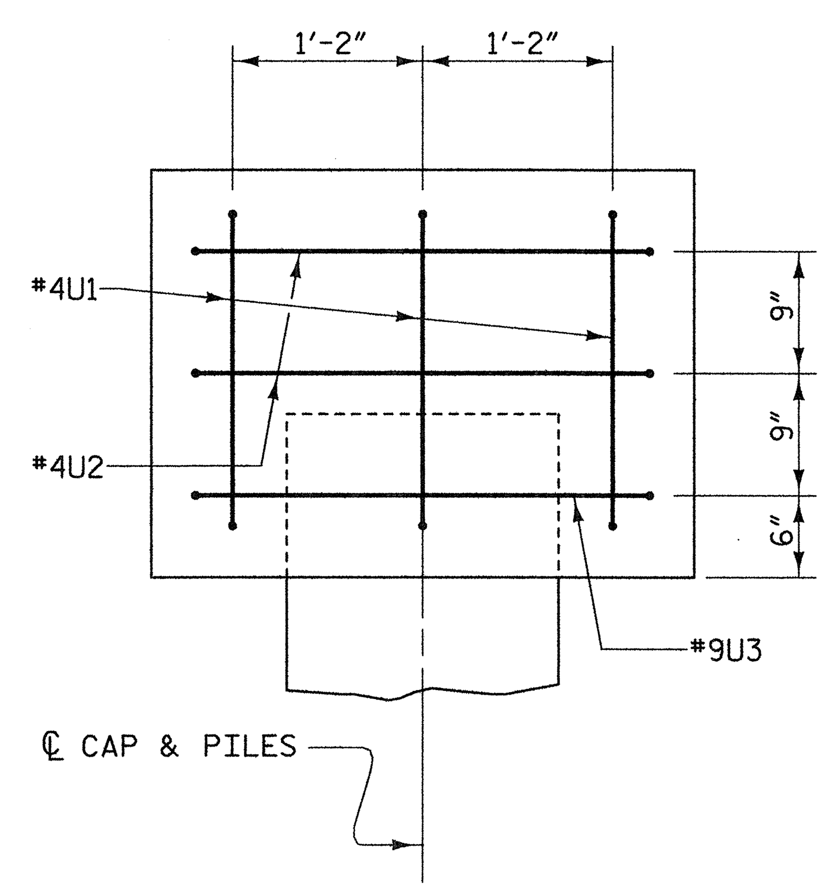
CLASS "A" CONCRETE - CU. YARDS 11.1

20" COMPOSITE PRESTRESSED CONC. PILES
7 PILES REQUIRED - LIN. FEET 350

STEEL PILE POINTS 7 EA.



SECTION A-A



END VIEW

(TYPICAL BOTH ENDS)

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/11/10

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 1

33' CLEAR ROADWAY - 90° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	20
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : W. B. ALLEN DATE : 12/09
CHECKED BY : L. K. AUSTIN DATE : 2/10

5/10/2010 4:38:37 PM R:\Structures\B5216_SD_B1_02.dgn

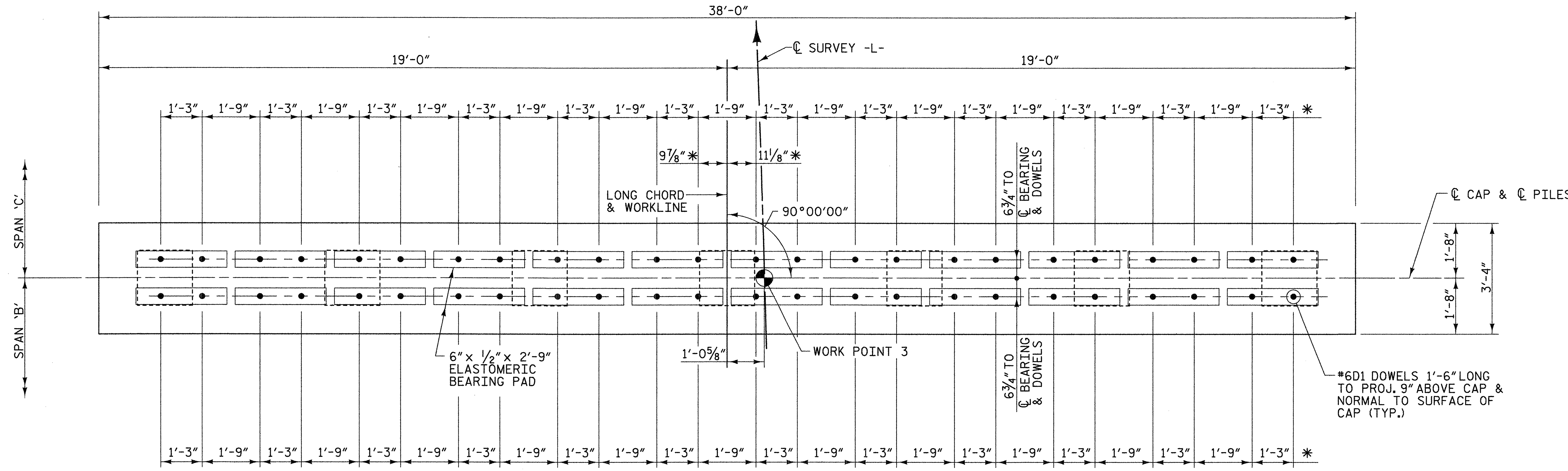
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

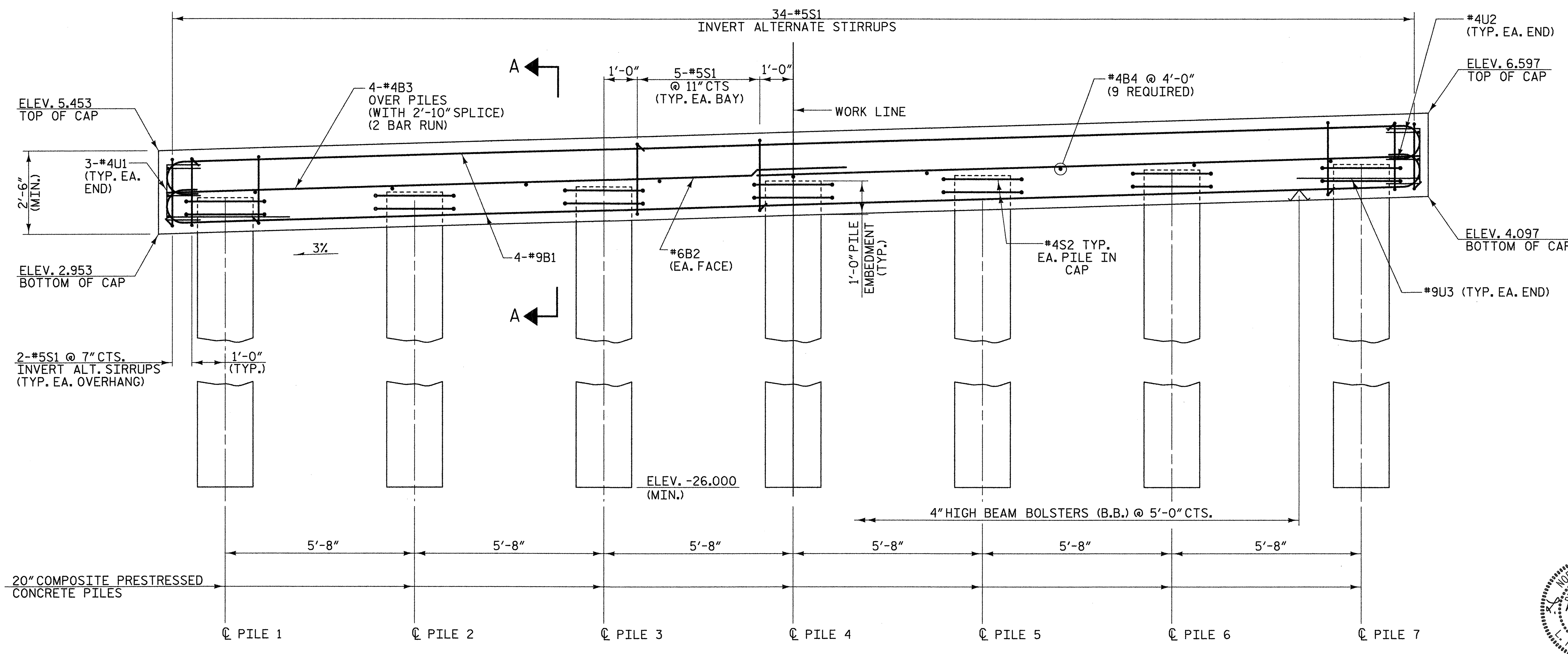
ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR DOWEL DETAIL, SEE END BENT 1 SHEET 3 OF 3.

∗ MEASURED ALONG SURFACE OF CAP



PLAN



ELEVATION

PILE CUT-OFF ELEVATIONS

PILE NO.	ELEV.
1	4.042
2	4.212
3	4.382
4	4.552
5	4.722
6	4.892
7	5.062

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 2

33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER 19661 L. KEVIN AUSTIN 5/11/10

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REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		21
1			3				TOTAL SHEETS
2			4				34

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CHECKED BY : L. K. AUSTIN DATE : 2/10

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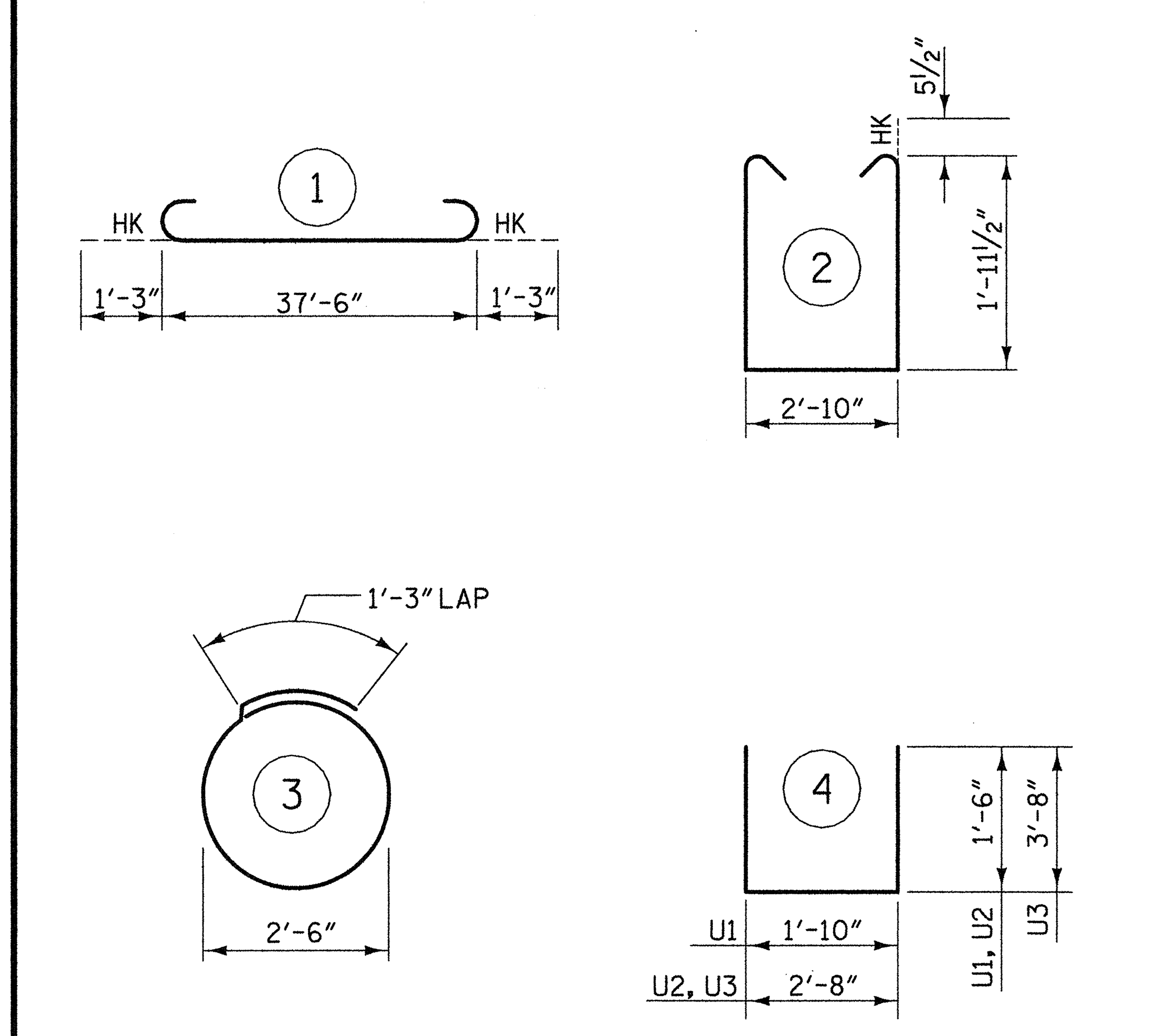
BAR TYPES



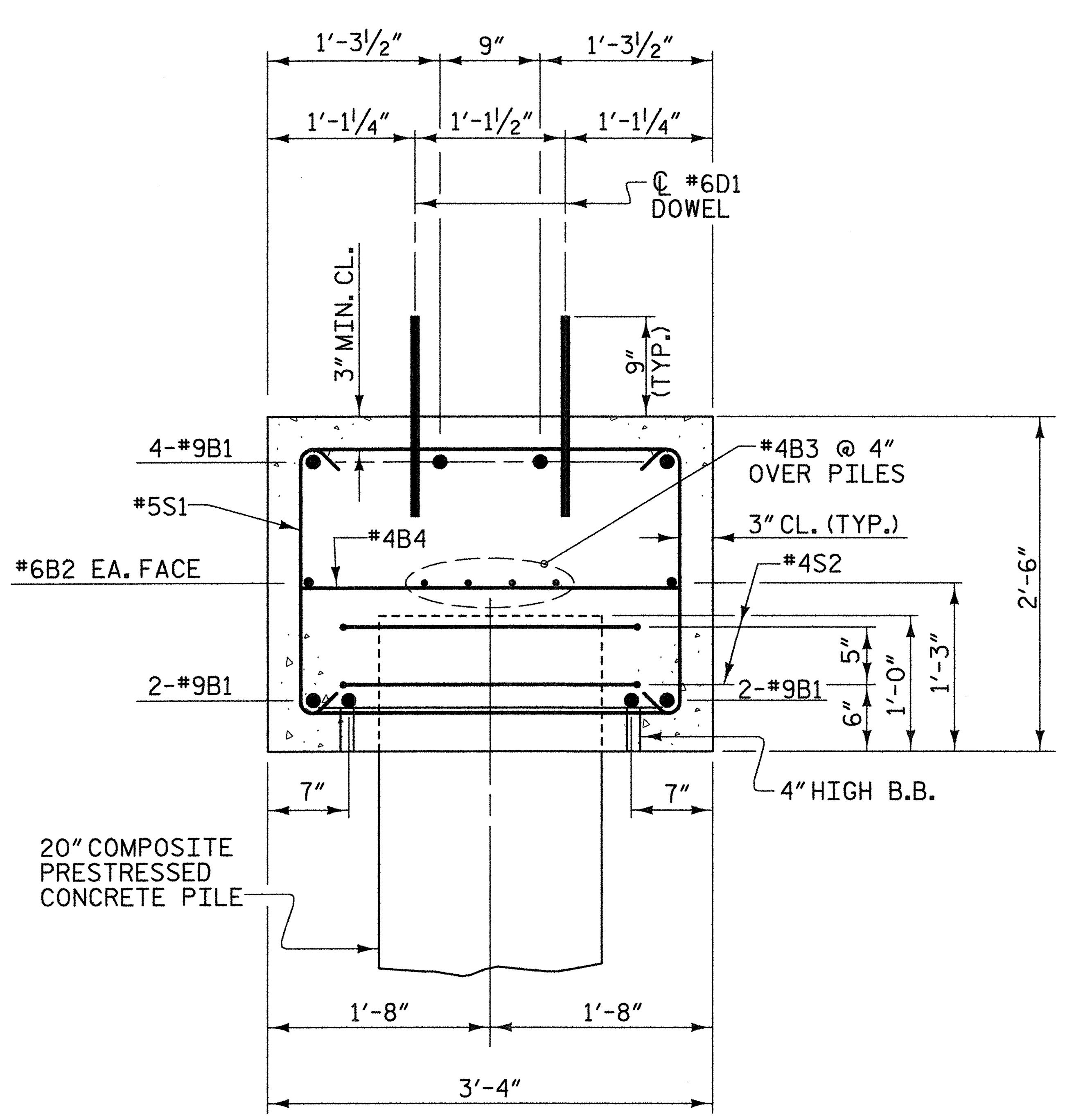
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

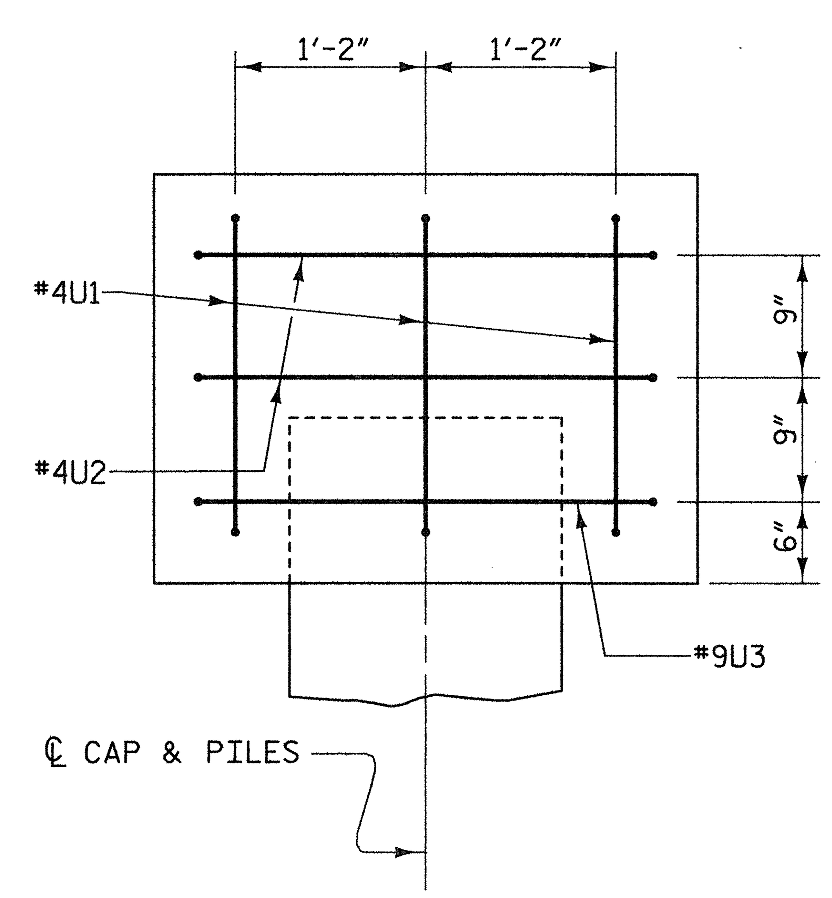
FOR BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	40'-0"	1088
B2	2	#6	STR	37'-6"	113
B3	8	#4	STR	20'-2"	108
B4	9	#4	STR	2'-10"	17
D1	48	#6	STR	1'-6"	108
S1	34	#5	2	7'-8"	272
S2	14	#4	3	9'-2"	86
U1	6	#4	4	4'-10"	19
U2	4	#4	4	5'-8"	15
U3	2	#9	4	10'-0"	68

TOTAL EPOXY COATED REINFORCING STEEL =	1894 lbs.
CLASS "A" CONCRETE - CU. YARDS	11.1
20" COMPOSITE PRESTRESSED CONC. PILES	
7 PILES REQUIRED - LIN. FEET	350
STEEL PILE POINTS	7 EA.



SECTION A-A



END VIEW

(TYPICAL BOTH ENDS)

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2

33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER 19661 L. KEVIN AUSTIN 5/11/10

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	22
1			3			TOTAL SHEETS
2			4			34

DRAWN BY :	W. B. ALLEN	DATE :	12/09
CHECKED BY :	L. K. AUSTIN	DATE :	2/10

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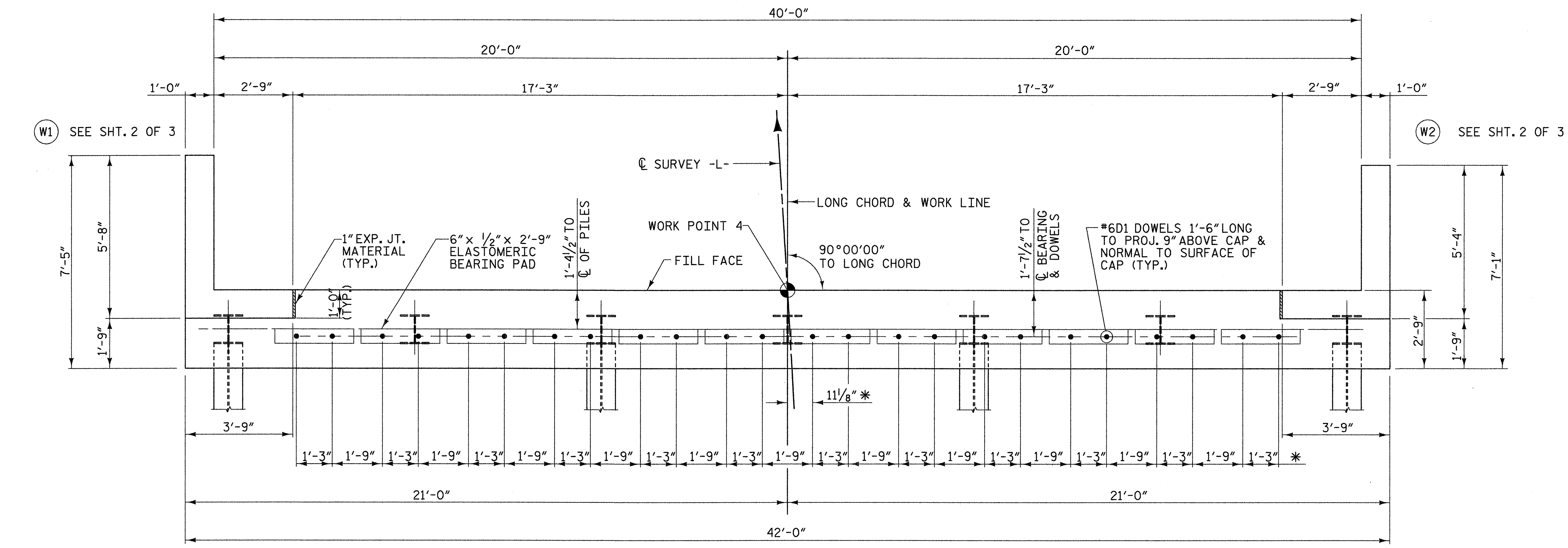
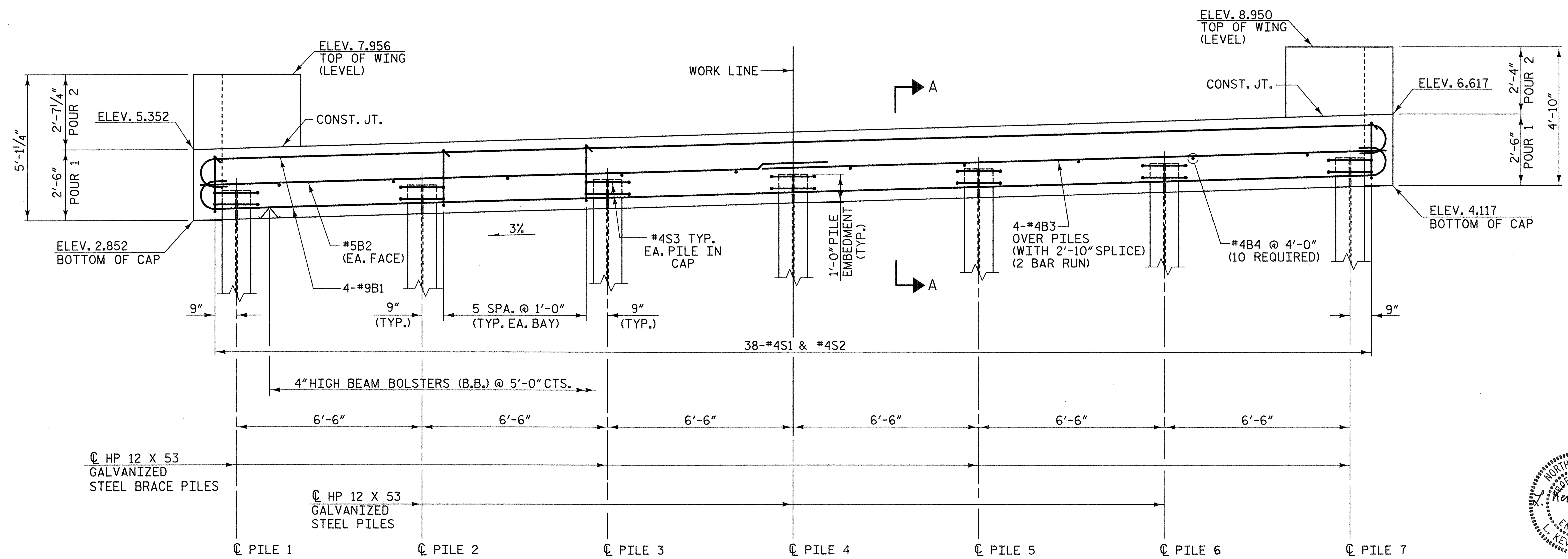


PLAN



ELEVATION

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

FOR PILE SPLICE DETAIL, SEE END BENT 1 SHEET 3 OF 3.

FOR DOWEL DETAIL, SEE END BENT 1 SHEET 3 OF 3.

✱ MEASURED ALONG SURFACE OF CAP

PILE CUT OFF ELEVATIONS

PILE	ELEVATION
1	3.917
2	4.112
3	4.307
4	4.502
5	4.697
6	4.892
7	5.087

PROJECT NO. 42813
BRUNSWICK COUNTY
STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2

33' CLEAR ROADWAY - 90° SKEW

NORTH CAROLINA PROFESSIONAL ENGINEER 19661 L. KEVIN AUSTIN 5/11/10

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

DRAWN BY : W. B. ALLEN DATE : 12/09
CHECKED BY : L. K. AUSTIN DATE : 2/10

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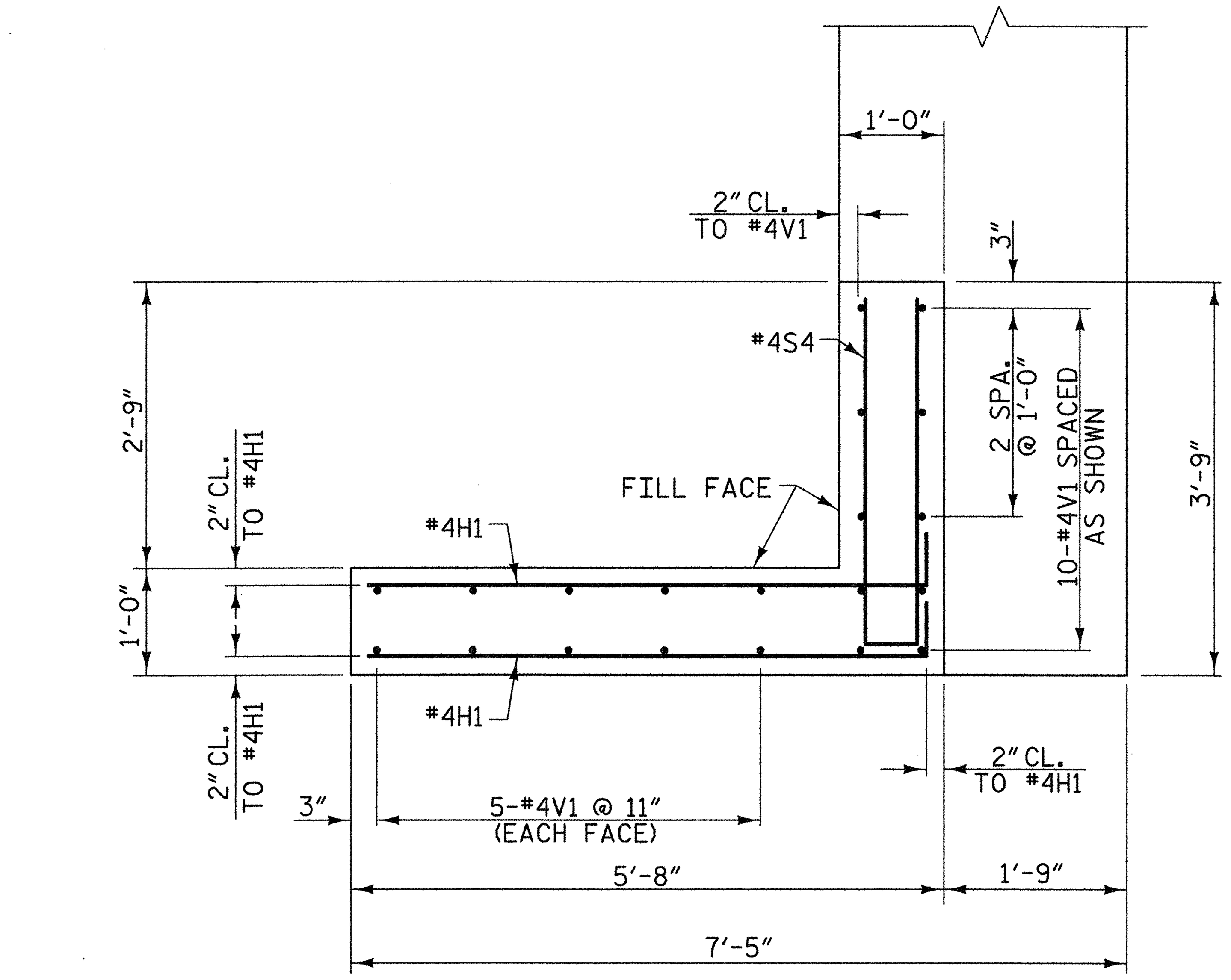
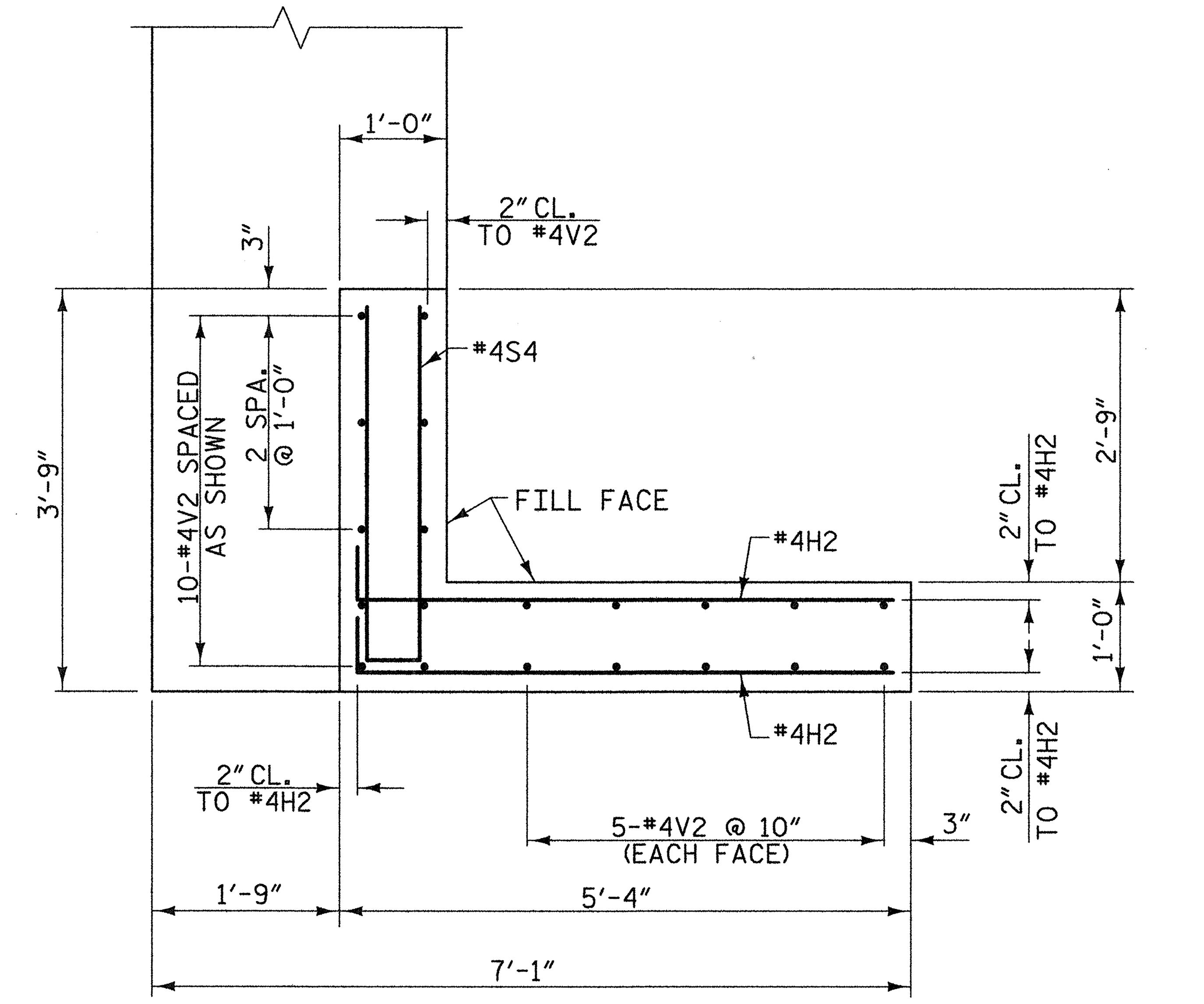
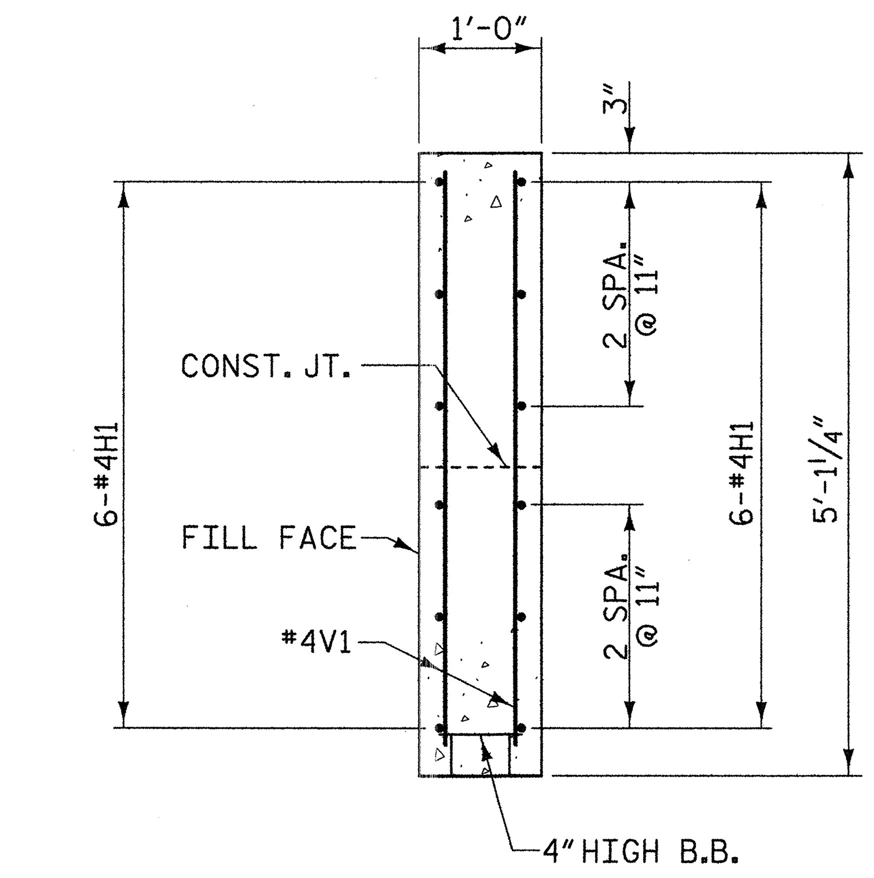


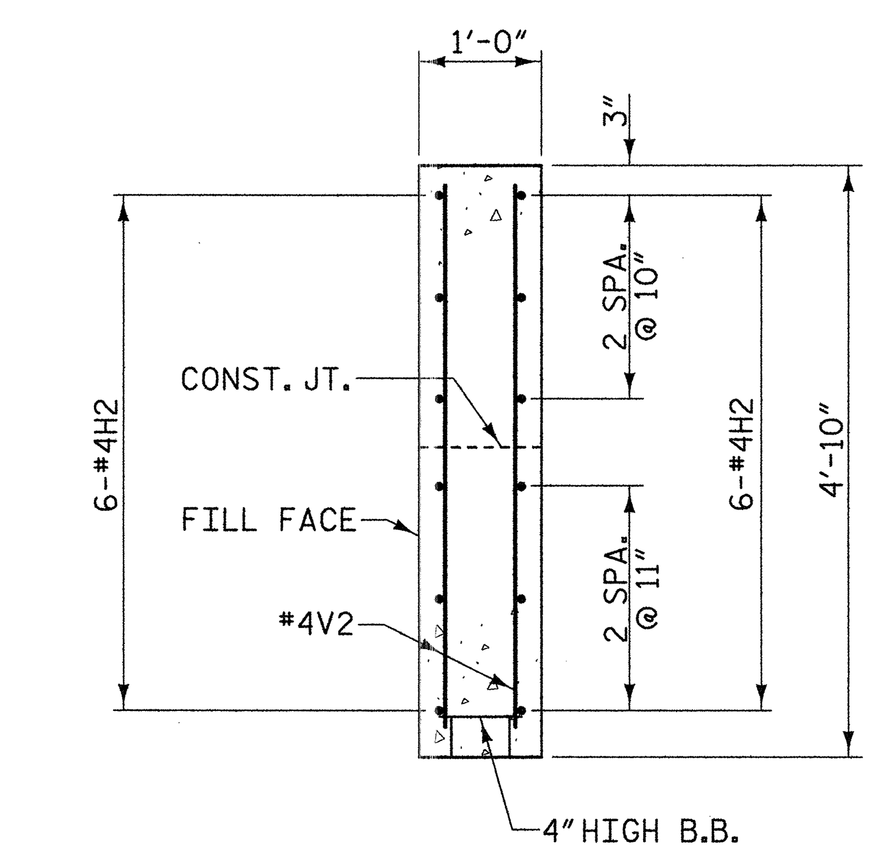
W1 PLAN OF LEFT WING



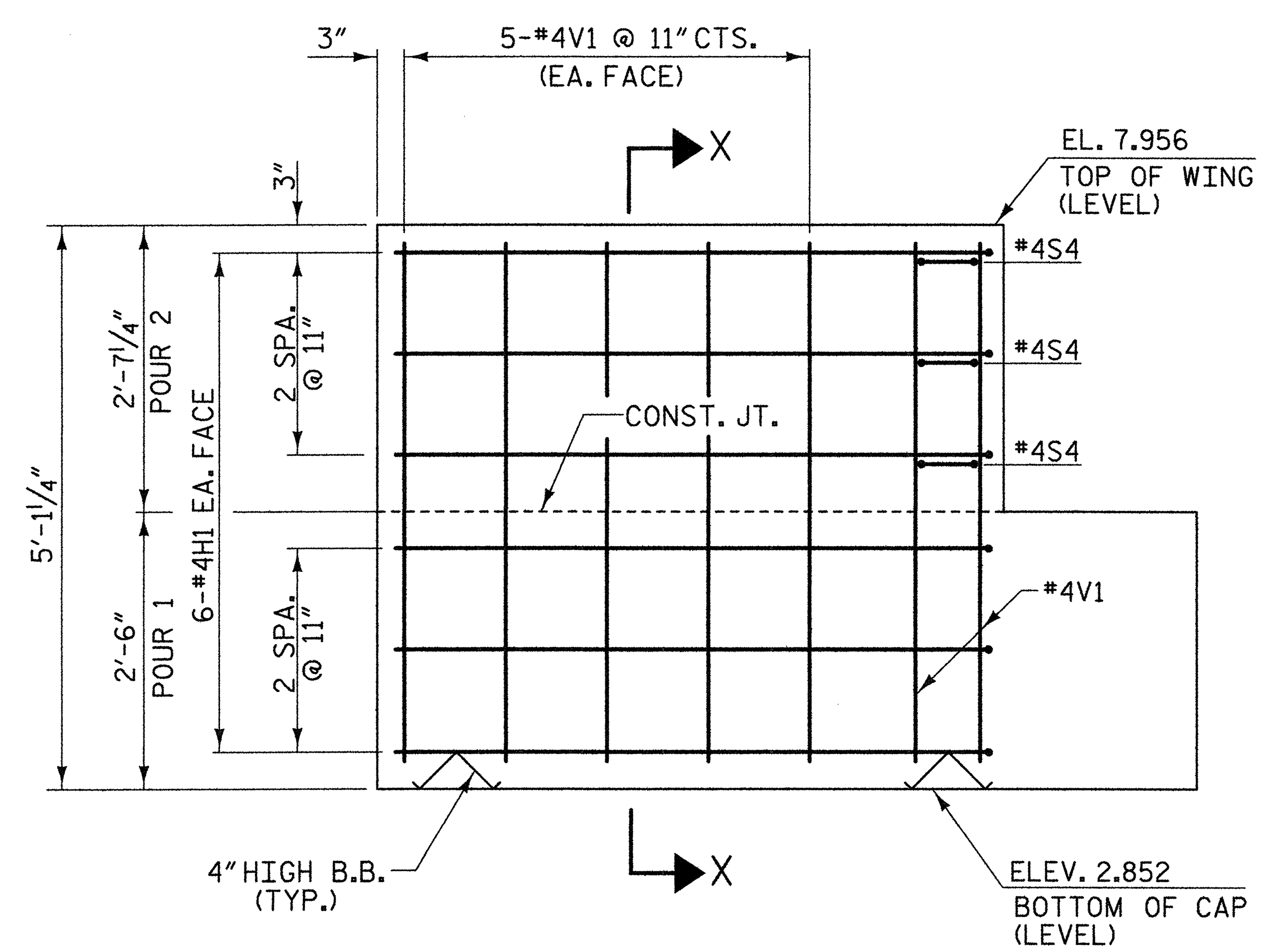
W2 PLAN OF RIGHT WING



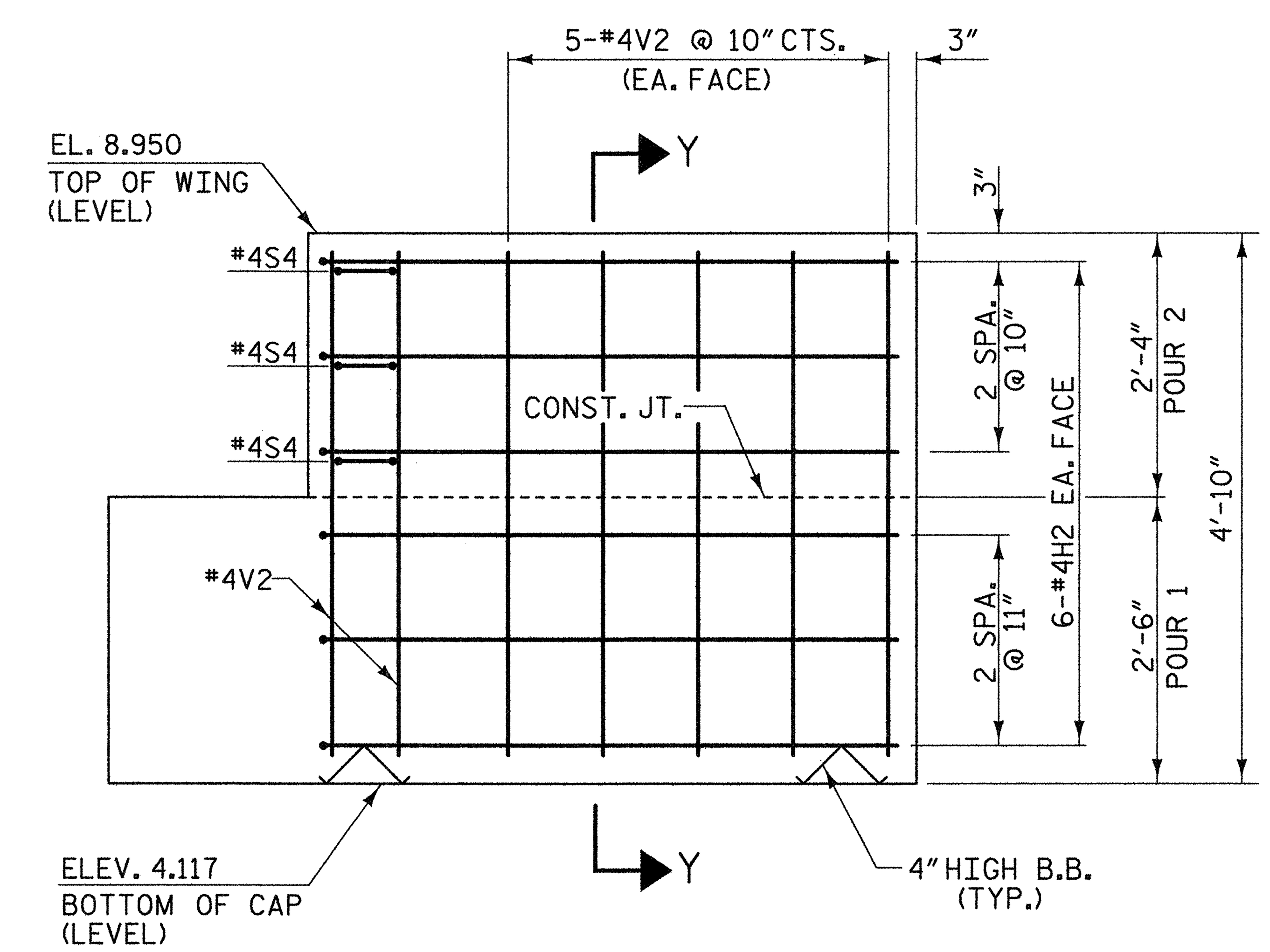
SECTION X-X



SECTION Y-Y



W1 ELEVATION OF LEFT WING



W2 ELEVATION OF RIGHT WING

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

33' CLEAR ROADWAY - 90° SKEW

PLANS PREPARED BY:
MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	24
1			3			TOTAL SHEETS
2			4			34

DRAWN BY :	W. B. ALLEN	DATE :	12/09
CHECKED BY :	L. K. AUSTIN	DATE :	2/10

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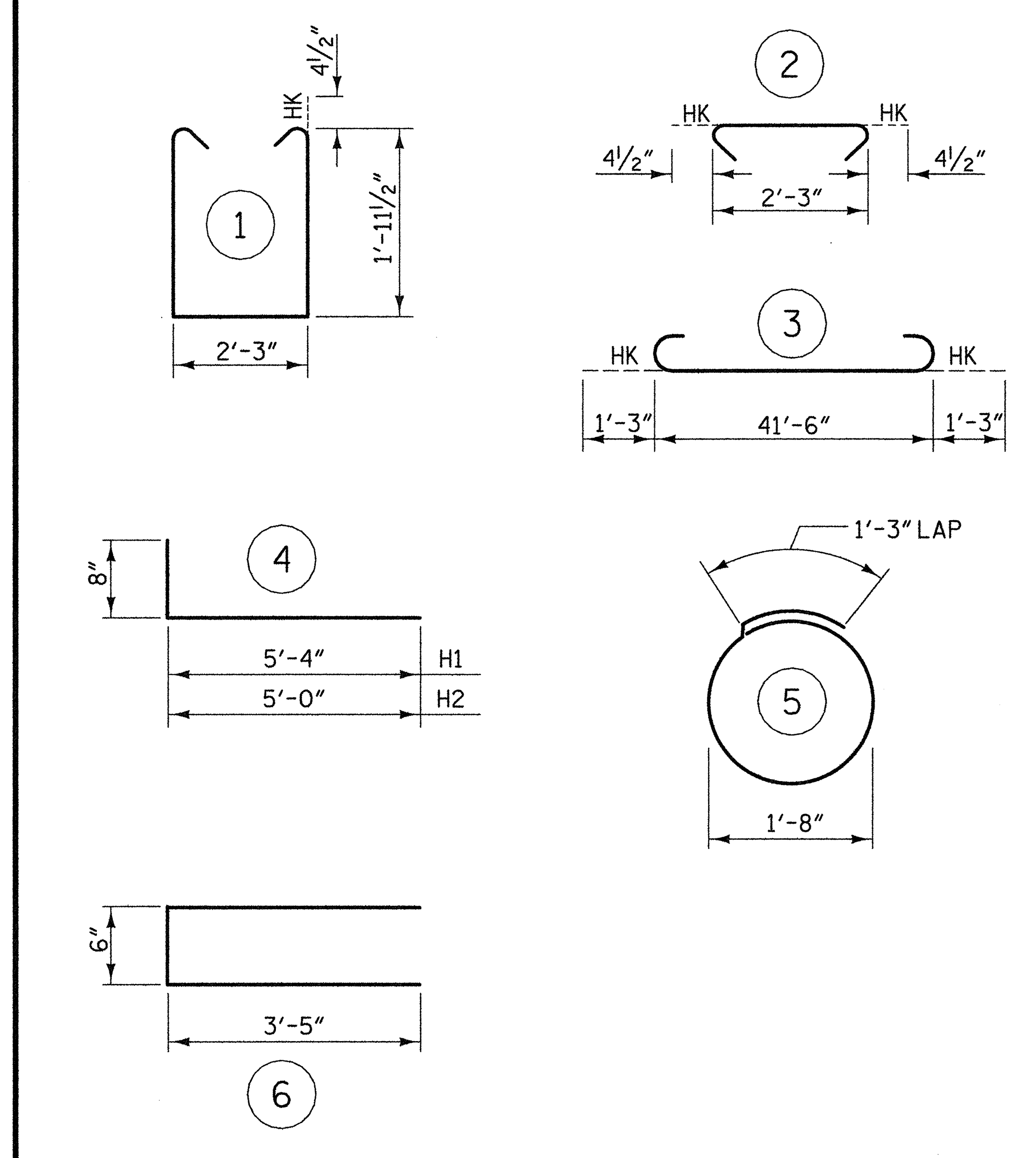
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR END BENT 2

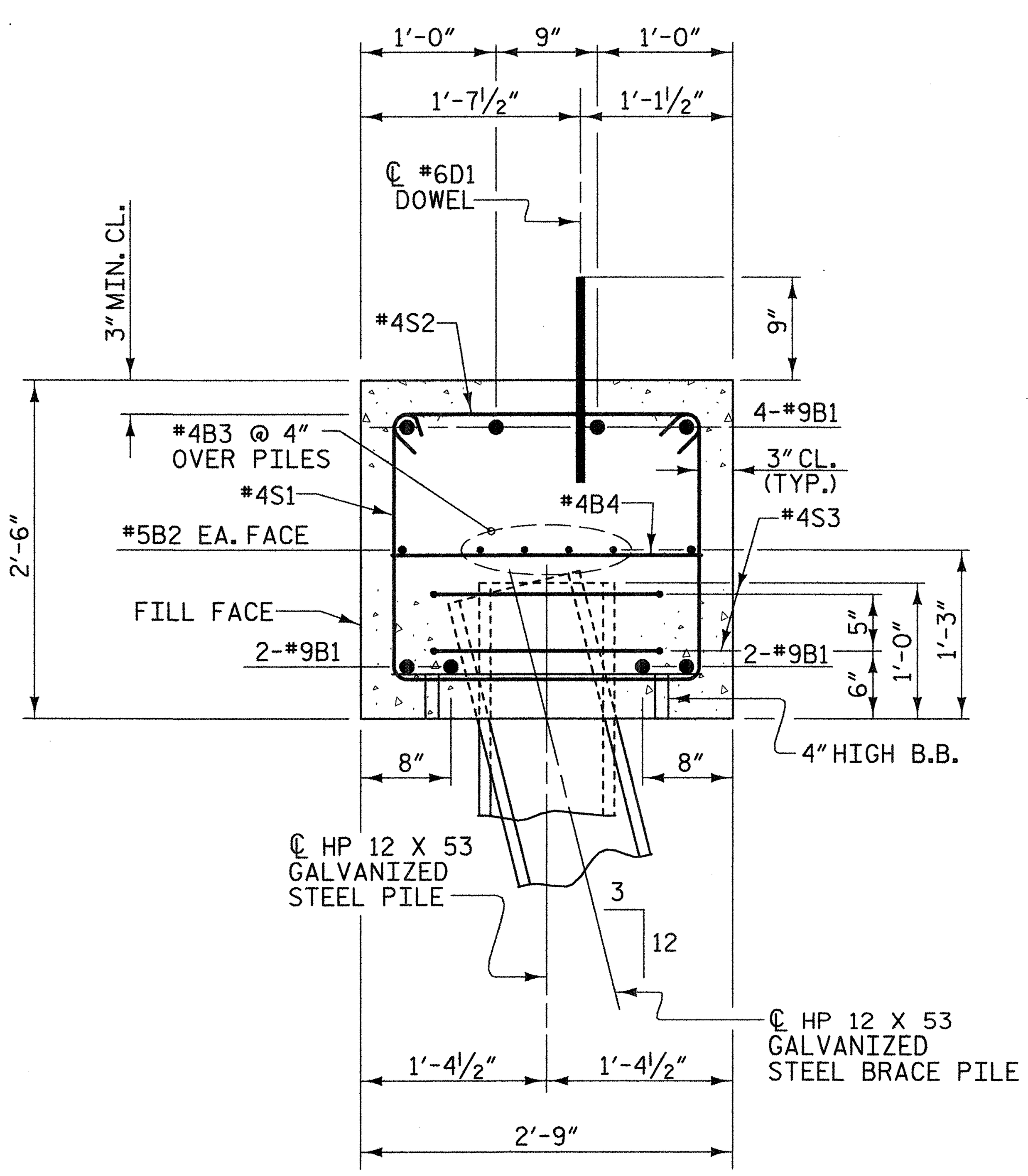
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	3	44'-0"	1197
B2	2	#5	STR	41'-6"	87
B3	8	#4	STR	22'-2"	118
B4	10	#4	STR	2'-3"	15
D1	24	#6	STR	1'-6"	54
H1	12	#4	4	6'-0"	48
H2	12	#4	4	5'-8"	45
S1	38	#4	1	6'-11"	176
S2	38	#4	2	3'-0"	76
S3	14	#4	5	6'-6"	61
S4	6	#4	6	7'-4"	29
V1	20	#4	STR	4'-9"	63
V2	20	#4	STR	4'-6"	60

TOTAL EPOXY COATED REINFORCING STEEL = 2029 lbs.

CLASS "A" CONCRETE - CU. YARDS	
POUR 1	11.5 cu. yds.
POUR 2	1.5 cu. yds.
TOTAL	13.0 cu. yds.

HP 12 X 53 GALVANIZED STEEL PILES
7 PILES REQUIRED - LIN. FEET 420

STEEL PILE POINTS 7 EA.



SECTION A-A

PROJECT NO. 42813
BRUNSWICK COUNTY
STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58 SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19661 L. KEVIN AUSTIN 5/11/10

PLANS PREPARED BY:
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE END BENT 2

33' CLEAR ROADWAY - 90° SKEW

REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	25
1			3			TOTAL SHEETS	34
2			4				

DRAWN BY :	W. B. ALLEN	DATE :	12/09
CHECKED BY :	L. K. AUSTIN	DATE :	2/10

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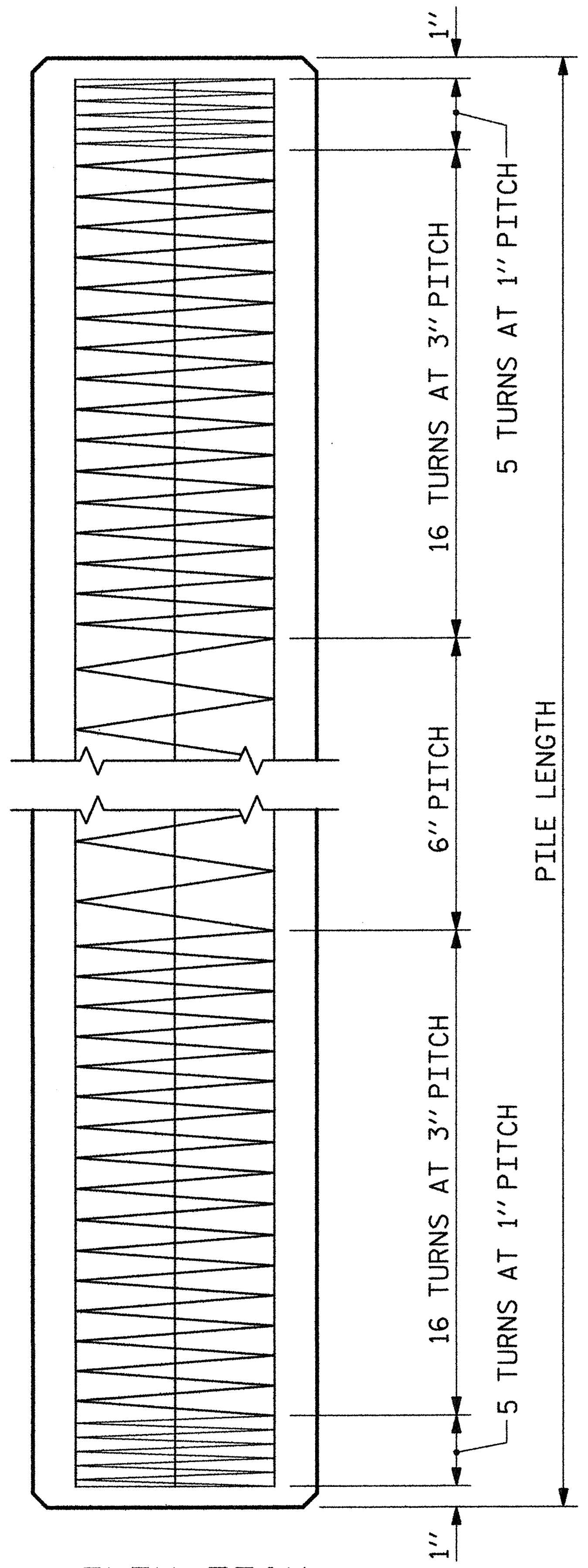
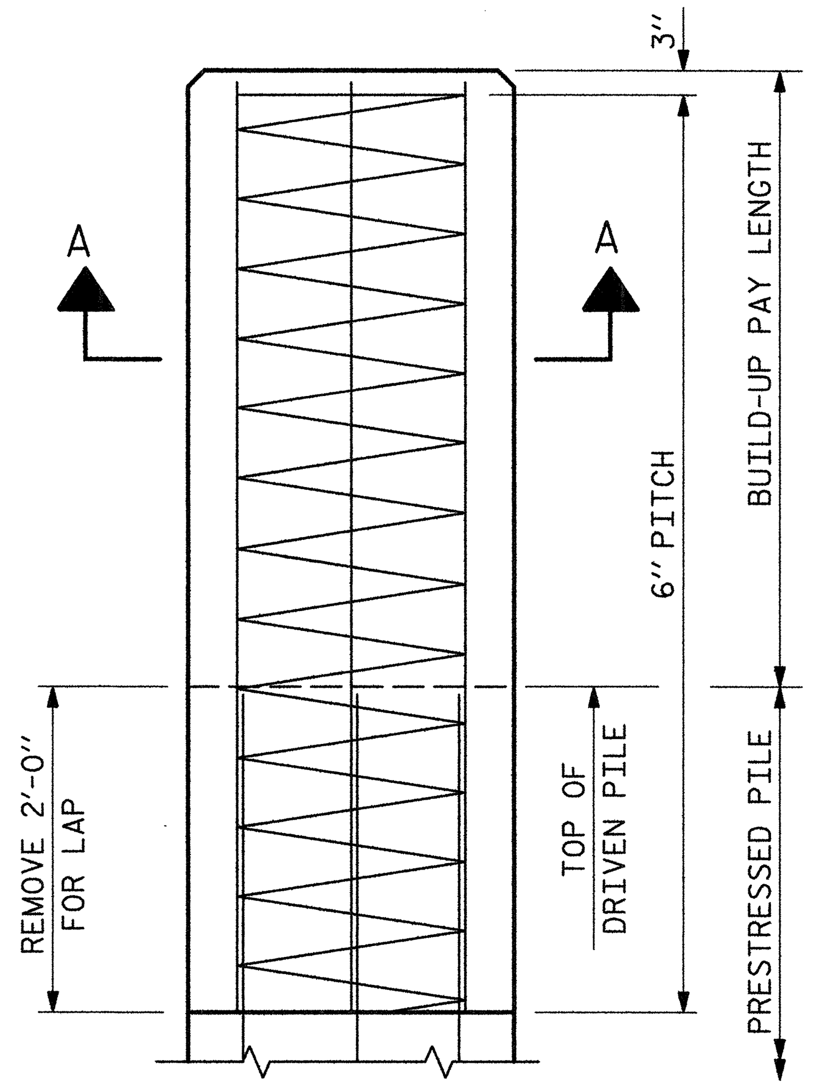
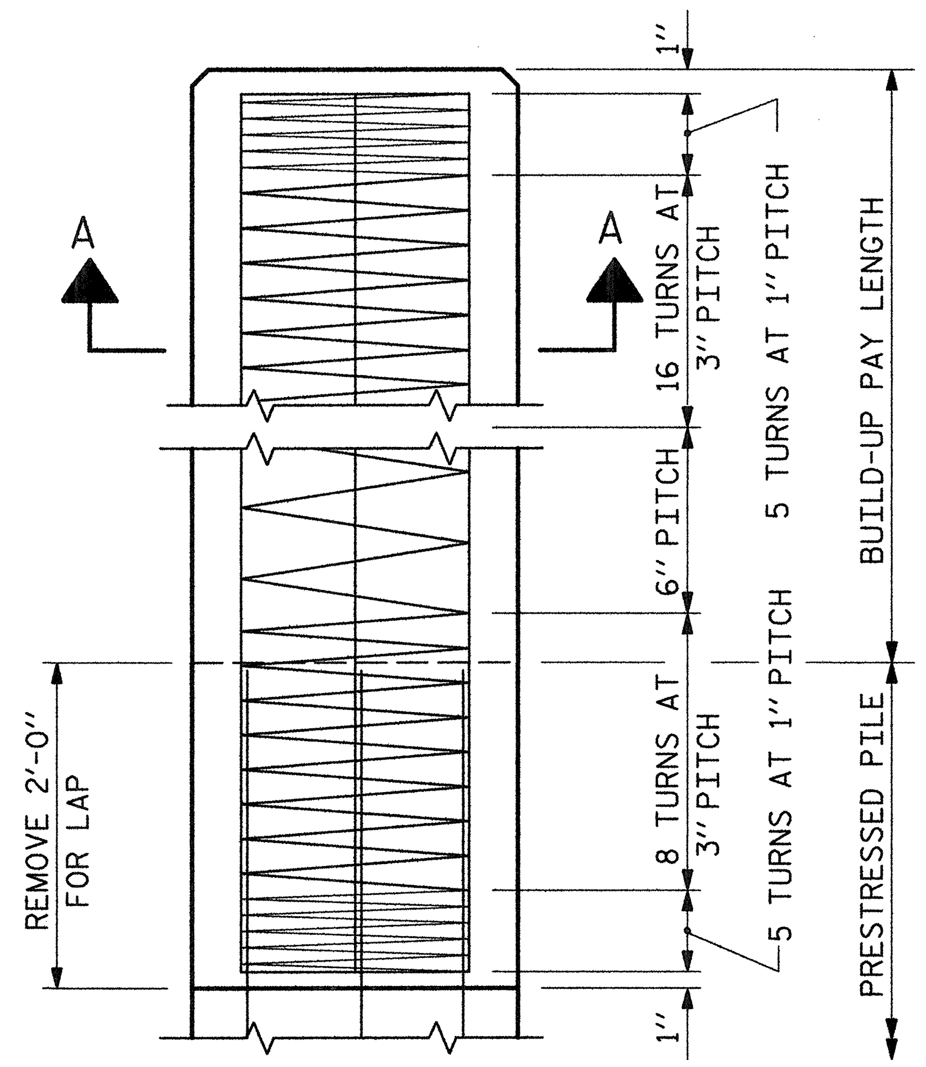


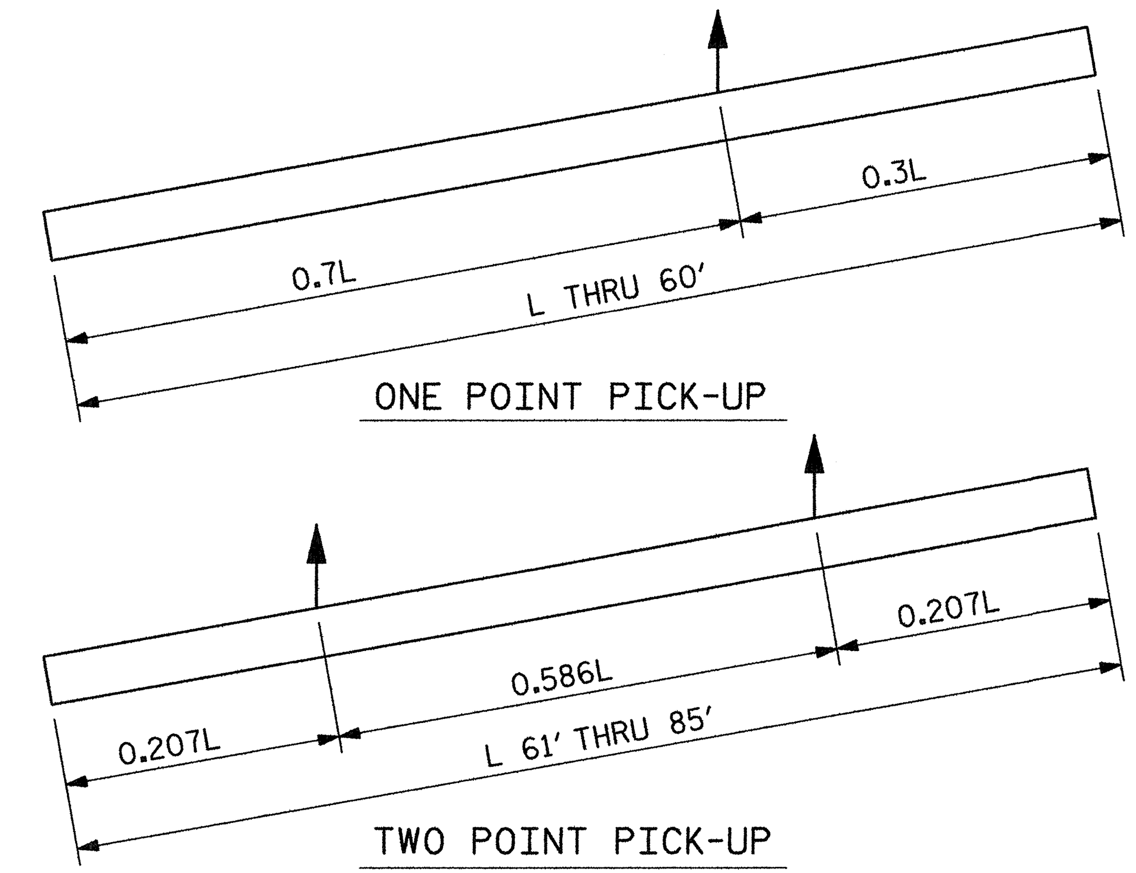
ELEVATION



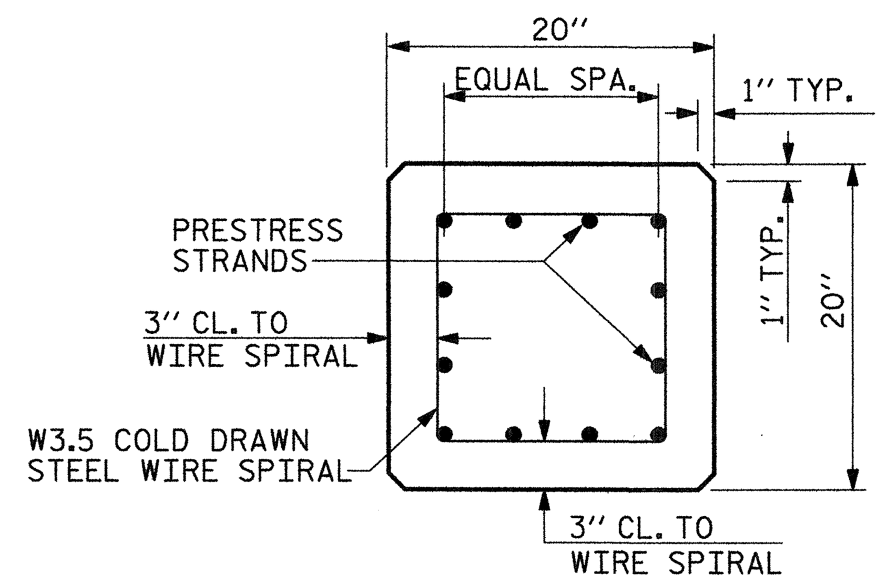
BUILD-UP
WITHOUT DRIVING



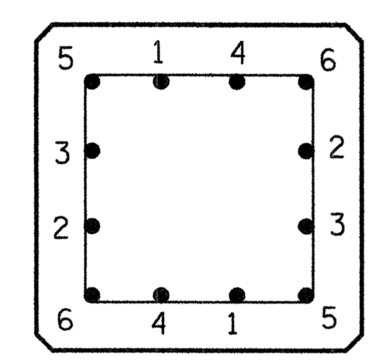
BUILD-UP
WITH DRIVING



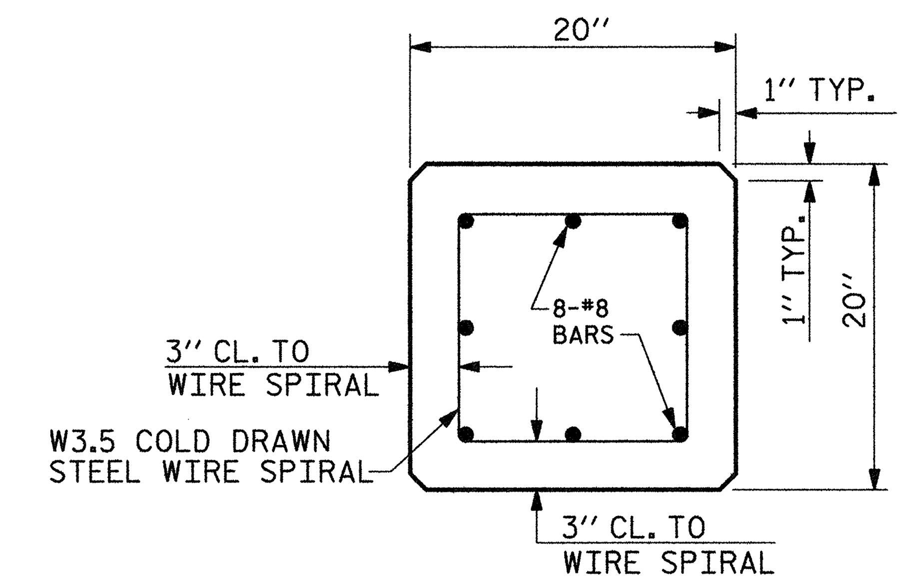
PICK-UP POINTS



TYPICAL SECTION



TYPICAL PATTERN
FOR
BURNING STRANDS



SECTION A-A

NOTES

CONCRETE DESIGN DATA : f′c= 5,000 PSI ;fc= 2,000 PSI

IMPACT IN HANDLING = 50%

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

THE CONTRACTOR SHALL USE THE FOLLOWING STRAND TYPE:

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2″	270 L.R.	12	0.153	41,300# PER STRAND	30,980# PER STRAND

STRANDS SHALL BE EQUALLY SPACED AS SHOWN IN THE "TYPICAL SECTION".

A CIRCULAR STRAND PATTERN SHALL NOT BE PERMITTED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS BURN IN OPPOSITE PAIRS AND SYMMETRICAL ABOUT BOTH VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE OF 'CLASS A' CONCRETE WITH 20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 P.S.I. AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

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 STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE PILE SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 3500 PSI.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

COMPOSITE PRESTRESSED CONCRETE PILES ARE REQUIRED AT ALL BENTS. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

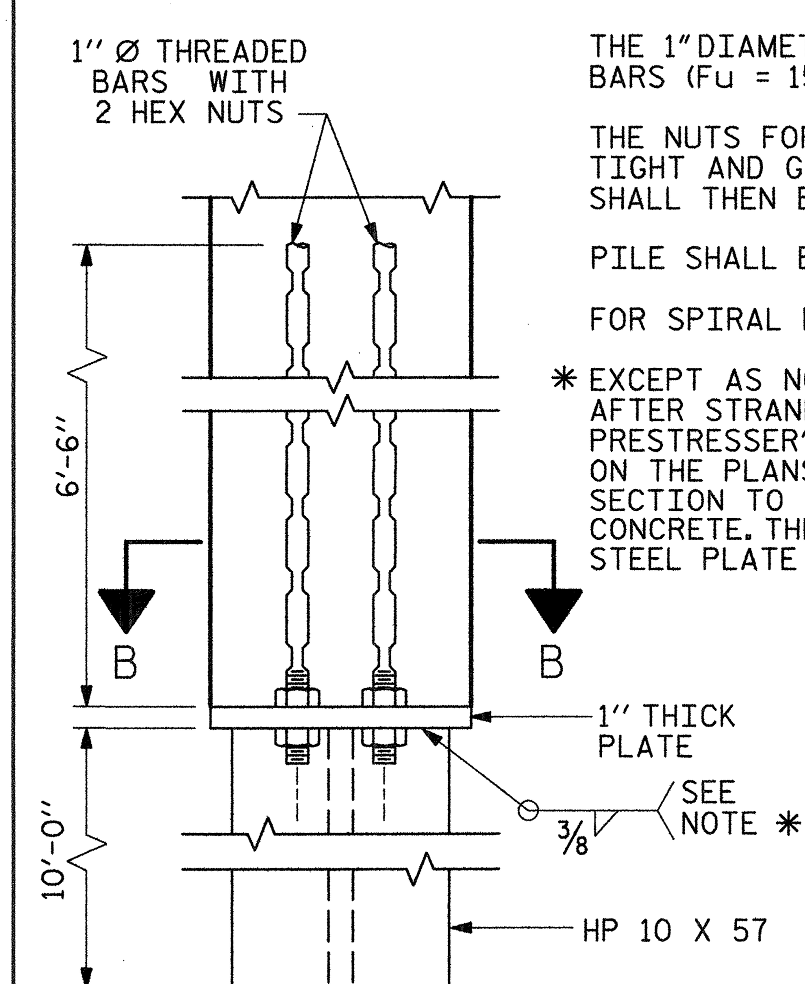
EACH 20″ COMPOSITE PRESTRESSED CONCRETE PILE WILL HAVE A TOTAL LENGTH OF 50′-0″ (40′-0″ PRESTRESSED CONCRETE PILE PORTION AND 10′-0″ STEEL HP 10 X 57 PORTION).

AT THE CONTRACTOR'S OPTION, THE COMPOSITE PILES MAY BE ASSEMBLED WHILE THE PRESTRESSED CONCRETE PILE PORTIONS AND THE STEEL HP PILE PORTIONS ARE LYING ON THE GROUND IN A HORIZONTAL POSITION. WHEN LIFTING THE ASSEMBLED COMPOSITE PILES INTO A VERTICAL POSITION, THEY SHALL BE LIFTED ONLY BY THE PRESTRESSED CONCRETE PILE PORTIONS USING TWO PICK-UP POINTS AND THE STEEL HP PILE PORTIONS SHALL NOT BE ALLOWED TO TOUCH THE GROUND. IF THIS OPTION IS CHOSEN, THE CONTRACTOR SHALL DETERMINE THE LOCATIONS OF THE TWO PICK-UP POINTS; THE TABLE SHOWN ON THIS SHEET DOES NOT APPLY.

QUANTITIES FOR ONE 20″ SQUARE PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINTS 0.3L	ONE PICK-UP POINTS 0.7L	TWO PICK-UP POINTS 0.207L	TWO PICK-UP POINTS 0.586L
25′-0″	2.56	5.18	7′-6″	17′-6″		
30′-0″	3.07	6.22	9′-0″	21′-0″		
35′-0″	3.58	7.26	10′-6″	24′-6″		
40′-0″	4.09	8.29	12′-0″	28′-0″		
45′-0″	4.61	9.33	13′-6″	31′-6″		
50′-0″	5.12	10.36	15′-0″	35′-0″		
55′-0″	5.63	11.40	16′-6″	38′-6″		
60′-0″	6.14	12.44	18′-0″	42′-0″		
65′-0″	6.65	13.47			13′-5½″	38′-1″
70′-0″	7.17	14.51			14′-6″	41′-0″
75′-0″	7.68	15.55			15′-6½″	43′-11″
80′-0″	8.19	16.58			16′-6½″	46′-11″
85′-0″	8.70	17.62			17′-7″	49′-10″

STEEL PILE CONNECTION DETAILS



ELEVATION

NOTES

THE HP 10 X 57 STEEL PILE AND ALL PILE CONNECTION ELEMENTS SHALL BE GALVANIZED. SEE SPECIAL PROVISIONS.

PLATE SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 36.

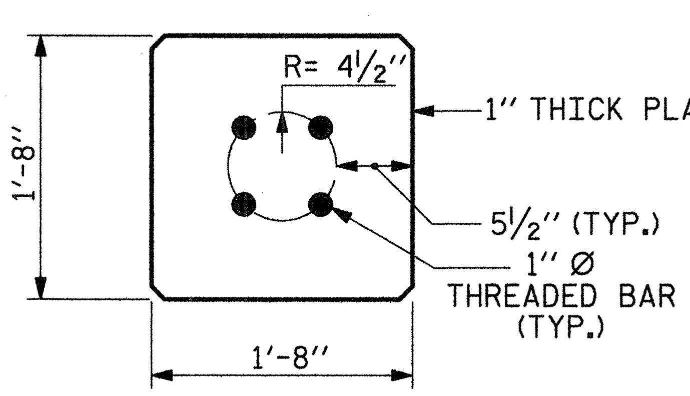
THE 1″ DIAMETER THREADED BARS SHALL BE EITHER DYWIDAG BARS OR WILLIAMS ALL-THREAD BARS (Fu = 150 KSI).

THE NUTS FOR THE THREADED BARS RETAINING THE PLATE SHALL BE TIGHTENED FINGER TIGHT AND GIVEN ONE ADDITIONAL TURN. THREADS OF THE NUTS AND THREADED BARS SHALL THEN BE BURRED AT THE FACE OF THE NUTS WITH A SHARP POINTED TOOL.

PILE SHALL BE CAST WITH THREADED BARS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE DETAILS ON THIS SHEET.

* EXCEPT AS NOTED BELOW, THE HP 10 X 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 X 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLANS IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 X 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



SECTION B-B
(HOLES FOR STRANDS NOT SHOWN)

PLANS PREPARED BY:
MULKEY ENGINEERS & CONSULTANTS
PO BOX 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

NORTH CAROLINA PROFESSIONAL SEAL 19661 ENGINEER L. KEVIN AUSTIN
L. Kevin Austin 5/11/10

PROJECT NO. 42813
BRUNSWICK COUNTY
STATION: 15+27.29 -L-
REPLACES BRIDGE NO. 58 SHEET 1 OF 1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

20″ PRESTRESSED CONCRETE PILE

STD. NO. PCP3

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

SHEET NO. 26
TOTAL SHEETS 34

ASSEMBLED BY :	W. B. ALLEN	DATE :	12/09
CHECKED BY :	L. K. AUSTIN	DATE :	2/10

DRAWN BY : WJH 1/89
CHECKED BY : CRK 3/89
REV. 6/1/94 EEM/GRP
REV. 8/16/99R RAL/LES
REV. 5/1/06 TLA/GM

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CONTRACT: DO00040 PROJECT: B-5216

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5216	27	34

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
42813	NA	P.E.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

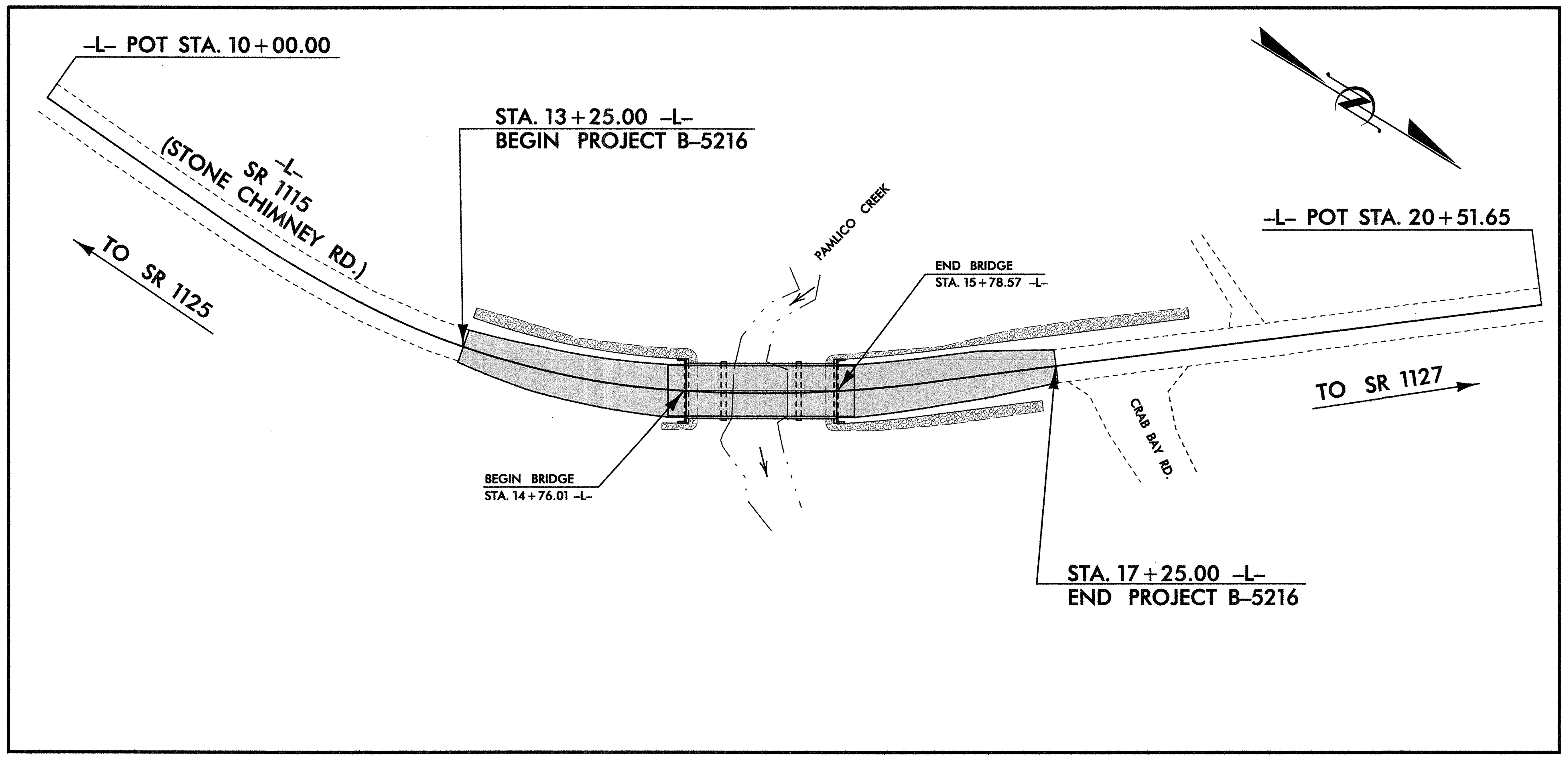
HIGH QUALITY WATER(S) EXIST ON THIS PROJECT

High Quality Water Zone(s) Exist

Refer To E. C. Special Provisions for Special Considerations.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.



LOCATION SKETCH
(NOT TO SCALE)

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

MULKEY
ENGINEERS & CONSULTANTS
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Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
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GRAPHIC SCALE

0

PLANS

0

PROFILE (HORIZONTAL)

0

PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-5216 = 0.057 MILE

LENGTH STRUCTURE PROJECT B-5216 = 0.019 MILE

TOTAL LENGTH PROJECT B-5216 = 0.076 MILE

Prepared In the Office of:

Mulkey Engineers & Consultants

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MATTHEW HARVEY

MULKEY E & C
ENGINEER

LEVEL III-A CERTIFICATION No.: 412

Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated July 18, 2006 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1630.06	Special Stilling Basin
1605.01	Temporary Silt Fence	1632.01	Rock Inlet Sediment Trap Type A
1606.01	Special Sediment Control Fence	1632.02	Rock Inlet Sediment Trap Type B
1607.01	Gravel Construction Entrance	1632.03	Rock Inlet Sediment Trap Type C
1622.01	Temporary Berms and Slope Drains	1633.01	Temporary Rock Silt Check Type A
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.03	Temporary Silt Ditch	1634.02	Temporary Rock Sediment Dam Type B
1630.04	Stilling Basin	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.05	Temporary Diversion	1635.02	Rock Pipe Inlet Sediment Trap Type B

EROSION CONTROL PLANS

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

ROADSIDE ENVIRONMENTAL UNIT
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

2006 STANDARD SPECIFICATIONS

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence Section	
1607.01	Gravel Construction Entrance (GCE)	
1622.01	Temporary Berms and Slope Drains	
1632.03	Rock Inlet Sediment Trap Type C	

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

PLANS PREPARED BY:

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON SR 1115
OVER PAMLICO CREEK
BETWEEN SR 1125 & SR 1127

33' CLEAR ROADWAY - 90° SKEW

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

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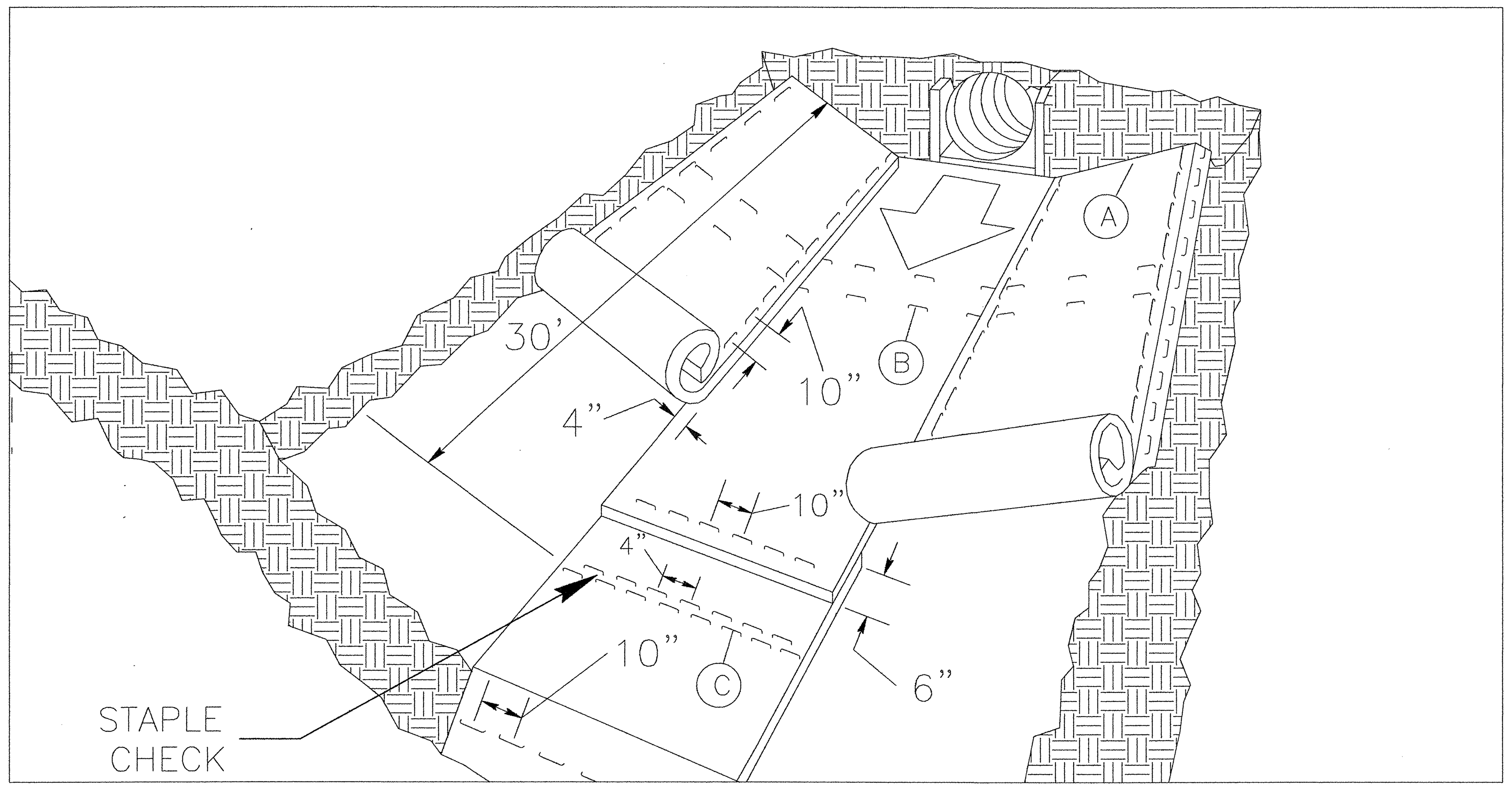
MATTING INSTALLATION DETAIL



MATTING IN DITCHES

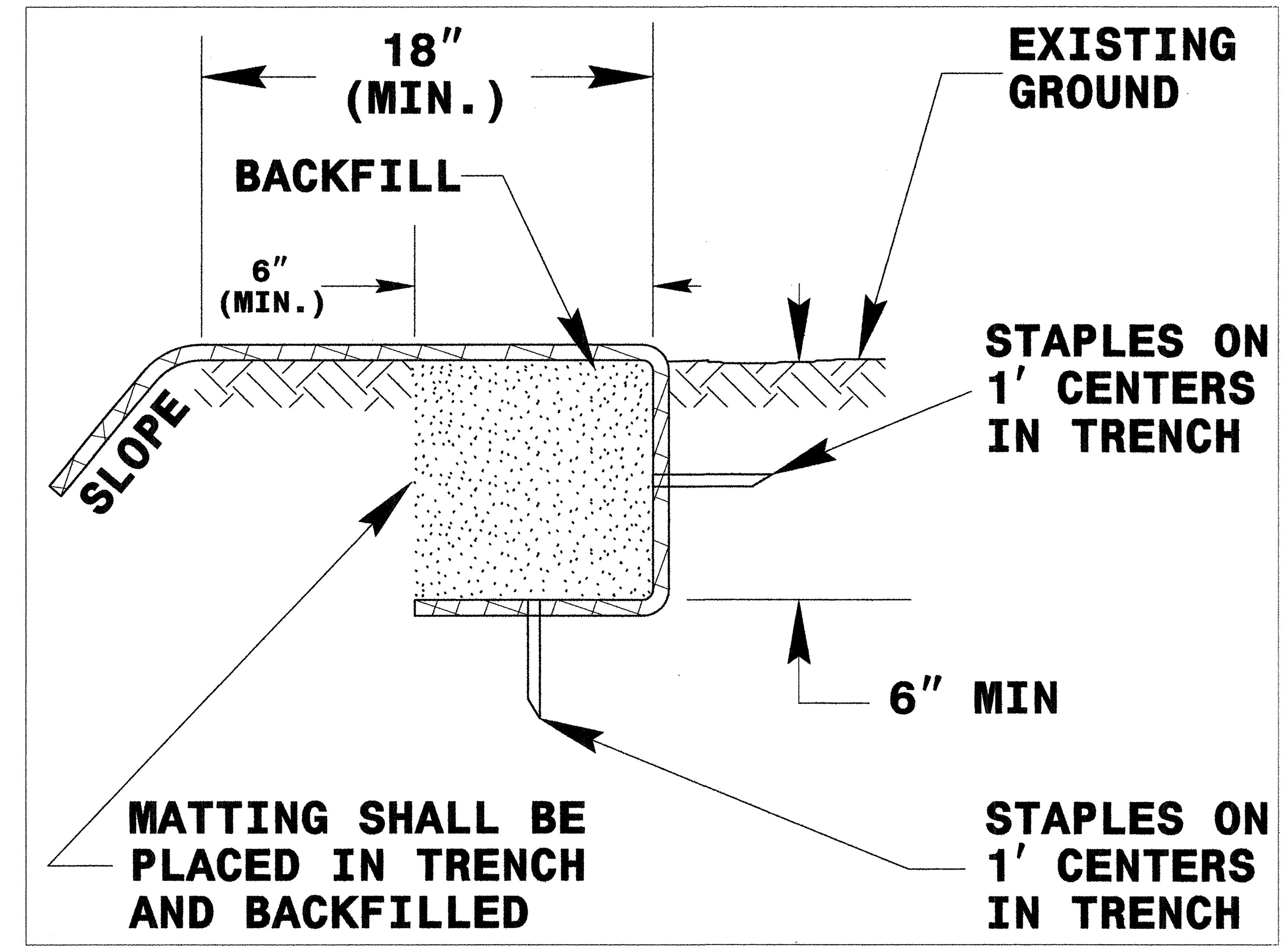


DIAGRAM (A)

Staple Check Pattern

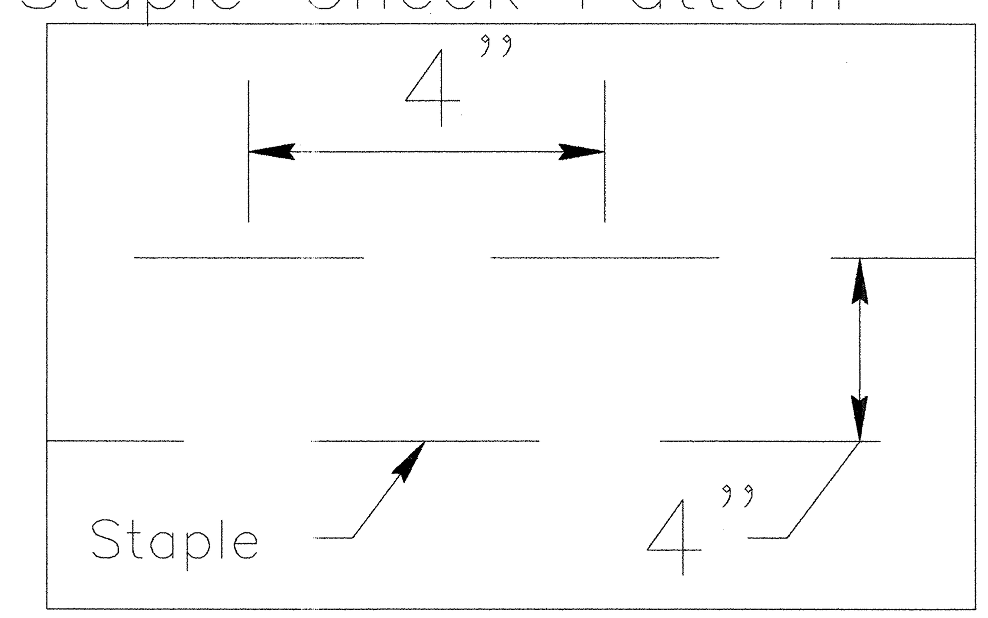
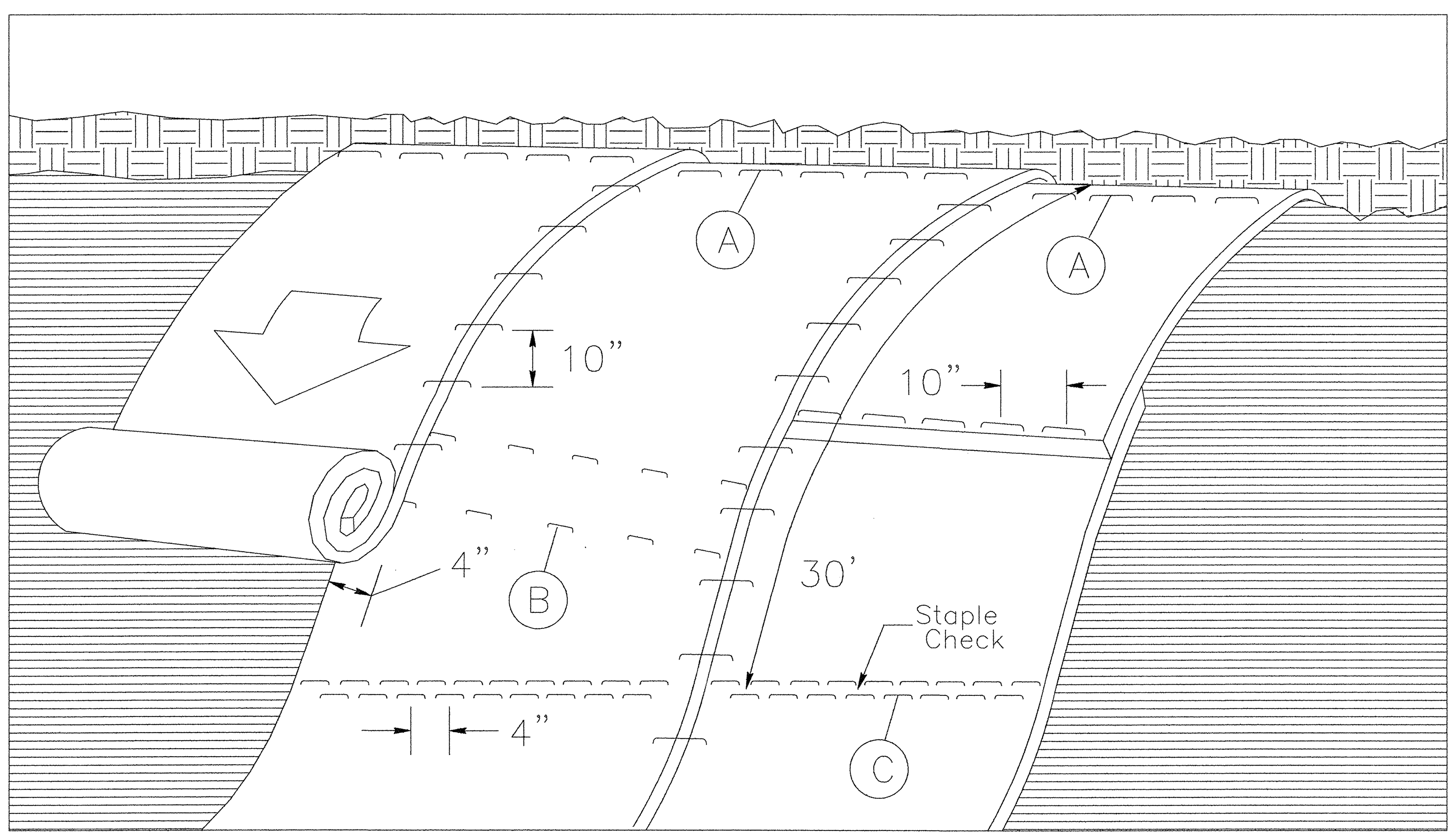


DIAGRAM (C)



MATTING ON SLOPES

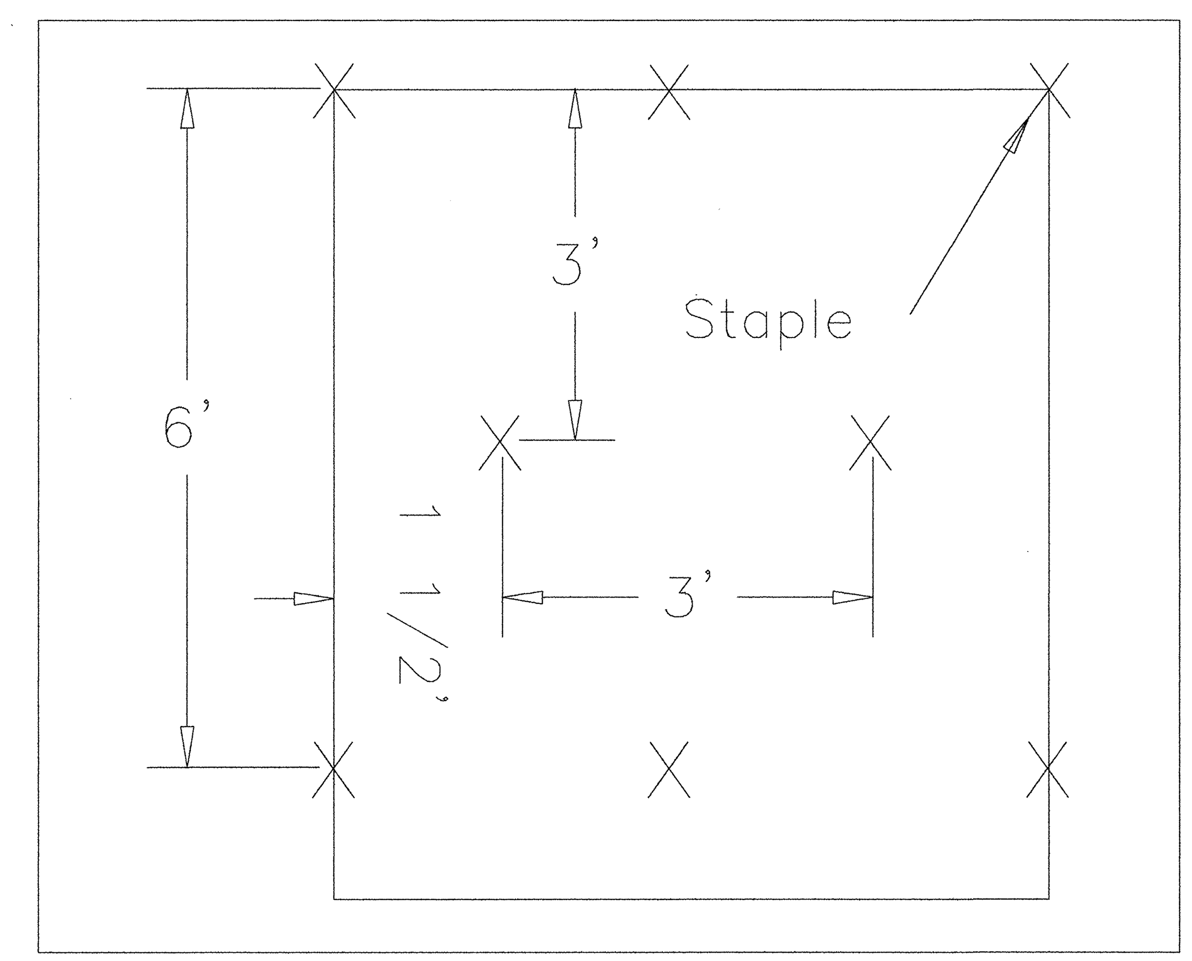


DIAGRAM (B)

PROJECT NO. 42813

BRUNSWICK COUNTY

STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON SR 1115
OVER PAMLICO CREEK
BETWEEN SR 1125 & SR 1127

33' CLEAR ROADWAY - 90°SKEW

NOT TO SCALE

PLANS PREPARED BY:
MULKEY
ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
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(919) 851-1918 (FAX)
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	29
1			3			TOTAL SHEETS
2			4			34

NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.

PLAN

SCALE : 1" = 20'

—OH— DENOTES OVERHEAD POWER LINE
—OT— DENOTES OVERHEAD TELEPHONE LINE
—T— DENOTES TELEPHONE LINE
—TV— DENOTES TELEVISION LINE
—W— DENOTES WATER LINE
—E— DENOTES PROPOSED OVERHEAD POWER LINE

NOTE: GUARDRAIL LENGTHS AS SHOWN INCLUDE ANCHOR UNITS.

U.O.N. - UNLESS OTHERWISE NOTED

UTILITY SHAPE LEGEND

ELECTRIC (BEMC) MODIFICATIONS

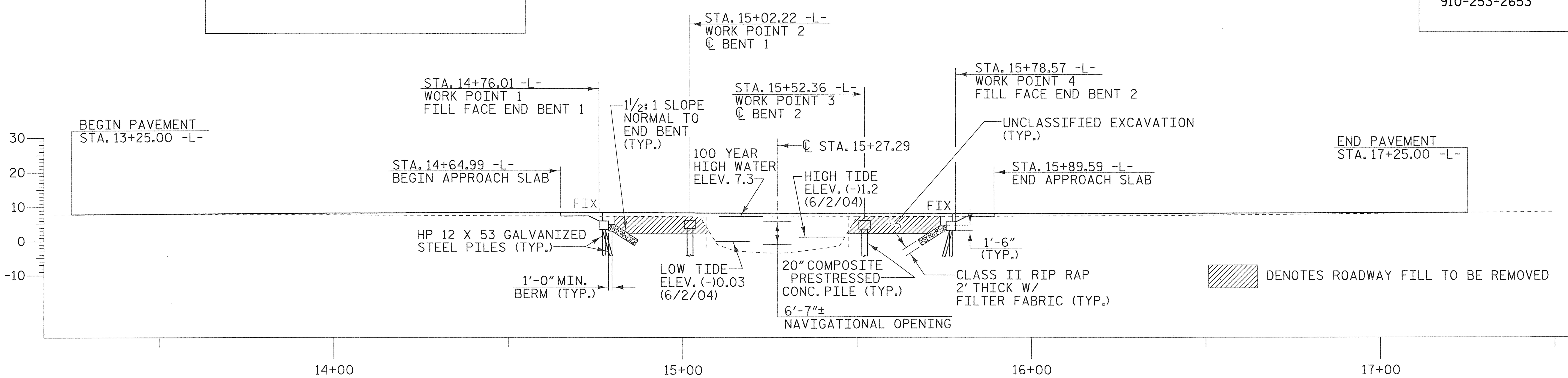
TELEPHONE & CABLE TV (ATMC) MODIFICATIONS

UTILITY CONTACTS

ATLANTIC TELEPHONE MEMBERSHIP CORP.
DANE STANLEY
910-755-1706

BRUNSWICK ELECTRIC CORP.
JOSHUA WINSLOW
910-754-4391

BRUNSWICK COUNTY PUBLIC UTILITIES (WATER-SEWER)
JOHN NICHOLS
910-253-2653



PROFILE ALONG ℄ SURVEY

SCALE : 1" = 20'

PROJECT NO. 42813
BRUNSWICK COUNTY
STATION: 15+27.29 -L-

REPLACES BRIDGE NO. 58

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

UTILITY BY OTHERS PLANS
BRIDGE ON SR 1115
OVER PAMLICO CREEK
BETWEEN SR 1125 & SR 1127
33' CLEAR ROADWAY - 90° SKEW

PLANS PREPARED BY:
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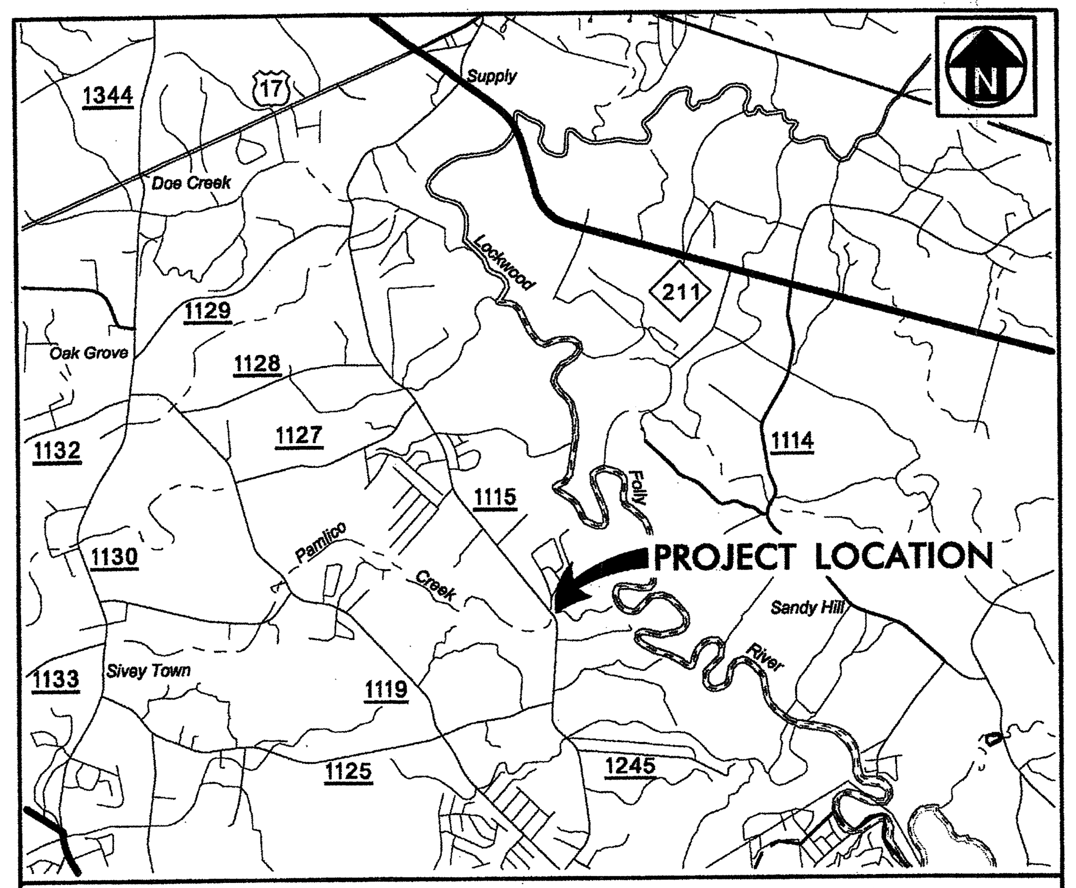
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	30
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : W. B. ALLEN DATE : 11/09
CHECKED BY : L. K. AUSTIN DATE : 1/10

5/2/2010 7:40:45 AM R:\Structures\B5296_SD_UO_01.dgn

PROJECT: B-5216

CONTRACT:



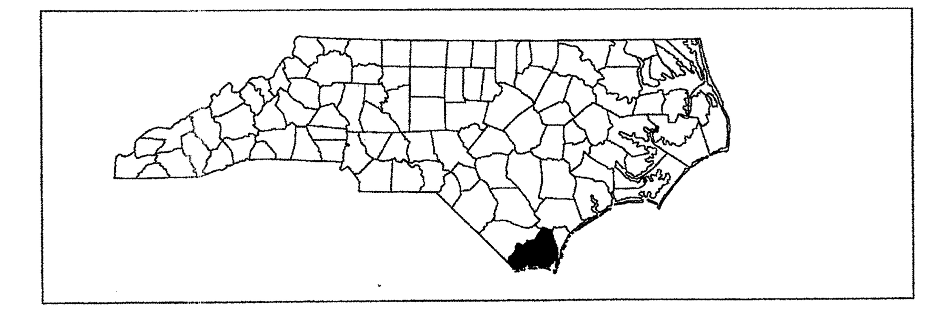
VICINITY MAP
(NOT TO SCALE)

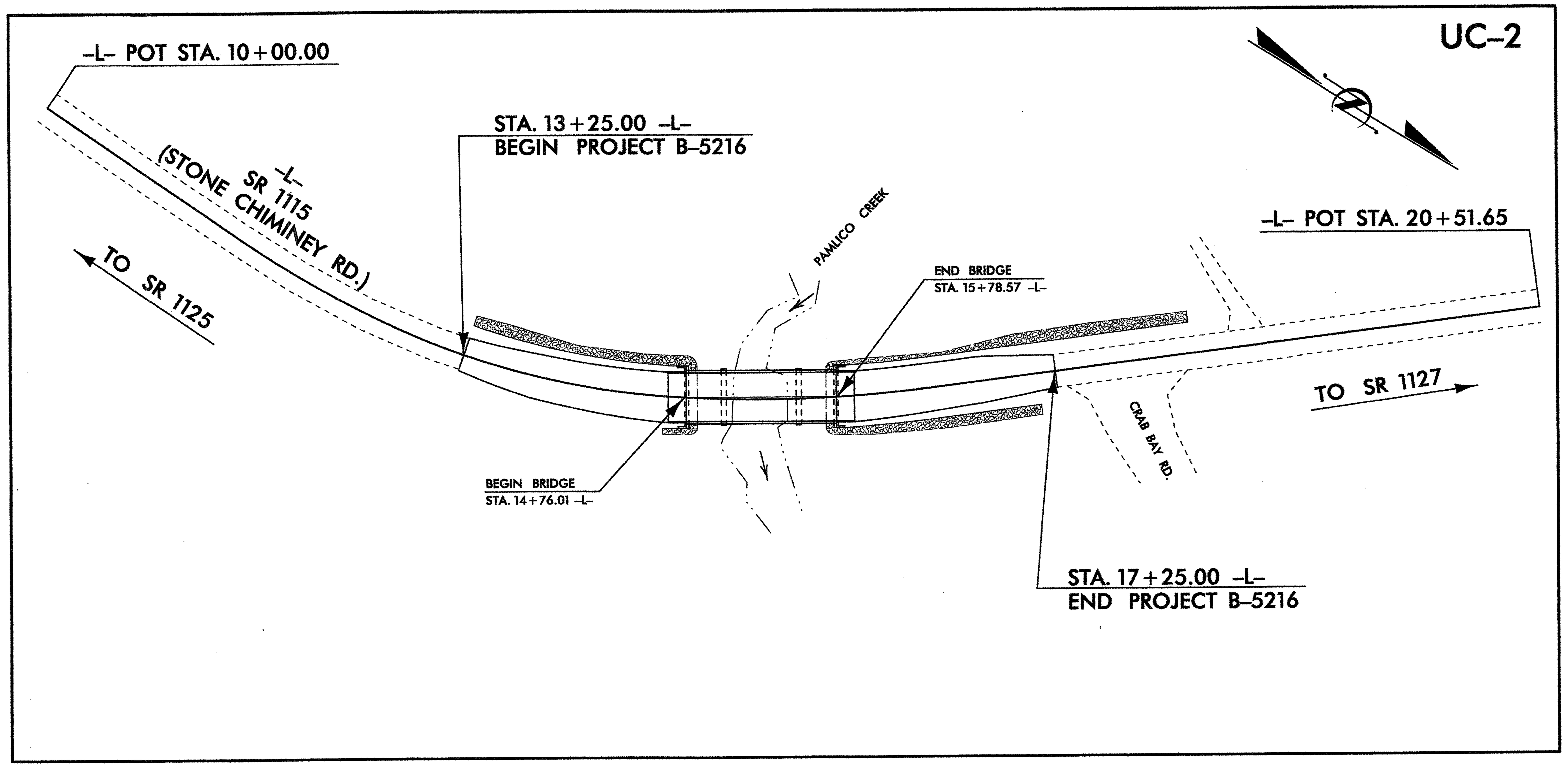
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

LOCATION: BRIDGE NO. 58 OVER PAMLICO CREEK

TYPE OF WORK: WATER AND SEWER RELOCATION





THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

INDEX OF SHEETS

SHEET NO.	*DESCRIPTION*
UC-1	*TITLE SHEET*
UC-2	*UTILITY CONSTRUCTION PLAN SHEET(S)*
UC-3	*PROFILE SHEET(S)*
UC-4	*DETAIL SHEET(S)*

WATER AND SEWER OWNERS ON PROJECT

(1) BRUNSWICK COUNTY (WATER AND SEWER)

Prepared In the Office of:

AECOM

AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
701 CORPORATE CENTER DRIVE, SUITE 475, RALEIGH, NC 27607
919-854-6200 919-854-6259 (fax)

Larry W. Mitchell

NORTH CAROLINA PROFESSIONAL SEAL 023965 ENGINEER LARRY W. MITCHELL

2-09-10

FOR:
DIVISION OF HIGHWAYS
PROJECT SERVICES
UTILITY ENGINEERING
1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
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Roger Worthington, P.E.	*UTILITIES SECTION ENGINEER*
	UTILITIES SQUAD LEADER PROJECT ENGINEER
AECOM Technical Services	*UTILITIES PROJECT DESIGNER*

2/9/2010
3:05:41 PM
Q:\LWM_Projects\NCDOT UTILITY\brunswick5216\UC_01.dgn

PROJECT REFERENCE NO. B-5216 | SHEET NO. UC-2

AECOM
AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.

SCALE: 10 0 20

NORTH CAROLINA PROFESSIONAL SEAL 023965 ENGINEER LARRY W. MITCHELL 2-26-10

UTILITY CONSTRUCTION

02-24-10 Rev. 1 - Modified Water Main Trenchless Installation Limits per CAMA Recommendations

USER: swinsong
DATE: 2/26/2010
TIME: 4:46:20 PM
DGN: G:\60147783\B5216\bruntsw\ck\B5216\UC_02.dgn

PROJECT REFERENCE NO.	SHEET NO.
B-5216	UC-3

AECOM
AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.

SCALE: 10 0 20

NORTH CAROLINA PROFESSIONAL SEAL 023965 ENGINEER LARRY W. MITCHELL

UTILITY CONSTRUCTION

02-24-10 Rev. 1 - Modified Water Main Trenchless Installation Limits per CAMA Recommendations

USER: swinsong
DATE: 2/26/2010
TIME: 9:34:25 AM
DGN: Q:\60147783\B5216\brunswickB5216\UC_03

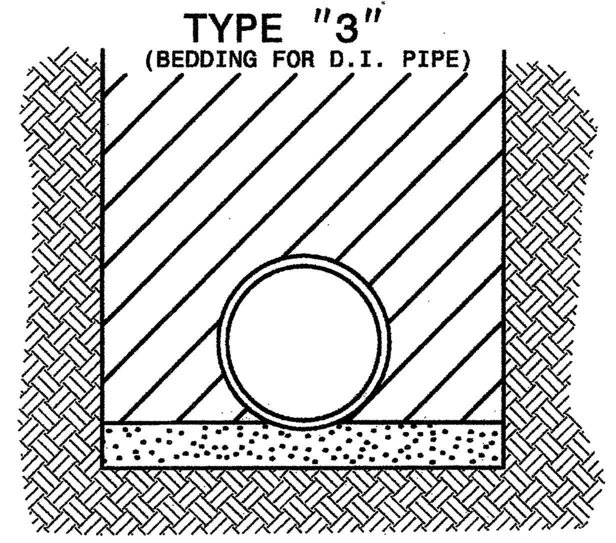
UTILITY CONSTRUCTION

MAXIMUM TRENCH WIDTH AT TOP OF PIPE

NOMINAL PIPE SIZE (inches)	TRENCH WIDTH (inches)	NOMINAL PIPE SIZE (inches)	TRENCH WIDTH (inches)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

TYPE "3"

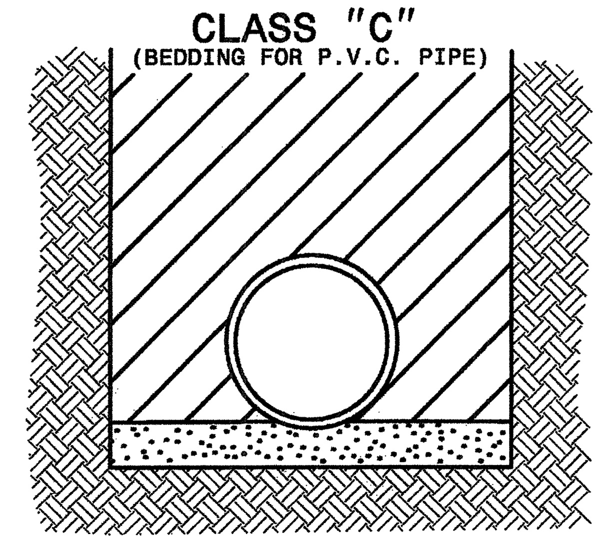
(BEDDING FOR D.I. PIPE)



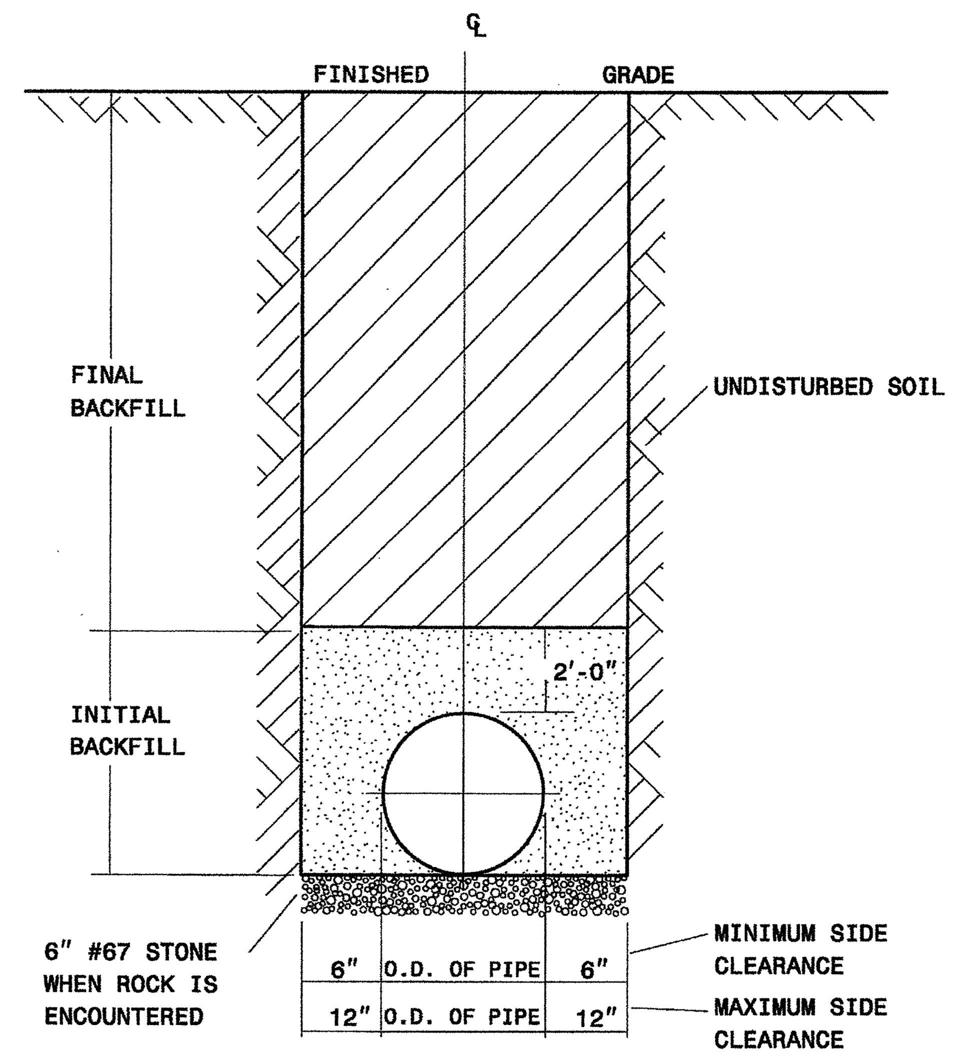
PIPE BEDDED IN 4" MINIMUM LOOSE SOIL. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

CLASS "C"

(BEDDING FOR P.V.C. PIPE)

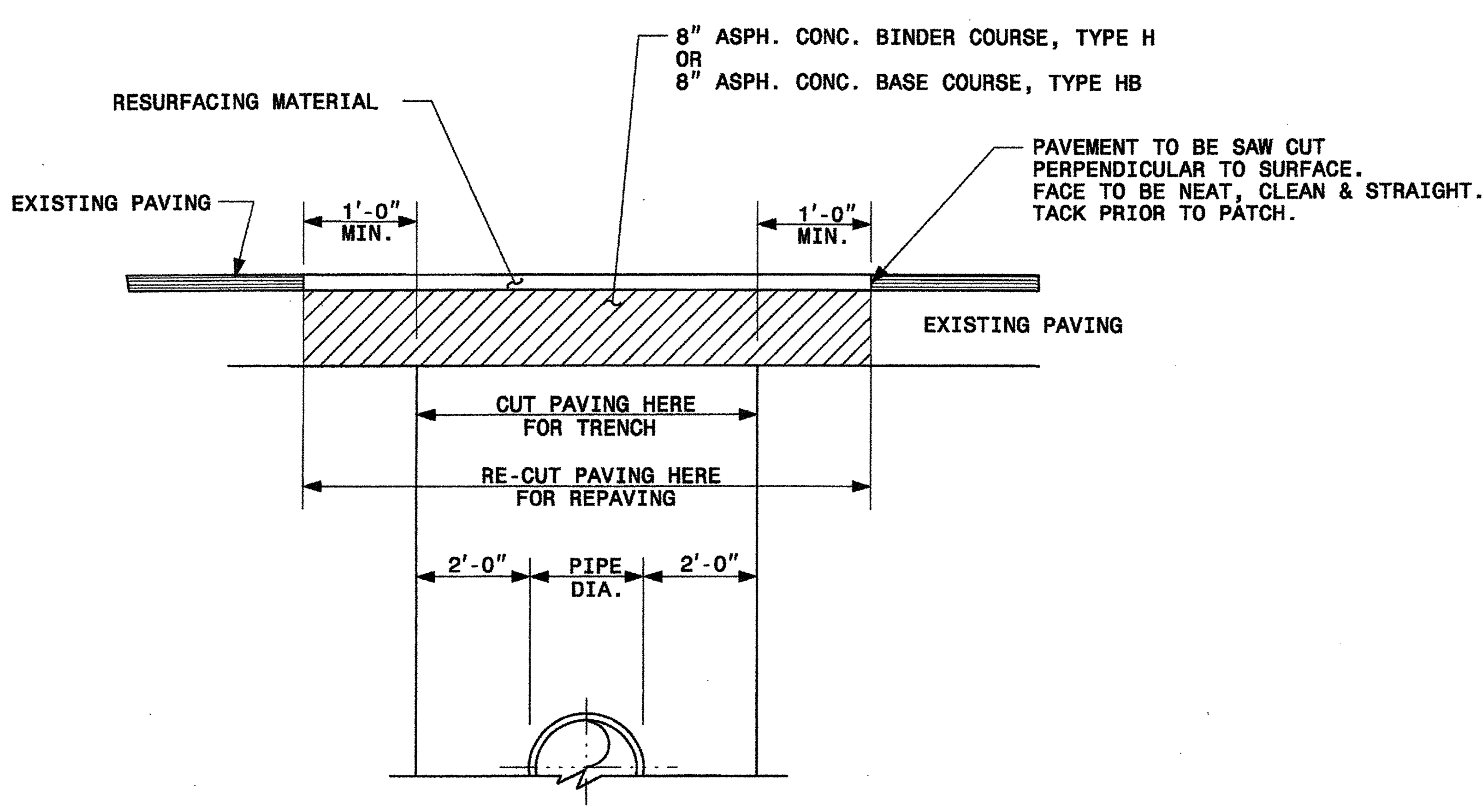


PIPE BEDDED IN LOOSE MATERIAL, LIGHTLY TAMPED WITH A MINIMUM OF 6" UNDER PIPE. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL, IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.



TRENCH & BACKFILL DETAIL

NTS

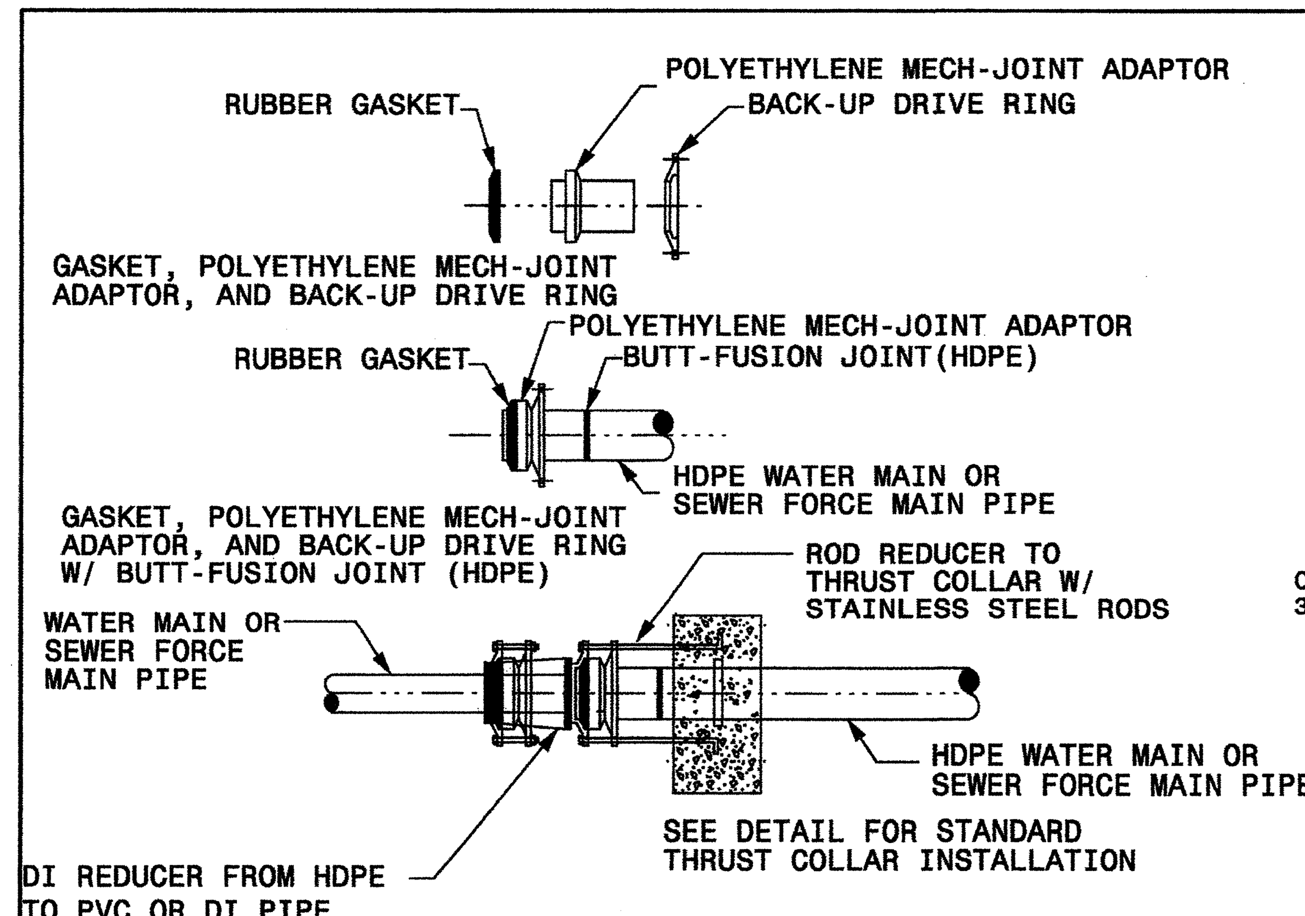


NOTE:
IF ENGINEER APPROVED. THEN THE BACKFILL (AGGREGATE BASE COURSE OR SUITABLE SUBGRADE) SHALL BE MADE IN 6" LAYERS AND SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD DENSITY (AASHTO METHOD T-99). EACH LAYER MUST BE THOROUGHLY TAMPED BY A MECHANICAL TAMP BEFORE THE NEXT LAYER IS PLACED. ALL ASPHALT PAVEMENT REPLACED SHALL BE IN ACCORDANCE WITH THE MOST CURRENT N.C.D.O.T. STANDARD SPECIFICATIONS. BASE COURSE DENSITY SHALL BE 100%.

SAW CUT AND PATCH METHOD

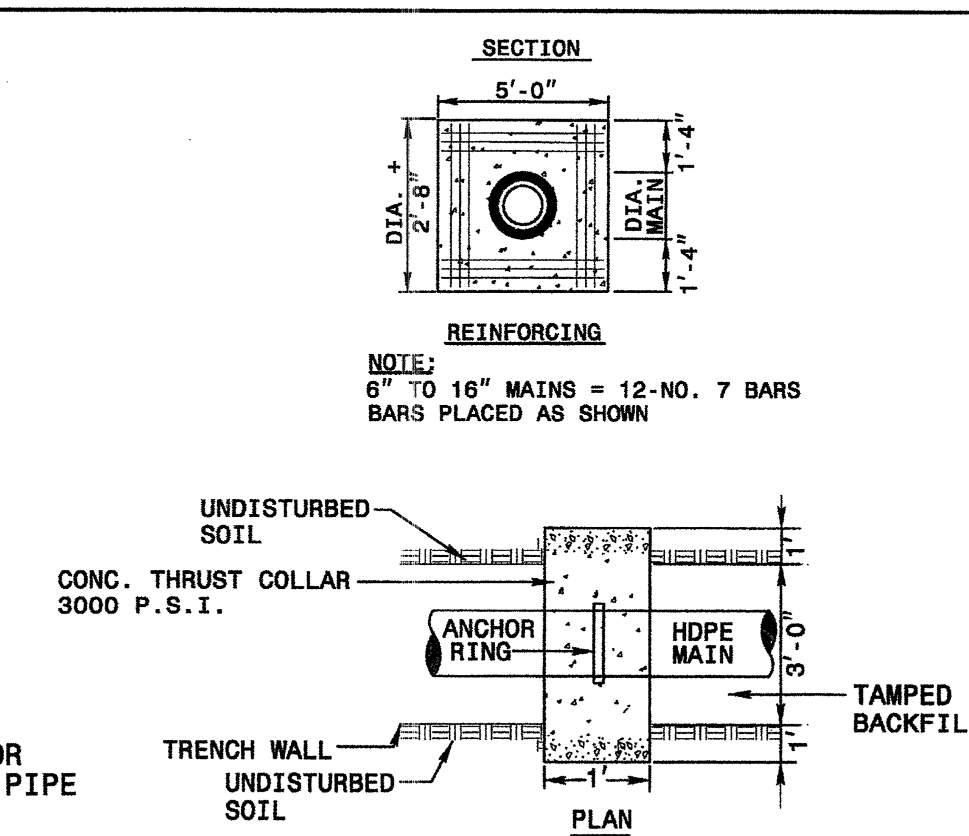
UTILITY UNDER EXISTING ASPHALT STREETS

NTS



CONNECTOR ASSEMBLY DETAILS

NTS



THRUST COLLAR DETAIL