



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

June 5, 2018

Addendum No. 1

RE: Contract # C204103

WBS # 34802.3.3

STATE FUNDED

Guilford County (U-2412A)

SR-1486/SR-4121 (Greensboro/High Point Road) From Proposed US-311 Bypass

To West of SR-1480 (Vickrey Chapel Road)

June 19, 2018 Letting

To Whom It May Concern:

The Contractor is hereby notified that the Structure Subsurface plans for bridges # 270 and #271 are now available and have been posted on the web along with the other information for this project.

Reference is made to the plans and proposal form furnished to you on this project.

The following revisions have been made to the Structure plans:

Sheet No.	Revisions
S1-3 thru S1-5, S2-3 and S2-4	Revised to add PE seal and DocuSign
S1-6 and S2-6	Revised quantities as described below on the item sheets
S1-42 and S2-42	Revised bar spacing for bar #4U2 to 6 inches
S1-43 and S2-43	Revised to add PE seal and DocuSign
S1-44 and S2-44	Revised quantities in the Bill Of Material for reinforcing steel, pile length and pile excavation. Deleted quantity for Pile Driving Equipment Setup
S1-45 and S2-45	Revised to add PE seal and DocuSign
S1-46 and S2-46	Revised embedment length of "V" bars. Revised reinforcing steel and drilled pier quantities
S1-47 and S2-47	Revised to add PE seal and DocuSign
S1-48 and S2-48	Revised embedment length of "V" bars. Revised reinforcing steel quantity.
S1-49 and S2-49	Revised to add PE seal and DocuSign

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
CONTRACT STANDARDS AND DEVELOPMENT
1591 MAIL SERVICE CENTER
RALEIGH, NC 27699-1591

Telephone: (919) 707-6900
Fax: (919) 250-4127
Customer Service: 1-877-368-4968

Location:
1020 BIRCH RIDGE DR.
RALEIGH, NC 27610

Website: www.ncdot.gov

Sheet No.	Revisions
S1-50 and S2-50	Revised embedment length of "V" bars. Revised reinforcing steel and concrete quantities.
S1-51 and S2-51	Revised to add PE seal and DocuSign
S1-52 and S2-52	Revised embedment length of "V" bars. Revised reinforcing steel, concrete and permanent steel casing quantities.
S1-53 and S2-53	Revised to add PE seal and DocuSign
S1-54 and S2-54	Revised embedment length of "V" bars. Revised reinforcing steel, concrete and permanent steel casing quantities.
S1-55 and S2-55	Revise bar spacing for bar #4U2 to 6 inches
S1-56 and S2-56	Revised to add PE seal and DocuSign
S1-57 and S2-57	Revised reinforcing steel and pile length quantities.
S7-3	Revised Class A concrete quantity for Bent #1 and the total concrete quantity
S7-27	Revised Note #4
S7-28	Revised Class A concrete quantity for Pour #1 and the total concrete quantity
New W-5 thru W-9	New sheets to add details for MSE Retaining Wall No. 2

Please void the above noted sheets in your plans and staple the revised sheets thereto. Please staple New Sheet Nos. W-5 thru W-9 after existing Sheet No. W-4.

The following revisions have been made to the proposal:

Page No.	Revisions
Proposal Cover	Note added that reads "Includes Addendum No. 1 Dated 06-05-2018"
ST-33	Revised to provide the railroad site data train information

Please void the Proposal Cover and the above listed page in your proposal and staple the revised pages thereto.

On the item sheets the following pay item quantities have been revised and a new pay item added:

<u>Item</u>	<u>Description</u>	<u>Old Quantity</u>	<u>New Quantity</u>
370-8801000000-E-SP	MSE Retaining Wall No. (2)	NEW ITEM	7,960 SF
320-8096000000-E-450	Pile Excavation In Soil	235 LF	201 LF
321-8097000000-E-450	Pile Excavation Not In Soil	134 LF	175 LF
323-8105500000-E-411	5'-0" Diameter Drilled Piers In Soil	122.5 LF	104.5 LF
328-8105600000-E-411	4'-6" Diameter Drilled Piers Not In Soil	107 LF	127 LF

U-2412A (C204103)

Guilford County

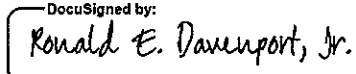
<u>Item</u>	<u>Description</u>	<u>Old Quantity</u>	<u>New Quantity</u>
329-8105600000-E-411	5'-0" Diameter Drilled Piers Not In Soil	58 LF	77 LF
335-8111000000-E-411	Permanent Steel Casing For 6'-6" Diameter Drilled Pier	100.78 LF	108.68 LF
343-818200000-N-420	Class A Concrete (Bridge)	3,233.1 CY	3,270.5 CY
351-8217000000-E-425	Reinforcing Steel (Bridge)	636,365 LB	639,487 LB
352-8238000000-E-425	Spiral Column Reinforcing Steel (Bridge)	111,800 LB	111,805 LB
356-8328200000-E-450	Pile Driving Equipment Setup For HP 12 X 53 Steel Piles	178 EA	160 EA
357-8364000000-E-450	HP 12 X 53 Steel Piles	4,819 LF	4,929 LF

The Contractor's bid must be based on the revised pay item quantities and include the new pay item.

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

The contract will be prepared accordingly.

Sincerely,

DocuSigned by:

F8196038A47A442...
Ronald E. Davenport, Jr., PE
State Contract Officer

RED/jag
Attachments

cc: Mr. Lamar Sylvester, PE
Mr. Mike Mills, PE
Mr. Ron Hancock, PE
Mr. Jon Weathersbee, PE
Mr. Ken Kennedy, PE
Ms. Lori Strickland
Project File (2)

Mr. Ray Arnold, PE
Ms. Theresa Canales, PE
Mr. Brian Hanks, PE
Mr. Mike Gwyn
Ms. Jaci Kincaid
Ms. Penny Higgins
Mr. Mitchell Dixon

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

PROPOSAL

INCLUDES ADDENDUM No. 1 DATED 06-05-2018

DATE AND TIME OF BID OPENING: **JUNE 19, 2018 AT 2:00 PM**

CONTRACT ID C204103
WBS 34802.3.3

FEDERAL-AID NO. STATE FUNDED
COUNTY GUILFORD
T.I.P. NO. U-2412A
MILES 3.844
ROUTE NO. SR 1486
LOCATION SR-1486/SR-4121 (GREENSBORO/HIGH POINT RD) FROM PROPOSED
US-311 BYPASS TO WEST OF SR-1480 (VICKREY CHAPEL RD).

TYPE OF WORK GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURE.

NOTICE:

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A ROADWAY & STRUCTURE PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

ST-33

Project U-2412A

Guilford County

Railroad Site Data:

The following information was received from the Railroad, and is provided as a convenience to the Contractor in bidding this project. This information is subject to change and the Contractor may, at his discretion, contact the Railroad directly to verify its current accuracy. Since this information is shown as a convenience to the Contractor, but is subject to change, the Contractor shall have no claims whatsoever against either the Railroad or the Department of Transportation for any delays or additional costs incurred based on changes in this information which occur after the above date of receipt.

Train information:

of Trains in a 24-hr. period: 40 to 50 trains a day.

Maximum Authorized Speed: Passenger Trains-70 MPH
Intermodal Trains-60 MPH
Freight Trains-50 MPH

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
ROADWAY ITEMS						
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0001000000-E	200	CLEARING & GRUBBING .. ACRE(S)	Lump Sum	L.S.	
0004	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUB- BING	4 ACR		
0005	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (14+97.65 -Y8-)	Lump Sum	L.S.	
0006	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (140+21.50 -L- LT)	Lump Sum	L.S.	
0007	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (140+21.50 -L- RT)	Lump Sum	L.S.	
0008	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (155+02.50 -L- LT)	Lump Sum	L.S.	
0009	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (155+02.50 -L- RT)	Lump Sum	L.S.	
0010	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (93+43.36 -L- LT)	Lump Sum	L.S.	
0011	0028000000-N	SP	TYPE I STANDARD APPROACH FILL STATION ***** (93+43.36 -L- RT)	Lump Sum	L.S.	
0012	0029000000-N	SP	TYPE III REINFORCED APPROACH FILL, STATION ***** (93+43.36 -L- LT)	Lump Sum	L.S.	
0013	0029000000-N	SP	TYPE III REINFORCED APPROACH FILL, STATION ***** (93+43.36 -L- RT)	Lump Sum	L.S.	
0014	0036000000-E	225	UNDERCUT EXCAVATION	29,200 CY		
0015	0134000000-E	240	DRAINAGE DITCH EXCAVATION	4,712 CY		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0016	0141000000-E	240	BERM DITCH CONSTRUCTION	1,350 LF		
0017	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	10,450 SY		
0018	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	2,900 SY		
0019	0192000000-N	260	PROOF ROLLING	40 HR		
0020	0195000000-E	265	SELECT GRANULAR MATERIAL	31,000 CY		
0021	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	30,150 SY		
0022	0220000000-E	SP	ROCK EMBANKMENTS	5,420 TON		
0023	0222000000-E	SP	GEOTEXTILE FOR ROCK EMBANKMENTS	2,860 SY		
0024	0223000000-E	275	ROCK PLATING	1,000 SY		
0025	0255000000-E	SP	GENERIC GRADING ITEM HAULING & DISPOSAL OF PETROLEUM CONTAMINATED SOIL	50 TON		
0026	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	3,492 TON		
0027	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	11,908 SY		
0028	0342000000-E	310	*** SIDE DRAIN PIPE (30")	980 LF		
0029	0342000000-E	310	*** SIDE DRAIN PIPE (36")	284 LF		
0030	0343000000-E	310	15" SIDE DRAIN PIPE	1,468 LF		
0031	0344000000-E	310	18" SIDE DRAIN PIPE	160 LF		
0032	0345000000-E	310	24" SIDE DRAIN PIPE	1,116 LF		
0033	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (15")	13 EA		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0034	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (18")	2 EA		
0035	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (24")	4 EA		
0036	0348000000-E	310	*** SIDE DRAIN PIPE ELBOWS (30")	8 EA		
0037	0350000000-E	SP	**** RC PIPE CULVERTS, CON- TRACTOR DESIGN (36")	388 LF		
0038	0350000000-E	SP	**** RC PIPE CULVERTS, CON- TRACTOR DESIGN (42")	244 LF		
0039	0354000000-E	310	**** RC PIPE CULVERTS, CLASS ***** (24", V)	512 LF		
0040	0354000000-E	310	**** RC PIPE CULVERTS, CLASS ***** (66", V)	356 LF		
0041	0366000000-E	310	15" RC PIPE CULVERTS, CLASS III	3,924 LF		
0042	0372000000-E	310	18" RC PIPE CULVERTS, CLASS III	3,616 LF		
0043	0378000000-E	310	24" RC PIPE CULVERTS, CLASS III	3,496 LF		
0044	0384000000-E	310	30" RC PIPE CULVERTS, CLASS III	1,888 LF		
0045	0390000000-E	310	36" RC PIPE CULVERTS, CLASS III	316 LF		
0046	0396000000-E	310	42" RC PIPE CULVERTS, CLASS III	108 LF		
0047	0408000000-E	310	54" RC PIPE CULVERTS, CLASS III	20 LF		
0048	0414000000-E	310	60" RC PIPE CULVERTS, CLASS III	476 LF		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0049	0448000000-E	310	***** RC PIPE CULVERTS, CLASS IV (54")	232 LF		
0050	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	5,724 LF		
0051	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	2,008 LF		
0052	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	1,276 LF		
0053	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	324 LF		
0054	0448600000-E	310	36" RC PIPE CULVERTS, CLASS IV	448 LF		
0055	0594000000-E	310	24" CS PIPE CULVERTS, 0.064" THICK	100 LF		
0056	0986000000-E	SP	GENERIC PIPE ITEM 24" DUCTILE IRON PIPE, CLASS 250	144 LF		
0057	0995000000-E	340	PIPE REMOVAL	4,045 LF		
0058	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
0059	1044000000-E	501	LIME TREATED SOIL (SLURRY METHOD)	84,000 SY		
0060	1066000000-E	501	LIME FOR LIME TREATED SOIL	840 TON		
0061	1077000000-E	SP	#57 STONE	1,560 TON		
0062	1099500000-E	505	SHALLOW UNDERCUT	550 CY		
0063	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	1,000 TON		
0064	1110000000-E	510	STABILIZER AGGREGATE	500 TON		
0065	1115000000-E	SP	GEOTEXTILE FOR PAVEMENT STABILIZATION	58,153 SY		
0066	1176000000-E	542	SOIL CEMENT BASE	84,000 SY		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0067	1187000000-E	542	PORTLAND CEMENT FOR SOIL CEMENT BASE	2,300 TON		
0068	1209000000-E	543	ASPHALT CURING SEAL	25,200 GAL		
0069	1220000000-E	545	INCIDENTAL STONE BASE	1,000 TON		
0070	1330000000-E	607	INCIDENTAL MILLING	3,850 SY		
0071	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	56,000 TON		
0072	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	39,100 TON		
0073	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	2,137 TON		
0074	2022000000-E	815	SUBDRAIN EXCAVATION	1,250 CY		
0075	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	3,900 SY		
0076	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	685 CY		
0077	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	3,700 LF		
0078	2070000000-N	815	SUBDRAIN PIPE OUTLET	9 EA		
0079	2077000000-E	815	6" OUTLET PIPE	53 LF		
0080	2143000000-E	818	BLOTTING SAND	20 TON		
0081	2209000000-E	838	ENDWALLS	29.8 CY		
0082	2220000000-E	838	REINFORCED ENDWALLS	17.2 CY		
0083	2253000000-E	840	PIPE COLLARS	1.8 CY		
0084	2264000000-E	840	PIPE PLUGS	1.4 CY		
0085	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	196 EA		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0086	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	20 CY		
0087	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	163.34 LF		
0088	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	12 EA		
0089	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	40 EA		
0090	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	93 EA		
0091	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	11 EA		
0092	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	2 EA		
0093	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	8 EA		
0094	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	13 EA		
0095	2396000000-N	840	FRAME WITH COVER, STD 840.54	10 EA		
0096	2440000000-N	852	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN	2 EA		
0097	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	8 EA		
0098	2462000000-E	836	*** SLUICE GATE (24")	1 EA		
0099	2462000000-E	836	*** SLUICE GATE (30")	2 EA		
0100	2462000000-E	836	*** SLUICE GATE (36")	4 EA		
0101	2462000000-E	836	*** SLUICE GATE (8")	7 EA		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0102	2542000000-E	846	1'-6" CONCRETE CURB & GUTTER	1,225 LF		
0103	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	4,520 LF		
0104	2556000000-E	846	SHOULDER BERM GUTTER	7,400 LF		
0105	2577000000-E	846	CONCRETE EXPRESSWAY GUTTER	1,140 LF		
0106	2591000000-E	848	4" CONCRETE SIDEWALK	160 SY		
0107	2612000000-E	848	6" CONCRETE DRIVEWAY	140 SY		
0108	2619000000-E	850	4" CONCRETE PAVED DITCH	50 SY		
0109	2655000000-E	852	5' MONOLITHIC CONCRETE ISLANDS (KEYED IN)	1,960 SY		
0110	2830000000-N	858	ADJUSTMENT OF MANHOLES	2 EA		
0111	3030000000-E	862	STEEL BEAM GUARDRAIL	20,862.5 LF		
0112	3045000000-E	862	STEEL BEAM GUARDRAIL, SHOP CURVED	237.5 LF		
0113	3105000000-N	862	STEEL BEAM GUARDRAIL TERMINAL SECTIONS	6 EA		
0114	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10 EA		
0115	3210000000-N	862	GUARDRAIL END UNITS, TYPE CAT-1	18 EA		
0116	3215000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE III	2 EA		
0117	3287000000-N	SP	GUARDRAIL END UNITS, TYPE TL-3	30 EA		
0118	3317000000-N	SP	GUARDRAIL ANCHOR UNITS, TYPE B-77	23 EA		
0119	3360000000-E	863	REMOVE EXISTING GUARDRAIL	60 LF		
0120	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	44,000 LF		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0121	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	2,680 EA		
0122	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	840 EA		
0123	3536000000-E	866	CHAIN LINK FENCE, 48" FABRIC	980 LF		
0124	3542000000-E	866	METAL LINE POSTS FOR 48" CHAIN LINK FENCE	70 EA		
0125	3548000000-E	866	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE	19 EA		
0126	3557000000-E	866	ADDITIONAL BARBED WIRE	300 LF		
0127	3628000000-E	876	RIP RAP, CLASS I	570 TON		
0128	3635000000-E	876	RIP RAP, CLASS II	435 TON		
0129	3642000000-E	876	RIP RAP, CLASS A	680 TON		
0130	3649000000-E	876	RIP RAP, CLASS B	4,270 TON		
0131	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	17,100 SY		
0132	4048000000-E	902	REINFORCED CONCRETE SIGN FOUNDATIONS	2 CY		
0133	4054000000-E	902	PLAIN CONCRETE SIGN FOUNDATIONS	1 CY		
0134	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	890 LB		
0135	4066000000-E	903	SUPPORTS, SIMPLE STEEL BEAM	637 LB		
0136	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	1,900 LF		
0137	4096000000-N	904	SIGN ERECTION, TYPE D	7 EA		
0138	4102000000-N	904	SIGN ERECTION, TYPE E	101 EA		
0139	4108000000-N	904	SIGN ERECTION, TYPE F	2 EA		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0140	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	3 EA		
0141	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	2 EA		
0142	4152000000-N	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	2 EA		
0143	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U- CHANNEL	54 EA		
0144	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	5 EA		
0145	4236000000-N	907	DISPOSAL OF SIGN, A & B (GROUND MOUNTED)	1 EA		
0146	4238000000-N	907	DISPOSAL OF SIGN, D, E OR F	5 EA		
0147	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	1,106 SF		
0148	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	1,184 SF		
0149	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	484 SF		
0150	4415000000-N	1115	FLASHING ARROW BOARD	2 EA		
0151	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	5 EA		
0152	4430000000-N	1130	DRUMS	900 EA		
0153	4435000000-N	1135	CONES	100 EA		
0154	4445000000-E	1145	BARRICADES (TYPE III)	2,888 LF		
0155	4455000000-N	1150	FLAGGER	2,400 DAY		
0156	4480000000-N	1165	TMA	4 EA		
0157	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	1,200 EA		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0158	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	85,903 LF		
0159	4686000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)	26,206 LF		
0160	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	310 LF		
0161	4690000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)	65 LF		
0162	4695000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)	7,633 LF		
0163	4697000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)	770 LF		
0164	4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	2,004 LF		
0165	4710000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)	1,897 LF		
0166	4721000000-E	1205	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)	60 EA		
0167	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	246 EA		
0168	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	12,000 LF		
0169	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	163,670 LF		
0170	4820000000-E	1205	PAINT PAVEMENT MARKING LINES (8")	1,680 LF		
0171	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	500 LF		
0172	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	36 EA		
0173	4847010000-E	1205	POLYUREA PAVEMENT MARKING LINES (4", 20 MILS)	7,307 LF		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0174	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	4,000 LF		
0175	4860000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (8")	1,000 LF		
0176	4870000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	150 LF		
0177	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	434 EA		
0178	4905000000-N	1253	SNOWPLOWABLE PAVEMENT MARKERS	1,055 EA		
0179	5325600000-E	1510	6" WATER LINE	1,140 LF		
0180	5325800000-E	1510	8" WATER LINE	794 LF		
0181	5326200000-E	1510	12" WATER LINE	1,513 LF		
0182	5326600000-E	1510	16" WATER LINE	33 LF		
0183	5329000000-E	1510	DUCTILE IRON WATER PIPE FITTINGS	17,215 LB		
0184	5540000000-E	1515	6" VALVE	11 EA		
0185	5546000000-E	1515	8" VALVE	2 EA		
0186	5558000000-E	1515	12" VALVE	3 EA		
0187	5648000000-N	1515	RELOCATE WATER METER	36 EA		
0188	5649000000-N	1515	RECONNECT WATER METER	3 EA		
0189	5656000000-E	1515	*** RPZ BACKFLOW PREVENTION ASSEMBLY (3/4")	1 EA		
0190	5672000000-N	1515	RELOCATE FIRE HYDRANT	17 EA		
0191	5673000000-E	1515	FIRE HYDRANT LEG	476 LF		
0192	5686500000-E	1515	WATER SERVICE LINE	1,434 LF		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0193	5691300000-E	1520	8" SANITARY GRAVITY SEWER	1,372 LF		
0194	5691400000-E	1520	10" SANITARY GRAVITY SEWER	180 LF		
0195	5691600000-E	1520	16" SANITARY GRAVITY SEWER	431 LF		
0196	5691800000-E	1520	20" SANITARY GRAVITY SEWER	619 LF		
0197	5768000000-N	1520	SANITARY SEWER CLEAN-OUT	2 EA		
0198	5768500000-E	1520	SEWER SERVICE LINE	94 LF		
0199	5775000000-E	1525	4' DIA UTILITY MANHOLE	20 EA		
0200	5776000000-E	1525	5' DIA UTILITY MANHOLE	7 EA		
0201	5781000000-E	1525	UTILITY MANHOLE WALL 4' DIA	44 LF		
0202	5782000000-E	1525	UTILITY MANHOLE WALL 5' DIA	51 LF		
0203	5798000000-E	1530	ABANDON *** UTILITY PIPE (15")	222 LF		
0204	5798000000-E	1530	ABANDON *** UTILITY PIPE (21")	350 LF		
0205	5798000000-E	1530	ABANDON *** UTILITY PIPE (36")	1,386 LF		
0206	5801000000-E	1530	ABANDON 8" UTILITY PIPE	1,295 LF		
0207	5802000000-E	1530	ABANDON 10" UTILITY PIPE	185 LF		
0208	5804000000-E	1530	ABANDON 12" UTILITY PIPE	1,548 LF		
0209	5812000000-E	1530	ABANDON 20" UTILITY PIPE	114 LF		
0210	5813000000-E	1530	ABANDON 24" UTILITY PIPE	512 LF		
0211	5815000000-N	1530	REMOVE WATER METER	56 EA		
0212	5815500000-N	1530	REMOVE FIRE HYDRANT	4 EA		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0213	5816000000-N	1530	ABANDON UTILITY MANHOLE	32 EA		
0214	5828000000-N	1530	REMOVE UTILITY MANHOLE	2 EA		
0215	5835800000-E	1540	18" ENCASEMENT PIPE	200 LF		
0216	5835900000-E	1540	20" ENCASEMENT PIPE	120 LF		
0217	5836200000-E	1540	30" ENCASEMENT PIPE	420 LF		
0218	5888000000-E	SP	GENERIC UTILITY ITEM ADJUST 48" FRP MANHOLE RISER	52 LF		
0219	6000000000-E	1605	TEMPORARY SILT FENCE	98,750 LF		
0220	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	2,620 TON		
0221	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	22,735 TON		
0222	6012000000-E	1610	SEDIMENT CONTROL STONE	45,800 TON		
0223	6015000000-E	1615	TEMPORARY MULCHING	173.5 ACR		
0224	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	8,500 LB		
0225	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEED- ING	44.5 TON		
0226	6024000000-E	1622	TEMPORARY SLOPE DRAINS	11,315 LF		
0227	6029000000-E	SP	SAFETY FENCE	3,000 LF		
0228	6030000000-E	1630	SILT EXCAVATION	94,270 CY		
0229	6036000000-E	1631	MATTING FOR EROSION CONTROL	274,700 SY		
0230	6037000000-E	SP	COIR FIBER MAT	3,000 SY		
0231	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	3,850 SY		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0232	6042000000-E	1632	1/4" HARDWARE CLOTH	14,180 LF		
0233	6045000000-E	SP	*** TEMPORARY PIPE (18")	310 LF		
0234	6046000000-E	1636	TEMPORARY PIPE FOR STREAM CROSSING	525 LF		
0235	6048000000-E	SP	FLOATING TURBIDITY CURTAIN	765 SY		
0236	6071012000-E	SP	COIR FIBER WATTLE	6,400 LF		
0237	6071020000-E	SP	POLYACRYLAMIDE (PAM)	6,050 LB		
0238	6071030000-E	1640	COIR FIBER BAFFLE	21,915 LF		
0239	6071050000-E	SP	*** SKIMMER (1-1/2")	31 EA		
0240	6071050000-E	SP	*** SKIMMER (2")	15 EA		
0241	6071050000-E	SP	*** SKIMMER (2-1/2")	3 EA		
0242	6071050000-E	SP	*** SKIMMER (3")	3 EA		
0243	6071050000-E	SP	*** SKIMMER (4")	6 EA		
0244	6084000000-E	1660	SEEDING & MULCHING	159 ACR		
0245	6087000000-E	1660	MOWING	110 ACR		
0246	6090000000-E	1661	SEED FOR REPAIR SEEDING	1,750 LB		
0247	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	6 TON		
0248	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	3,700 LB		
0249	6108000000-E	1665	FERTILIZER TOPDRESSING	111 TON		
0250	6111000000-E	SP	IMPERVIOUS DIKE	240 LF		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0251	6114500000-N	1667	SPECIALIZED HAND MOWING	85 MHR		
0252	6117000000-N	SP	RESPONSE FOR EROSION CONTROL	100 EA		
0253	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	16 EA		
0254	6120000000-E	SP	CULVERT DIVERSION CHANNEL	330 CY		
0255	6123000000-E	1670	REFORESTATION	1.8 ACR		
0256	6126000000-E	SP	STREAMBANK REFORESTATION	0.6 ACR		
0257	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE CLEANOUT	225 EA		
0258	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE	75 EA		
0259	7060000000-E	1705	SIGNAL CABLE	11,950 LF		
0260	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	77 EA		
0261	7132000000-E	1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	13 EA		
0262	7144000000-E	1705	VEHICLE SIGNAL HEAD (12", 5 SECTION)	15 EA		
0263	7252000000-E	1710	MESSENGER CABLE (1/4")	800 LF		
0264	7264000000-E	1710	MESSENGER CABLE (3/8")	4,500 LF		
0265	7279000000-E	1715	TRACER WIRE	15,475 LF		
0266	7288000000-E	1715	PAVED TRENCHING (***** (1, 2")	75 LF		
0267	7300000000-E	1715	UNPAVED TRENCHING (***** (1, 2")	6,050 LF		
0268	7300000000-E	1715	UNPAVED TRENCHING (***** (2, 2")	15,625 LF		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0269	7301000000-E	1715	DIRECTIONAL DRILL (***** (2, 2")	250 LF		
0270	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	70 EA		
0271	7348000000-N	1716	JUNCTION BOX (OVER-SIZED, HEA- VY DUTY)	51 EA		
0272	7360000000-N	1720	WOOD POLE	7 EA		
0273	7372000000-N	1721	GUY ASSEMBLY	14 EA		
0274	7408000000-E	1722	1" RISER WITH WEATHERHEAD	1 EA		
0275	7420000000-E	1722	2" RISER WITH WEATHERHEAD	4 EA		
0276	7432000000-E	1722	2" RISER WITH HEAT SHRINK TUBING	12 EA		
0277	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	12,800 LF		
0278	7456000000-E	1726	LEAD-IN CABLE (***** (14-2)	49,450 LF		
0279	7516000000-E	1730	COMMUNICATIONS CABLE (**FIBER) (36)	15,000 LF		
0280	7528000000-E	1730	DROP CABLE	600 LF		
0281	7540000000-N	1731	SPLICE ENCLOSURE	7 EA		
0282	7541000000-N	1731	MODIFY SPLICE ENCLOSURE	1 EA		
0283	7552000000-N	1731	INTERCONNECT CENTER	6 EA		
0284	7566000000-N	1733	DELINEATOR MARKER	21 EA		
0285	7576000000-N	SP	METAL STRAIN SIGNAL POLE	24 EA		
0286	7588000000-N	SP	METAL POLE WITH SINGLE MAST ARM	1 EA		
0287	7613000000-N	SP	SOIL TEST	25 EA		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0288	7614100000-E	SP	DRILLED PIER FOUNDATION	150 CY		
0289	7631000000-N	SP	MAST ARM WITH METAL POLE DESIGN	1 EA		
0290	7636000000-N	1745	SIGN FOR SIGNALS	24 EA		
0291	7684000000-N	1750	SIGNAL CABINET FOUNDATION	6 EA		
0292	7756000000-N	1751	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)	6 EA		
0293	7780000000-N	1751	DETECTOR CARD (TYPE 2070L)	55 EA		
0294	7901000000-N	1753	CABINET BASE EXTENDER	6 EA		
0295	7960000000-N	SP	METAL POLE FOUNDATION REMOVAL	5 EA		
0296	7972000000-N	SP	METAL POLE REMOVAL	5 EA		
0297	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV CAMERA ASSEMBLY	5 EA		
0298	7980000000-N	SP	GENERIC SIGNAL ITEM ETHERNET EDGE SWITCH	6 EA		
0299	7980000000-N	SP	GENERIC SIGNAL ITEM MICROWAVE VEHICLE DETECTION SYSTEM-MULTIPLE ZONES	1 EA		
0300	7990000000-E	SP	GENERIC SIGNAL ITEM BACK PULL FIBER OPTICS CABLE	150 LF		

***** BEGIN SCHEDULE AA *****
 ***** (2 ALTERNATES) *****

0301	0022000000-E	225	UNCLASSIFIED EXCAVATION	705,000 CY		
AA1						
0302	0106000000-E	230	BORROW EXCAVATION	385,000 CY		
AA1						
0303	1121000000-E	520	AGGREGATE BASE COURSE	95,500 TON		
AA1						
0304	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	21,200 TON		
AA1						

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0305 AA1	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	5,970 TON		
*** OR ***						
0306 AA2	0022000000-E	225	UNCLASSIFIED EXCAVATION	695,000 CY		
0307 AA2	0106000000-E	230	BORROW EXCAVATION	405,000 CY		
0308 AA2	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	62,200 TON		
0309 AA2	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	7,771 TON		

***** END SCHEDULE AA *****

CULVERT ITEMS

0310	8126000000-N	414	CULVERT EXCAVATION, STA ***** (173+47.00 -L-)	Lump Sum	L.S.	
0311	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	140 TON		
0312	8196000000-E	420	CLASS A CONCRETE (CULVERT)	204.6 CY		
0313	8245000000-E	425	REINFORCING STEEL (CULVERT)	29,262 LB		

WALL ITEMS

0314	8801000000-E	SP	MSE RETAINING WALL NO ***** (1)	1,325 SF		
0370	8801000000-E	SP	MSE RETAINING WALL NO ***** (2)	7,960 SF		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
STRUCTURE ITEMS						
0315	801700000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (140+21.50 -L- LT)	Lump Sum	L.S.	
0316	801700000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (140+21.50 -L- RT)	Lump Sum	L.S.	
0317	801700000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (155+02.50 -L- LT)	Lump Sum	L.S.	
0318	801700000-N	SP	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA ***** (155+02.50 -L- RT)	Lump Sum	L.S.	
0319	809100000-N	410	FOUNDATION EXCAVATION FOR BENT ** AT STATION ***** (1, 14+97.65 -Y8-)	Lump Sum	L.S.	
0320	809600000-E	450	PILE EXCAVATION IN SOIL	201 LF		
0321	809700000-E	450	PILE EXCAVATION NOT IN SOIL	175 LF		
0322	810550000-E	411	***_*** DIA DRILLED PIERS IN SOIL (4'-6")	95 LF		
0323	810550000-E	411	***_*** DIA DRILLED PIERS IN SOIL (5'-0")	104.5 LF		
0324	810550000-E	411	***_*** DIA DRILLED PIERS IN SOIL (5'-6")	124 LF		
0325	810550000-E	411	***_*** DIA DRILLED PIERS IN SOIL (6'-0")	94.92 LF		
0326	810550000-E	411	***_*** DIA DRILLED PIERS IN SOIL (6'-6")	85.17 LF		
0327	810556000-E	411	4'-0" DIA DRILLED PIERS IN SOIL	155 LF		

County : Guilford

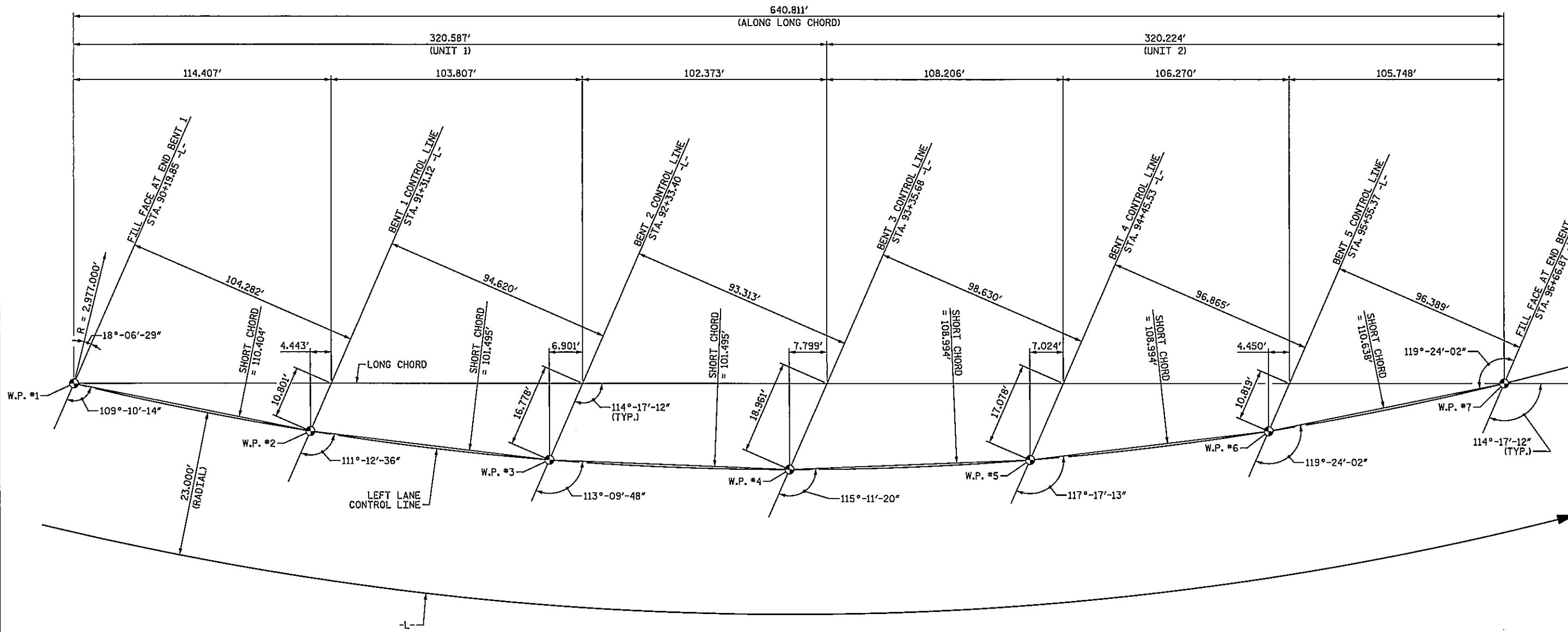
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0328	8105600000-E	411	***_*** DIA DRILLED PIERS NOT IN SOIL (4'-6")	127 LF		
0329	8105600000-E	411	***_*** DIA DRILLED PIERS NOT IN SOIL (5'-0")	77 LF		
0330	8105600000-E	411	***_*** DIA DRILLED PIERS NOT IN SOIL (5'-6")	74 LF		
0331	8105600000-E	411	***_*** DIA DRILLED PIERS NOT IN SOIL (6'-0")	80 LF		
0332	8105600000-E	411	***_*** DIA DRILLED PIERS NOT IN SOIL (6'-6")	183 LF		
0333	8105660000-E	411	4'-0" DIA DRILLED PIERS NOT IN SOIL	116 LF		
0334	8111000000-E	411	PERMANENT STEEL CASING FOR ***_*** DIA DRILLED PIER (4'-6")	18 LF		
0335	8111000000-E	411	PERMANENT STEEL CASING FOR ***_*** DIA DRILLED PIER (6'-6")	108.68 LF		
0336	8111600000-E	411	PERMANENT STEEL CASING FOR 4'-0" DIA DRILLED PIER	31.8 LF		
0337	8113000000-N	411	SID INSPECTIONS	14 EA		
0338	8115000000-N	411	CSL TESTING	14 EA		
0339	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ***** (93+43.36 -L- LT)	Lump Sum	L.S.	
0340	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ***** (93+43.36 -L- RT)	Lump Sum	L.S.	
0341	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	119,670 SF		
0342	8161000000-E	420	GROOVING BRIDGE FLOORS	110,470 SF		

County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0343	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	3,270.5 CY		
0344	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (14+97.65 -Y8-)	Lump Sum	L.S.	
0345	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (140+21.50 -L- LT)	Lump Sum	L.S.	
0346	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (140+21.50 -L- RT)	Lump Sum	L.S.	
0347	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (155+02.50 -L- LT)	Lump Sum	L.S.	
0348	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (155+02.50 -L- RT)	Lump Sum	L.S.	
0349	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (93+43.36 -L- LT)	Lump Sum	L.S.	
0350	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ***** (93+43.36 -L- RT)	Lump Sum	L.S.	
0351	8217000000-E	425	REINFORCING STEEL (BRIDGE)	639,487 LB		
0352	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	111,805 LB		
0353	8265000000-E	430	54" PRESTRESSED CONCRETE GIR- DERS	1,027.92 LF		
0354	8274000000-E	430	MODIFIED 63" PRESTRESSED CONC GIRDERS	5,051.82 LF		
0355	8277000000-E	430	MODIFIED 72" PRESTRESSED CONC GIRDERS	2,402.66 LF		
0356	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53)	160 EA		
0357	8364000000-E	450	HP12X53 STEEL PILES	4,929 LF		

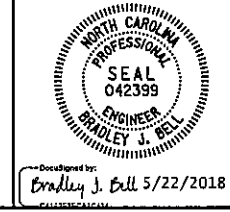
County : Guilford

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0358	8391000000-N	450	STEEL PILE POINTS	54 EA		
0359	8482000000-E	460	THREE BAR METAL RAIL	399.67 LF		
0360	8503000000-E	460	CONCRETE BARRIER RAIL	5,518.91 LF		
0361	8531000000-E	462	4" SLOPE PROTECTION	638 SY		
0362	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	8,302 TON		
0363	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	9,219 SY		
0364	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0365	8706000000-N	SP	EXPANSION JOINT SEALS	Lump Sum	L.S.	
0366	8727000000-N	SP	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS AT STA***** (140+21.50 -L- RT)	Lump Sum	L.S.	
0367	8727000000-N	SP	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS AT STA***** (155+02.50 -L- RT)	Lump Sum	L.S.	
0368	8727000000-N	SP	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS AT STA***** (93+43.36 -L- RT)	Lump Sum	L.S.	
0369	8867000000-E	SP	GENERIC STRUCTURE ITEM 78" FIB PRESTRESSED CONCRETE GIRDERS	3,121.8 LF		
1330/Jun04/Q5219517.89/D1703637542000/E370			Total Amount Of Bid For Entire Project :			



LONG CHORD LAYOUT
ALL END BENTS & BENTS ARE PARALLEL

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+43.36 -L-
 SHEET 5 OF 6

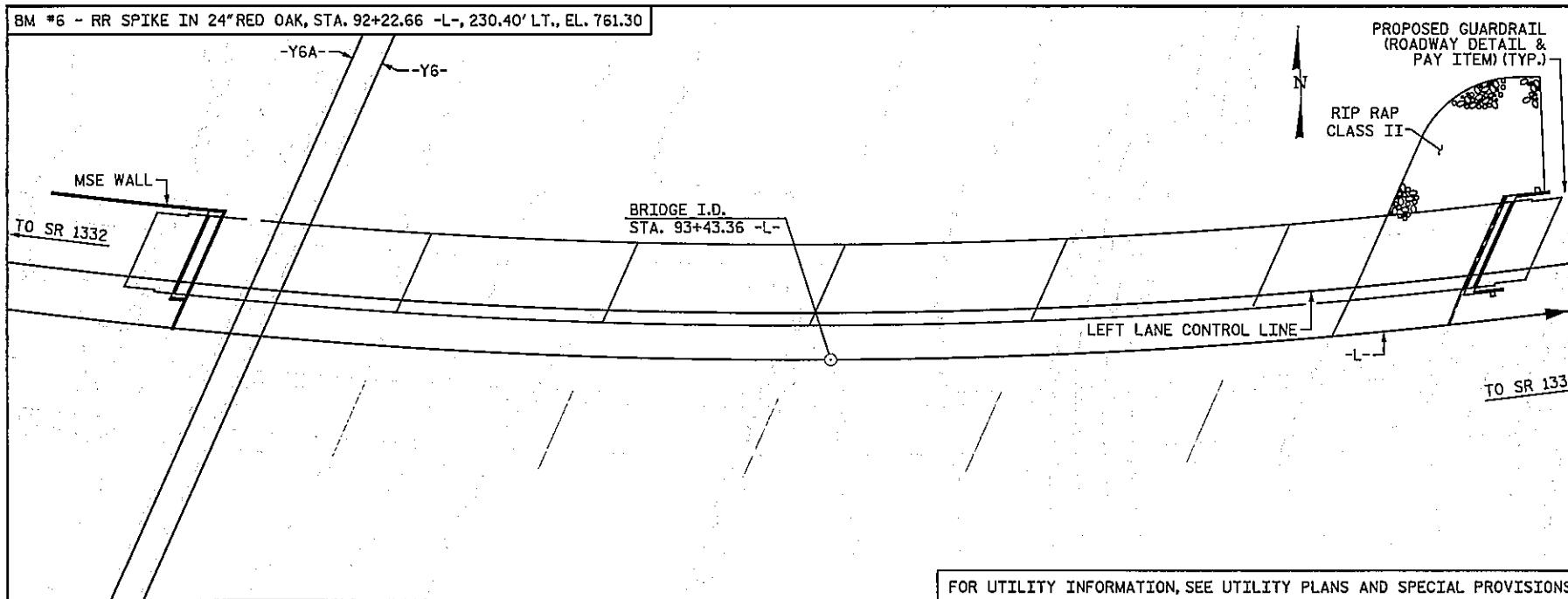


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER NCRR/NSRR
 & DEEP RIVER TRIBUTARY 1
 ON SR 4121 BETWEEN
 SR 1332 AND SR 1334
 LEFT LANE

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

Michael Baker International		REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	SI-5			
1			3			TOTAL SHEETS			
2			4			62			

DRAWN BY : C. E. MAYHEW DATE : 2-13-18
 CHECKED BY : B. J. BELL DATE : 2-13-18



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS
- THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 36'-9" EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

TOTAL BILL OF MATERIAL

LOCATION	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	5'-0" DIA. DRILLED PIERS IN SOIL	5'-0" DIA. DRILLED PIERS NOT IN SOIL	5'-6" DIA. DRILLED PIERS IN SOIL	5'-6" DIA. DRILLED PIERS NOT IN SOIL	6'-0" DIA. DRILLED PIERS IN SOIL	6'-0" DIA. DRILLED PIERS NOT IN SOIL	6'-6" DIA. DRILLED PIERS IN SOIL	6'-6" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 6'-6" DIA. DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	
	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	SQ. FT.	
SUPERSTRUCTURE																25,434
END BENT 1	6	89														
BENT 1			36.00	39.00								1	1			
BENT 2					62.50	38.00						1	1			
BENT 3							56.17	41.00				1	1			
BENT 4									29.00	47.00	35.50	1	1			
BENT 5									19.42	41.00	23.42	1	1			
END BENT 2																
TOTAL	6	89	36.00	39.00	62.50	38.00	56.17	41.00	48.42	88.00	58.92	5	5	LUMP SUM		25,434

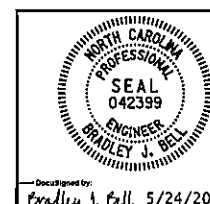
TOTAL BILL OF MATERIAL (CONT'D)

LOCATION	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS		
	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	LIN. FT.	SQ. YDS.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	22,961					24	2,525.94								LUMP SUM	LUMP SUM
END BENT 1		42.7		7,687				9	425	12						
BENT 1		84.0		19,090	4,635											
BENT 2		116.1		26,535	7,110											
BENT 3		161.8		31,889	9,050											
BENT 4		206.6		36,480	9,950											
BENT 5		192.7		33,331	8,586											
END BENT 2		61.4		9,861				11	11	420		925	1,025			
TOTAL	22,961	865.3	LUMP SUM	164,873	39,331	24	2,525.94	11	20	845	1,320.55	12	925	1,025	LUMP SUM	LUMP SUM

HYDRAULIC DATA	
DESIGN DISCHARGE	= 2,000 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 739.6
DRAINAGE AREA	= 2.5 SQ. MI.
BASE DISCHARGE (Q100)	= 2,200 C.F.S.
BASE HIGH WATER ELEVATION	= 739.9

OVERTOPPING DATA	
OVERTOPPING DISCHARGE	= 3,500+ C.F.S.
FREQUENCY OF OVERTOPPING	= 500+ YEARS
OVERTOPPING ELEVATION	= 763+

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+43.36 -L-
 SHEET 6 OF 6



Designed by: *Bradley J. Bell* 5/24/2018

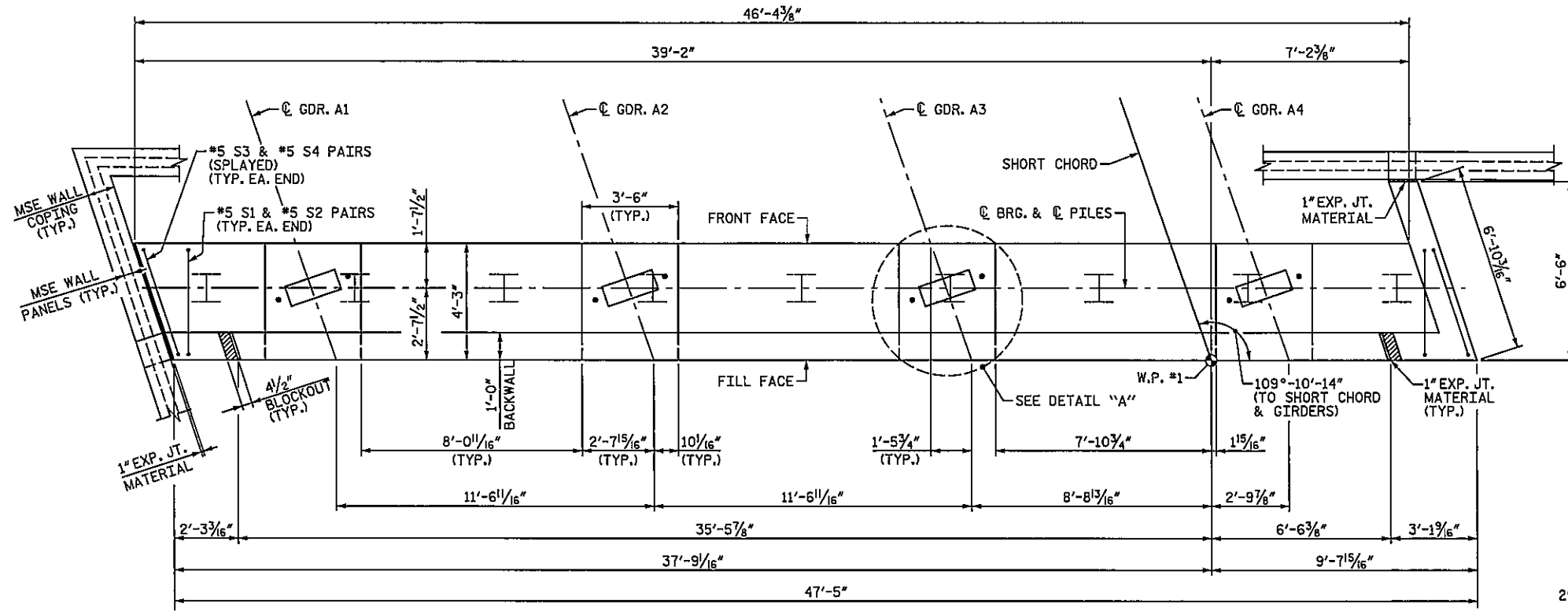
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER NCRR/NSRR
 & DEEP RIVER TRIBUTARY 1
 ON SR 4121 BETWEEN
 SR 1332 AND SR 1334
LEFT LANE

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

NO.	REVISIONS			NO.	REVISIONS			SHEET NO.
	BY:	DATE:	NO.		BY:	DATE:	TOTAL SHEETS	
1			3				62	
2			4					

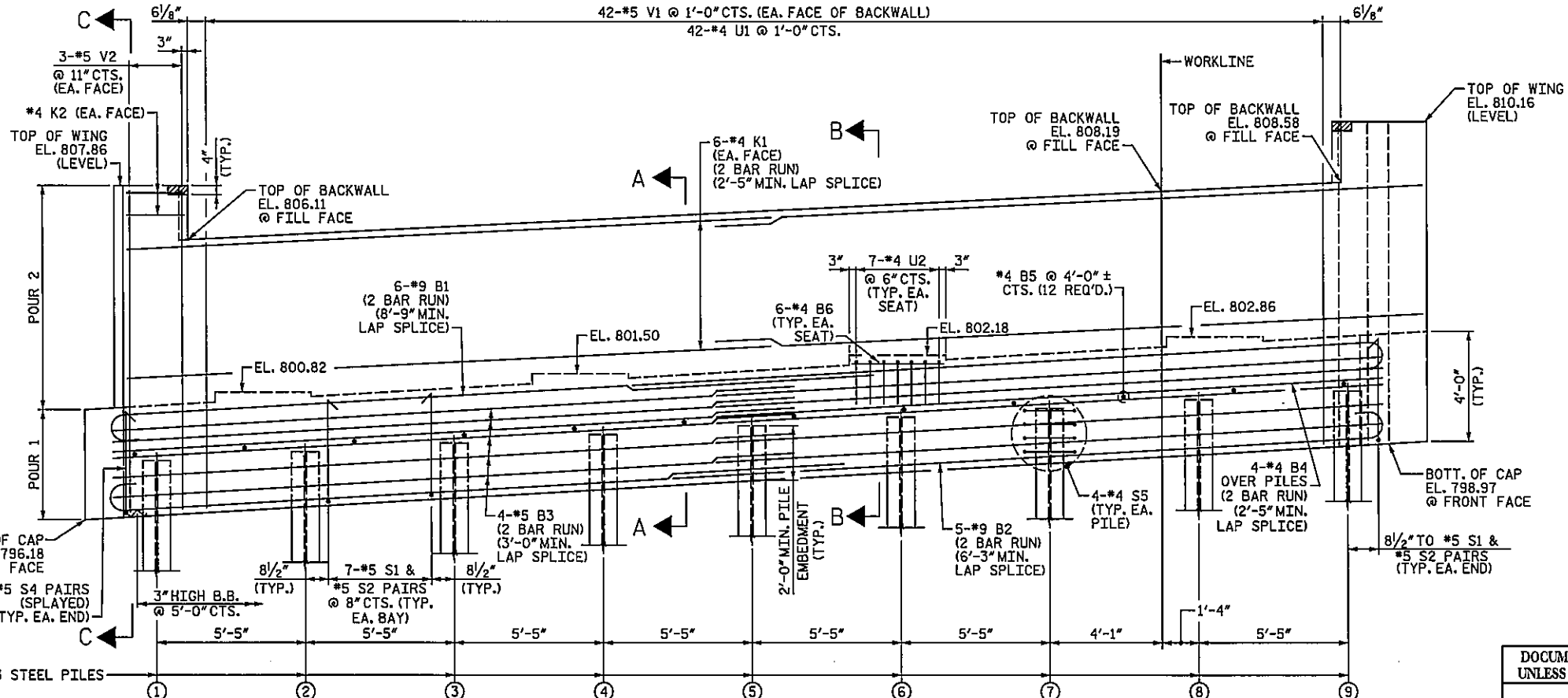
DRAWN BY : M. D. MAYHEW DATE : 5-24-18
 CHECKED BY : B. J. BELL DATE : 5-24-18

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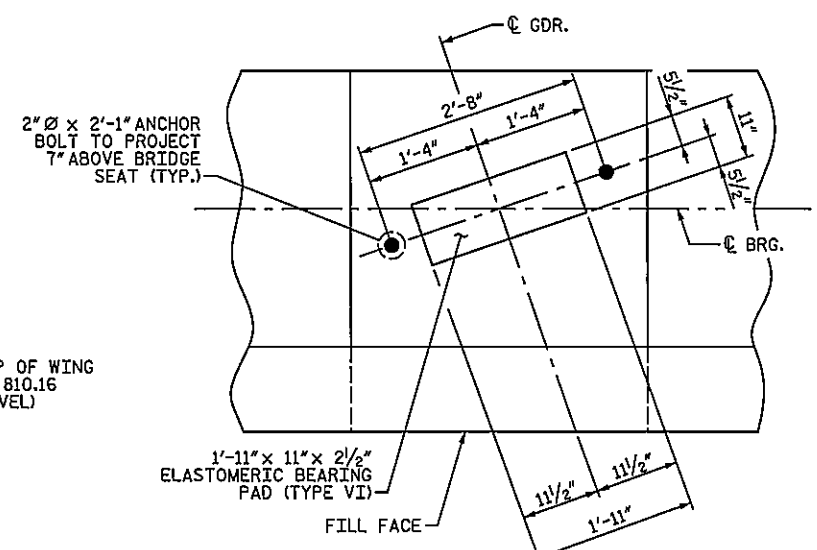
PLAN

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	798.36
②	798.68
③	799.00
④	799.32
⑤	799.64
⑥	799.96
⑦	800.28
⑧	800.60
⑨	800.92



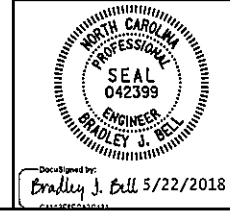
ELEVATION

NOTES:
 FOR "SECTION A-A", "SECTION B-B" AND "SECTION C-C", SEE "END BENT 1 DETAILS" SHEET.
 STIRRUPS & U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
 THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT A RATE OF 2%.
 THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR MSE WALLS, SEE SPECIAL PROVISIONS.
 FOR LOCATION OF MSE WALL, SEE MSE WALL PLANS.
 LENGTH OF CAP AND EACH WING SHALL BE FIELD ADJUSTED AS REQUIRED TO PROVIDE 1" EXPANSION JOINT MATERIAL AS SHOWN BETWEEN THESE COMPONENTS AND THE MSE WALL COPING.



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-
 SHEET 1 OF 2



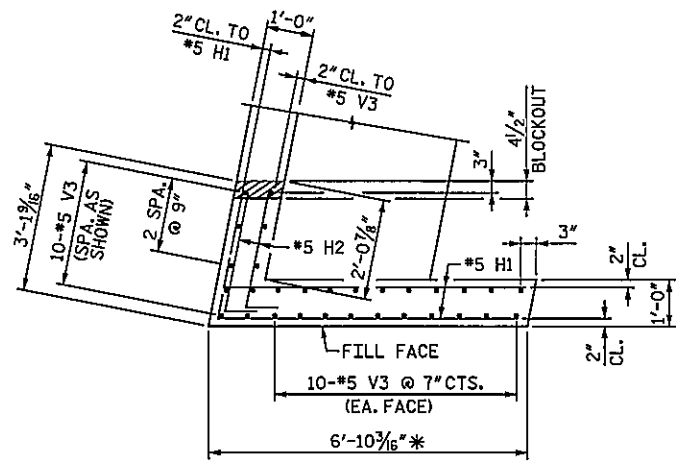
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

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REVISIONS						SHEET NO. SI-42
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

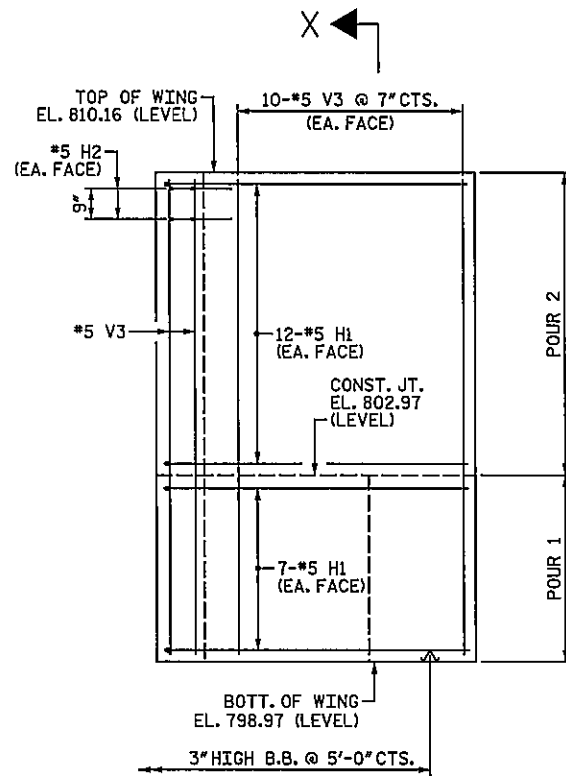
DRAWN BY: N. B. SPEAKS DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18

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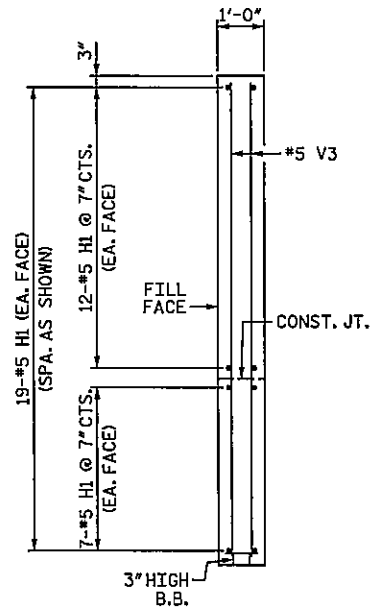


PLAN OF RIGHT WING

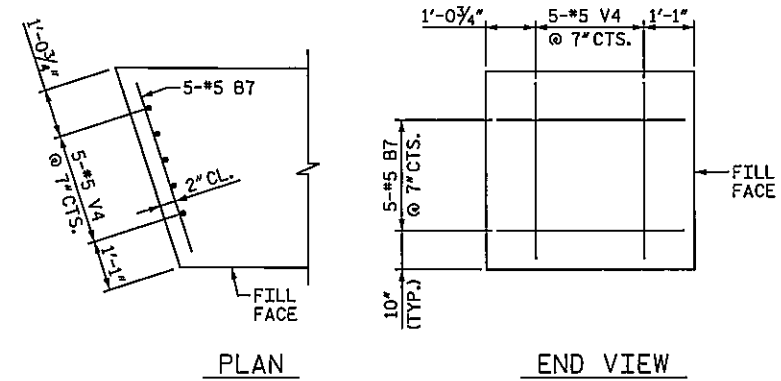
* SEE NOTE REGARDING LENGTH OF WING ON "END BENT 1" SHEET 1 OF 2.



ELEVATION OF RIGHT WING



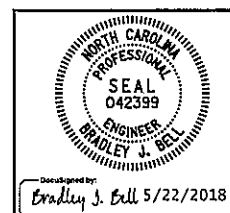
SECTION X-X



LEFT END OF CAP

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+43.36 -L-

SHEET 2 OF 2



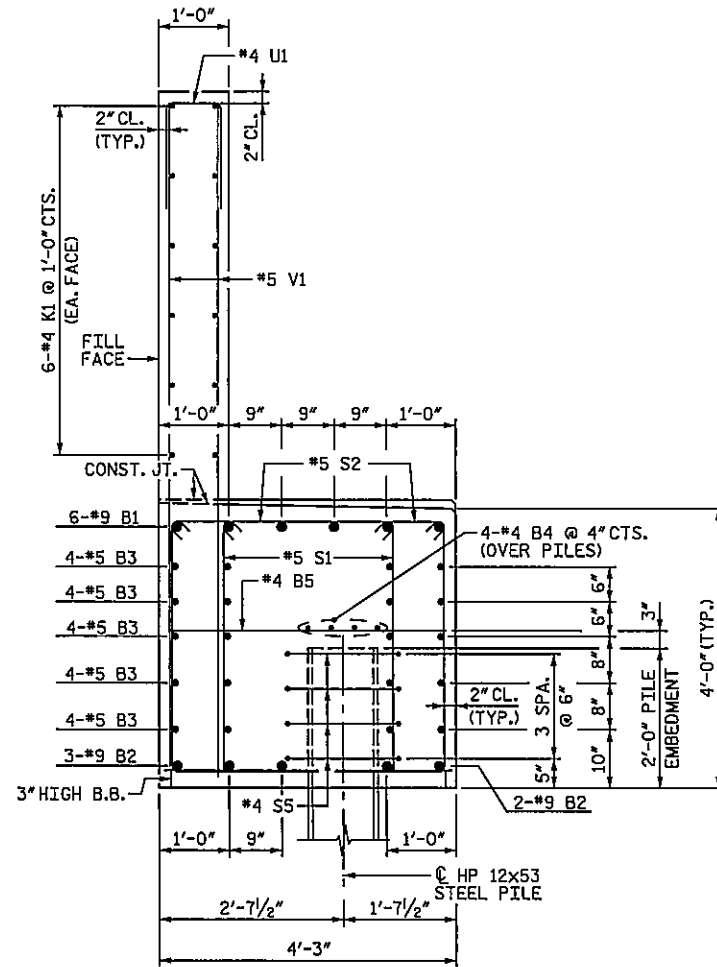
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 SUBSTRUCTURE
 END BENT 1

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

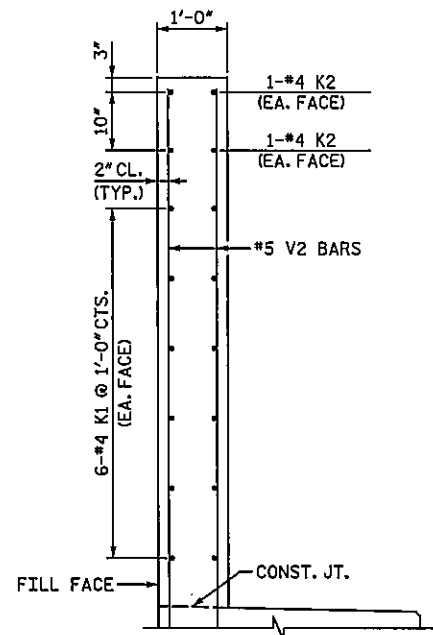
LEFT LANE

DRAWN BY : N. B. SPEAKS DATE : 5-21-18
 CHECKED BY : T. M. GARRISON DATE : 5-21-18

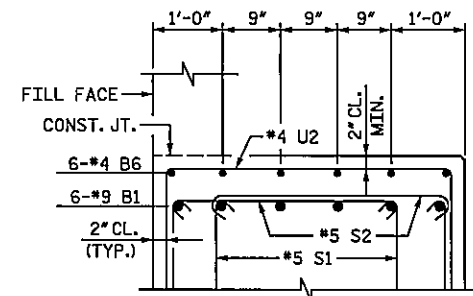
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NO.	DESCRIPTION							
1		3						TOTAL SHEETS 62
2		4						



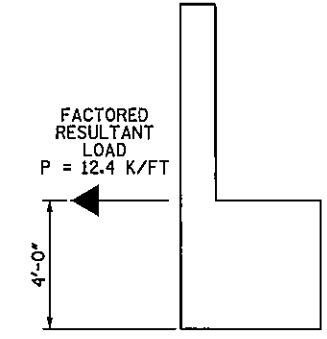
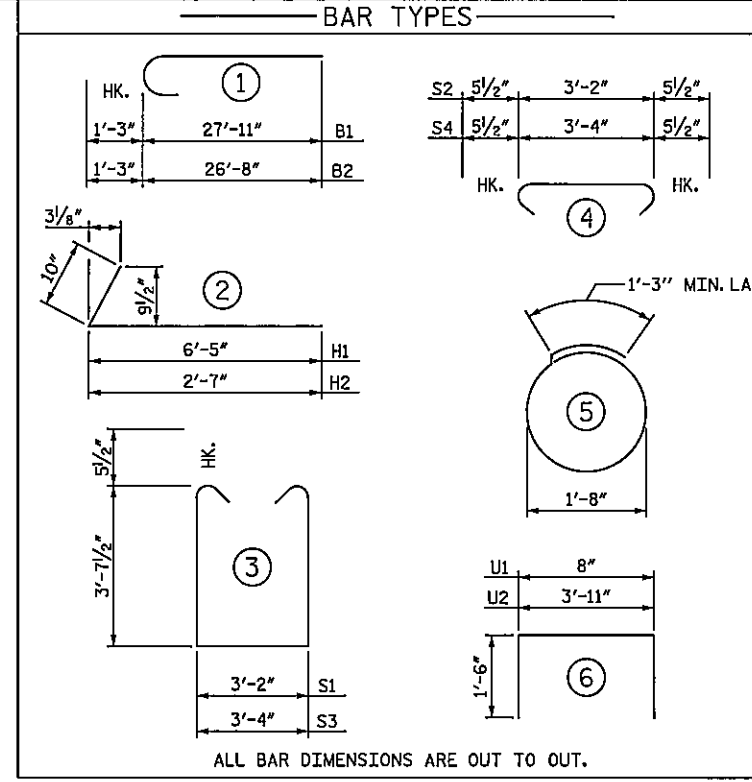
SECTION A-A



PARTIAL SECTION C-C



PARTIAL SECTION B-B



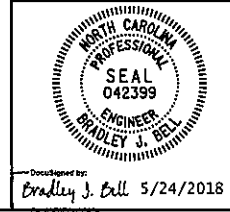
MSE REINFORCING STRAP LOAD DETAIL

MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	29' - 2"	1,190
B2	10	#9	1	27' - 11"	949
B3	40	#5	STR.	25' - 1"	1,046
B4	8	#4	STR.	24' - 9"	132
B5	12	#4	STR.	3' - 11"	31
B6	24	#4	STR.	3' - 2"	51
B7	5	#5	STR.	4' - 1"	21
H1	38	#5	2	7' - 3"	287
H2	4	#5	2	3' - 5"	14
K1	24	#4	STR.	24' - 9"	397
K2	4	#4	STR.	1' - 10"	5
S1	116	#5	3	11' - 4"	1,371
S2	116	#5	4	4' - 1"	494
S3	4	#5	3	11' - 6"	48
S4	4	#5	4	4' - 3"	18
S5	36	#4	5	6' - 6"	156
U1	42	#4	6	3' - 8"	103
U2	28	#4	6	6' - 11"	129
V1	84	#5	STR.	9' - 4"	818
V2	6	#5	STR.	11' - 1"	69
V3	30	#5	STR.	10' - 10"	339
V4	5	#5	STR.	3' - 8"	19
REINFORCING STEEL					LBS. 7,687
CLASS A CONCRETE					
POUR 1 - CAP & LOWER PART OF WINGS C.Y. 30.8					
POUR 2 - BACKWALL & UPPER PART OF WINGS C.Y. 11.9					
TOTAL C.Y. 42.7					
PILE EXCAVATION IN SOIL LIN. FT. 6					
PILE EXCAVATION NOT IN SOIL LIN. FT. 89					
HP 12x53 STEEL PILES NO. 9 LIN. FT. 425					

NOTES:
FOR PILE SPLICE DETAILS, SEE "END BENT 2 DETAILS" SHEET.

PROJECT NO. U-2412A
GUILFORD COUNTY
STATION: 93+43.36 -L-



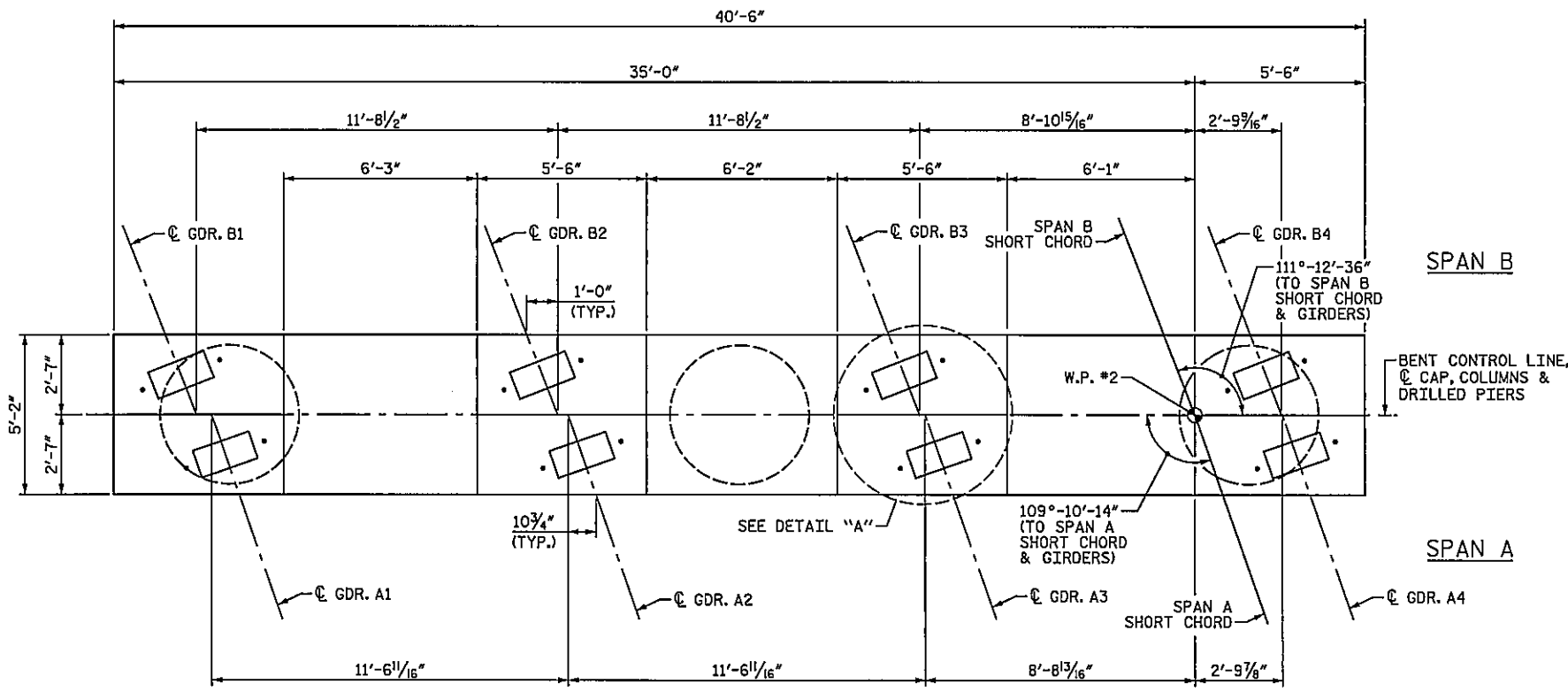
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1 DETAILS

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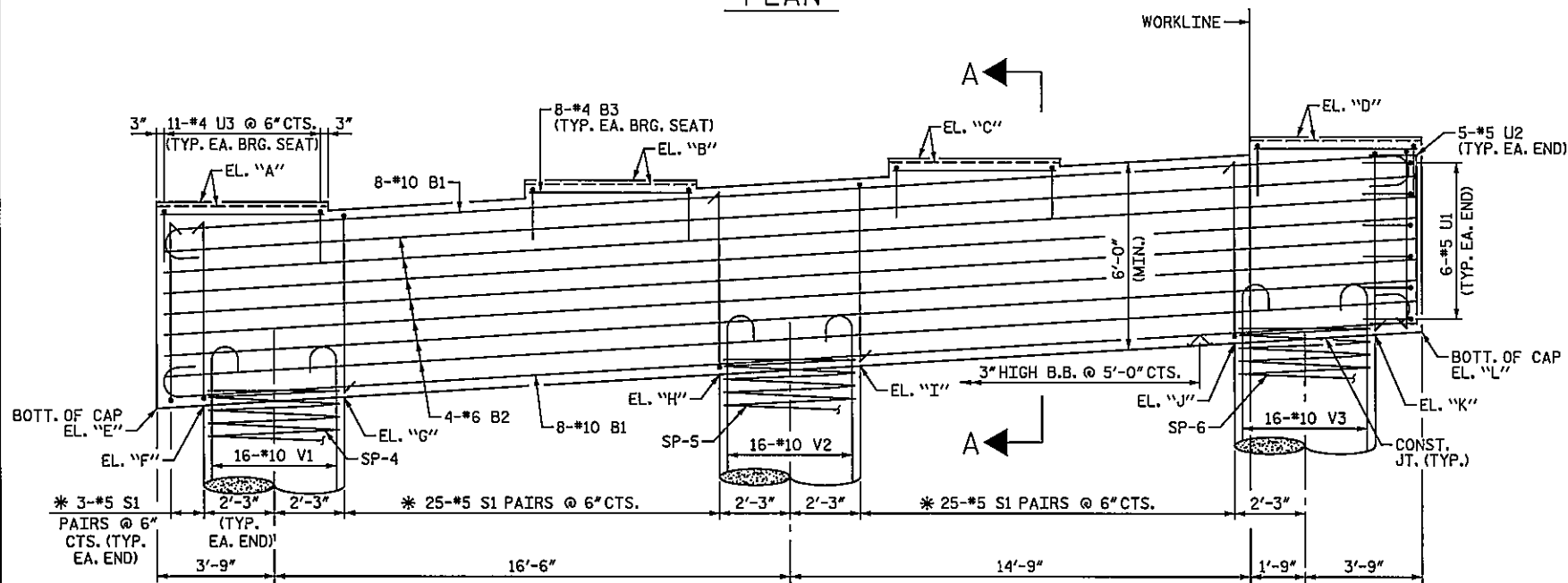
LEFT LANE					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. SI-44
TOTAL SHEETS 62

DRAWN BY: N. B. SPEAKS DATE: 5-24-18
CHECKED BY: T. M. GARRISON DATE: 5-24-18



PLAN



ELEVATION

LOCATION	ELEVATION SPAN A	ELEVATION SPAN B
A	796.68	796.54
B	797.38	797.25
C	798.08	797.96
D	798.78	798.67

LOCATION	ELEVATION
E	790.07
F	790.16
G	790.44
H	791.17
I	791.44
J	792.18
K	792.45
L	792.54

NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

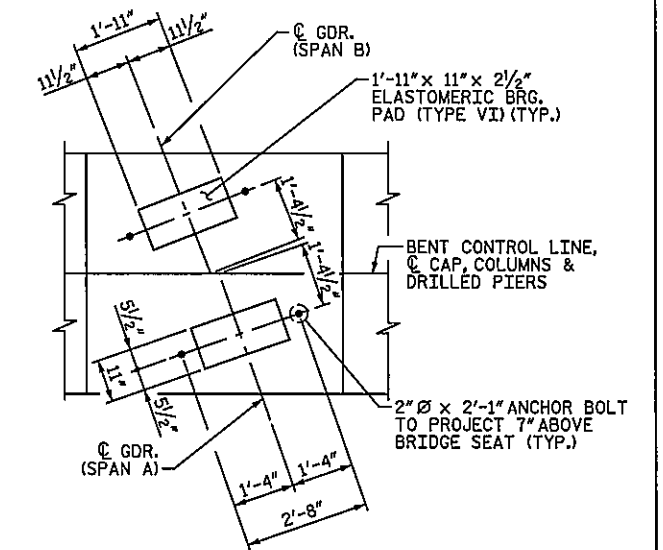
FOR SECTION A-A, SEE "BENT 1 DETAILS" SHEET.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

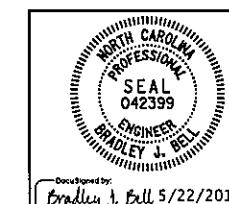
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

BENT 1

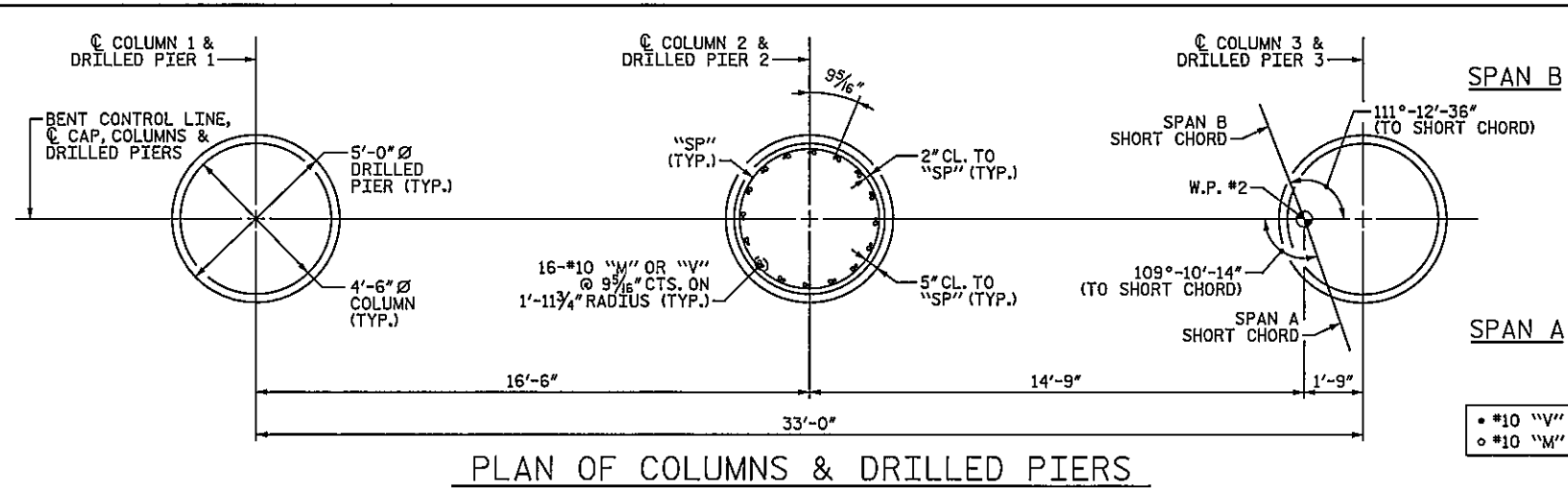
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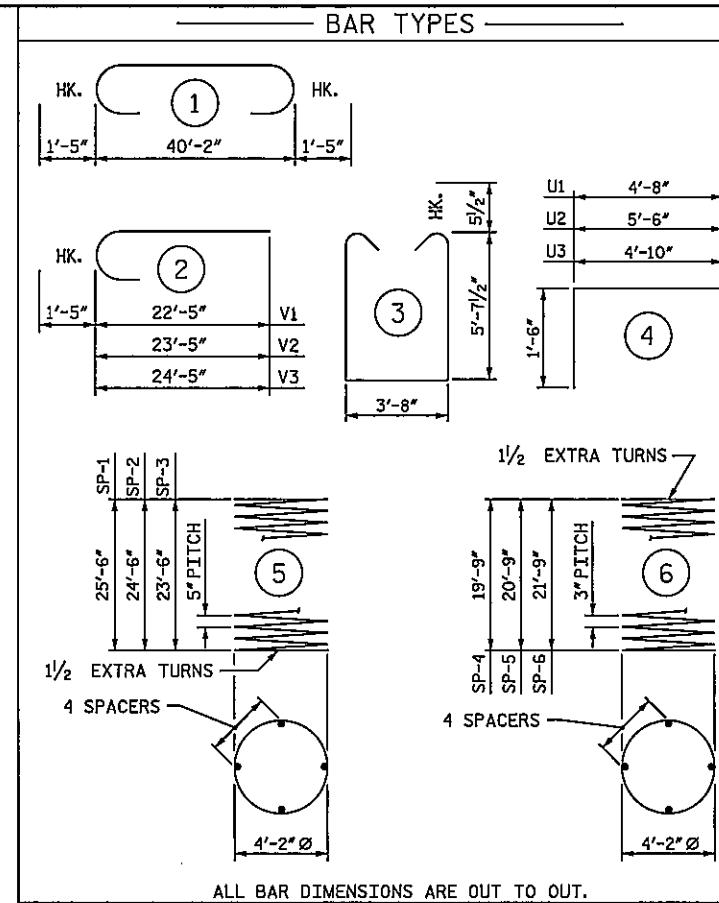
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REVISIONS						SHEET NO. SI-45
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 62
2			4			

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18



PLAN OF COLUMNS & DRILLED PIERS



ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 THRU SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-4 THRU SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL

BENT 1

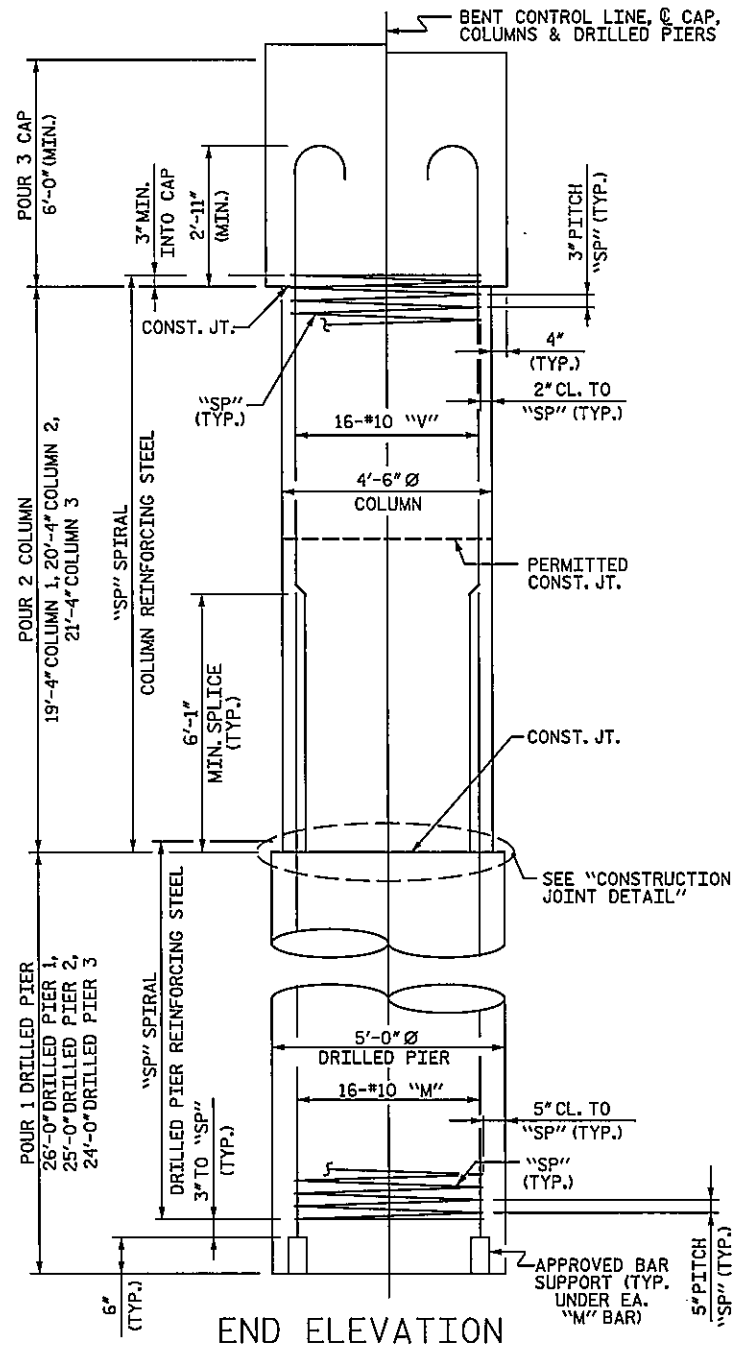
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	16	#10	1	43' - 0"	2,960
B2	28	#6	STR.	40' - 2"	1,689
B3	32	#4	STR.	5' - 2"	110
M1	16	#10	STR.	34' - 7"	2,381
M2	16	#10	STR.	33' - 7"	2,312
M3	16	#10	STR.	32' - 7"	2,243
S1	112	#5	3	15' - 10"	1,850
U1	12	#5	4	7' - 8"	96
U2	10	#5	4	8' - 6"	89
U3	44	#4	4	7' - 10"	230
V1	16	#10	2	23' - 10"	1,641
V2	16	#10	2	24' - 10"	1,710
V3	16	#10	2	25' - 10"	1,779

REINFORCING STEEL				LBS.	19,090
SP-1	1	*	5	810' - 11"	846
SP-2	1	*	5	779' - 10"	813
SP-3	1	*	5	748' - 10"	781
SP-4	1	**	6	1043' - 5"	697
SP-5	1	**	6	1095' - 3"	732
SP-6	1	**	6	1147' - 1"	766

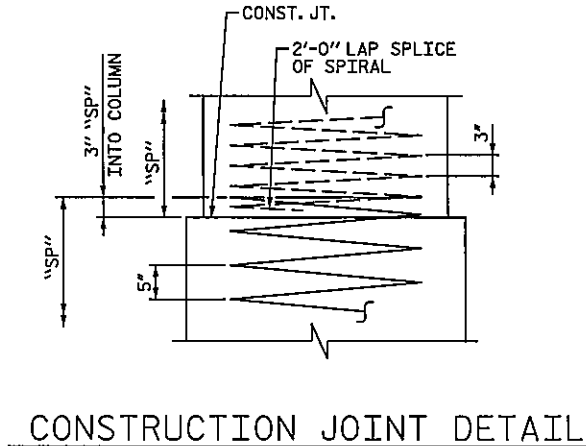
SPIRAL COLUMN REINFORCING STEEL				LBS.	4,635
---------------------------------	--	--	--	------	-------

CLASS A CONCRETE			
POUR 2 - COLUMNS	C.Y.	35.9	
POUR 3 - CAP	C.Y.	48.1	
TOTAL CLASS A CONCRETE	C.Y.	84.0	

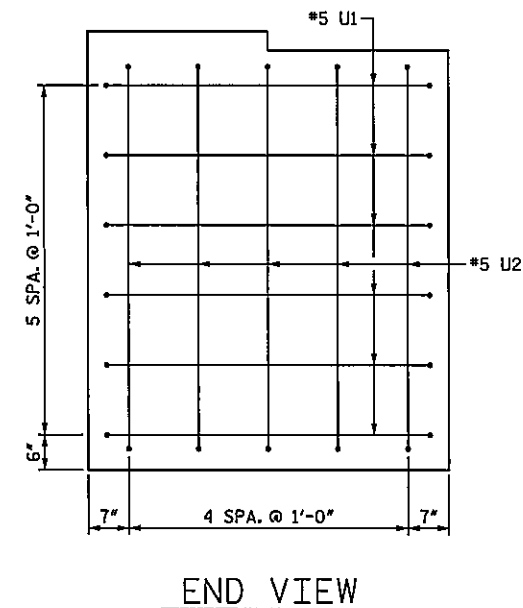
DRILLED PIER CONCRETE			
POUR 1 - DRILLED PIERS	C.Y.	54.6	
5'-0" DIA. DRILLED PIERS IN SOIL	LIN. FT.	36.00	
5'-0" DIA. DRILLED PIERS NOT IN SOIL	LIN. FT.	39.00	
SID INSPECTIONS	EA.	1	
CSL TESTING	EA.	1	
CSL TUBES	LIN. FT.	397.50	



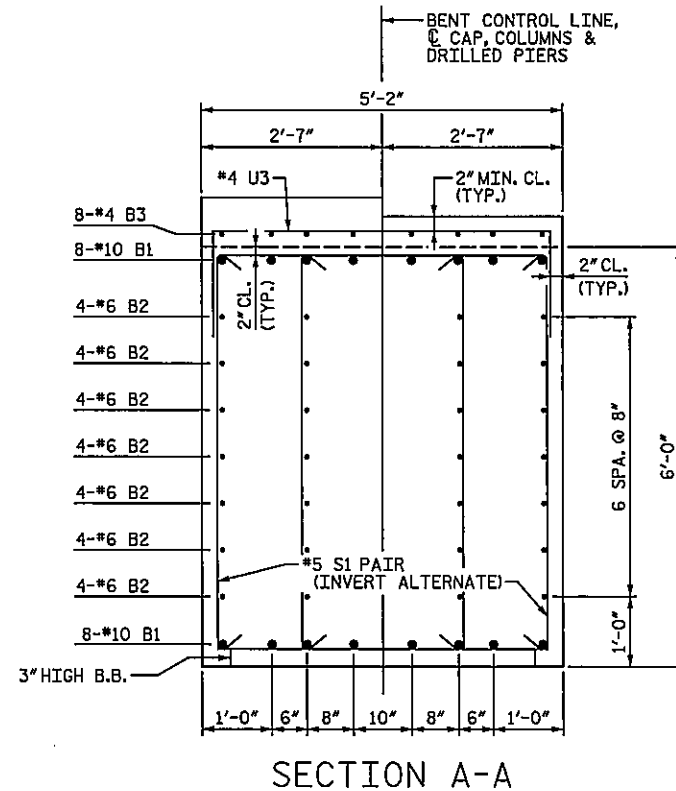
END ELEVATION



CONSTRUCTION JOINT DETAIL

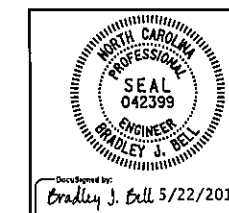


END VIEW



SECTION A-A

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1 DETAILS

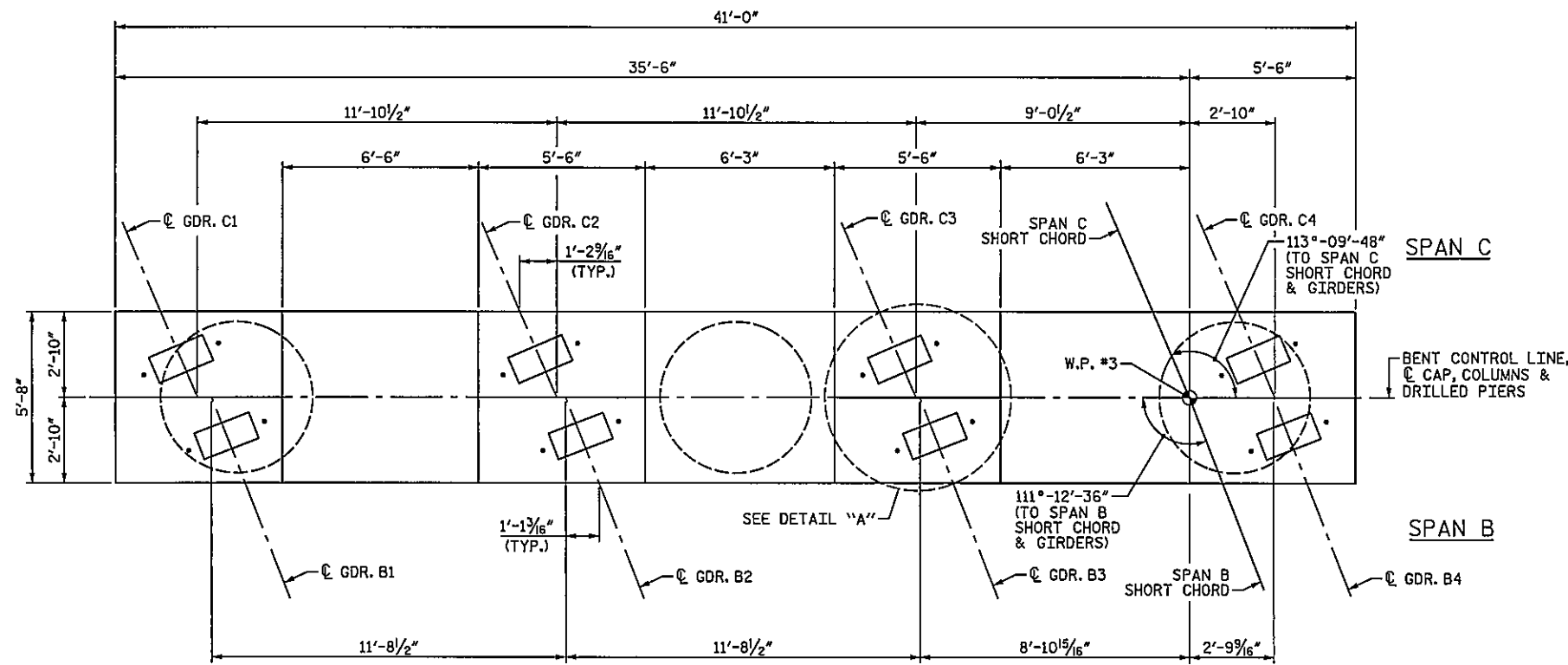
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LEFT LANE

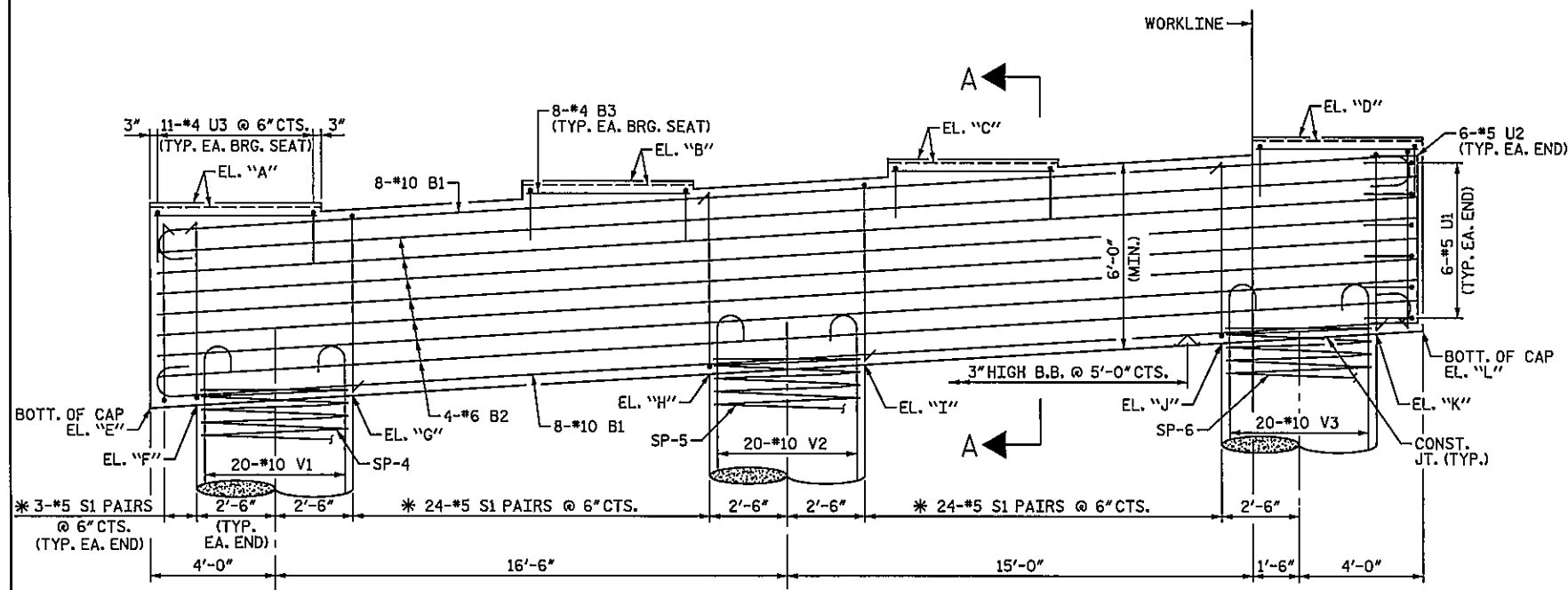
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	SI-46
1			3			TOTAL SHEETS
2			4			62

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18

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 NC License No.: F-1084



PLAN



ELEVATION

NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

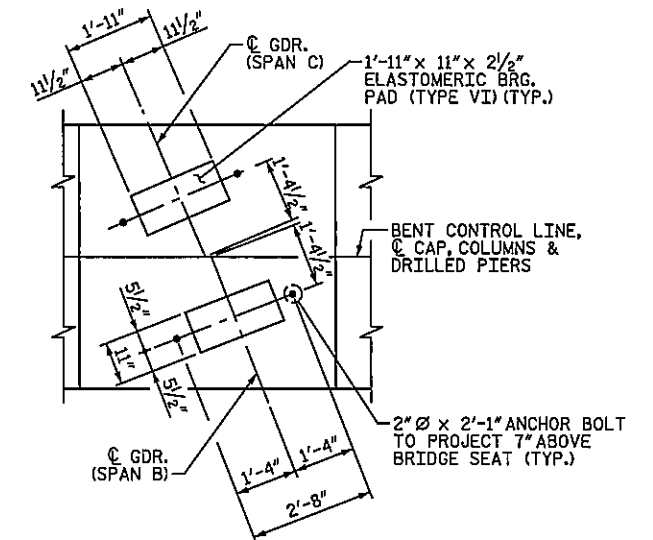
FOR SECTION A-A, SEE "BENT 2 DETAILS" SHEET.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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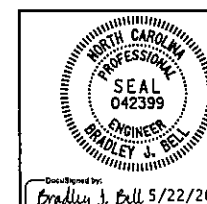
DETAIL "A"

(TYP. EA. BRIDGE SEAT)

LOCATION	ELEVATION SPAN B	ELEVATION SPAN C
A	792.62	792.48
B	793.34	793.21
C	794.06	793.94
D	794.77	794.67

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+43.36 -L-

LOCATION	ELEVATION
E	786.01
F	786.10
G	786.41
H	787.12
I	787.43
J	788.14
K	788.45
L	788.54



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

BENT 2

LEFT LANE

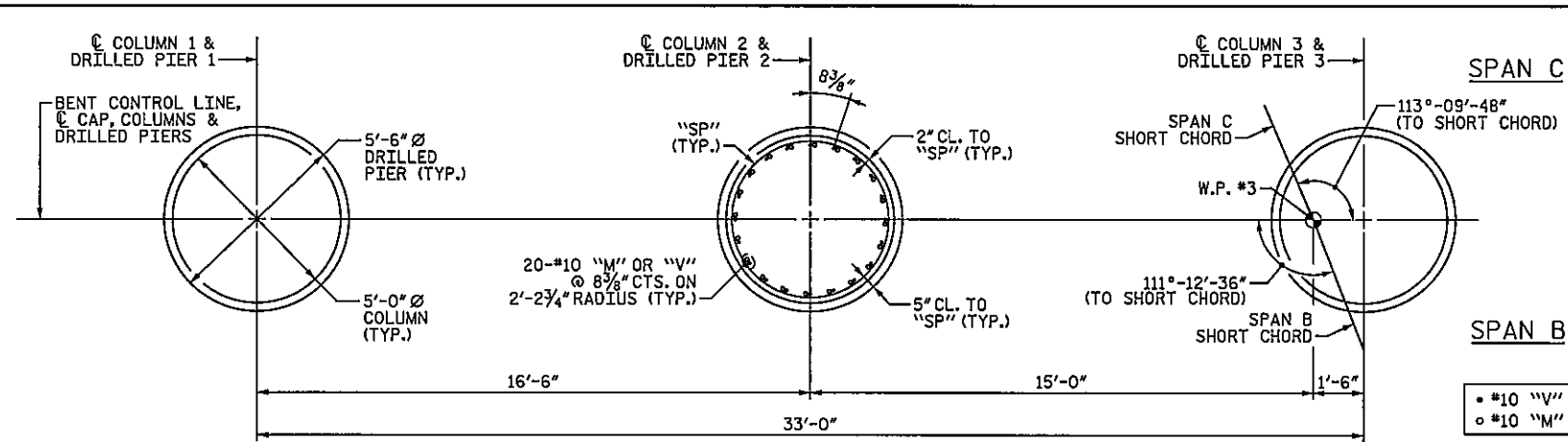
DOCUMENT NOT CONSIDERED FINAL
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Michael Baker International

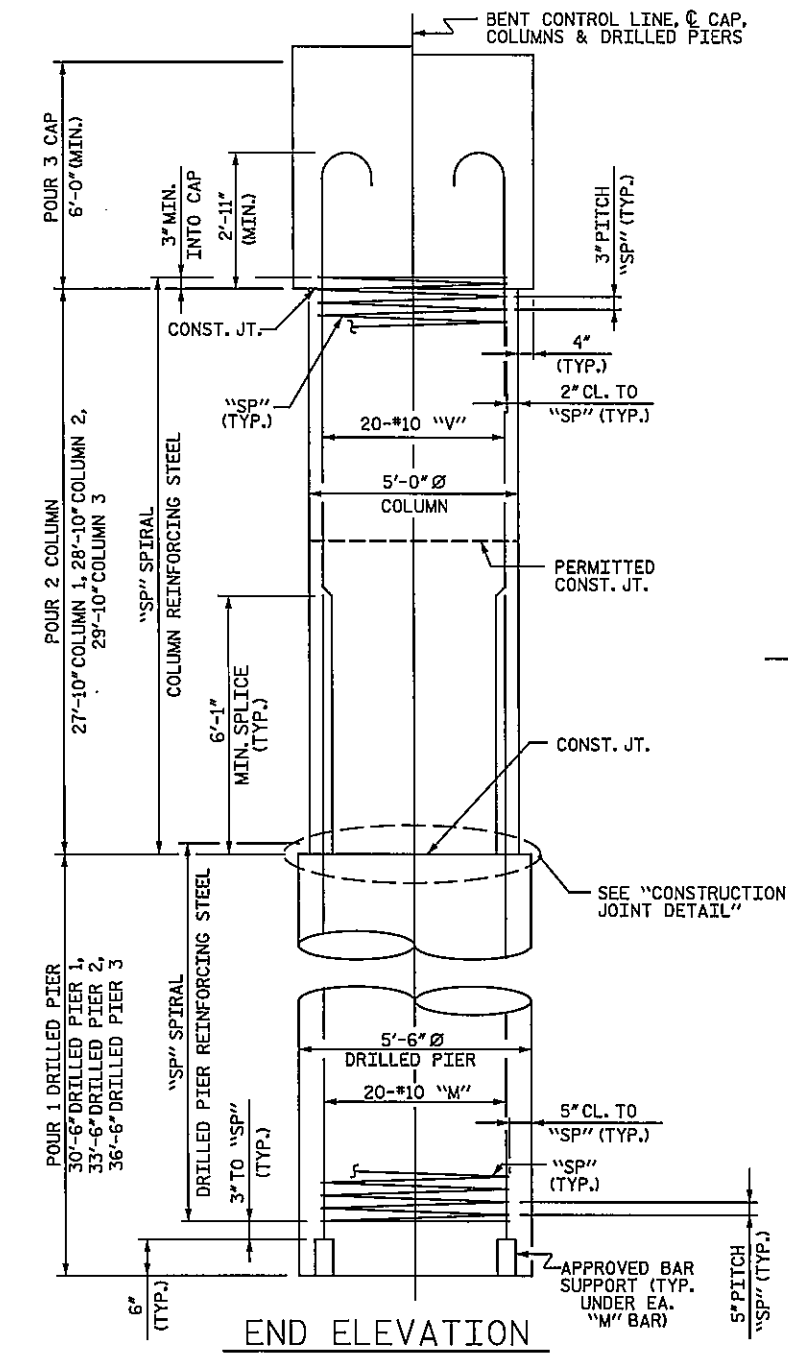
Michael Baker Engineering
 6000 Regency Parkway, Suite 600
 Cary, North Carolina 27519
 NC License No.: F-1084

REVISIONS						SHEET NO. SI-47
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 62
2			4			

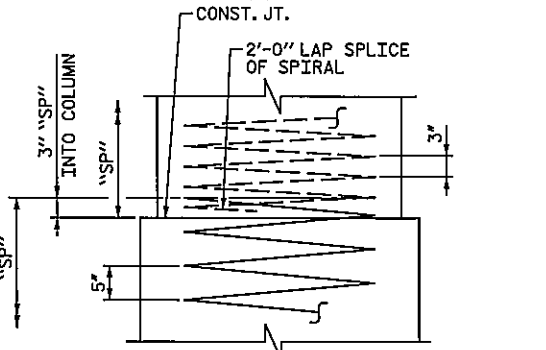
DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18



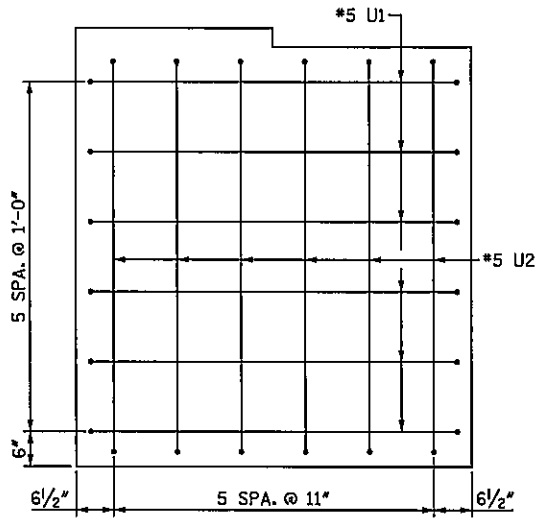
PLAN OF COLUMNS & DRILLED PIERS



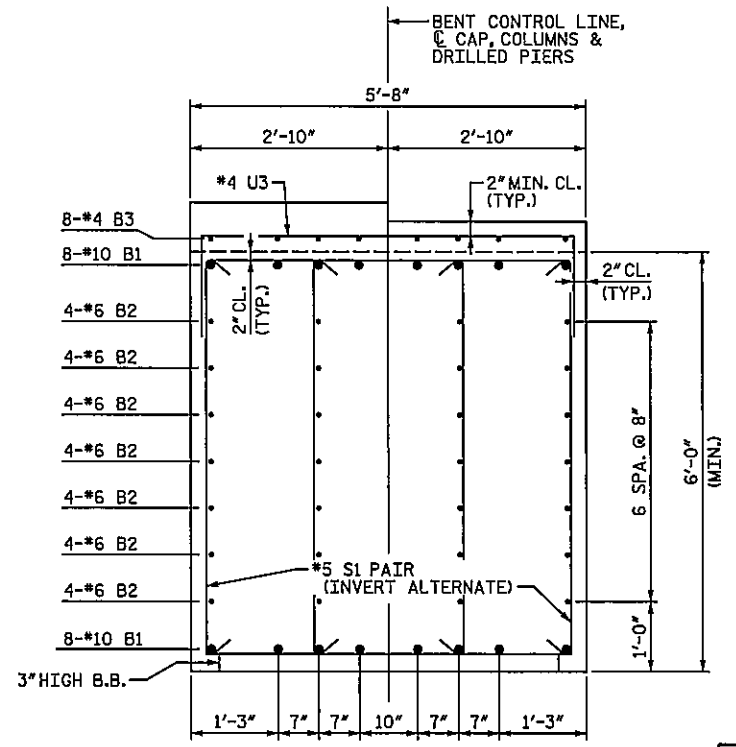
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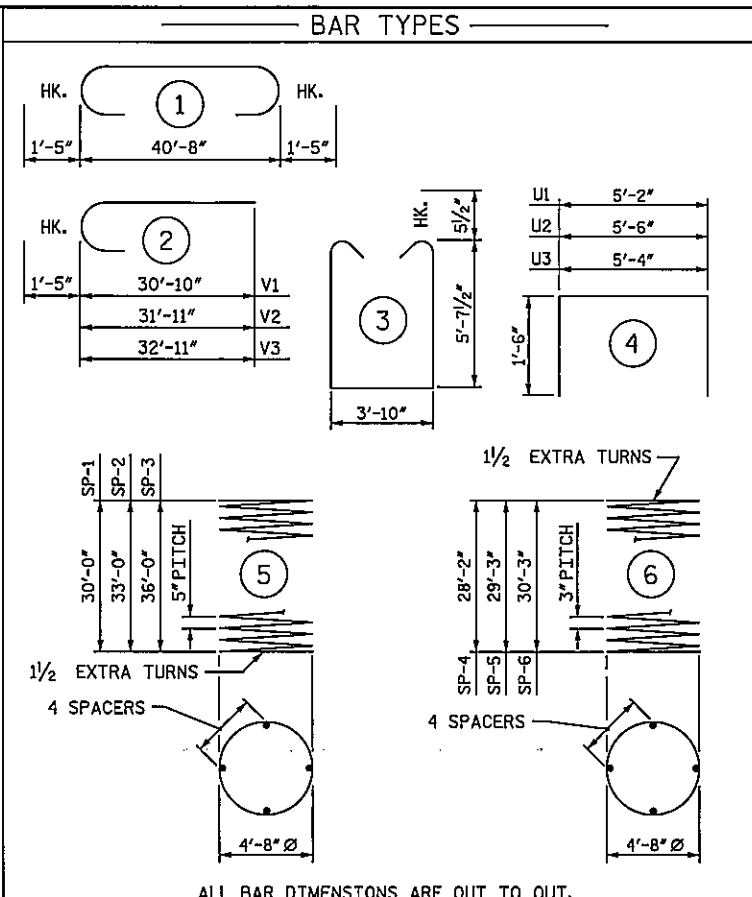
CONSTRUCTION JOINT DETAIL



END VIEW



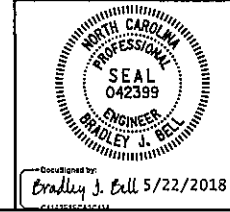
SECTION A-A



* THE SP-1 THRU SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-4 THRU SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL					
BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#10		43' - 6"	2,995
B2	28	#6	STR.	40' - 8"	1,710
B3	32	#4	STR.	5' - 2"	110
M1	20	#10	STR.	39' - 1"	3,364
M2	20	#10	STR.	42' - 1"	3,622
M3	20	#10	STR.	45' - 1"	3,880
S1	108	#5	3	16' - 0"	1,802
U1	12	#5	4	8' - 2"	102
U2	12	#5	4	8' - 6"	106
U3	44	#4	4	8' - 4"	245
V1	20	#10	2	32' - 3"	2,775
V2	20	#10	2	33' - 4"	2,869
V3	20	#10	2	34' - 4"	2,955
REINFORCING STEEL				LBS.	26,535
SP-1	1	*	5	1066' - 0"	1,112
SP-2	1	*	5	1170' - 5"	1,221
SP-3	1	*	5	1274' - 10"	1,330
SP-4	1	**	6	1659' - 1"	1,108
SP-5	1	**	6	1722' - 1"	1,150
SP-6	1	**	6	1780' - 2"	1,189
SPIRAL COLUMN REINFORCING STEEL				LBS.	7,110
CLASS A CONCRETE					
POUR 2 - COLUMNS			C.Y.	62.8	
POUR 3 - CAP			C.Y.	53.3	
TOTAL CLASS A CONCRETE			C.Y.	116.1	
DRILLED PIER CONCRETE					
POUR 1 - DRILLED PIERS			C.Y.	88.5	
5'-6" DIA. DRILLED PIERS IN SOIL			LIN. FT.	62.50	
5'-6" DIA. DRILLED PIERS NOT IN SOIL			LIN. FT.	38.00	
SID INSPECTIONS			EA.	1	
CSL TESTING			EA.	1	
CSL TUBES			LIN. FT.	630.00	

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2 DETAILS

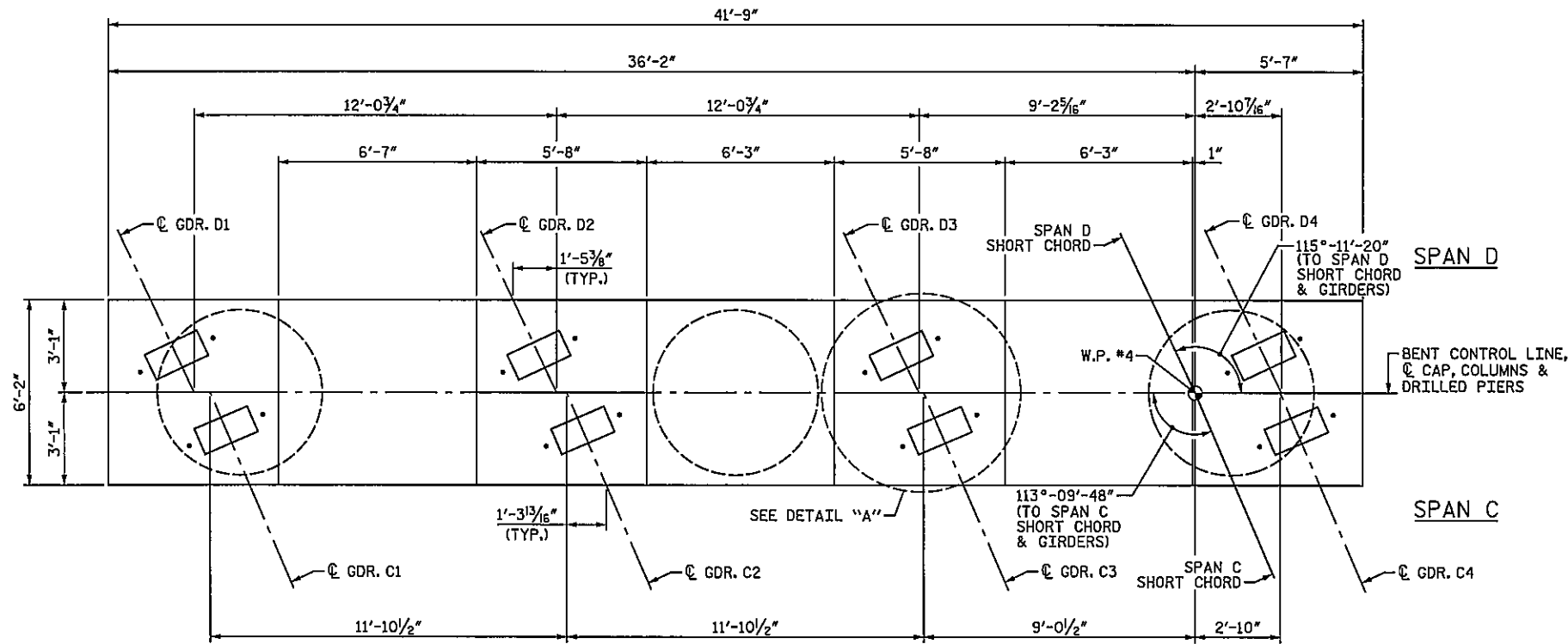
DOCUMENT NOT CONSIDERED FINAL
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LEFT LANE

DRAWN BY: C.E.M./N.B.S. DATE: 5-21-18
 CHECKED BY: T.M. GARRISON DATE: 5-21-18

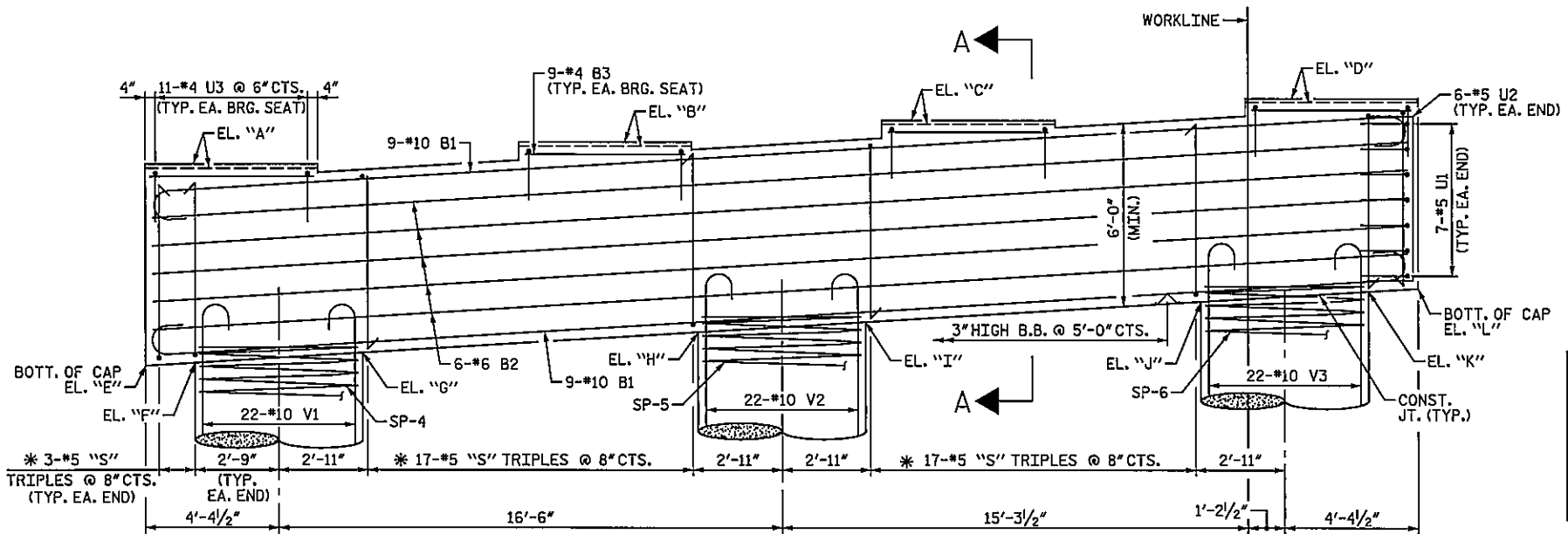
Michael Baker International
 Michael Baker Engineering
 8000 Ragnacy Parkway, Suite 800
 Cary, North Carolina 27518
 NC License No.: F-1084

REVISIONS						SHEET NO. SI-48
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 62
2			4			

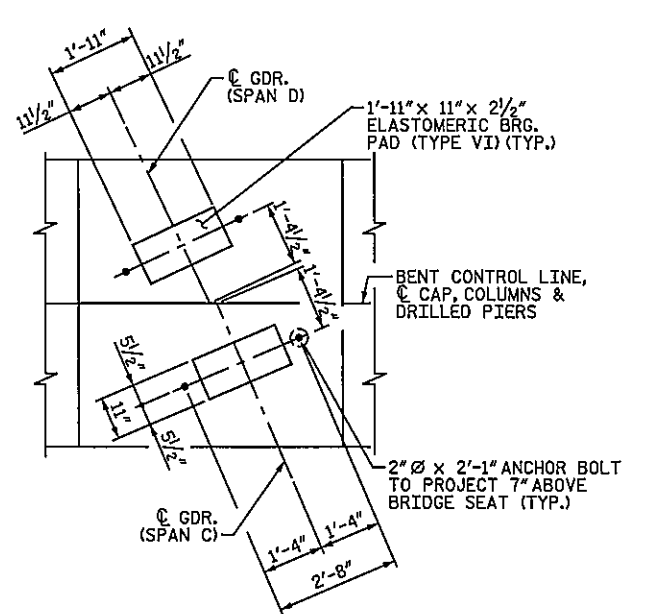


PLAN

NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR SECTION A-A, SEE "BENT 3 DETAILS" SHEET.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 THE TOP SURFACE AREAS OF THE BENT 3 CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
 FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.

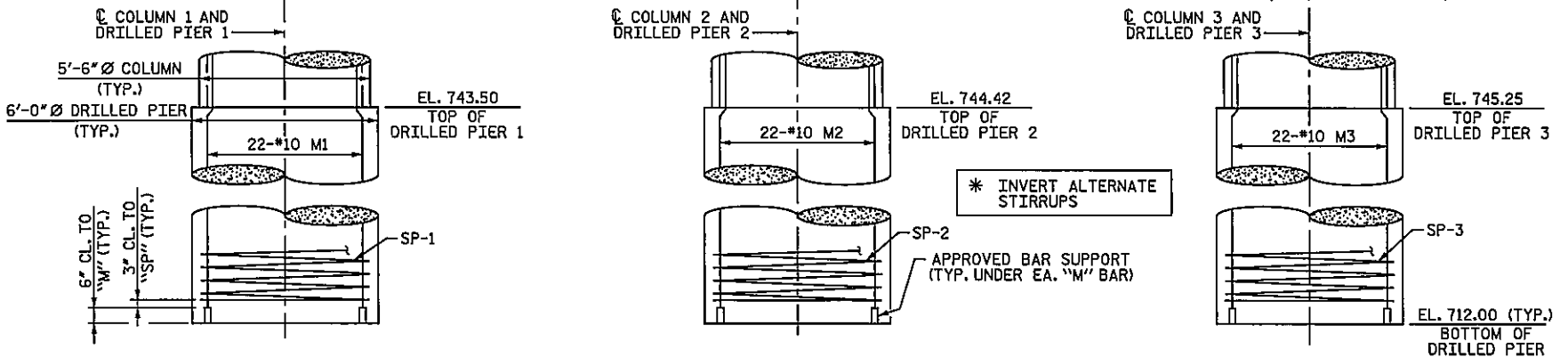


ELEVATION



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

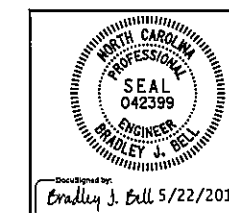
LOCATION	ELEVATION SPAN C	ELEVATION SPAN D
A	788.57	788.42
B	789.30	789.17
C	790.04	789.92
D	790.77	790.66



DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: A. H. SHARPE DATE: 5-21-18

LOCATION	ELEVATION
E	781.93
F	782.03
G	782.37
H	783.06
I	783.40
J	784.09
K	784.43
L	784.53

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-

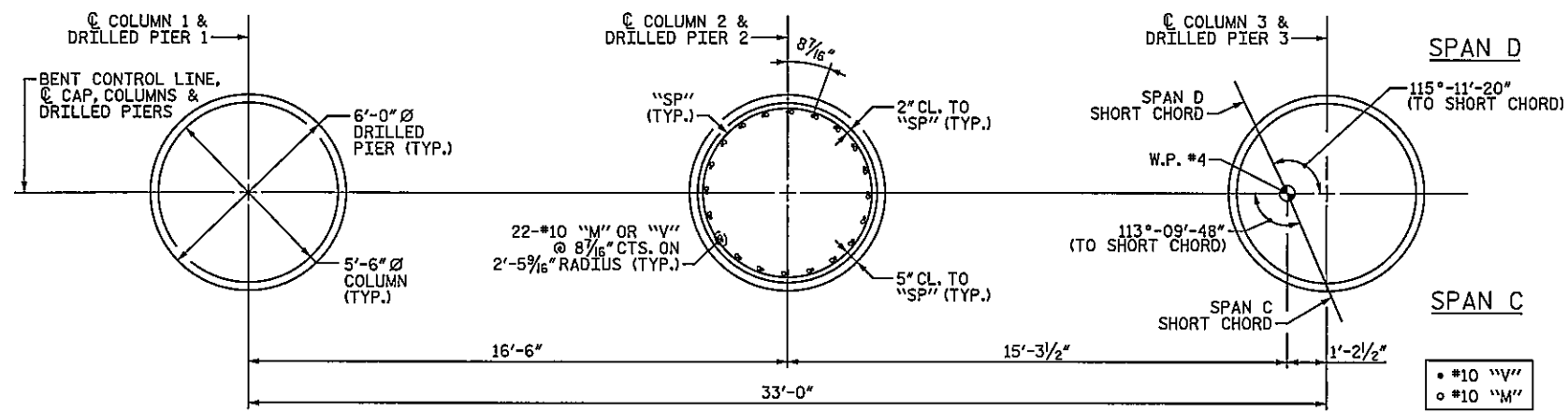


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 3

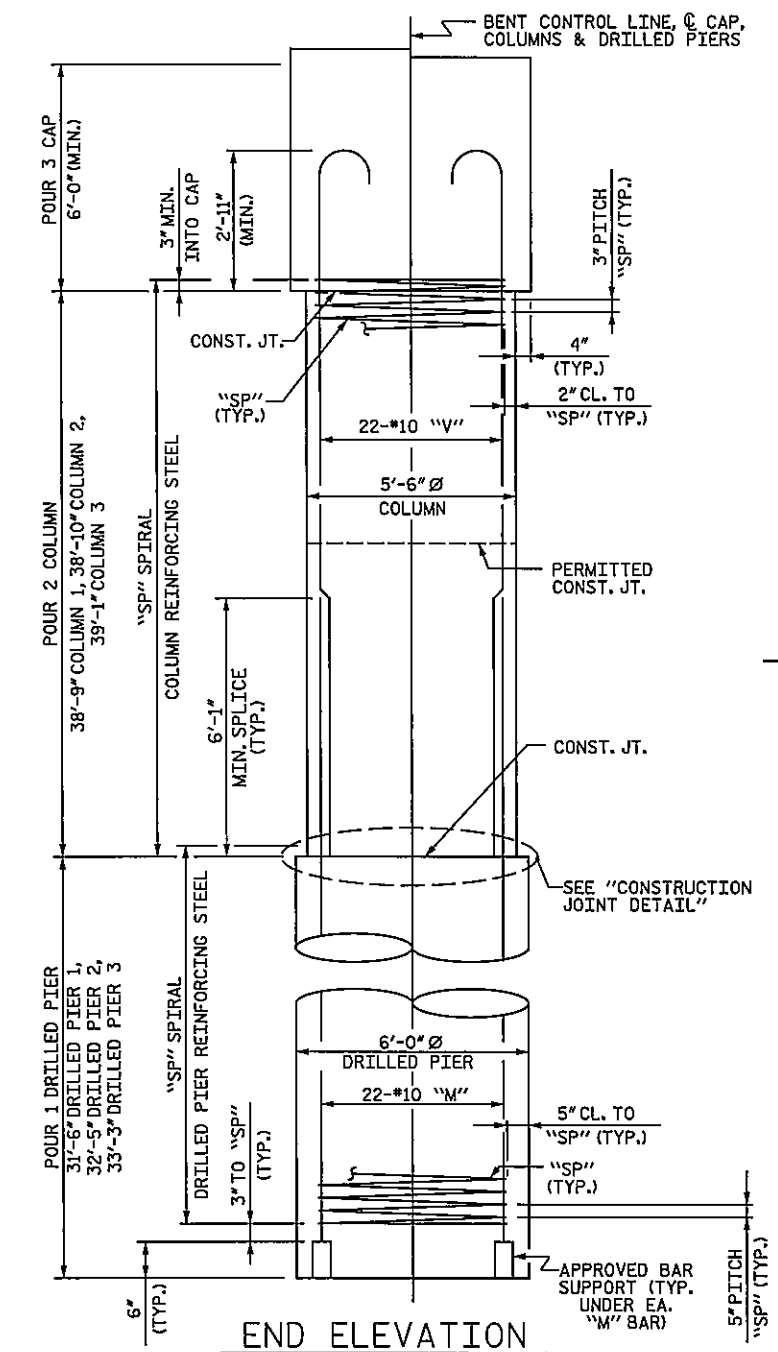
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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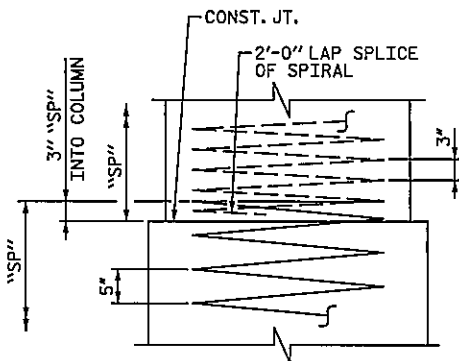
REVISIONS						SHEET NO. SI-49
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 62
2			4			



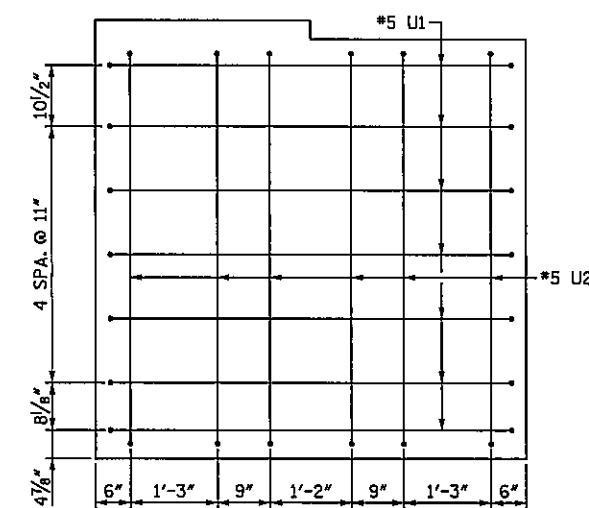
PLAN OF COLUMNS & DRILLED PIERS



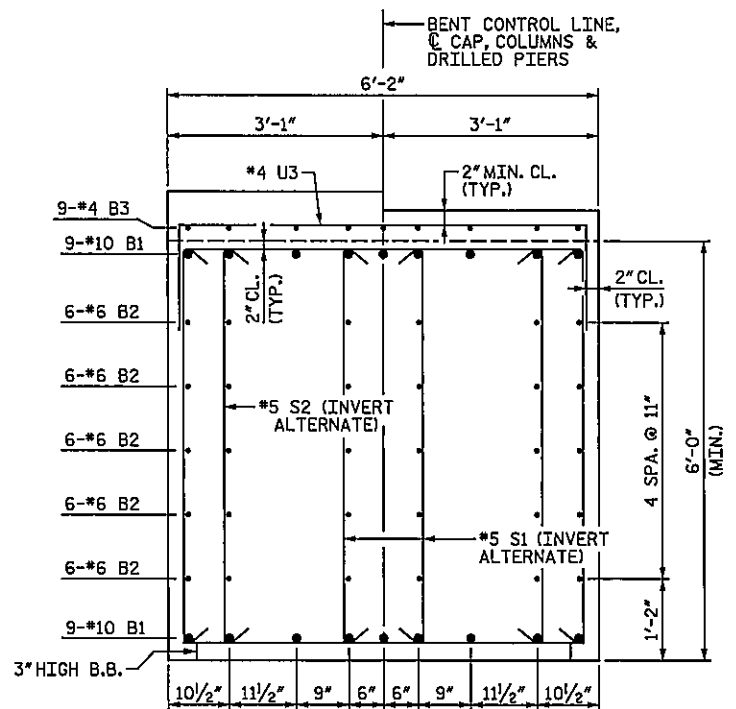
END ELEVATION



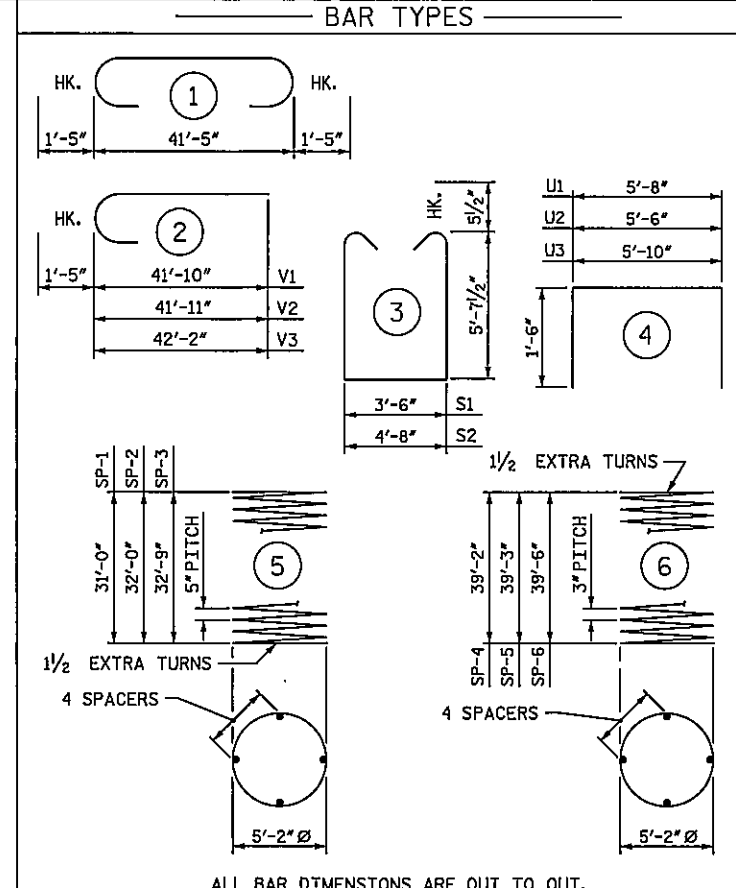
CONSTRUCTION JOINT DETAIL



END VIEW



SECTION A-A

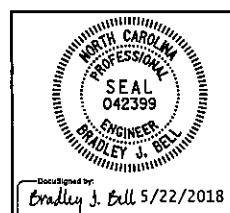


ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 THRU SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-4 THRU SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL					
BENT 3					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	18	#10	1	44' - 3"	3,427
B2	30	#6	STR.	41' - 5"	1,866
B3	36	#4	STR.	5' - 4"	128
M1	22	#10	STR.	40' - 1"	3,795
M2	22	#10	STR.	41' - 1"	3,889
M3	22	#10	STR.	41' - 10"	3,960
S1	80	#5	3	15' - 8"	1,307
S2	40	#5	3	16' - 10"	702
U1	14	#5	4	8' - 8"	127
U2	12	#5	4	8' - 6"	106
U3	44	#4	4	8' - 10"	260
V1	22	#10	2	43' - 3"	4,094
V2	22	#10	2	43' - 4"	4,102
V3	22	#10	2	43' - 7"	4,126
REINFORCING STEEL				LBS.	31,889
SP-1	1	*	5	1220' - 0"	1,272
SP-2	1	*	5	1258' - 7"	1,313
SP-3	1	*	5	1287' - 6"	1,343
SP-4	1	**	6	2546' - 11"	1,701
SP-5	1	**	6	2552' - 3"	1,705
SP-6	1	**	6	2568' - 4"	1,716
SPIRAL COLUMN REINFORCING STEEL				LBS.	9,050
CLASS A CONCRETE					
POUR 2 - COLUMNS				C.Y.	102.6
POUR 3 - CAP				C.Y.	59.2
TOTAL CLASS A CONCRETE				C.Y.	161.8
DRILLED PIER CONCRETE					
POUR 1 - DRILLED PIERS				C.Y.	101.8
6'-0" DIA. DRILLED PIERS IN SOIL				LIN. FT.	56.17
6'-0" DIA. DRILLED PIERS NOT IN SOIL				LIN. FT.	41.00
SID INSPECTIONS				EA.	1
CSL TESTING				EA.	1
CSL TUBES				LIN. FT.	610.00

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-

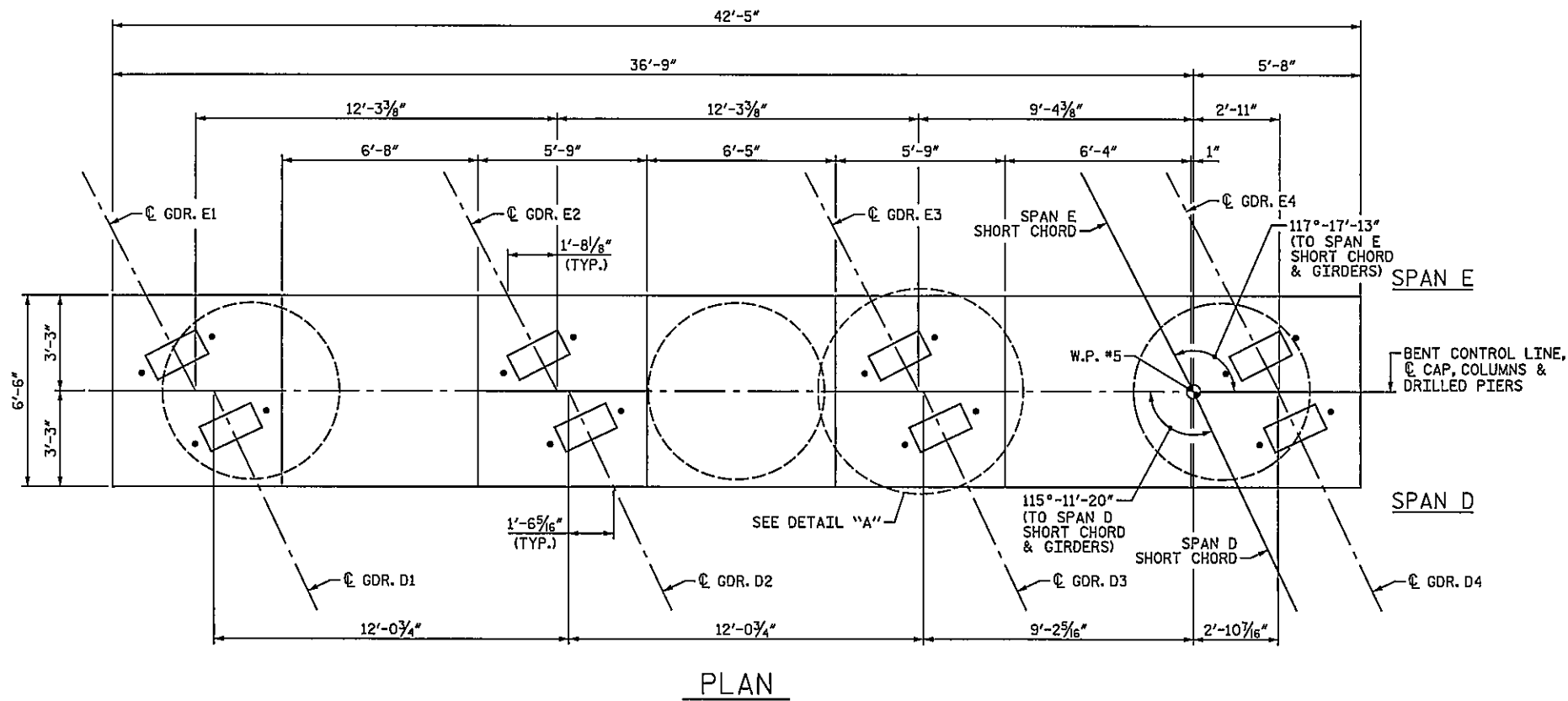


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 3 DETAILS

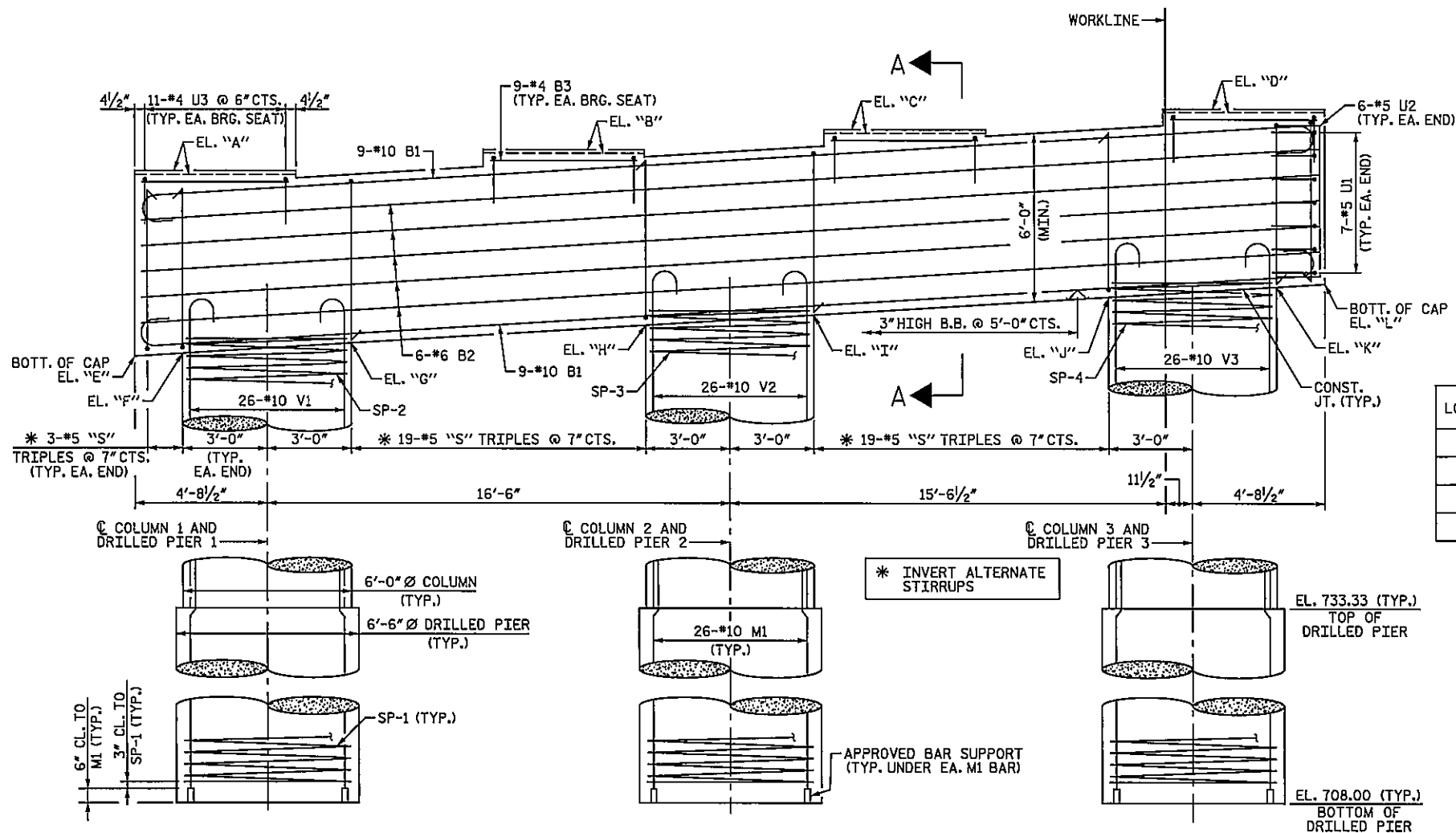
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 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1064

REVISIONS						SHEET NO. SI-50
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 62
2			4			

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18



PLAN



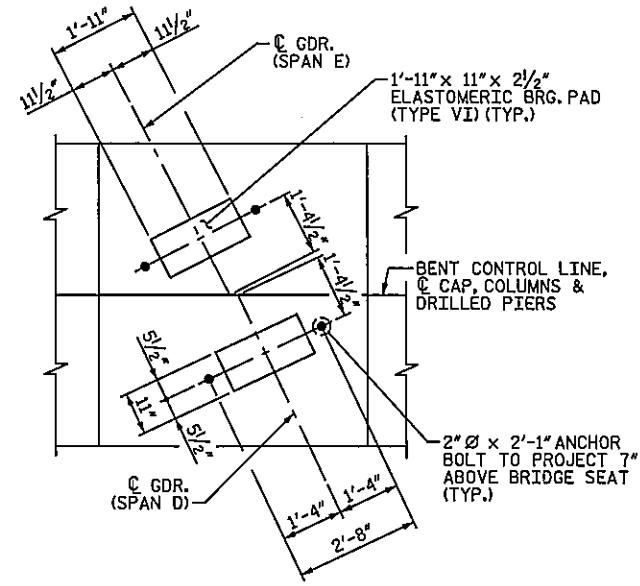
ELEVATION

LOCATION	ELEVATION SPAN D	ELEVATION SPAN E
A	784.21	784.06
B	784.97	784.83
C	785.72	785.60
D	786.47	786.37

LOCATION	ELEVATION
E	777.56
F	777.67
G	778.05
H	778.71
I	779.09
J	779.75
K	780.13
L	780.23

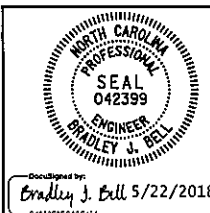
NOTES:

- STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR SECTION A-A, SEE "BENT 4 DETAILS" SHEET.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
- FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-



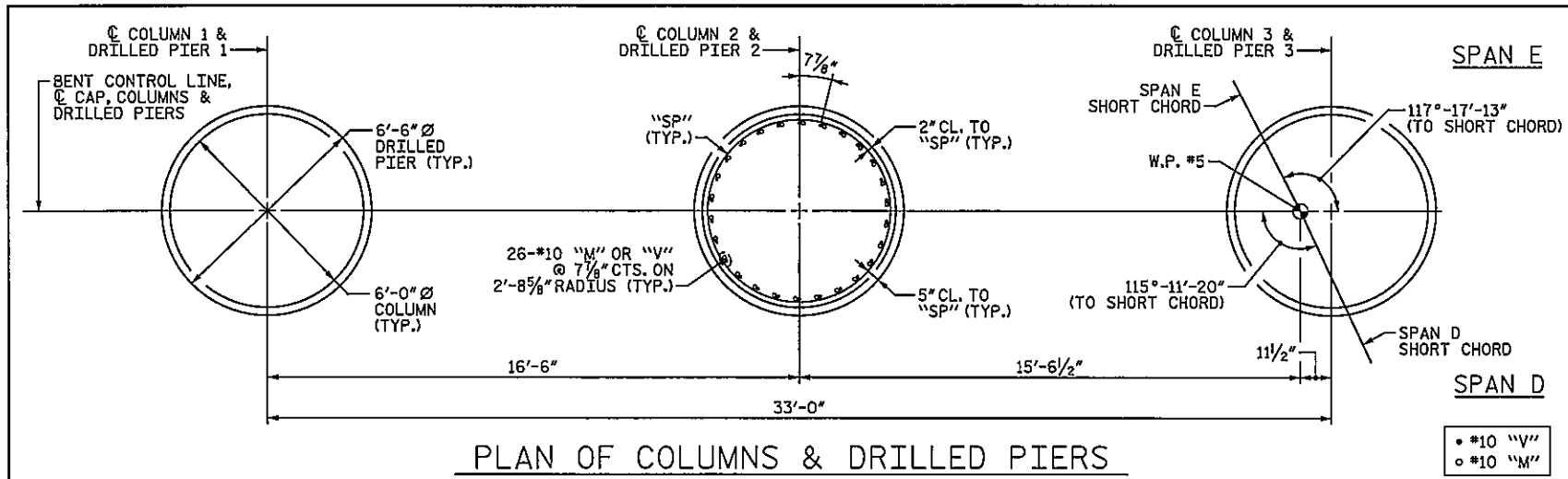
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 4
 LEFT LANE

DOCUMENT NOT CONSIDERED FINAL
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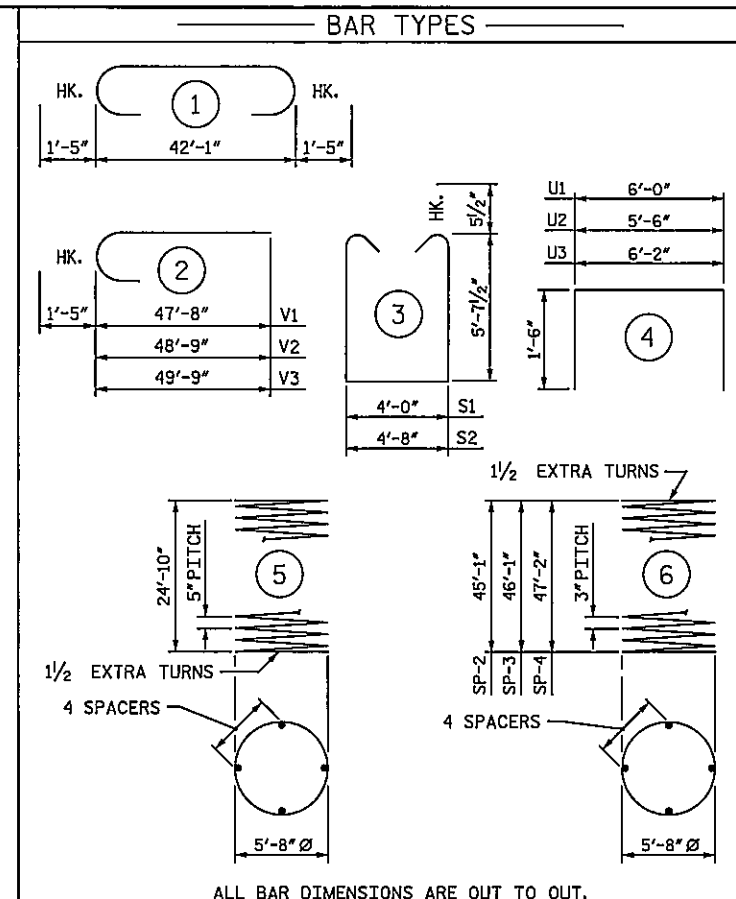
Michael Baker International
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27516
 NC License No.: F-1064

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SI-51
1			3			TOTAL SHEETS
2			4			62

DRAWN BY: N. B. SPEAKS DATE: 5-21-18
 CHECKED BY: A. H. SHARPE DATE: 5-21-18

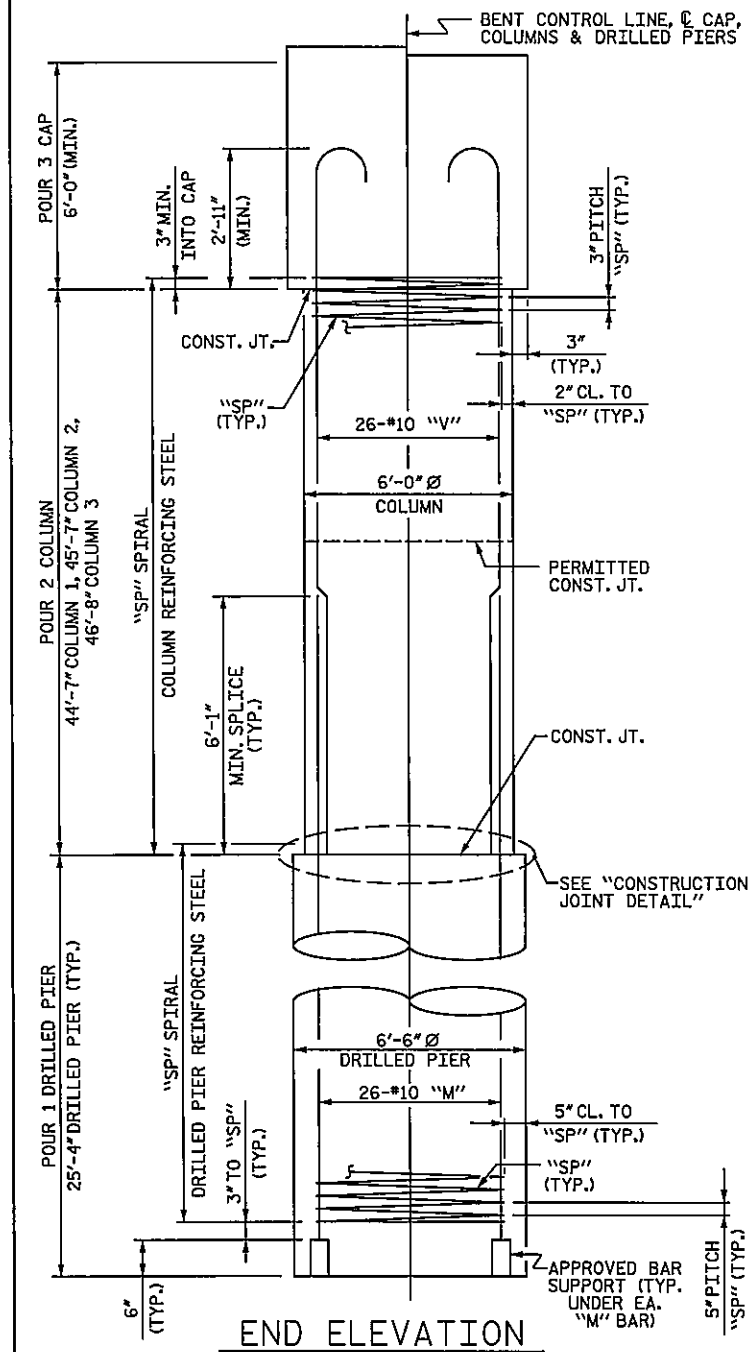


PLAN OF COLUMNS & DRILLED PIERS

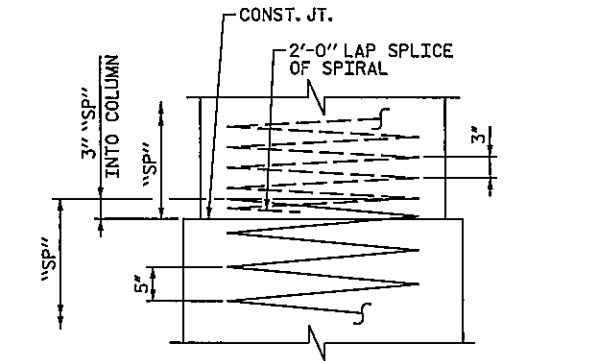


* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-2 THRU SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

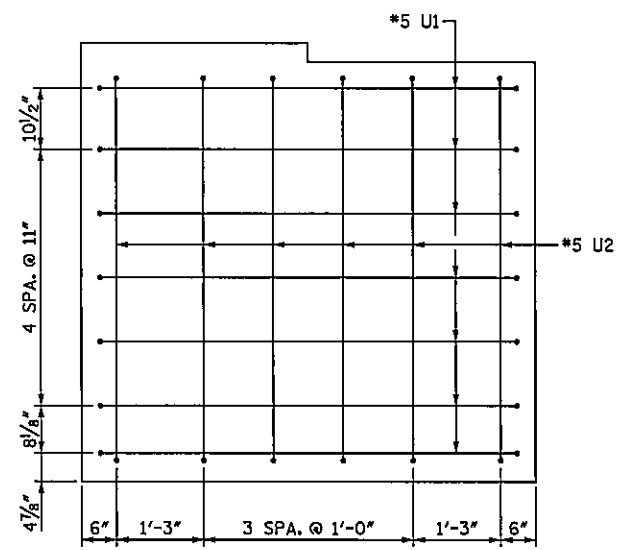
BILL OF MATERIAL					
BENT 4					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	18	#10	1	44' - 11"	3,479
B2	30	#6	STR.	42' - 1"	1,896
B3	36	#4	STR.	5' - 5"	130
M1	78	#10	STR.	33' - 11"	11,384
S1	88	#5	3	16' - 2"	1,484
S2	44	#5	3	16' - 10"	773
U1	14	#5	4	9' - 0"	131
U2	12	#5	4	8' - 6"	106
U3	44	#4	4	9' - 2"	269
V1	26	#10	2	49' - 1"	5,491
V2	26	#10	2	50' - 2"	5,613
V3	26	#10	2	51' - 2"	5,724
REINFORCING STEEL				LBS.	36,480
SP-1	3	*	5	1078' - 0"	3,372
SP-2	1	**	6	3207' - 8"	2,143
SP-3	1	**	6	3284' - 3"	2,194
SP-4	1	**	6	3355' - 0"	2,241
SPIRAL COLUMN REINFORCING STEEL				LBS.	9,950
CLASS A CONCRETE					
POUR 2 - COLUMNS			C.Y.	143.2	
POUR 3 - CAP			C.Y.	63.4	
TOTAL CLASS A CONCRETE				C.Y.	206.6
DRILLED PIER CONCRETE					
POUR 1 - DRILLED PIERS			C.Y.	93.4	
6'-6" DIA. DRILLED PIERS IN SOIL			LIN. FT.	29.00	
6'-6" DIA. DRILLED PIERS NOT IN SOIL			LIN. FT.	47.00	
PERMANENT STEEL CASING FOR 6'-6" DIA. DRILLED PIER				LIN. FT.	35.50
SID INSPECTIONS			EA.	1	
CSL TESTING			EA.	1	
CSL TUBES			LIN. FT.	563.50	



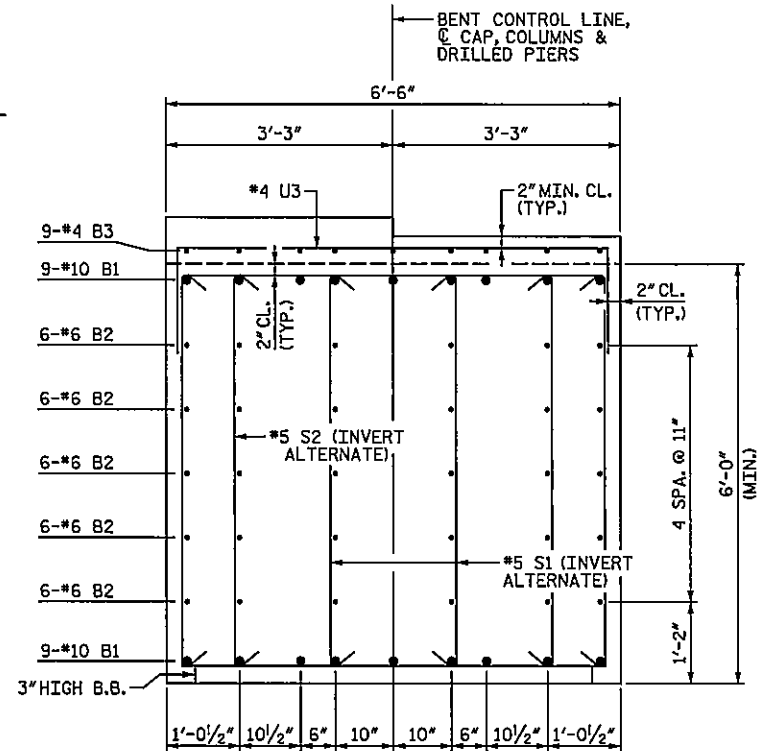
END ELEVATION



CONSTRUCTION JOINT DETAIL



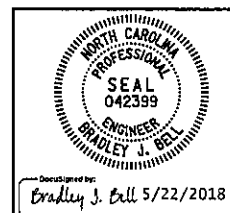
END VIEW



SECTION A-A

DRAWN BY : C. E. MAYHEW DATE : 5-21-18
 CHECKED BY : A. H. SHARPE DATE : 5-21-18

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 Michael Baker Engineering
 8001 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

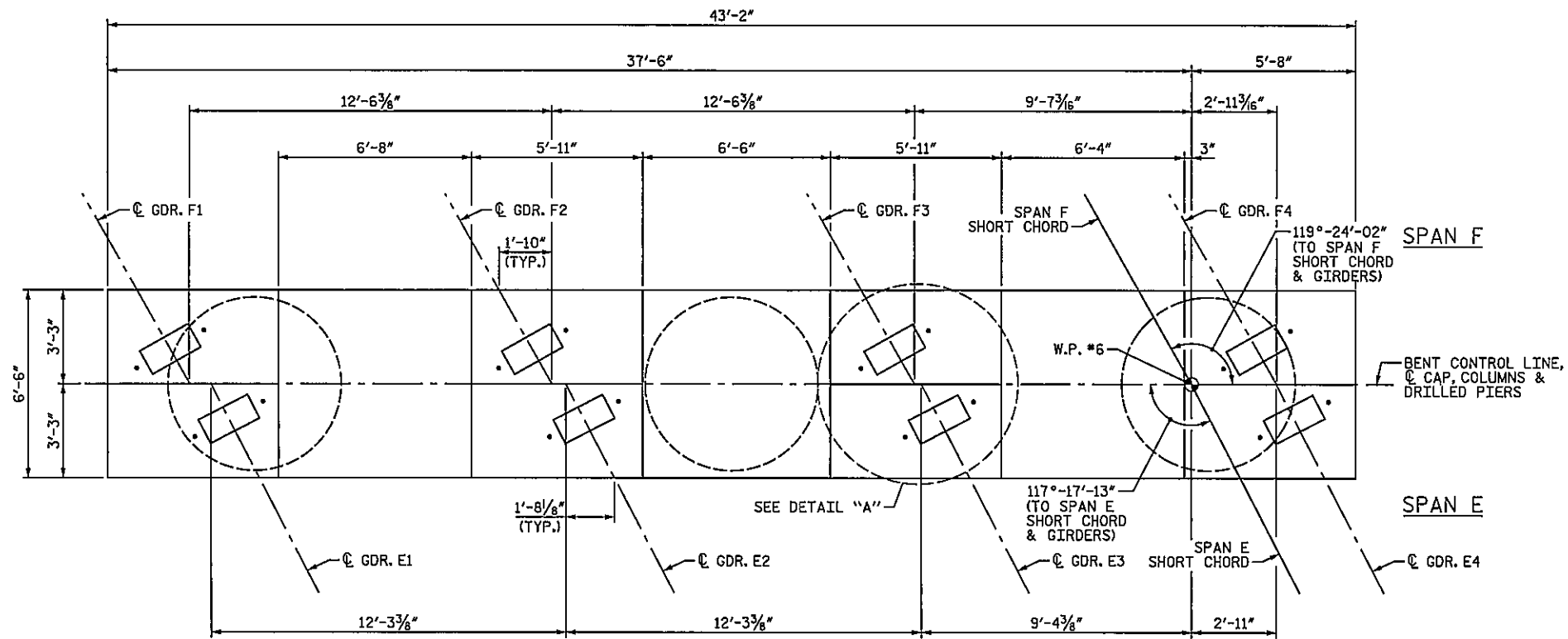


PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 4 DETAILS

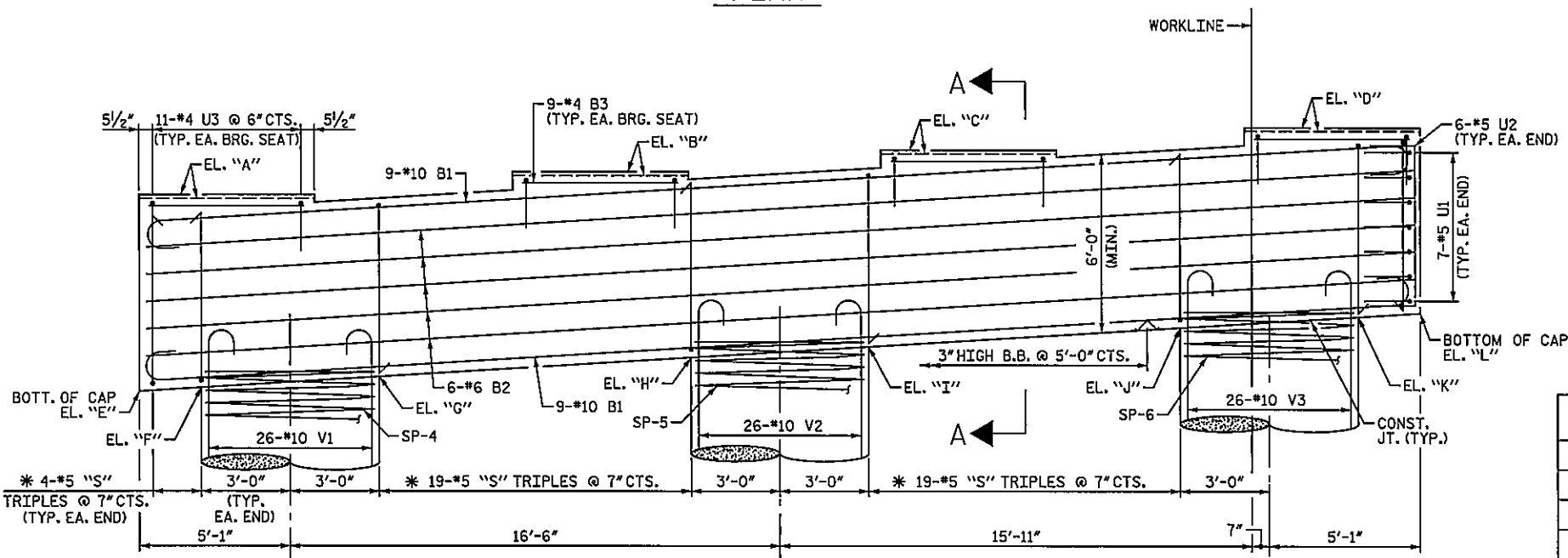
LEFT LANE

REVISIONS						SHEET NO. SI-52
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 62
2			4			

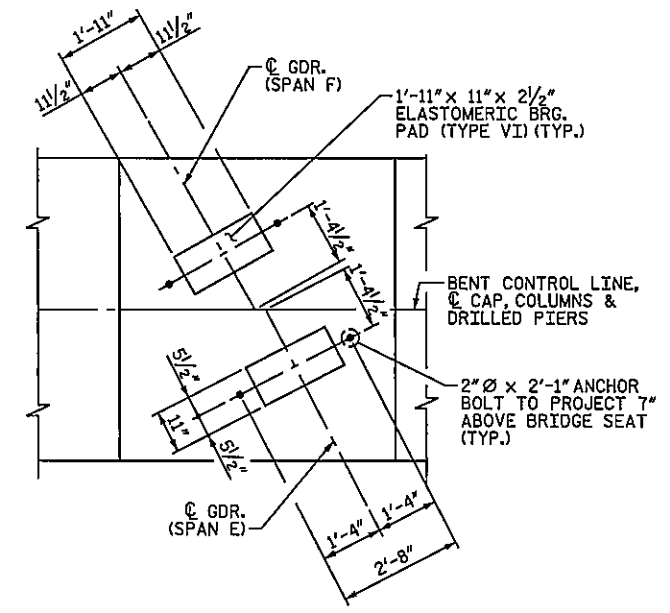


PLAN

NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR SECTION A-A, SEE "BENT 5 DETAILS" SHEET.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
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 FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.



ELEVATION



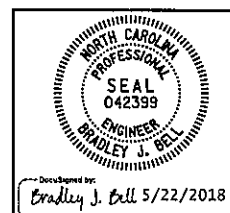
DETAIL "A"
(TYP. EA. BRIDGE SEAT)

LOCATION	ELEVATION SPAN E	ELEVATION SPAN F
A	779.85	779.70
B	780.63	780.49
C	781.40	781.28
D	782.17	782.06

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+43.36 -L-

LOCATION	ELEVATION
E	773.19
F	773.32
G	773.70
H	774.37
I	774.75
J	775.41
K	775.79
L	775.92

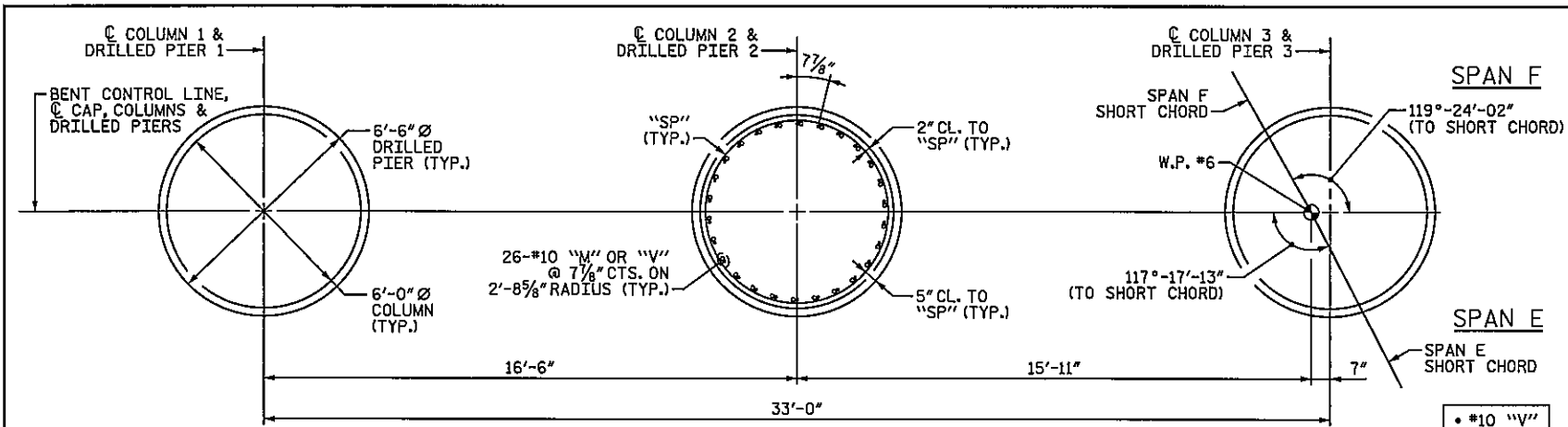
DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: A. H. SHARPE DATE: 5-21-18



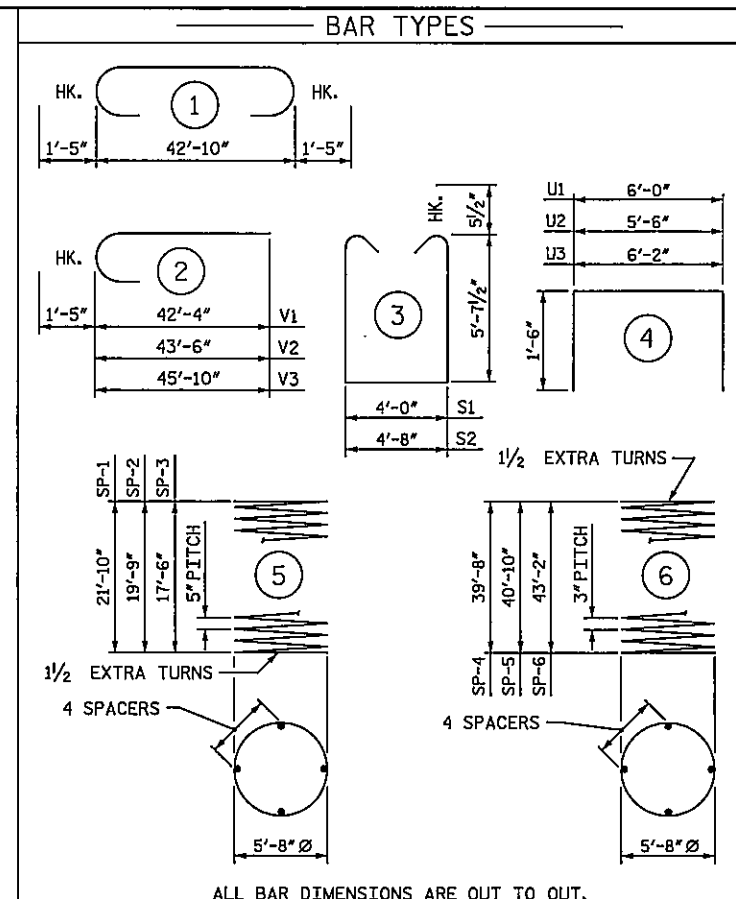
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 5

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. SI-53
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 62
2			4			



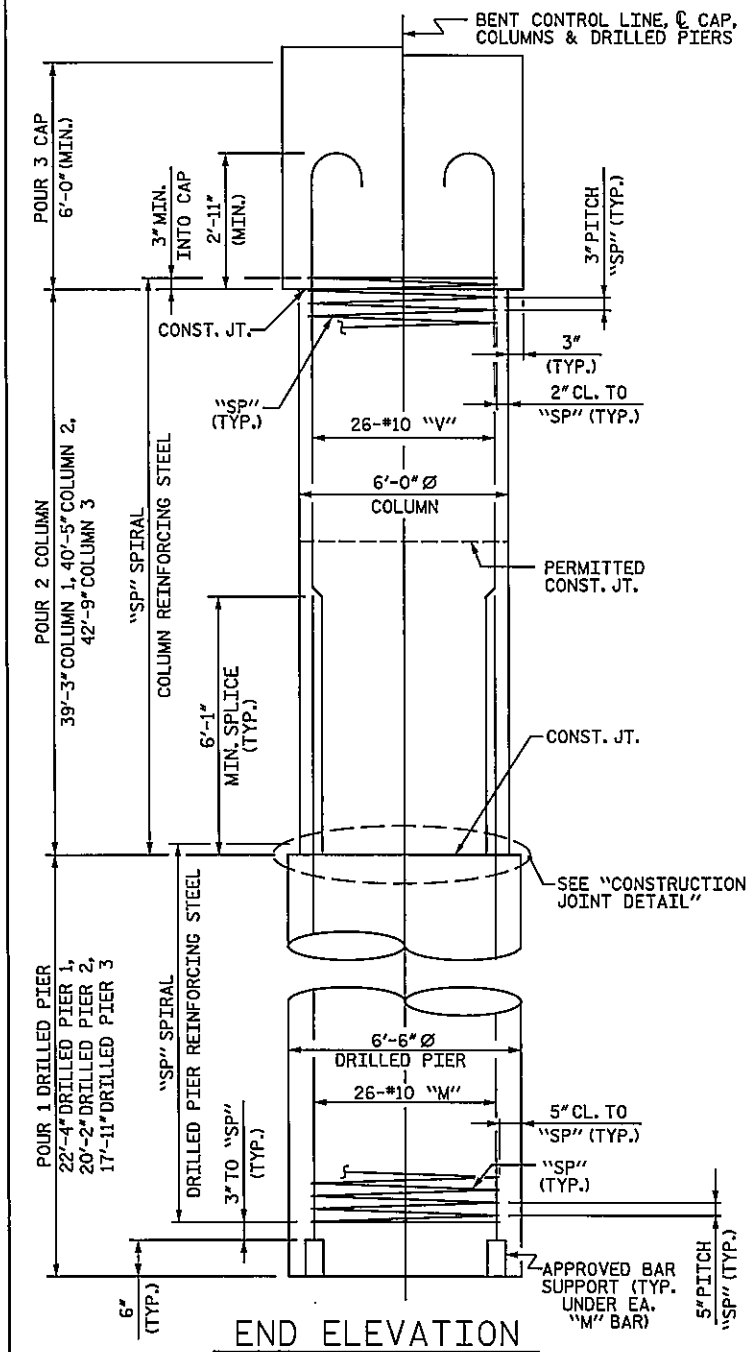
PLAN OF COLUMNS & DRILLED PIERS



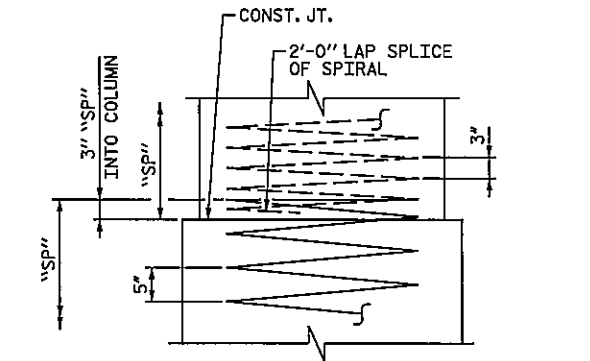
ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 THRU SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-4 THRU SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

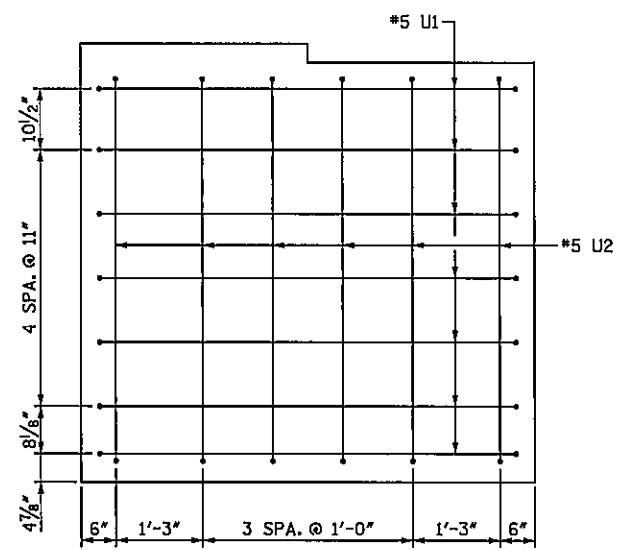
BILL OF MATERIAL					
BENT 5					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	18	#10	1	45' - 8"	3,537
B2	30	#6	STR.	42' - 10"	1,930
B3	36	#4	STR.	5' - 7"	134
M1	26	#10	STR.	30' - 11"	3,459
M2	26	#10	STR.	28' - 10"	3,226
M3	26	#10	STR.	26' - 7"	2,974
S1	92	#5	3	16' - 2"	1,551
S2	46	#5	3	16' - 10"	808
U1	14	#5	4	9' - 0"	131
U2	12	#5	4	8' - 6"	106
U3	44	#4	4	9' - 2"	269
V1	26	#10	2	43' - 9"	4,895
V2	26	#10	2	44' - 11"	5,025
V3	26	#10	2	47' - 3"	5,286
REINFORCING STEEL			LBS. 33,331		
SP-1	1	*	5	951' - 0"	992
SP-2	1	*	5	862' - 9"	900
SP-3	1	*	5	767' - 6"	801
SP-4	1	**	6	2830' - 8"	1,891
SP-5	1	**	6	2913' - 2"	1,946
SP-6	1	**	6	3078' - 1"	2,056
SPIRAL COLUMN REINFORCING STEEL			LBS. 8,586		
CLASS A CONCRETE					
POUR 2 - COLUMNS			C.Y. 128.1		
POUR 3 - CAP			C.Y. 64.6		
TOTAL CLASS A CONCRETE			C.Y. 192.7		
DRILLED PIER CONCRETE					
POUR 1 - DRILLED PIERS			C.Y. 74.3		
6'-6" DIA. DRILLED PIERS IN SOIL			LIN. FT. 19.42		
6'-6" DIA. DRILLED PIERS NOT IN SOIL			LIN. FT. 41.00		
PERMANENT STEEL CASING FOR 6'-6" DIA. DRILLED PIER			LIN. FT. 23.42		
SID INSPECTIONS			EA. 1		
CSL TESTING			EA. 1		
CSL TUBES			LIN. FT. 454.42		



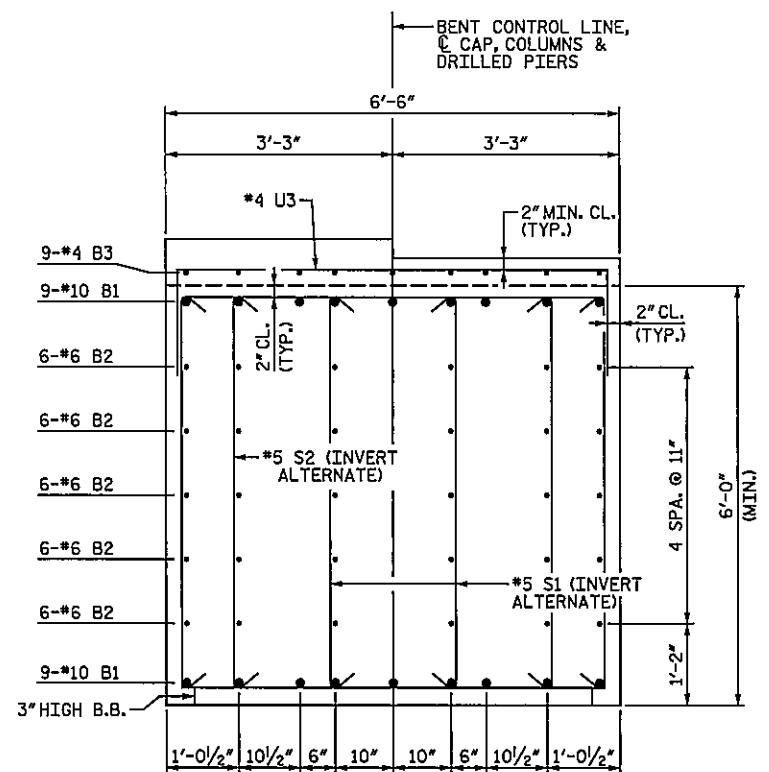
END ELEVATION



CONSTRUCTION JOINT DETAIL



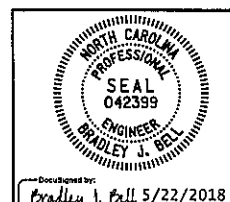
END VIEW



SECTION A-A

DRAWN BY: M.D. MAYHEW DATE: 5-21-18
 CHECKED BY: A.H. SHARPE DATE: 5-21-18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 Michael Baker International
 Michael Baker Engineering
 8000 Raganway Parkway, Suite 800
 Cary, North Carolina 27519
 NC License No.: F-1084

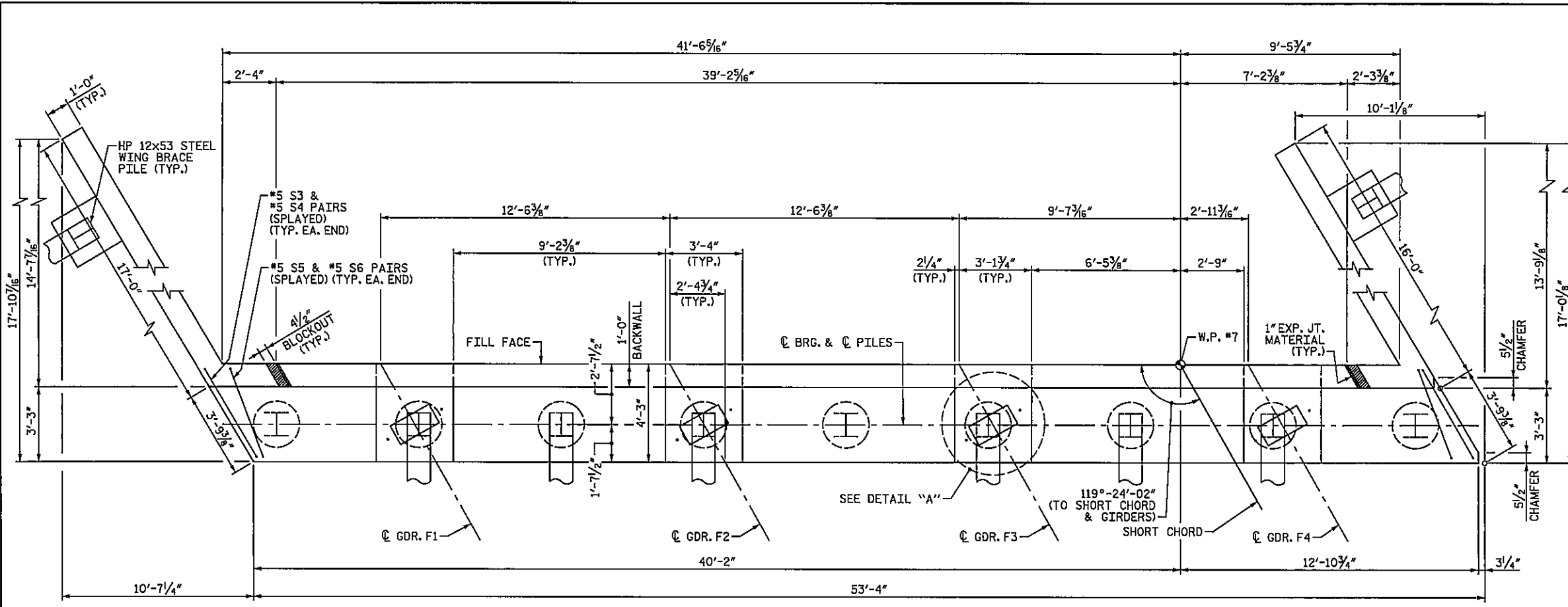


PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 SUBSTRUCTURE
 BENT 5 DETAILS

LEFT LANE

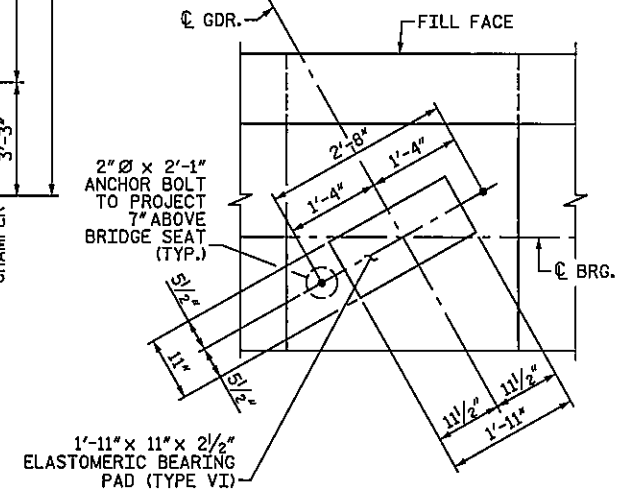
REVISIONS						SHEET NO. SI-54
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 62
2			4			



PLAN

NOTES:

- SEE "GENERAL DRAWING" SHEET 4 OF 6 FOR LOCATIONS OF BRACE PILES IN WINGS.
- FOR "SECTION A-A" AND "SECTION B-B", SEE "END BENT 2 DETAILS" SHEET.
- STIRRUPS & U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT A RATE OF 2%.
- THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



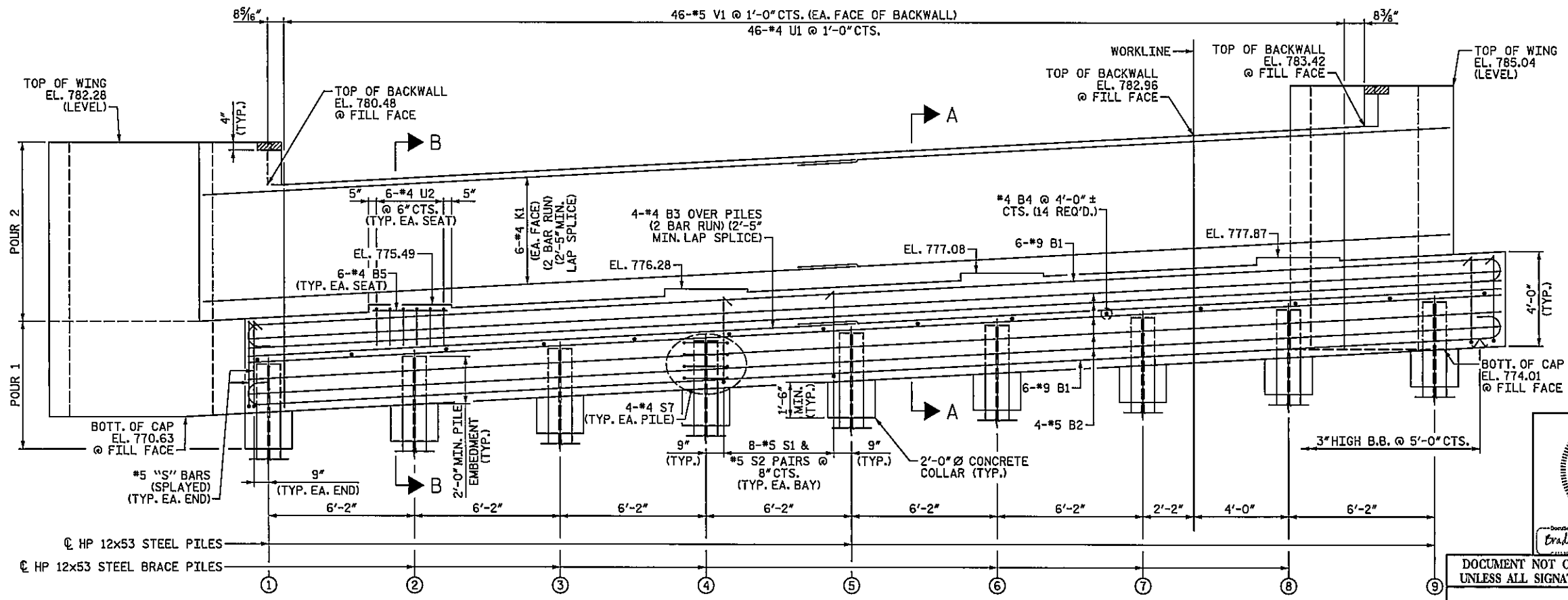
DETAIL "A"

(TYP. EA. BRIDGE SEAT)

TOP OF PILE ELEVATIONS

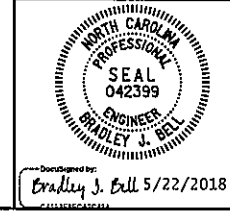
PILE	ELEVATION
①	772.89
②	773.28
③	773.67
④	774.06
⑤	774.45
⑥	774.84
⑦	775.23
⑧	775.62
⑨	776.01

PROJECT NO. U-2412A
GUILFORD COUNTY
STATION: 93+43.36 -L-
SHEET 1 OF 2



ELEVATION

(BRACE PILES AND PILE CAPS IN WINGS NOT SHOWN FOR CLARITY)



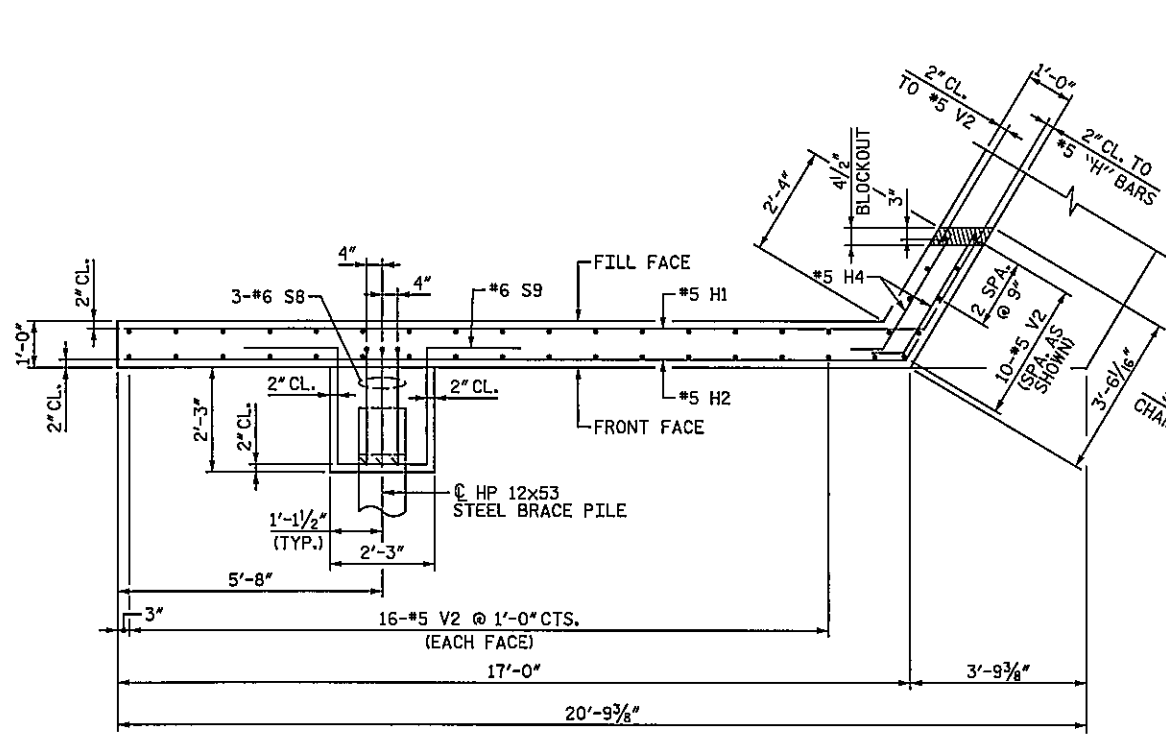
Documented by: Bradley J. Bell 5/22/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

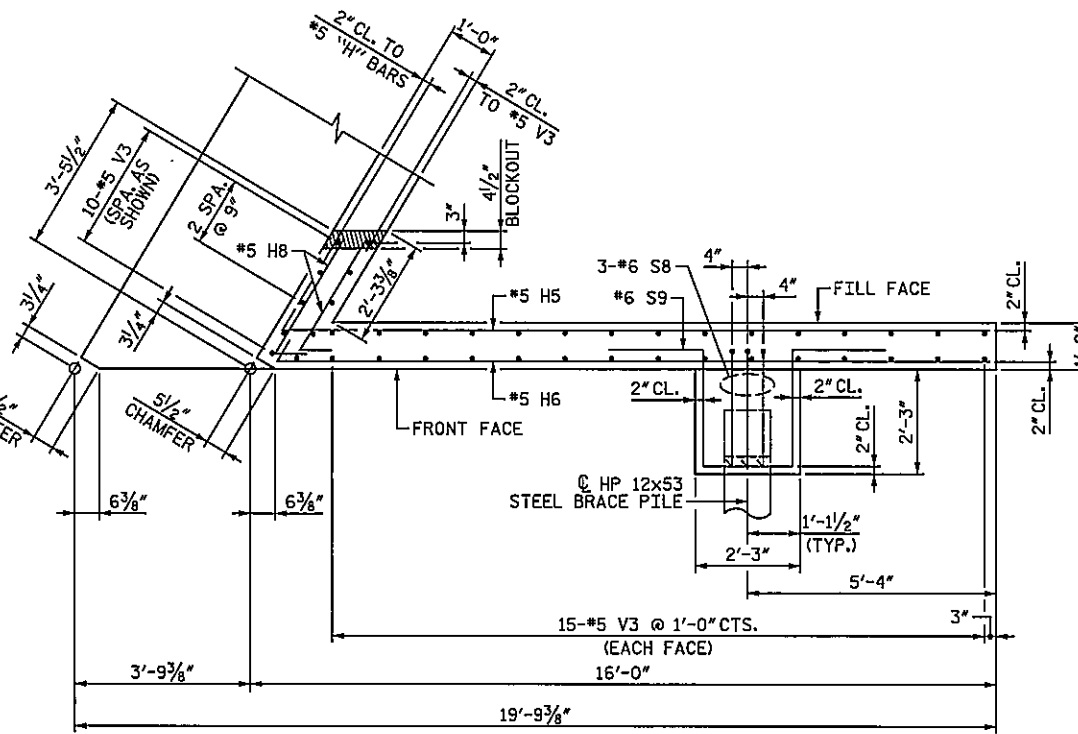
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Cary, North Carolina 27519
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REVISIONS						SHEET NO. SI-55
NO.	BY	DATE	NO.	BY	DATE	
1			5			TOTAL SHEETS 62
2			4			

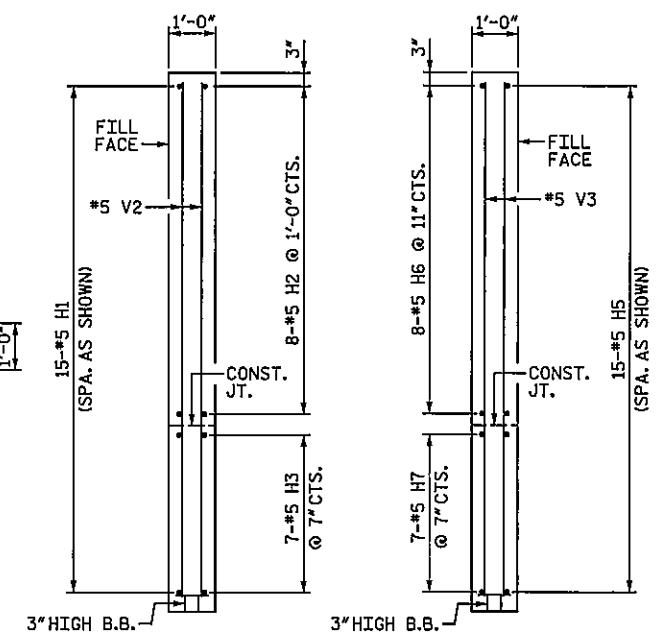
DRAWN BY: C. E. MAYHEW DATE: 5-21-18
CHECKED BY: T. M. GARRISON DATE: 5-21-18



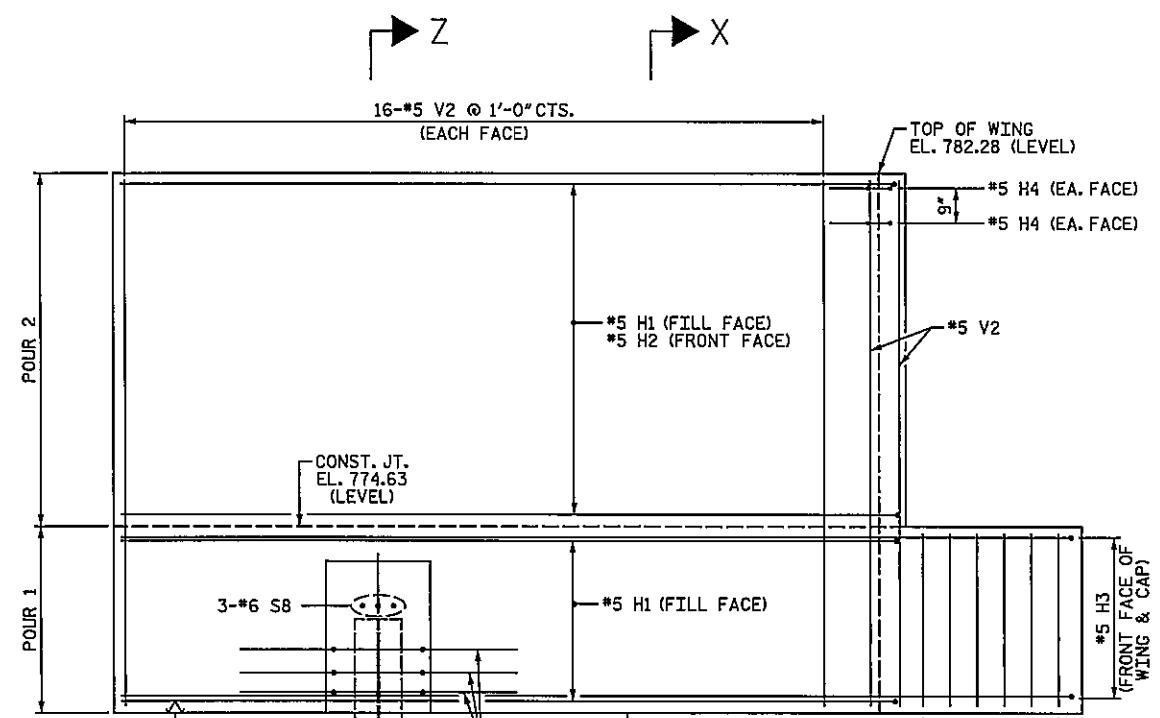
PLAN OF LEFT WING
(H3 & V4 BARS NOT SHOWN FOR CLARITY)



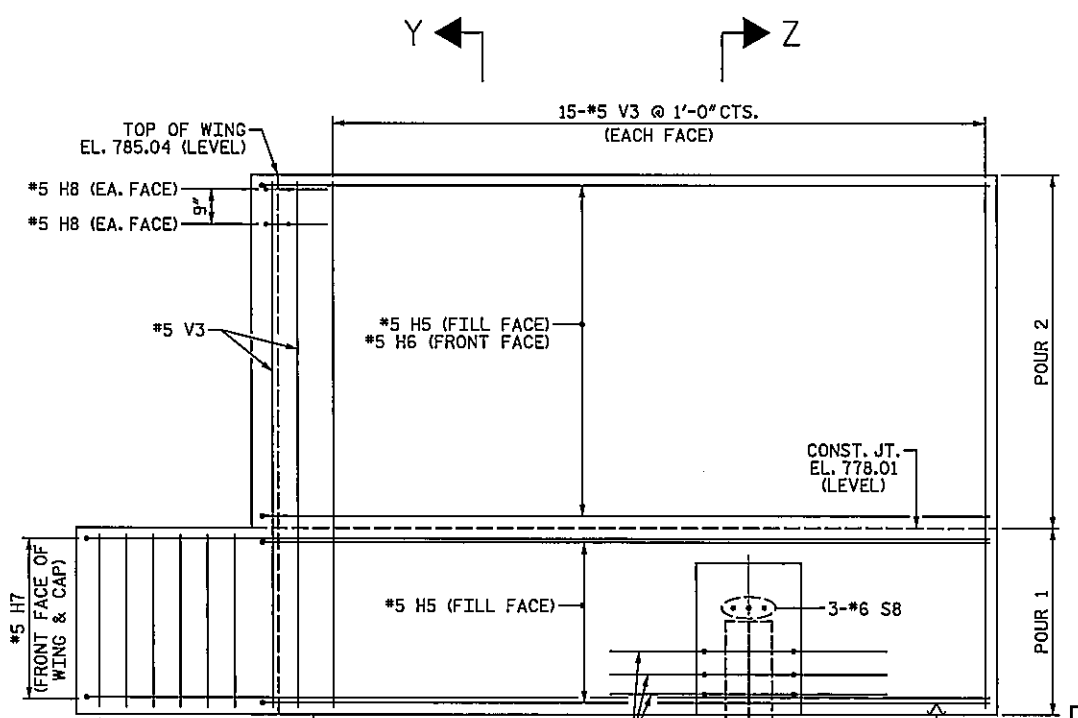
PLAN OF RIGHT WING
(H7 & V4 BARS NOT SHOWN FOR CLARITY)



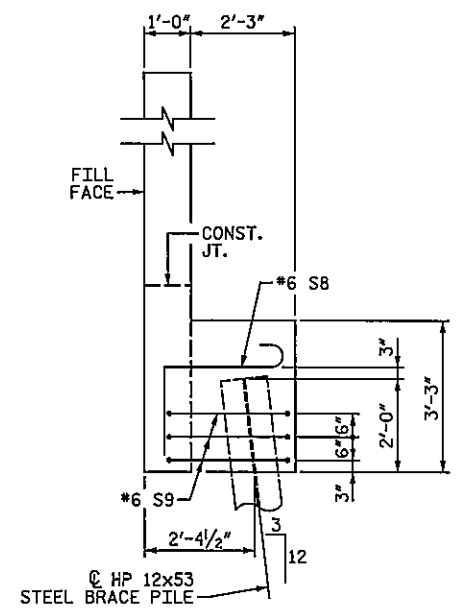
SECTION X-X SECTION Y-Y



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION Z-Z

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-
 SHEET 2 OF 2

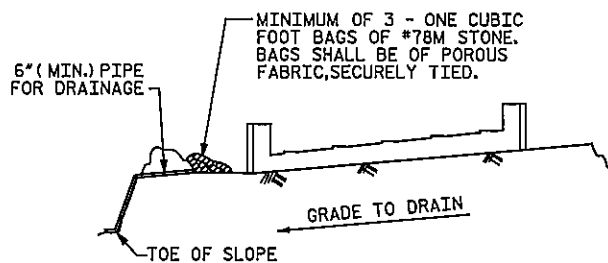
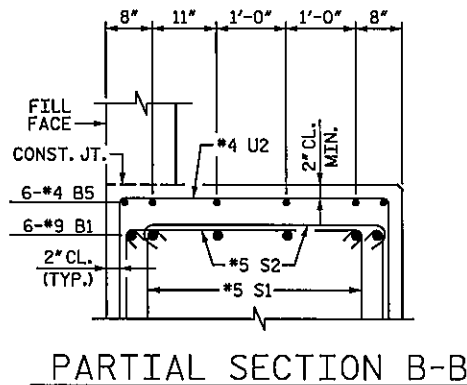
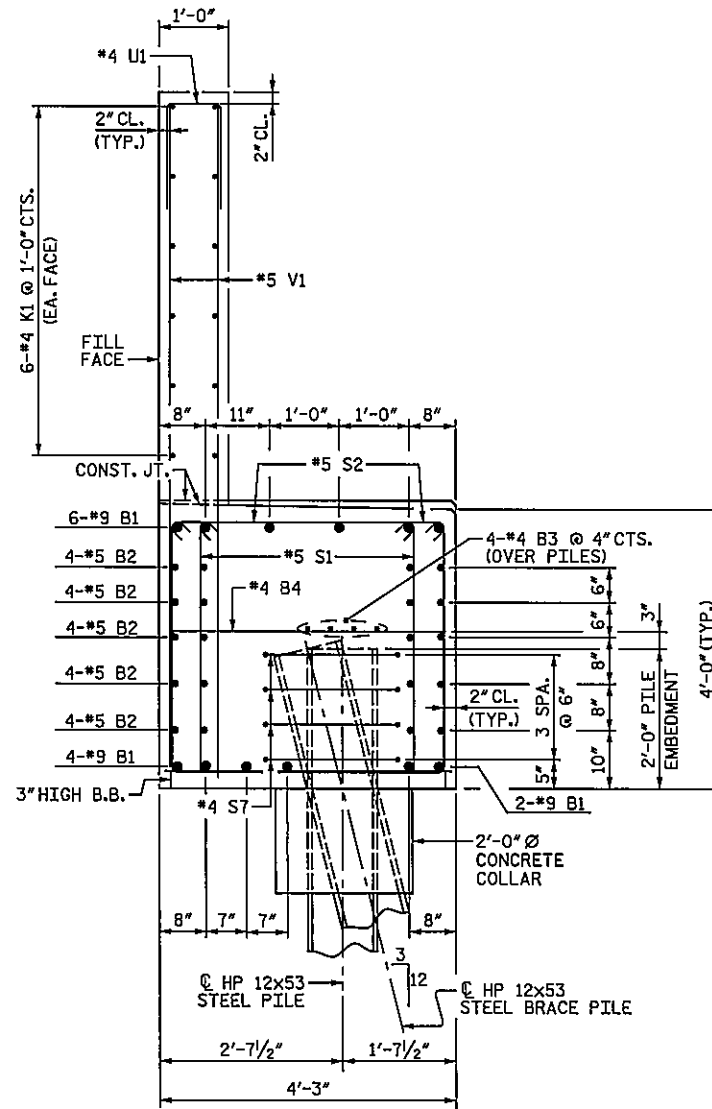
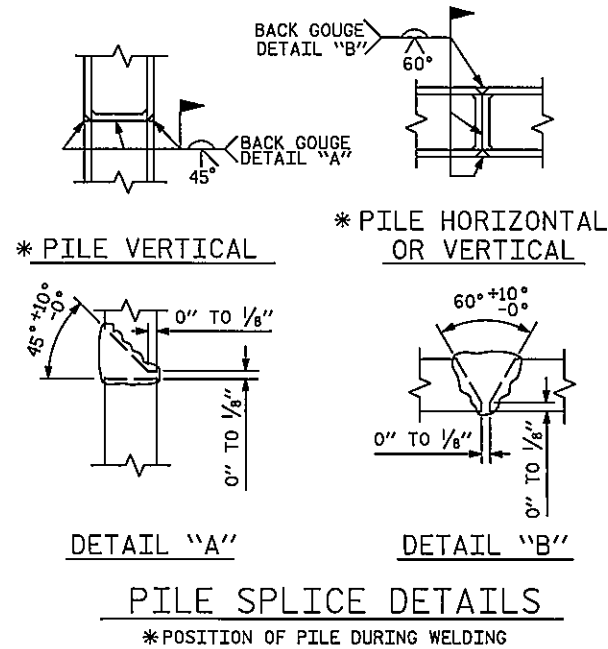


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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18

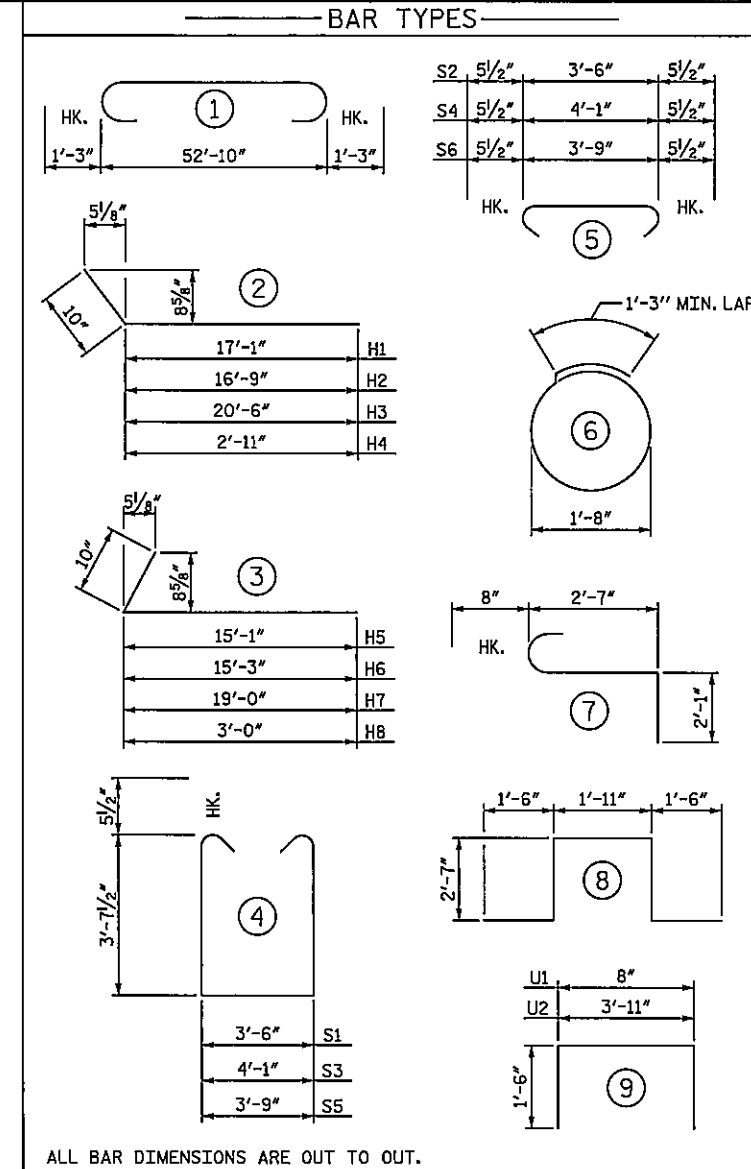
REVISIONS		NO.	BY	DATE	NO.	BY	DATE	SHEET NO.
NO.	DESCRIPTION							
1		3						TOTAL SHEETS
2		4						62



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

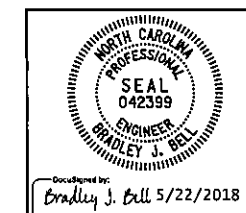
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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



BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	55' - 4"	2,258
B2	20	#5	STR.	52' - 10"	1,102
B3	8	#4	STR.	27' - 9"	148
B4	14	#4	STR.	3' - 11"	37
B5	24	#4	STR.	3' - 0"	48
H1	15	#5	2	17' - 11"	280
H2	8	#5	2	17' - 7"	147
H3	7	#5	2	21' - 4"	156
H4	4	#5	2	3' - 9"	16
H5	15	#5	3	15' - 11"	249
H6	8	#5	3	16' - 1"	134
H7	7	#5	3	19' - 10"	145
H8	4	#5	3	3' - 10"	16
K1	24	#4	STR.	27' - 9"	445
S1	128	#5	4	11' - 8"	1,558
S2	128	#5	5	4' - 5"	590
S3	4	#5	4	12' - 3"	51
S4	4	#5	5	5' - 0"	21
S5	4	#5	4	11' - 11"	50
S6	4	#5	5	4' - 8"	19
S7	36	#4	6	6' - 6"	156
S8	6	#6	7	5' - 4"	48
S9	6	#6	8	10' - 1"	91
U1	46	#4	9	3' - 8"	113
U2	24	#4	9	6' - 11"	111
V1	92	#5	STR.	9' - 3"	888
V2	42	#5	STR.	11' - 3"	493
V3	40	#5	STR.	10' - 8"	445
V4	12	#5	STR.	3' - 8"	46
REINFORCING STEEL				LBS.	9,861
CLASS A CONCRETE					
POUR 1 -					
CAP, COLLARS, LOWER PART OF WINGS, & PILE CAPS IN WINGS					
				C.Y.	41.5
POUR 2 -					
BACKWALL & UPPER PART OF WINGS					
				C.Y.	19.9
TOTAL				C.Y.	61.4
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES					
				EA.	11
HP 12x53 STEEL PILES					
				NO.	11
				LIN. FT.	420

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+43.36 -L-



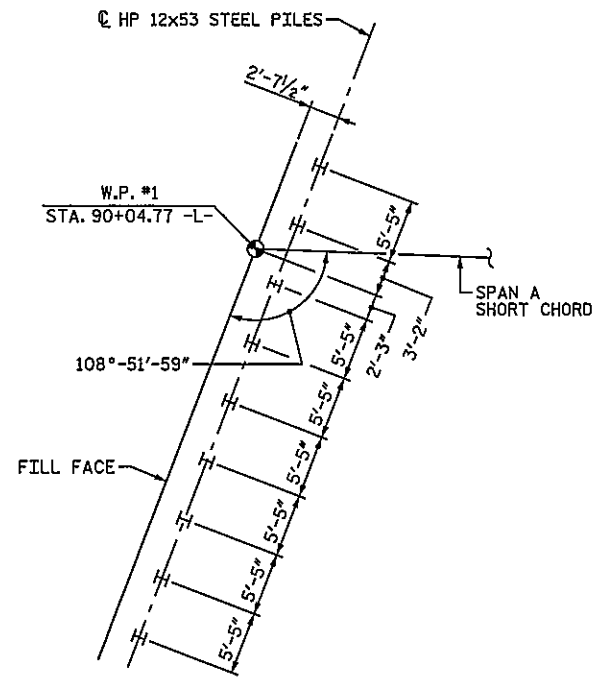
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 DETAILS
 LEFT LANE

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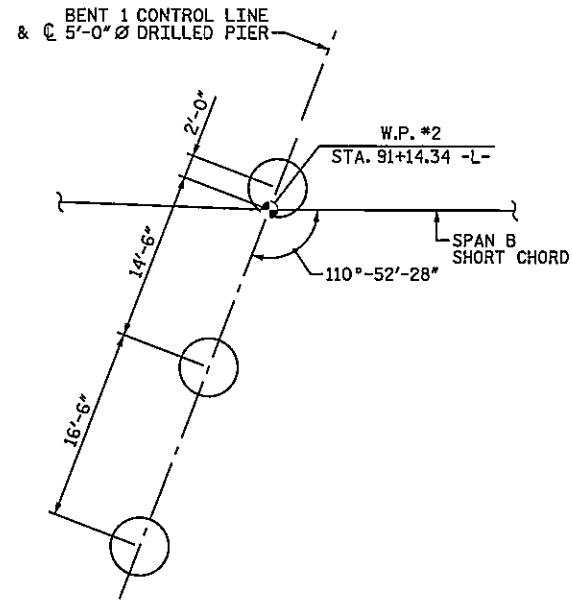
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	SI-57
1			3			TOTAL SHEETS
2			4			62

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18

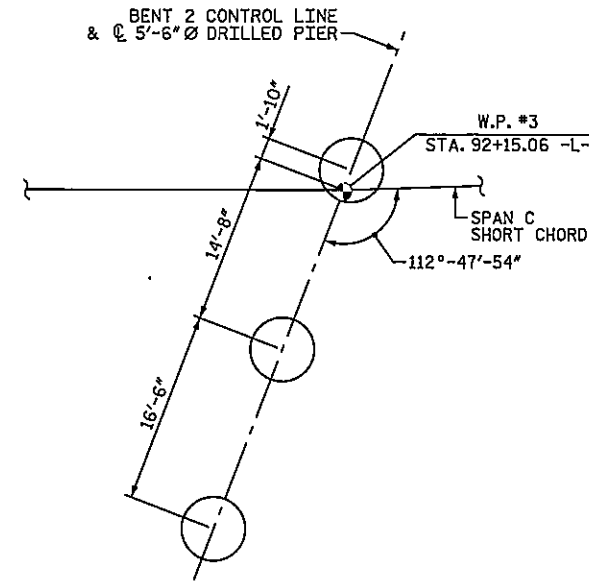


END BENT 1

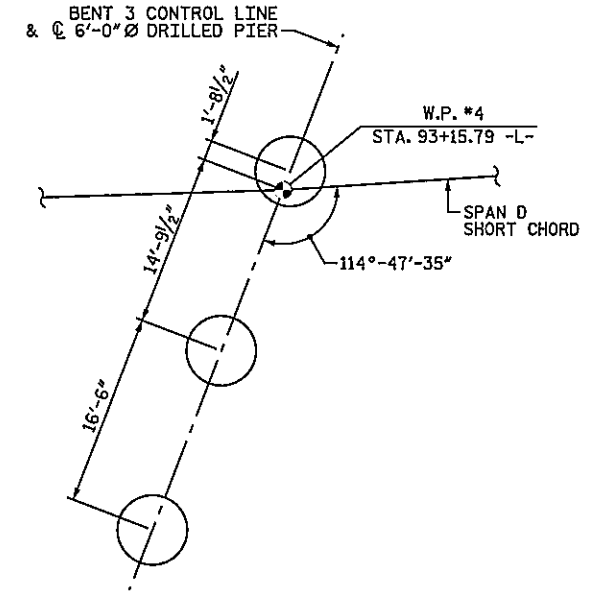
I VERTICAL HP 12x53 STEEL PILE



BENT 1



BENT 2



BENT 3

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.
DIMENSIONS LOCATING DRILLED PIERS ARE SHOWN TO THE DRILLED PIER CENTERLINE.

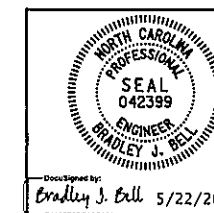
NOTES:

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.
- DRILLED-IN PILES ARE REQUIRED FOR END BENT NO. 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 758 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- DRILL-IN AND INSTALL PILES AT END BENT NO. 1 PRIOR TO CONSTRUCTING MSE WALL.
- CONCRETE IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 675 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF.
- INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 735 FT (LT), 737 FT (CTR), AND 739 FT (RT) WITH THE REQUIRED TIP RESISTANCE.

- DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 630 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 65 TSF.
- INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 729 FT WITH THE REQUIRED TIP RESISTANCE.
- DRILLED PIERS AT BENT NO. 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 580 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 50 TSF.
- INSTALL DRILLED PIERS AT BENT NO. 3 TO A TIP ELEVATION NO HIGHER THAN 717 FT (LT), 724 FT (CTR), AND 731 FT (RT) WITH THE REQUIRED TIP RESISTANCE.
- SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-

SHEET 3 OF 6



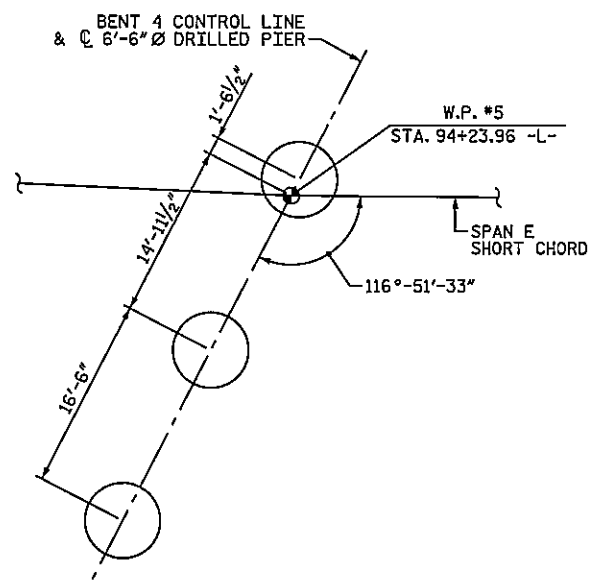
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER NCR/NSRR
 & DEEP RIVER TRIBUTARY 1
 ON SR 4121 BETWEEN
 SR 1332 AND SR 1334
 RIGHT LANE

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

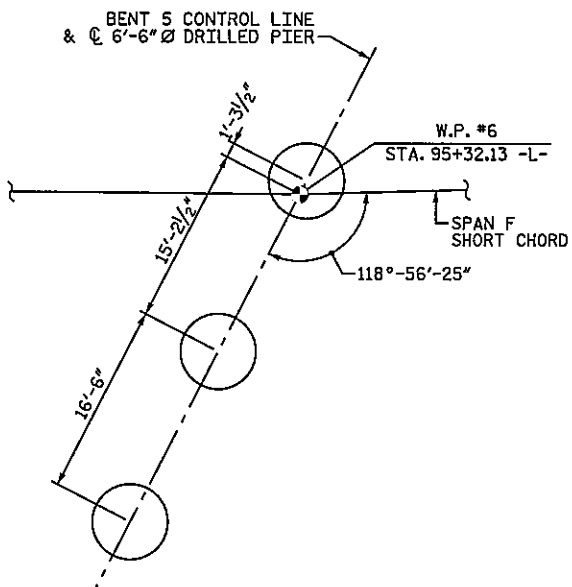
REVISIONS						SHEET NO. S2-3
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 63
2			4			

DRAWN BY : C. E. MAYHEW DATE : 5-21-18
 CHECKED BY : B. J. BELL DATE : 5-21-18

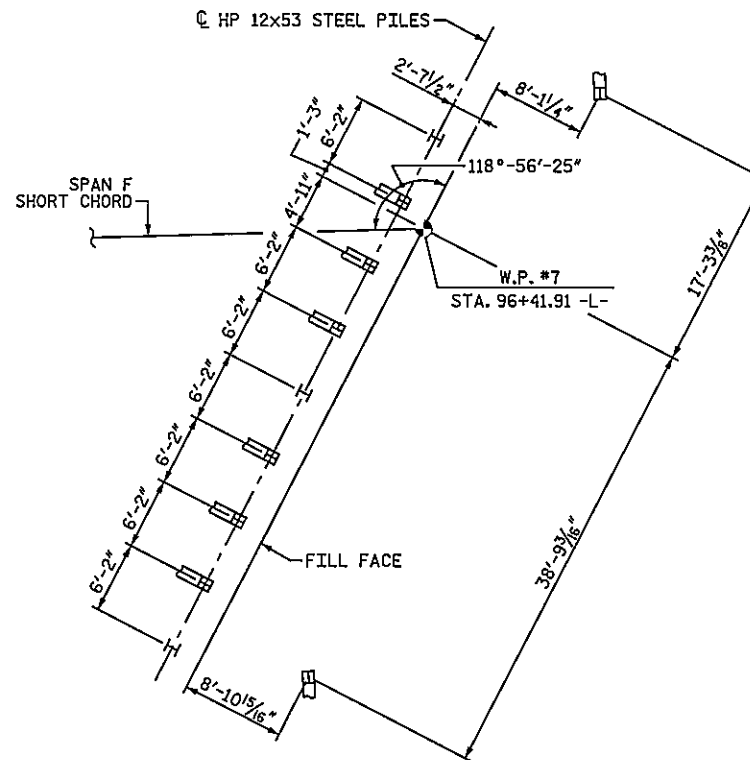
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 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27513
 NC License No. : F-1084



BENT 4



BENT 5



END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.
DIMENSIONS LOCATING DRILLED PIERS ARE SHOWN TO THE DRILLED PIER CENTERLINE.

⊥ VERTICAL HP 12x53 STEEL PILE
 ▭ 3:12 BATTERED HP 12x53 STEEL PILE

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO. 4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 640 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 50 TSF.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 4. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 725 FT (LT), 726 FT (CTR), AND 728 FT (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

INSTALL PERMANENT STEEL CASINGS AT BENT NO. 4 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 726 FT (LT) AND 730 FT (RT).

INSTALL DRILLED PIERS AT BENT NO. 4 TO A TIP ELEVATION NO HIGHER THAN 712 FT WITH THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO. 5 ARE DESIGNED FOR A FACTORED RESISTANCE OF 640 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 50 TSF.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 5. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 724 FT (LT), 726 FT (CTR), AND 728 FT (RT) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

INSTALL PERMANENT STEEL CASINGS AT BENT NO. 5 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 725 FT (LT) AND 729 FT (RT).

INSTALL DRILLED PIERS AT BENT NO. 5 TO A TIP ELEVATION NO HIGHER THAN 711 FT WITH THE REQUIRED TIP RESISTANCE.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 4 IS ELEVATION 725 FT (LT), 726.5 FT (CTR), AND 728 FT (RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

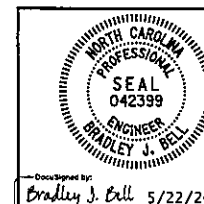
THE SCOUR CRITICAL ELEVATION FOR BENT NO. 5 IS ELEVATION 724 FT (LT), 726 FT (CTR), AND 728 FT (RT). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. U-2412A

GUILFORD COUNTY

STATION: 93+23.34 -L-

SHEET 4 OF 6



DocuSigned by:
Bradley J. Bell 5/22/2018

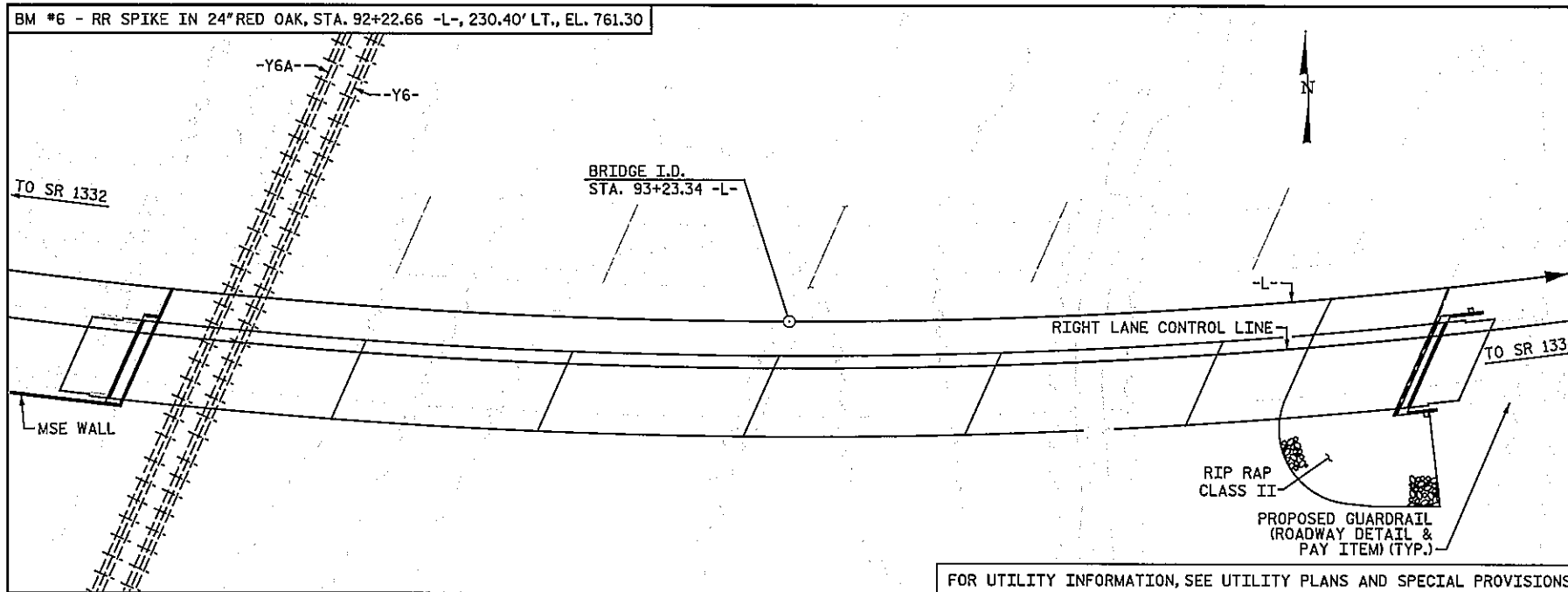
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER NCRR/NSRR
& DEEP RIVER TRIBUTARY 1
ON SR 4121 BETWEEN
SR 1332 AND SR 1334
RIGHT LANE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL <small>Michael Baker Engineering 8002 Regency Parkway, Suite 600 Cary, North Carolina 27518 NC License No.: F-1084</small>	REVISIONS						SHEET NO. S2-4 TOTAL SHEETS 63
	NO.	BY:	DATE:	NO.	BY:	DATE:	
	1			3			
	2			4			

DRAWN BY : C. E. MAYHEW DATE : 5-21-18
 CHECKED BY : B. J. BELL DATE : 5-21-18



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS
- THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 36"-9" EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

TOTAL BILL OF MATERIAL

LOCATION	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	5'-0"DIA. DRILLED PIERS IN SOIL	5'-0"DIA. DRILLED PIERS NOT IN SOIL	5'-6"DIA. DRILLED PIERS IN SOIL	5'-6"DIA. DRILLED PIERS NOT IN SOIL	6'-0"DIA. DRILLED PIERS IN SOIL	6'-0"DIA. DRILLED PIERS NOT IN SOIL	6'-6"DIA. DRILLED PIERS IN SOIL	6'-6"DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 6'-6"DIA. DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB
	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	SQ. FT.
SUPERSTRUCTURE															25,385
END BENT 1	53	38												LUMP SUM	
BENT 1			68.50	38.00								1	1		
BENT 2					61.50	36.00						1	1		
BENT 3							38.75	39.00				1	1		
BENT 4									22.25	45.00	27.26	1	1		
BENT 5									14.50	50.00	22.50	1	1		
END BENT 2															
TOTAL	53	38	68.50	38.00	61.50	36.00	38.75	39.00	36.75	95.00	49.76	5	5	LUMP SUM	25,385

TOTAL BILL OF MATERIAL (CONT'D)

LOCATION	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)		
	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	LIN. FT.	SQ. YDS.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	EA.
SUPERSTRUCTURE	22,916					24	2,525.88											
END BENT 1		42.9		7,745				9	425	13								
BENT 1		85.6		21,448	5,750													
BENT 2		115.1		26,155	6,946													
BENT 3		154.1		29,231	7,895													
BENT 4		211.8		36,089	9,811													
BENT 5		205.7		35,177	9,352													
END BENT 2		61.4		9,883				11	11	475		890	985					
TOTAL	22,916	876.6	LUMP SUM	165,728	39,754	24	2,525.88	11	20	900	1,318.06	13	890	985	LUMP SUM	LUMP SUM	LUMP SUM	2

HYDRAULIC DATA

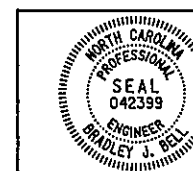
DESIGN DISCHARGE	= 2,000 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 739.6
DRAINAGE AREA	= 2.5 SQ. MI.
BASE DISCHARGE (Q100)	= 2,200 C.F.S.
BASE HIGH WATER ELEVATION	= 739.9

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= 3,500+ C.F.S.
FREQUENCY OF OVERTOPPING	= 500+ YEARS
OVERTOPPING ELEVATION	= 763+

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-

SHEET 6 OF 6



Drawn by: Bradley J. Bell 5/24/2018

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

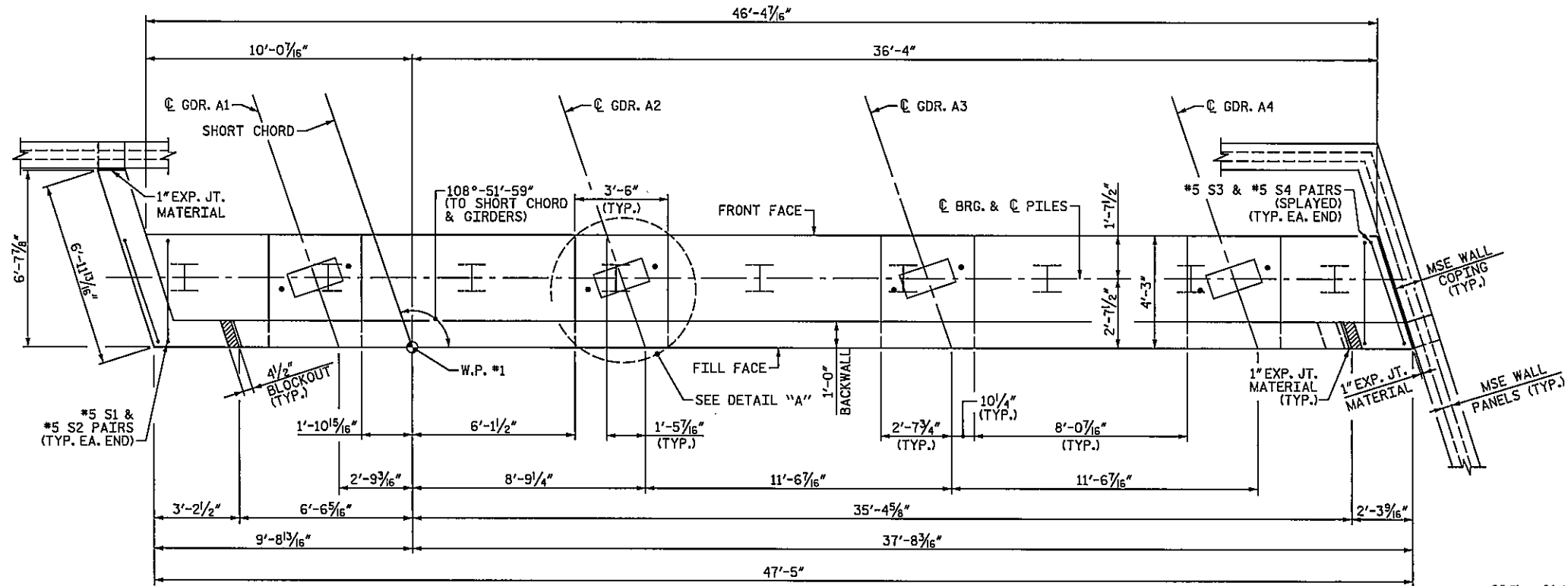
GENERAL DRAWING
 FOR BRIDGE OVER NCR/NSRR
 & DEEP RIVER TRIBUTARY 1
 ON SR 4121 BETWEEN
 SR 1332 AND SR 1334
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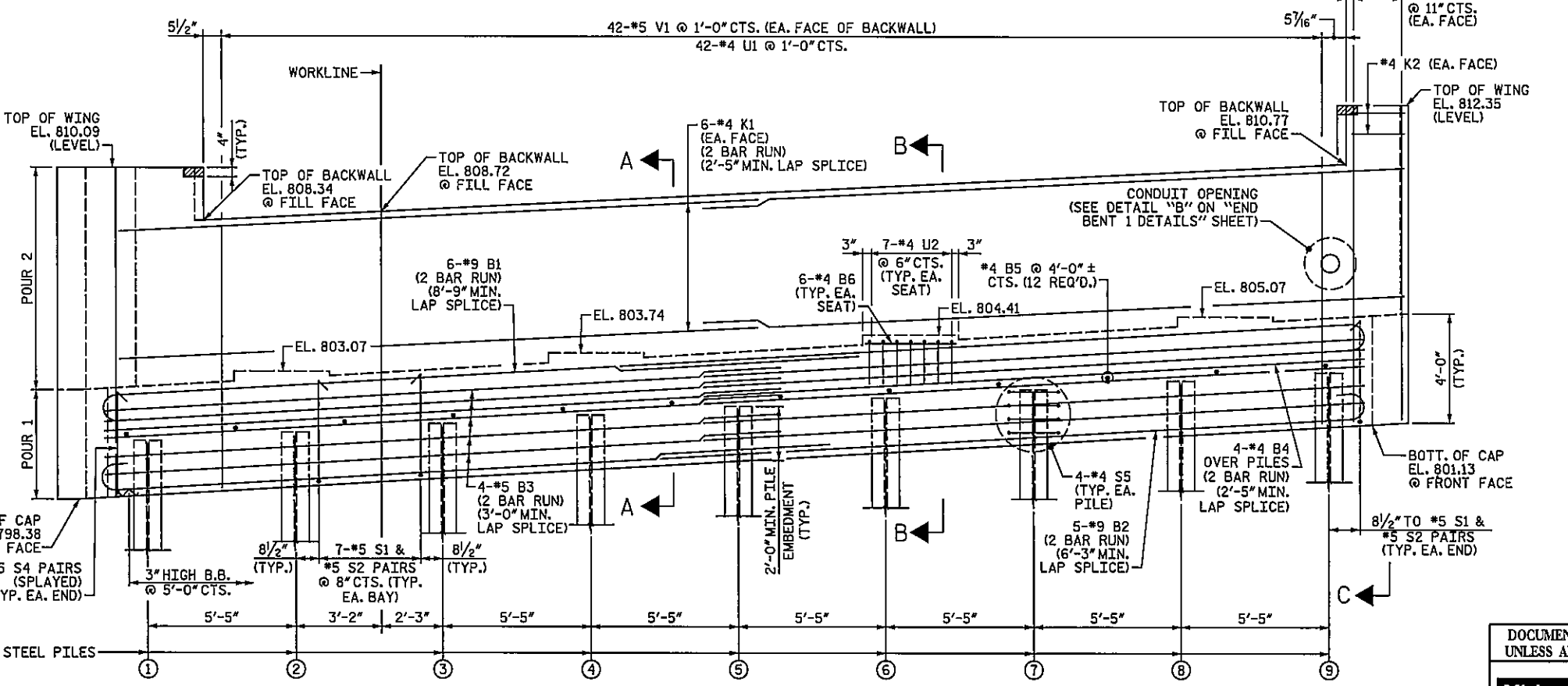
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: M. D. MAYHEW DATE: 5-24-18
 CHECKED BY: B. J. BELL DATE: 5-24-18



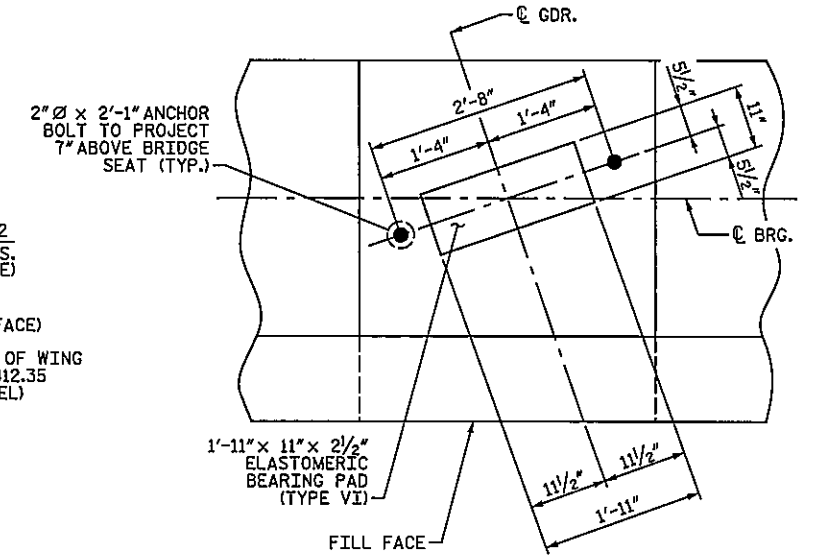
PLAN

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	800.55
②	800.87
③	801.18
④	801.50
⑤	801.81
⑥	802.13
⑦	802.44
⑧	802.75
⑨	803.07



ELEVATION

NOTES:
 FOR "SECTION A-A", "SECTION B-B" AND "SECTION C-C", SEE "END BENT 1 DETAILS" SHEET.
 STIRRUPS & U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
 THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT A RATE OF 2%.
 THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 V1 & K1 BARS IN BACKWALL MAY BE SHIFTED AS NECESSARY TO CLEAR CONDUIT OPENING.
 FOR MSE WALLS, SEE SPECIAL PROVISIONS.
 FOR LOCATION OF MSE WALL, SEE MSE WALL PLANS.
 LENGTH OF CAP AND EACH WING SHALL BE FIELD ADJUSTED AS REQUIRED TO PROVIDE 1" EXPANSION JOINT MATERIAL AS SHOWN BETWEEN THESE COMPONENTS AND THE MSE WALL COPING.



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+23.34 -L-

SHEET 1 OF 2



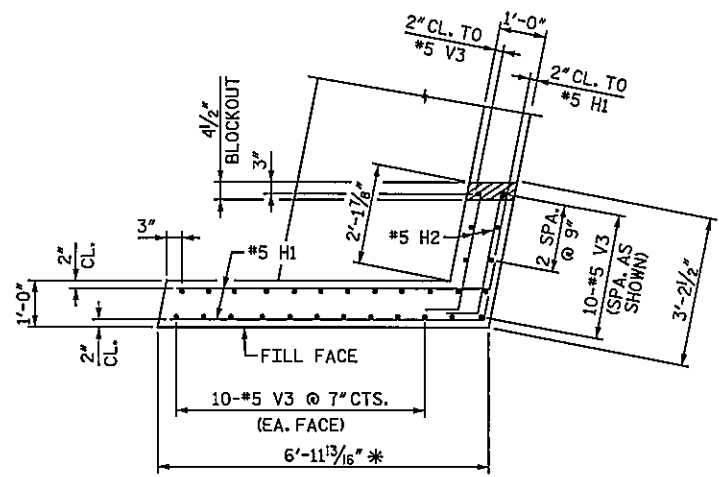
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

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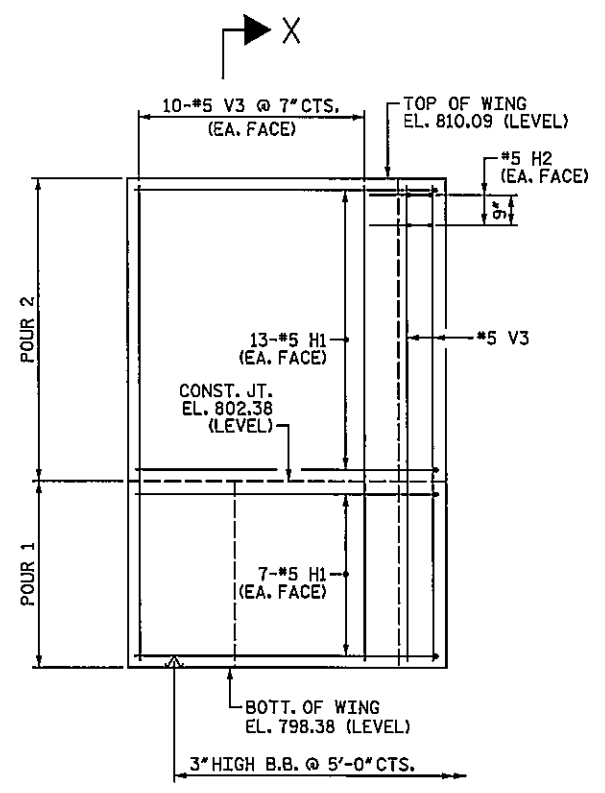
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REVISIONS						SHEET NO. S2-42
NO.	BY	DATE	NO.	BY	DATE	
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2			4			

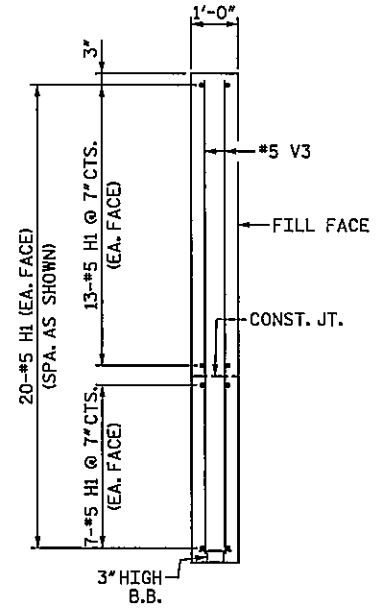
DRAWN BY: N. B. SPEAKS DATE: 5-21-18
 CHECKED BY: I. M. GARRISON DATE: 5-21-18



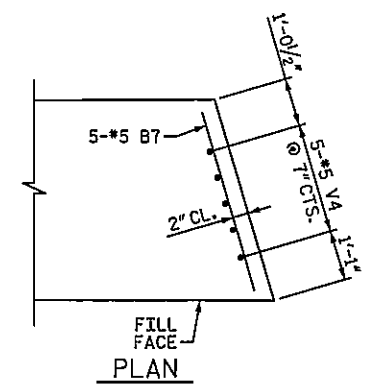
PLAN OF LEFT WING
 *SEE NOTE REGARDING LENGTH OF WING ON "END BENT 1" SHEET 1 OF 2.



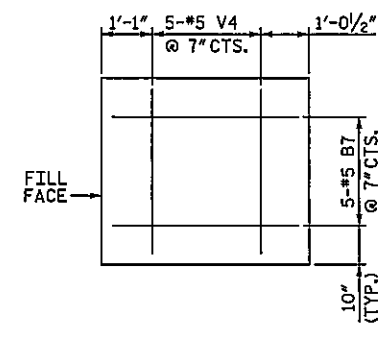
ELEVATION OF LEFT WING



SECTION X-X



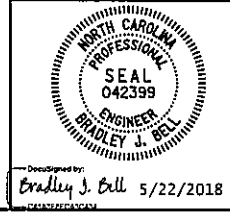
PLAN



END VIEW

RIGHT END OF CAP

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-
 SHEET 2 OF 2



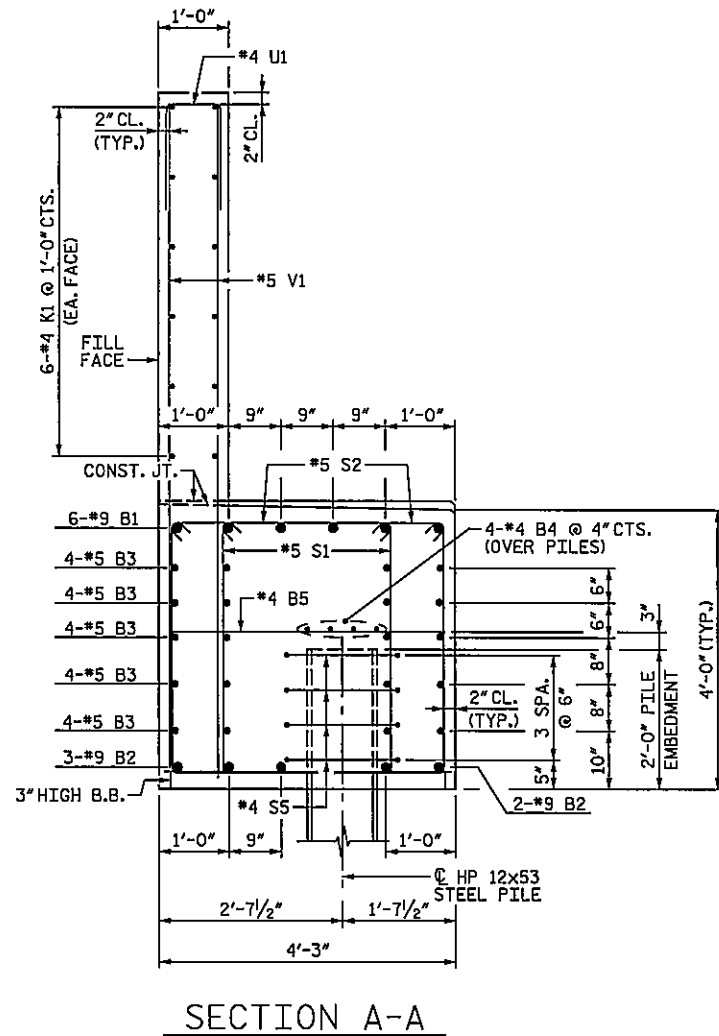
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 RIGHT LANE

DRAWN BY : N. B. SPEAKS DATE : 5-21-18
 CHECKED BY : T. M. GARRISON DATE : 5-21-18

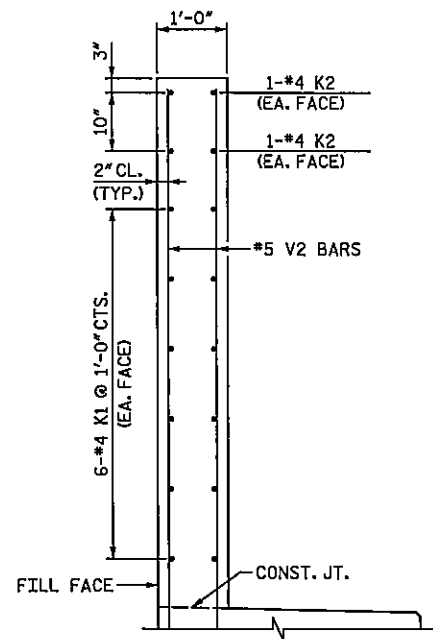
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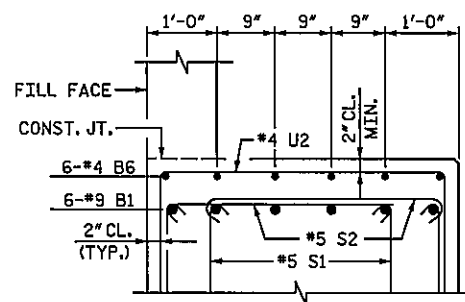
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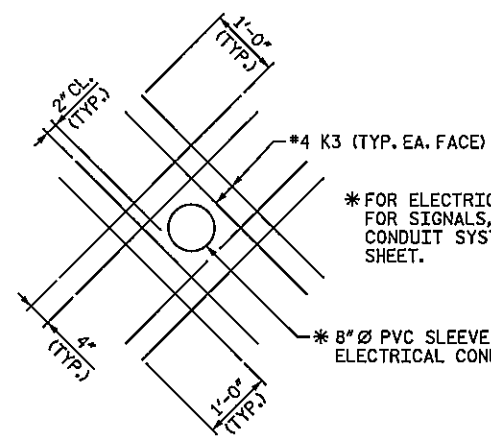
SECTION A-A



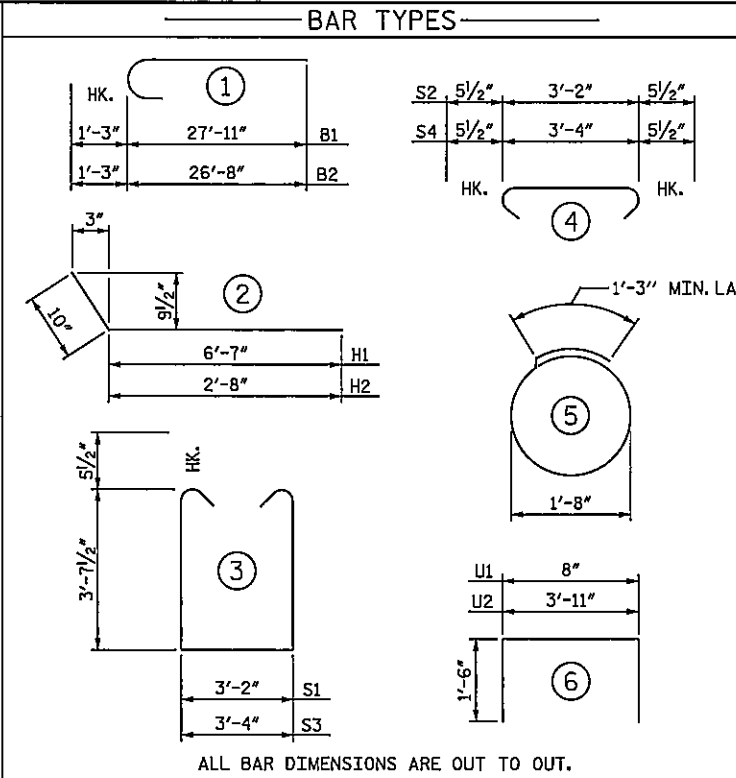
PARTIAL SECTION C-C



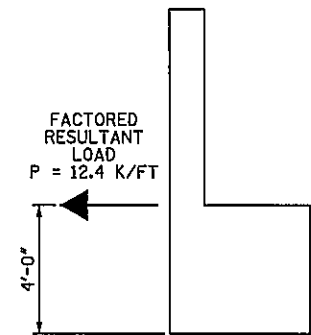
PARTIAL SECTION B-B



DETAIL "B"
 THE PVC SLEEVE THROUGH THE BACKWALL SHALL BE LOCATED BY THE ENGINEER. THE K3 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR TOP OF CAP.



ALL BAR DIMENSIONS ARE OUT TO OUT.



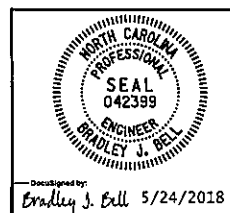
MSE REINFORCING STRAP LOAD DETAIL

MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9	1	29' - 2"	1,190
B2	10	#9	1	27' - 11"	949
B3	40	#5	STR.	25' - 1"	1,046
B4	8	#4	STR.	24' - 9"	132
B5	12	#4	STR.	3' - 11"	31
B6	24	#4	STR.	3' - 2"	51
B7	5	#5	STR.	4' - 1"	21
H1	40	#5	2	7' - 5"	309
H2	4	#5	2	3' - 6"	15
K1	24	#4	STR.	24' - 9"	397
K2	4	#4	STR.	1' - 11"	5
K3	8	#4	STR.	3' - 8"	20
S1	116	#5	3	11' - 4"	1,371
S2	116	#5	4	4' - 1"	494
S3	4	#5	3	11' - 6"	48
S4	4	#5	4	4' - 3"	18
S5	36	#4	5	6' - 6"	156
U1	42	#4	6	3' - 8"	103
U2	28	#4	6	6' - 11"	129
V1	84	#5	STR.	9' - 4"	818
V2	6	#5	STR.	10' - 11"	68
V3	30	#5	STR.	11' - 4"	355
V4	5	#5	STR.	3' - 8"	19
REINFORCING STEEL				LBS. 7,745	
CLASS A CONCRETE					
POUR 1 - CAP & LOWER PART OF WINGS				C.Y.	30.8
POUR 2 - BACKWALL & UPPER PART OF WINGS				C.Y.	12.1
TOTAL				C.Y.	42.9
PILE EXCAVATION IN SOIL				LIN. FT.	53
PILE EXCAVATION NOT IN SOIL				LIN. FT.	38
HP 12x53 STEEL PILES NO. 9				LIN. FT.	425

NOTES:
 FOR PILE SPLICE DETAILS, SEE "END BENT 2 DETAILS" SHEET.

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-



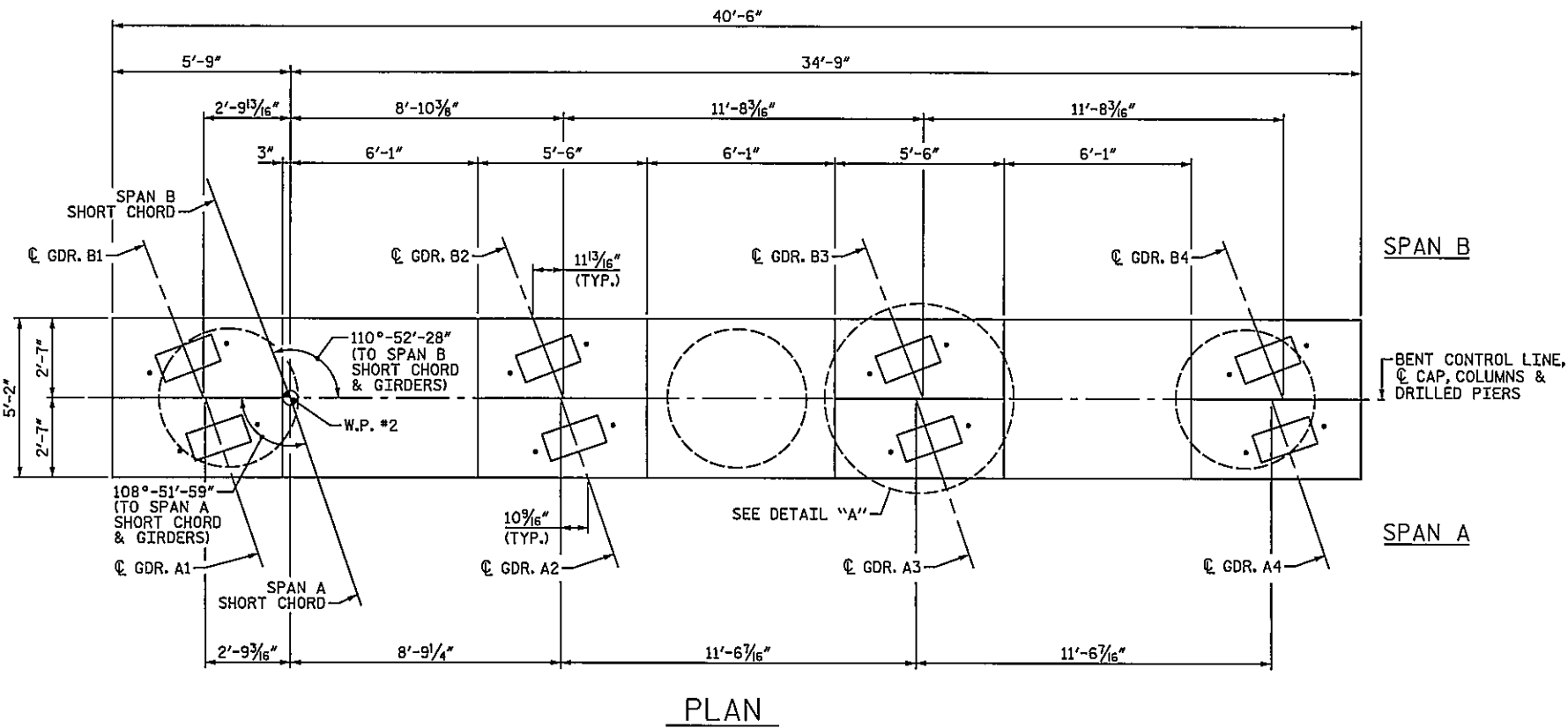
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 RALEIGH
 SUBSTRUCTURE
 END BENT 1 DETAILS

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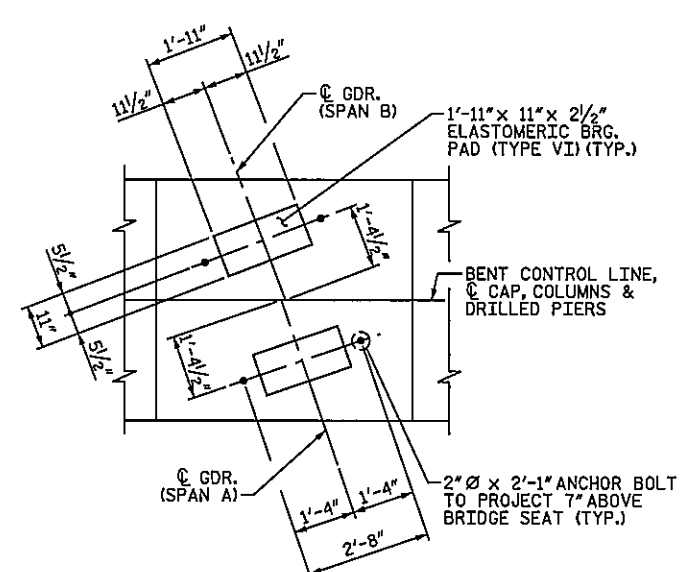
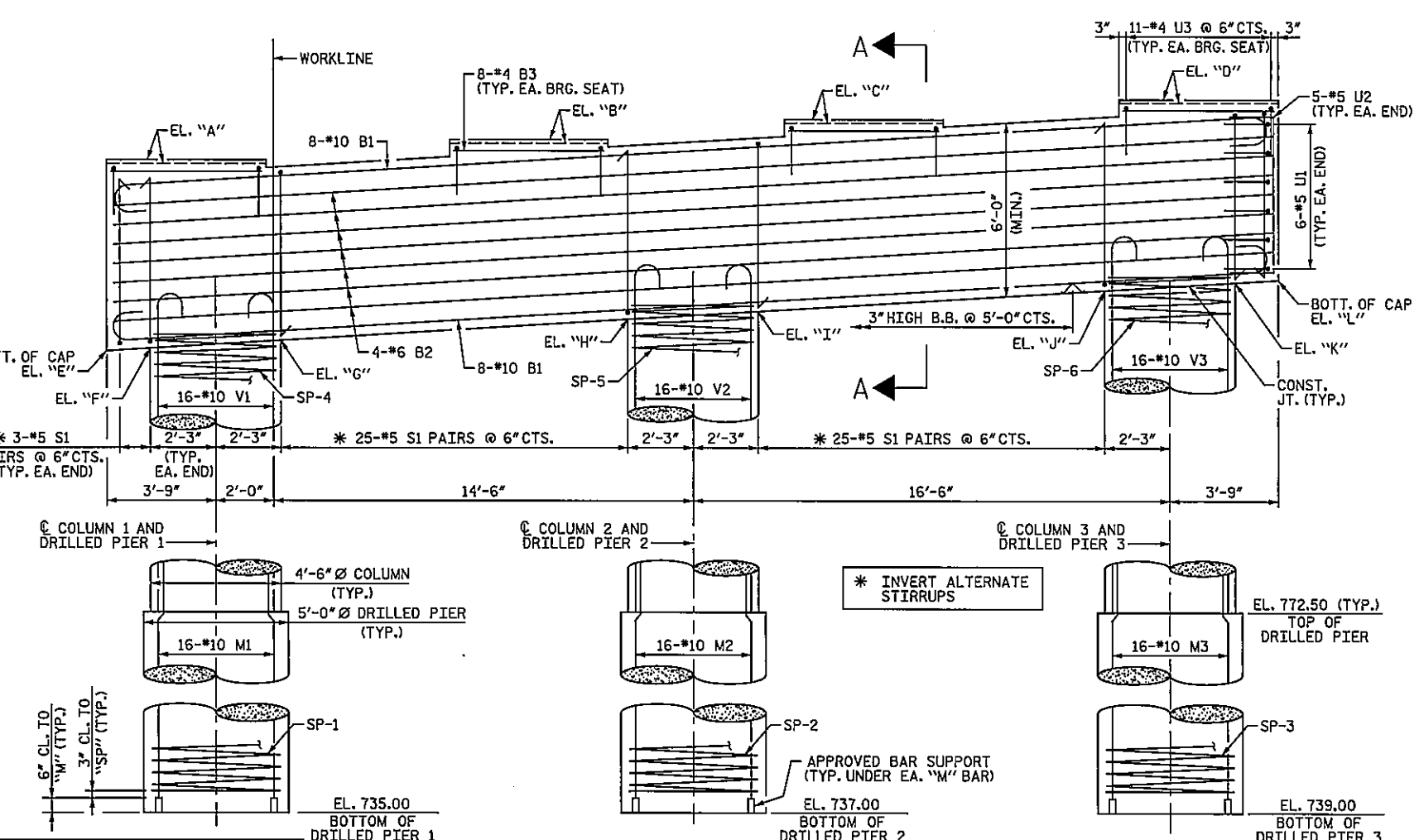
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

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 CHECKED BY: T. M. GARRISON DATE: 5-24-18



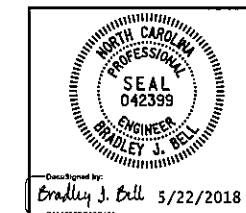
NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR SECTION A-A, SEE "BENT 1 DETAILS" SHEET.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.



LOCATION	ELEVATION SPAN A	ELEVATION SPAN B
A	799.10	798.99
B	799.80	799.69
C	800.49	800.40
D	801.18	801.10

LOCATION	ELEVATION
E	792.52
F	792.61
G	792.88
H	793.61
I	793.88
J	794.61
K	794.88
L	794.97

DETAIL "A"
 (TYP. EA. BRIDGE SEAT)
 PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-



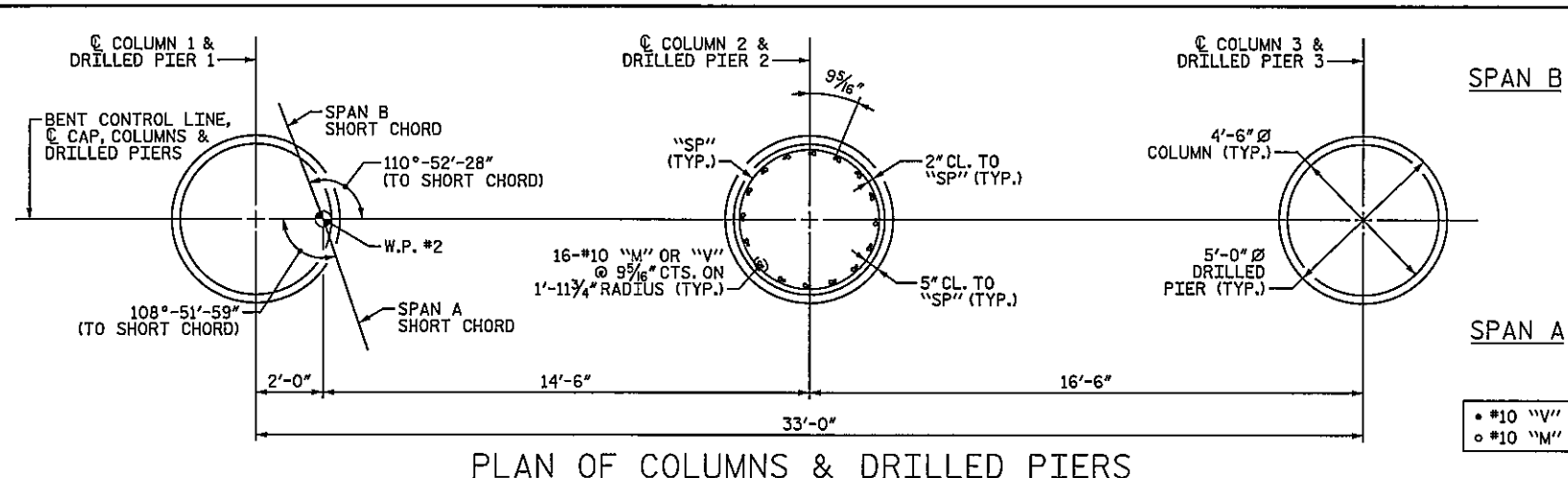
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT 1
RIGHT LANE

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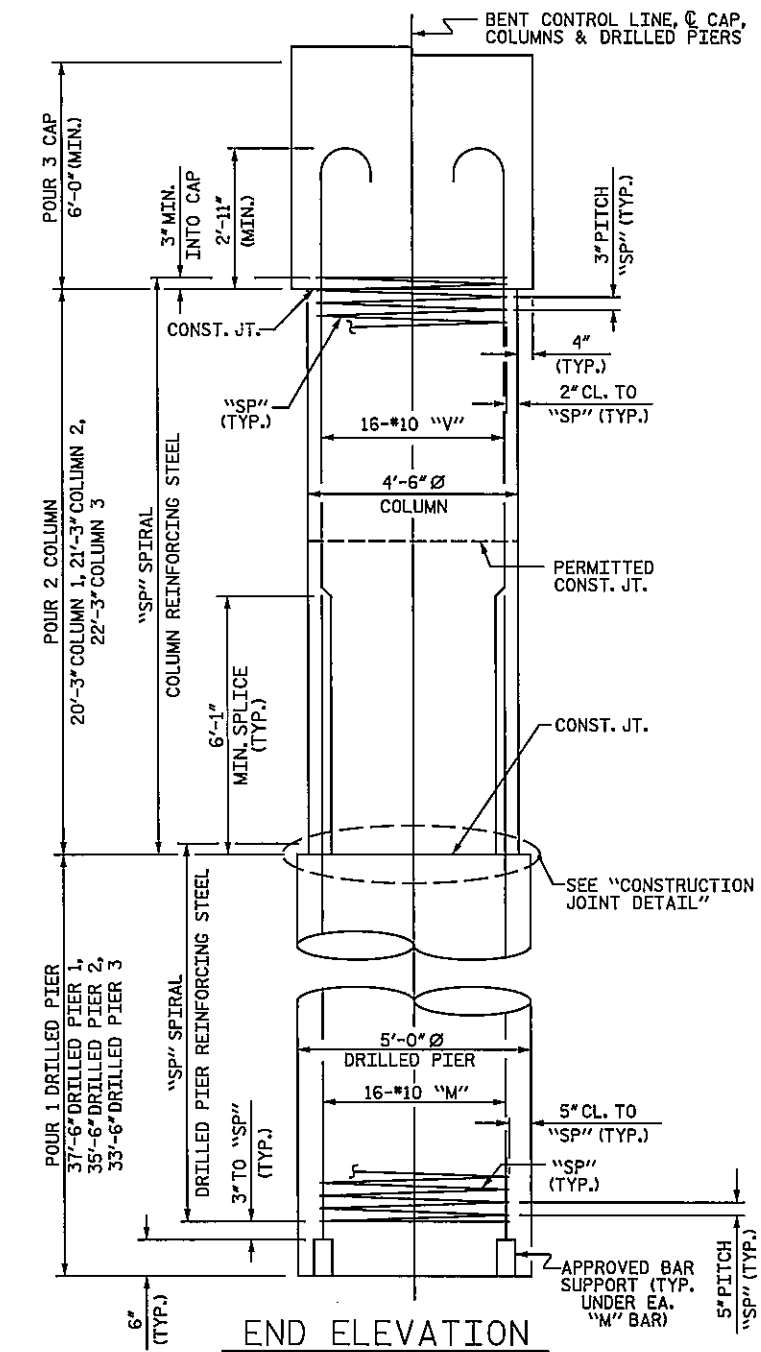
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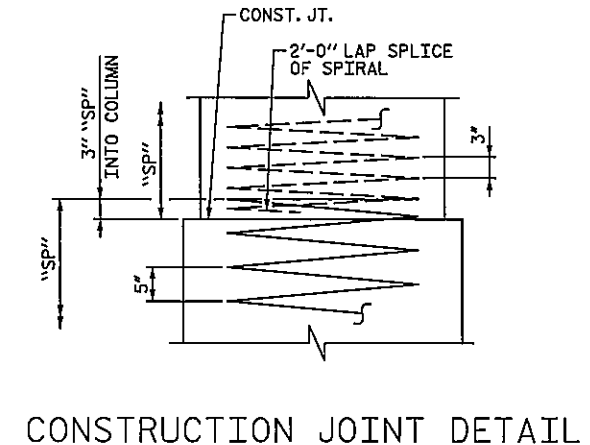
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 CHECKED BY: I. M. GARRISON DATE: 5-21-18



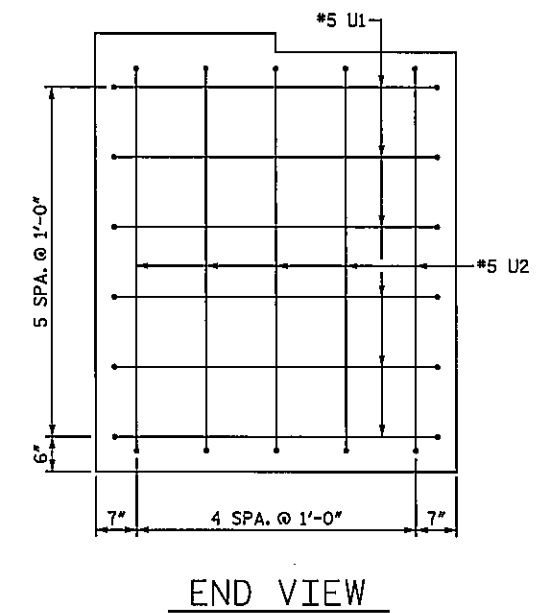
PLAN OF COLUMNS & DRILLED PIERS



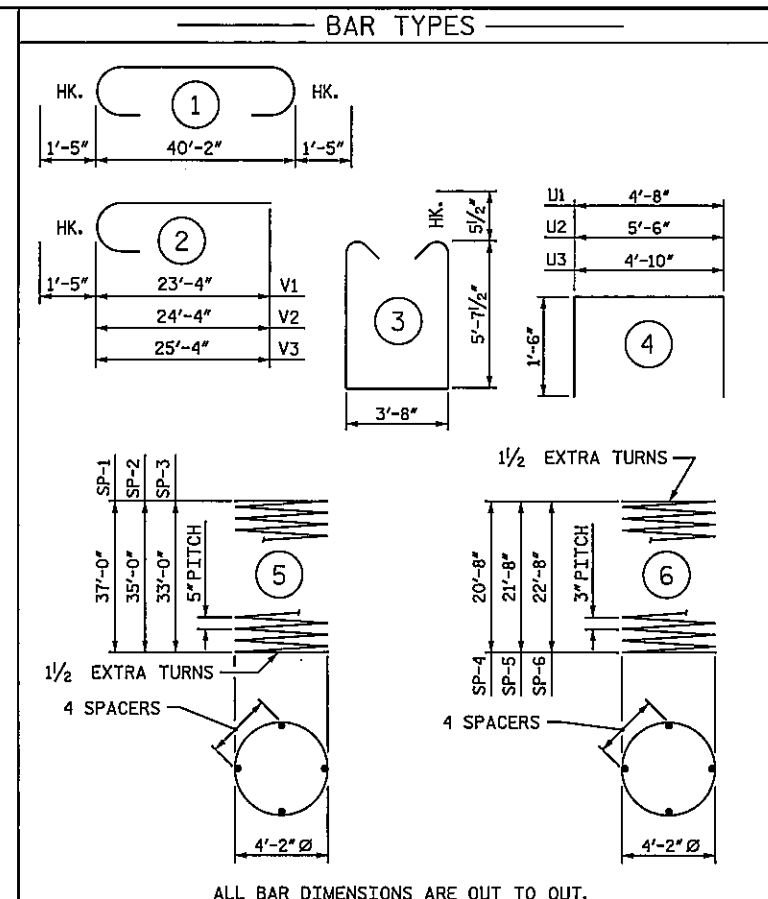
END ELEVATION



CONSTRUCTION JOINT DETAIL



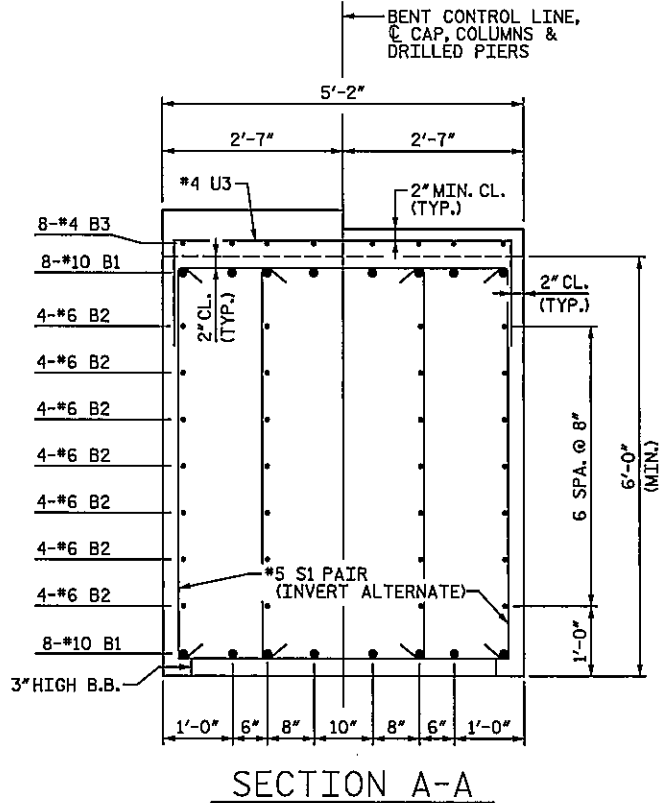
END VIEW



ALL BAR DIMENSIONS ARE OUT TO OUT.

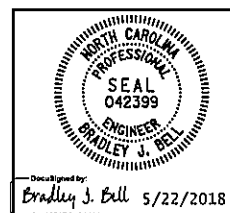
* THE SP-1 THRU SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-4 THRU SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL				
BENT 1				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16 #10		43' - 0"	2,960
B2	28 #6	STR.	40' - 2"	1,689
B3	32 #4	STR.	5' - 2"	110
M1	16 #10	STR.	46' - 1"	3,173
M2	16 #10	STR.	44' - 1"	3,035
M3	16 #10	STR.	42' - 1"	2,897
S1	112 #5	3	15' - 10"	1,850
U1	12 #5	4	7' - 8"	96
U2	10 #5	4	8' - 6"	89
U3	44 #4	4	7' - 10"	230
V1	16 #10	2	24' - 9"	1,704
V2	16 #10	2	25' - 9"	1,773
V3	16 #10	2	26' - 9"	1,842
REINFORCING STEEL			LBS. 21,448	
SP-1	1 *	5	1167' - 10"	1,218
SP-2	1 *	5	1105' - 9"	1,153
SP-3	1 *	5	1043' - 8"	1,089
SP-4	1 ***	6	1090' - 11"	729
SP-5	1 ***	6	1142' - 9"	763
SP-6	1 ***	6	1194' - 7"	798
SPIRAL COLUMN REINFORCING STEEL			LBS. 5,750	
CLASS A CONCRETE				
POUR 2 - COLUMNS			C.Y.	37.6
POUR 3 - CAP			C.Y.	48.0
TOTAL CLASS A CONCRETE			C.Y.	85.6
DRILLED PIER CONCRETE				
POUR 1 - DRILLED PIERS			C.Y.	77.5
5'-0" DIA. DRILLED PIERS IN SOIL			LN. FT.	68.50
5'-0" DIA. DRILLED PIERS NOT IN SOIL			LN. FT.	38.00
SID INSPECTIONS			EA.	1
CSL TESTING			EA.	1
CSL TUBES			LN. FT.	555.00



SECTION A-A

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+23.34 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1 DETAILS

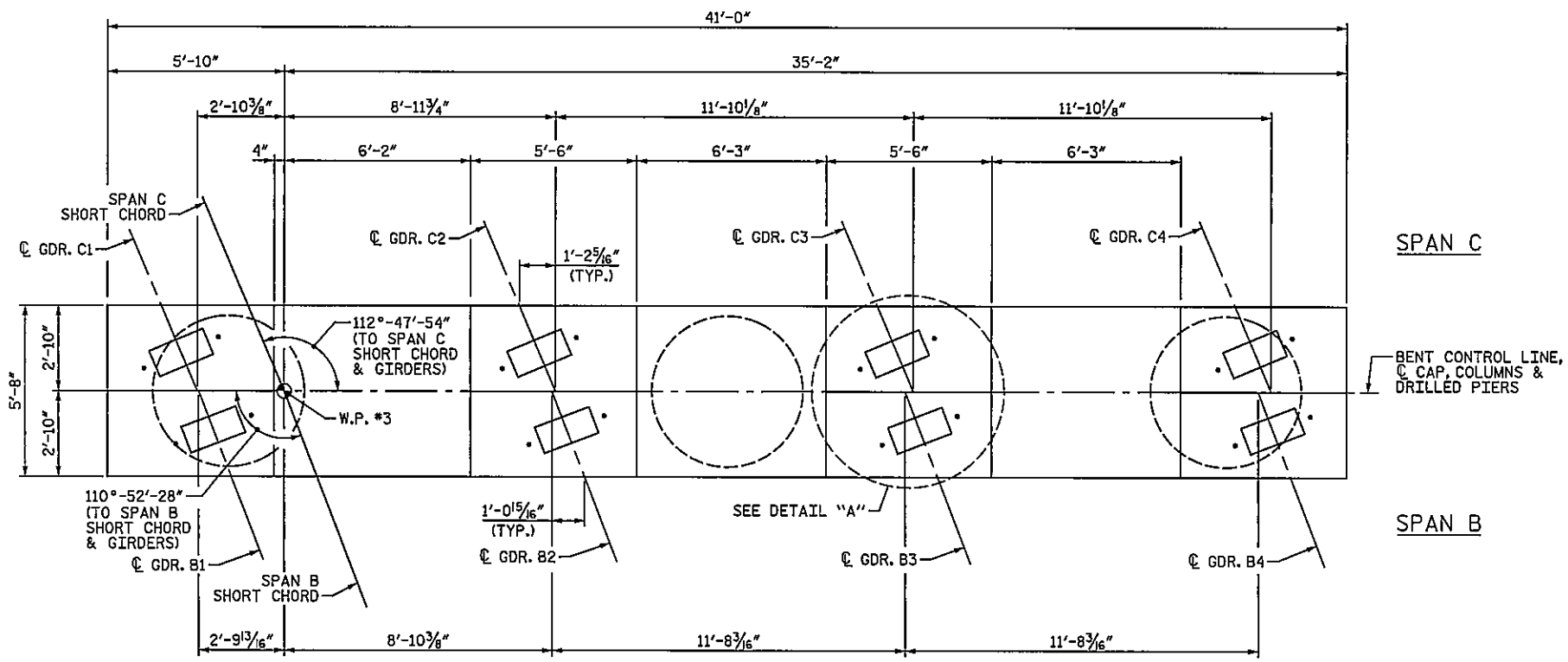
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RIGHT LANE

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18

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

REVISIONS						SHEET NO. S2-46
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 63
2			4			



NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

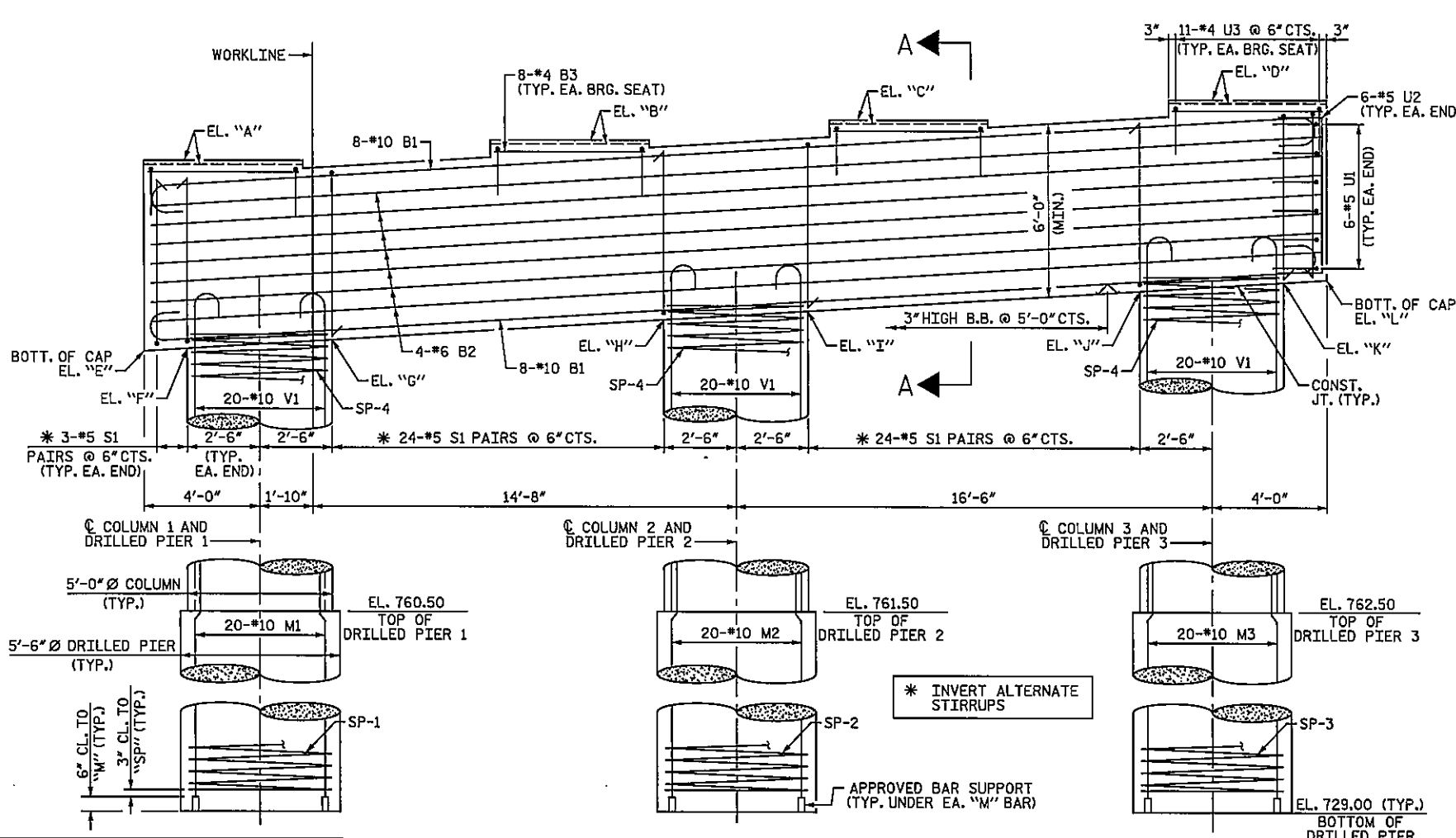
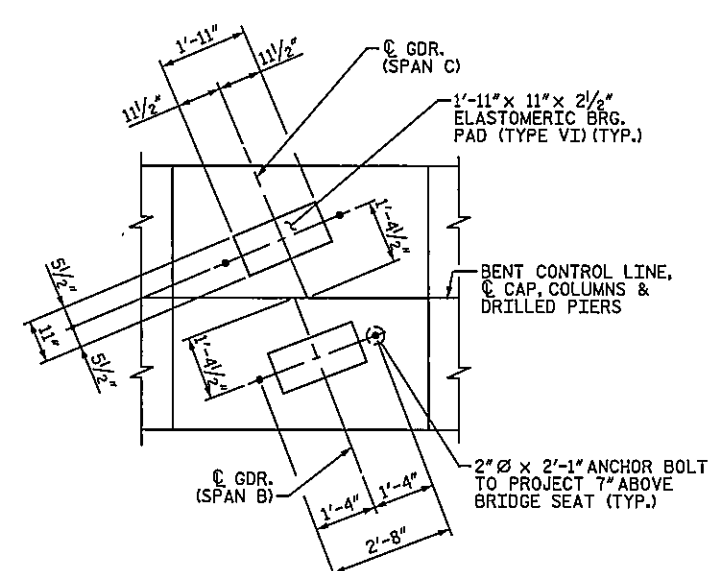
FOR SECTION A-A, SEE "BENT 2 DETAILS" SHEET.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

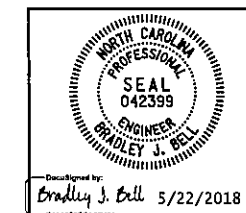
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.



LOCATION	ELEVATION SPAN B	ELEVATION SPAN C
A	795.15	795.04
B	795.86	795.76
C	796.57	796.48
D	797.28	797.20

LOCATION	ELEVATION
E	788.56
F	788.66
G	788.96
H	789.67
I	789.97
J	790.68
K	790.98
L	791.07

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
BENT 2
RIGHT LANE

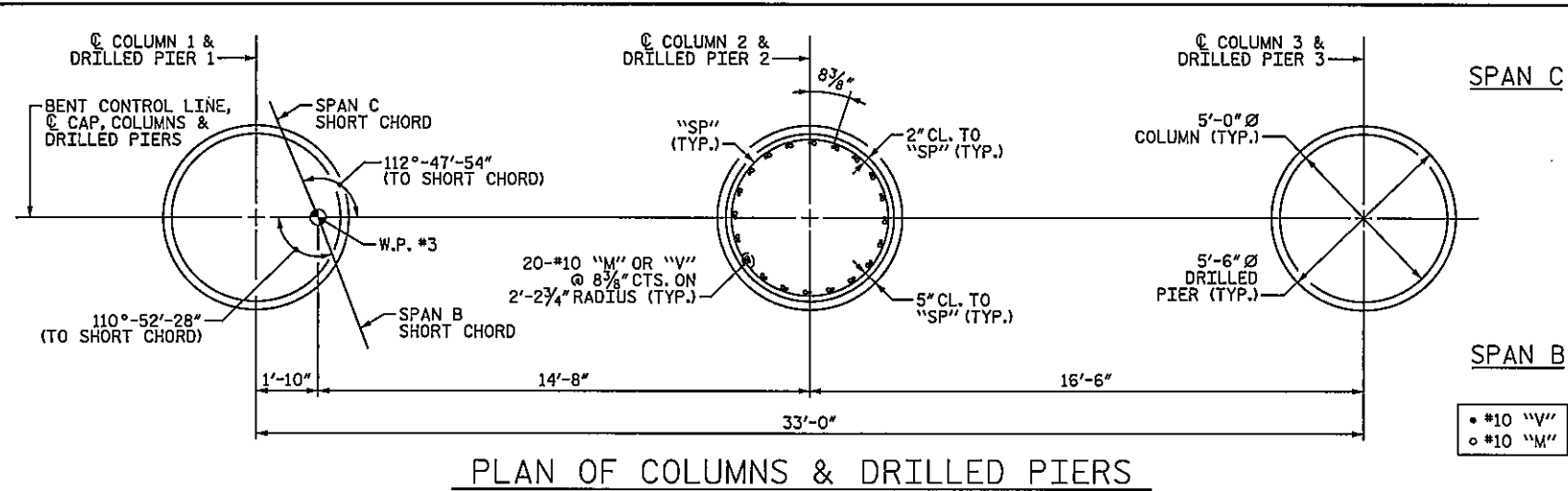
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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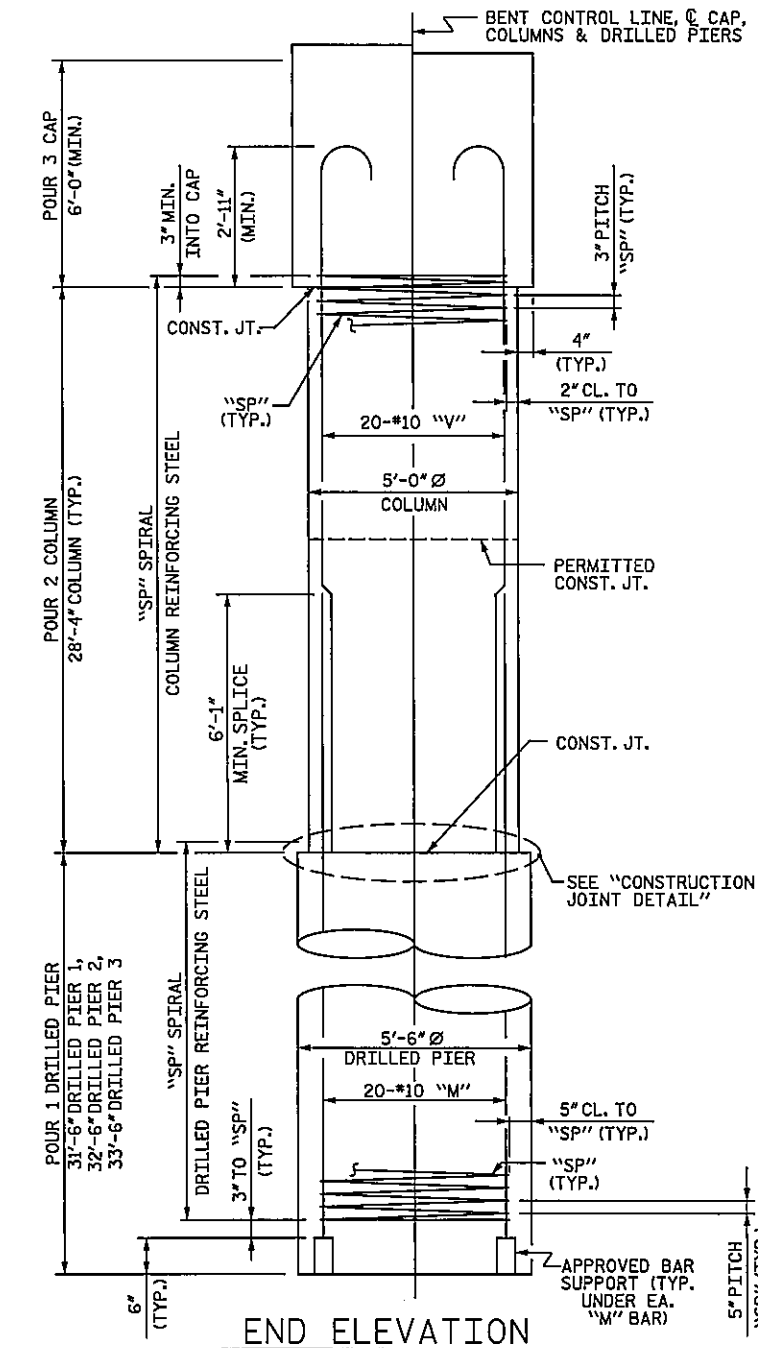
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. **S2-47**
 TOTAL SHEETS **63**

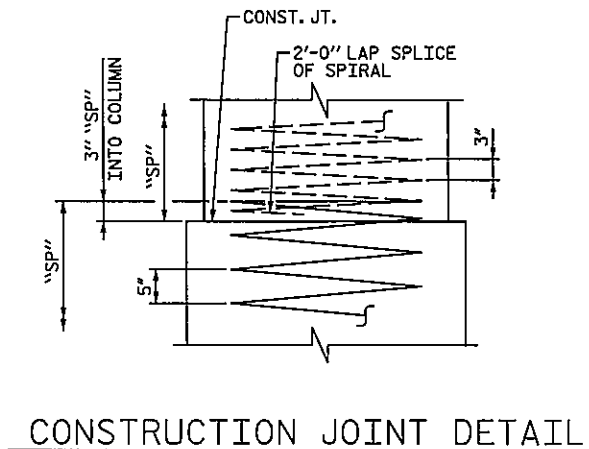
DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18



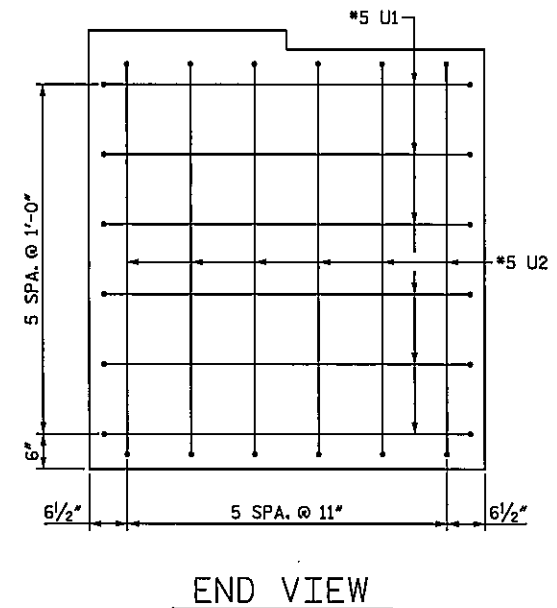
PLAN OF COLUMNS & DRILLED PIERS



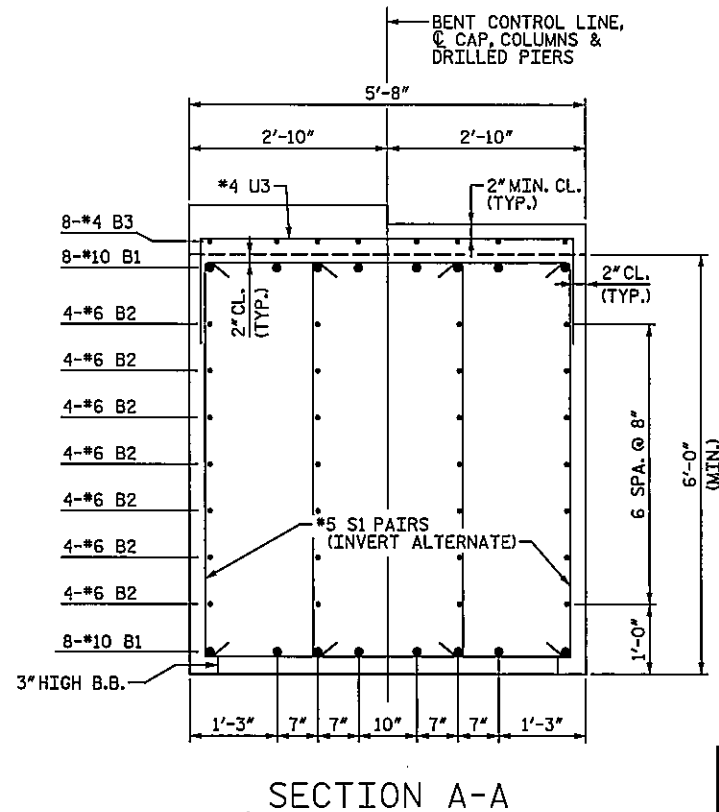
END ELEVATION



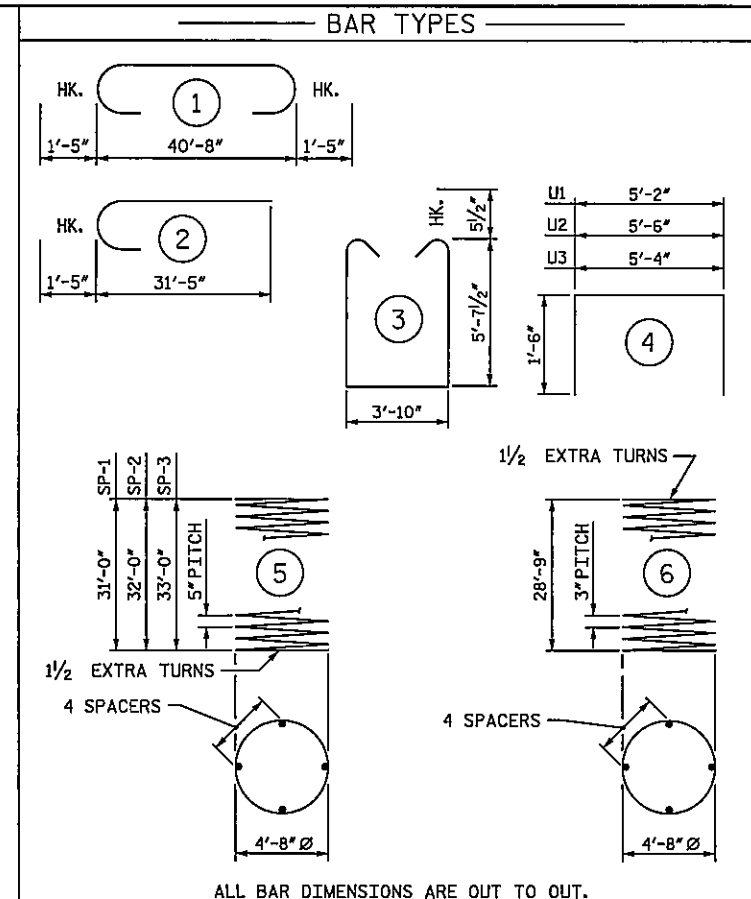
CONSTRUCTION JOINT DETAIL



END VIEW



SECTION A-A

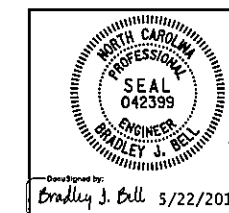


ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 THRU SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL					
BENT 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	16	#10	1	43' - 6"	2,995
B2	28	#6	STR.	40' - 8"	1,710
B3	32	#4	STR.	5' - 2"	110
M1	20	#10	STR.	40' - 1"	3,450
M2	20	#10	STR.	41' - 1"	3,536
M3	20	#10	STR.	42' - 1"	3,622
S1	108	#5	3	16' - 0"	1,802
U1	12	#5	4	8' - 2"	102
U2	12	#5	4	8' - 6"	106
U3	44	#4	4	8' - 4"	245
V1	60	#10	2	32' - 10"	8,477
REINFORCING STEEL				LBS.	26,155
SP-1	1	*	5	1100' - 9"	1,148
SP-2	1	*	5	1135' - 7"	1,184
SP-3	1	*	5	1170' - 5"	1,221
SP-4	3	**	6	1693' - 0"	3,393
SPIRAL COLUMN REINFORCING STEEL				LBS.	6,946
CLASS A CONCRETE					
POUR 2 - COLUMNS				C.Y.	61.8
POUR 3 - CAP				C.Y.	53.3
TOTAL CLASS A CONCRETE				C.Y.	115.1
DRILLED PIER CONCRETE					
POUR 1 - DRILLED PIERS				C.Y.	85.8
5'-6" DIA. DRILLED PIERS IN SOIL				LIN. FT.	61.50
5'-6" DIA. DRILLED PIERS NOT IN SOIL				LIN. FT.	36.00
SID INSPECTIONS				EA.	1
CSL TESTING				EA.	1
CSL TUBES				LIN. FT.	612.00

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+23.34 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 SUBSTRUCTURE
 BENT 2 DETAILS

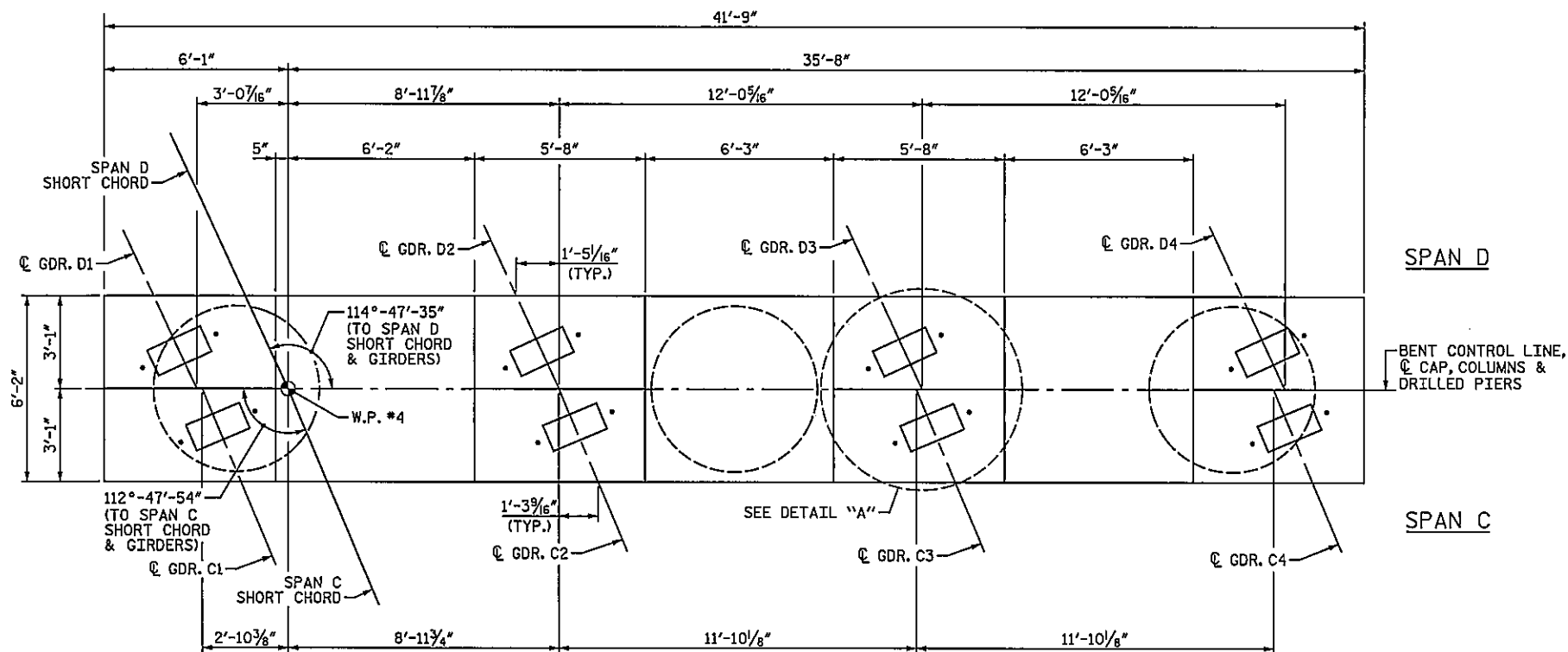
REVISIONS						SHEET NO. S2-48
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			5			TOTAL SHEETS 63
2			4			

DRAWN BY: C.E.M./N.B.S. DATE: 5-21-18
 CHECKED BY: T.M. GARRISON DATE: 5-21-18

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 NC License No.: F-1084

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RIGHT LANE



PLAN

NOTES:

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR SECTION A-A, SEE "BENT 3 DETAILS" SHEET.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

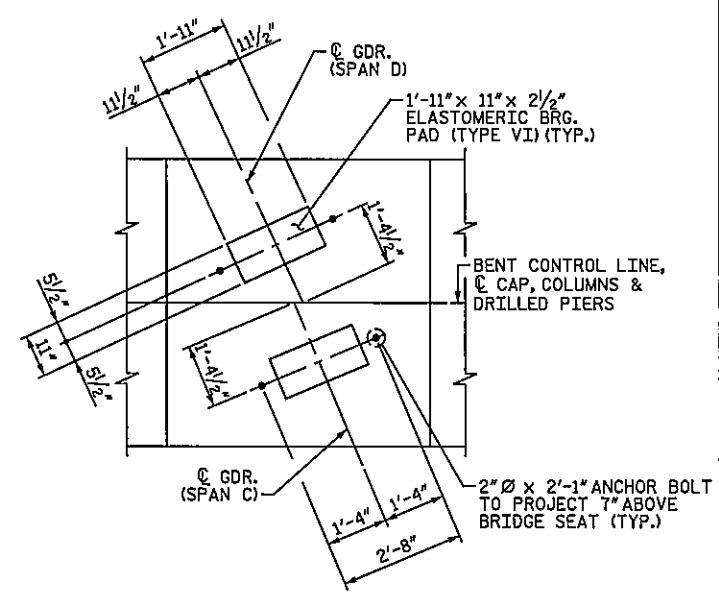
THE TOP SURFACE AREAS OF THE BENT 3 CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

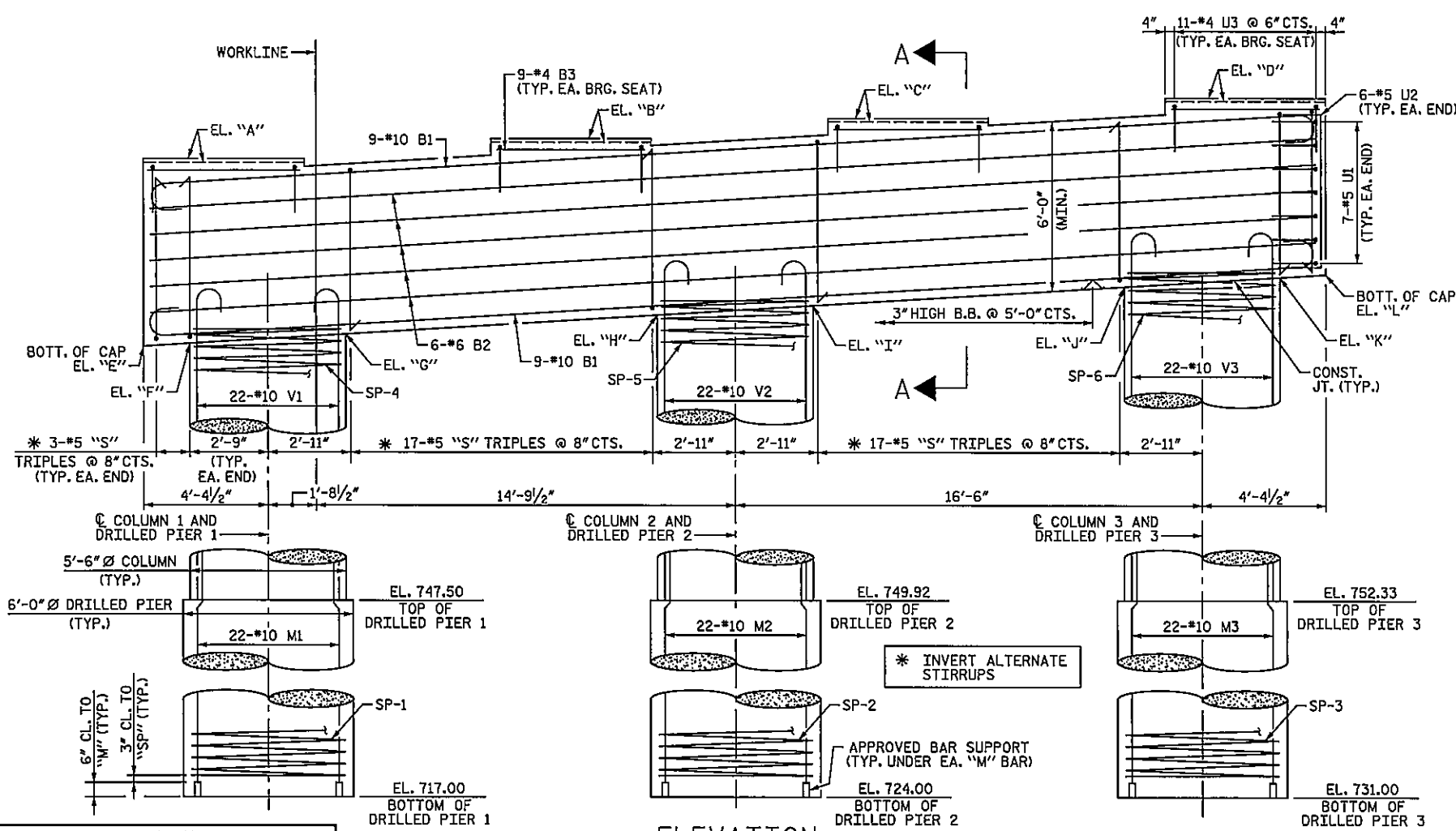
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

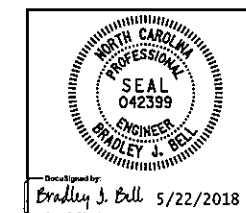


ELEVATION

LOCATION	ELEVATION SPAN C	ELEVATION SPAN D
A	791.20	791.08
B	791.93	791.82
C	792.65	792.56
D	793.38	793.29

LOCATION	ELEVATION
E	784.59
F	784.69
G	785.03
H	785.71
I	786.05
J	786.73
K	787.07
L	787.17

PROJECT NO. U-2412A
GUILFORD COUNTY
STATION: 93+23.34 -L-



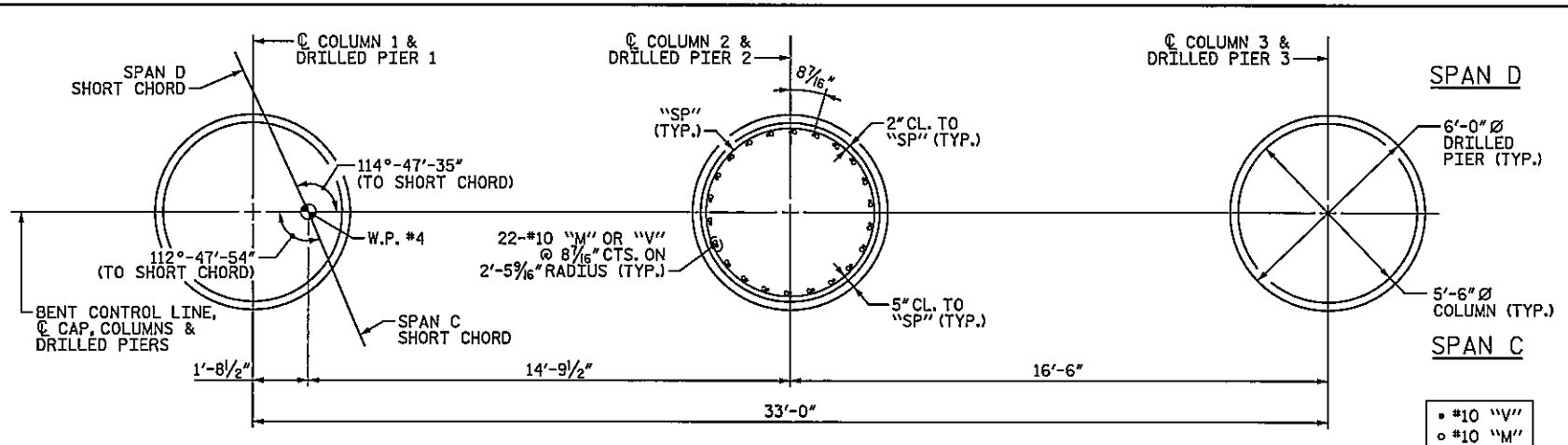
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 3
RIGHT LANE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

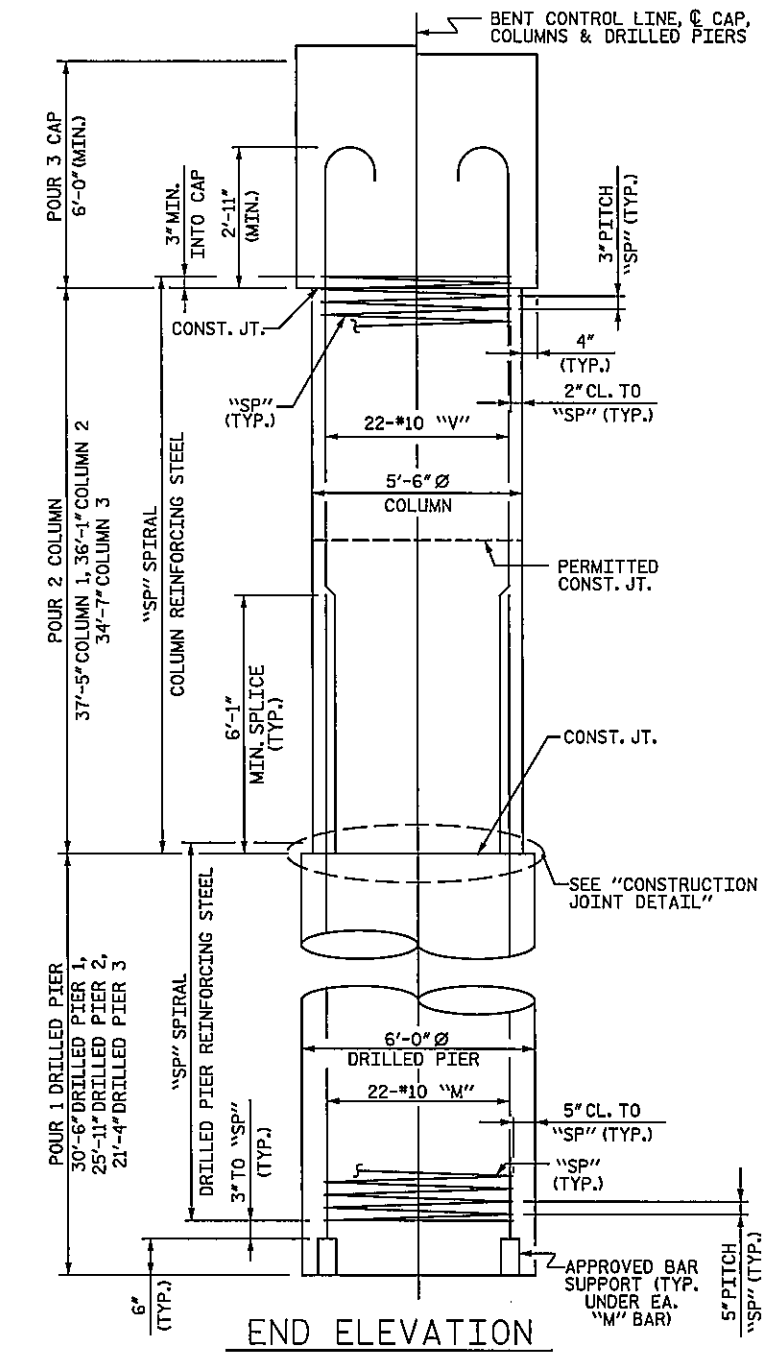
Michael Baker International
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27513
NC License No.: F-1054

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S2-49
1			3			TOTAL SHEETS
2			4			63

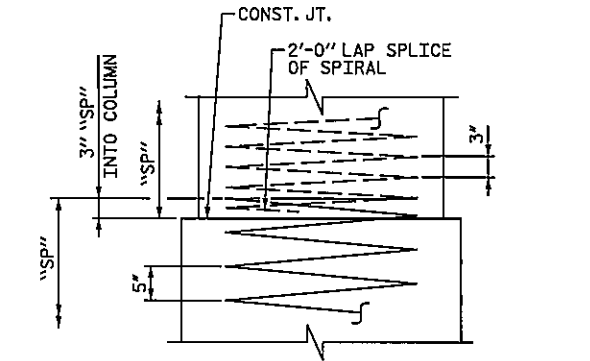
DRAWN BY: C. E. MAYHEW DATE: 5-21-18
CHECKED BY: A. H. SHARPE DATE: 5-21-18



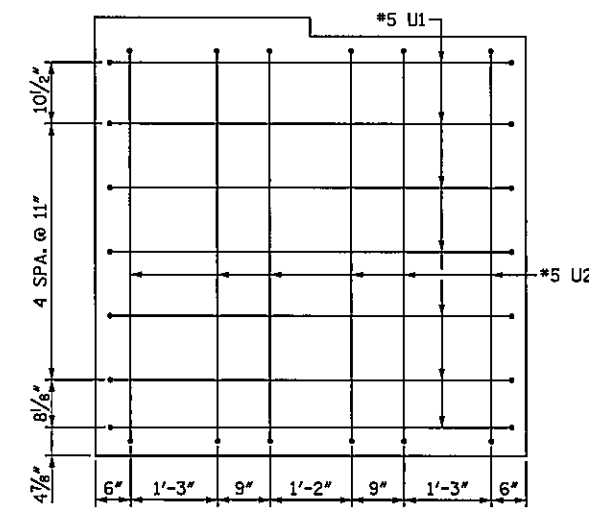
PLAN OF COLUMNS & DRILLED PIERS



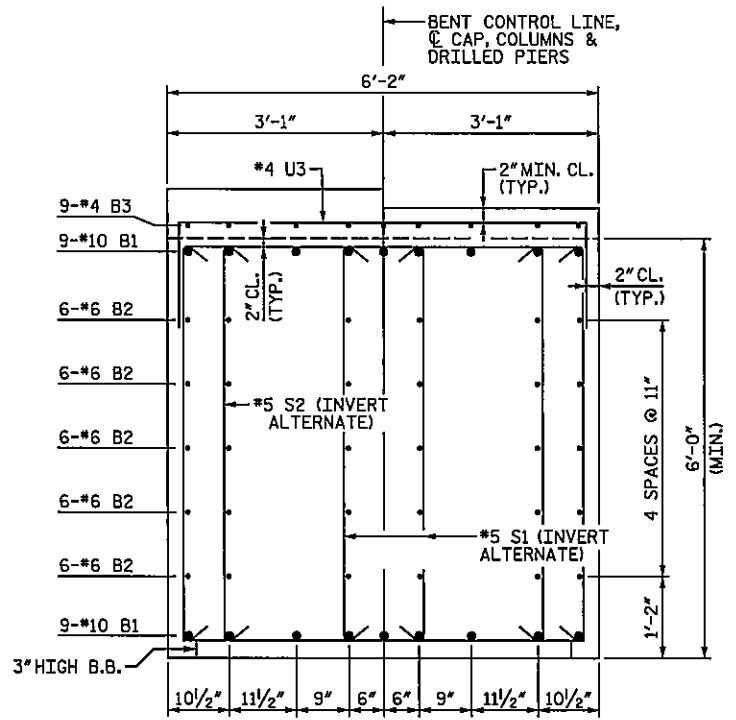
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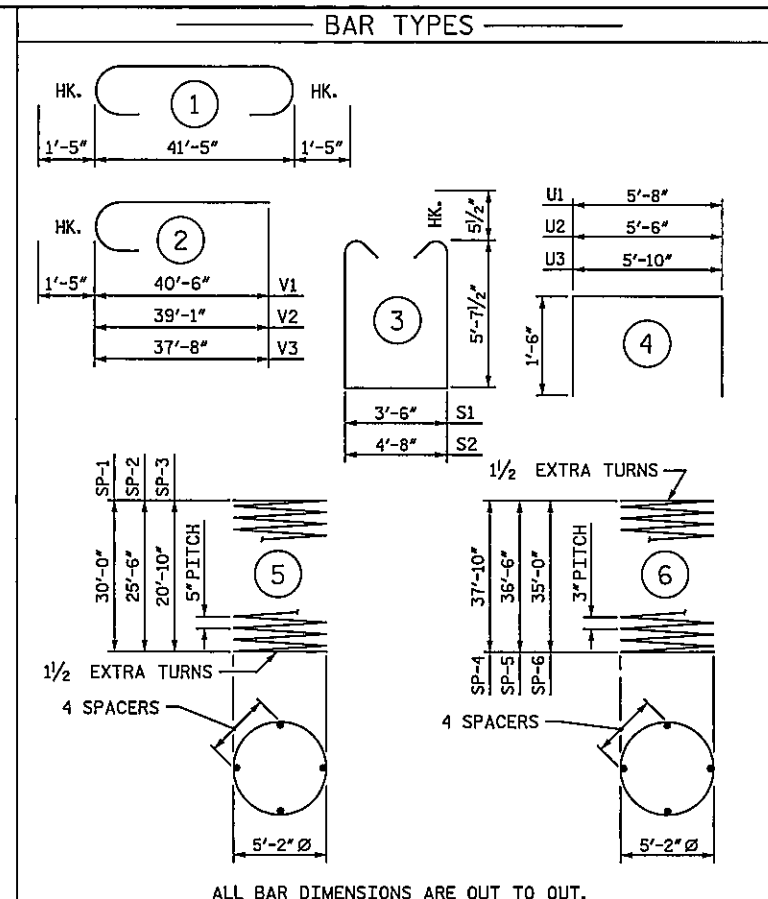
CONSTRUCTION JOINT DETAIL



END VIEW



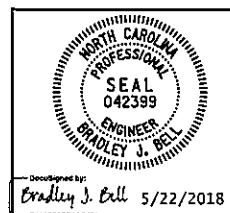
SECTION A-A



* THE SP-1 THRU SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-4 THRU SP-6 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL					
BENT 3					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	18	#10	1	44' - 3"	3,427
B2	30	#6	STR.	41' - 5"	1,866
B3	36	#4	STR.	5' - 4"	128
M1	22	#10	STR.	39' - 1"	3,700
M2	22	#10	STR.	34' - 7"	3,274
M3	22	#10	STR.	29' - 11"	2,832
S1	80	#5	3	15' - 8"	1,307
S2	40	#5	3	16' - 10"	702
U1	14	#5	4	8' - 8"	127
U2	12	#5	4	8' - 6"	106
U3	44	#4	4	8' - 10"	260
V1	22	#10	2	41' - 11"	3,968
V2	22	#10	2	40' - 6"	3,834
V3	22	#10	2	39' - 1"	3,700
REINFORCING STEEL			LBS. 29,231		
SP-1	1	*	5	1181' - 5"	1,232
SP-2	1	*	5	1007' - 10"	1,051
SP-3	1	*	5	827' - 9"	863
SP-4	1	**	6	2461' - 0"	1,644
SP-5	1	**	6	2369' - 9"	1,583
SP-6	1	**	6	2278' - 6"	1,522
SPIRAL COLUMN REINFORCING STEEL			LBS. 7,895		
CLASS A CONCRETE					
POUR 2 - COLUMNS			C.Y.	95.0	
POUR 3 - CAP			C.Y.	59.1	
TOTAL CLASS A CONCRETE			C.Y.	154.1	
DRILLED PIER CONCRETE					
POUR 1 - DRILLED PIERS			C.Y.	81.5	
6'-0" DIA. DRILLED PIERS IN SOIL			LIN. FT.	38.75	
6'-0" DIA. DRILLED PIERS NOT IN SOIL			LIN. FT.	39.00	
SID INSPECTIONS			EA.	1	
CSL TESTING			EA.	1	
CSL TUBES			LIN. FT.	493.50	

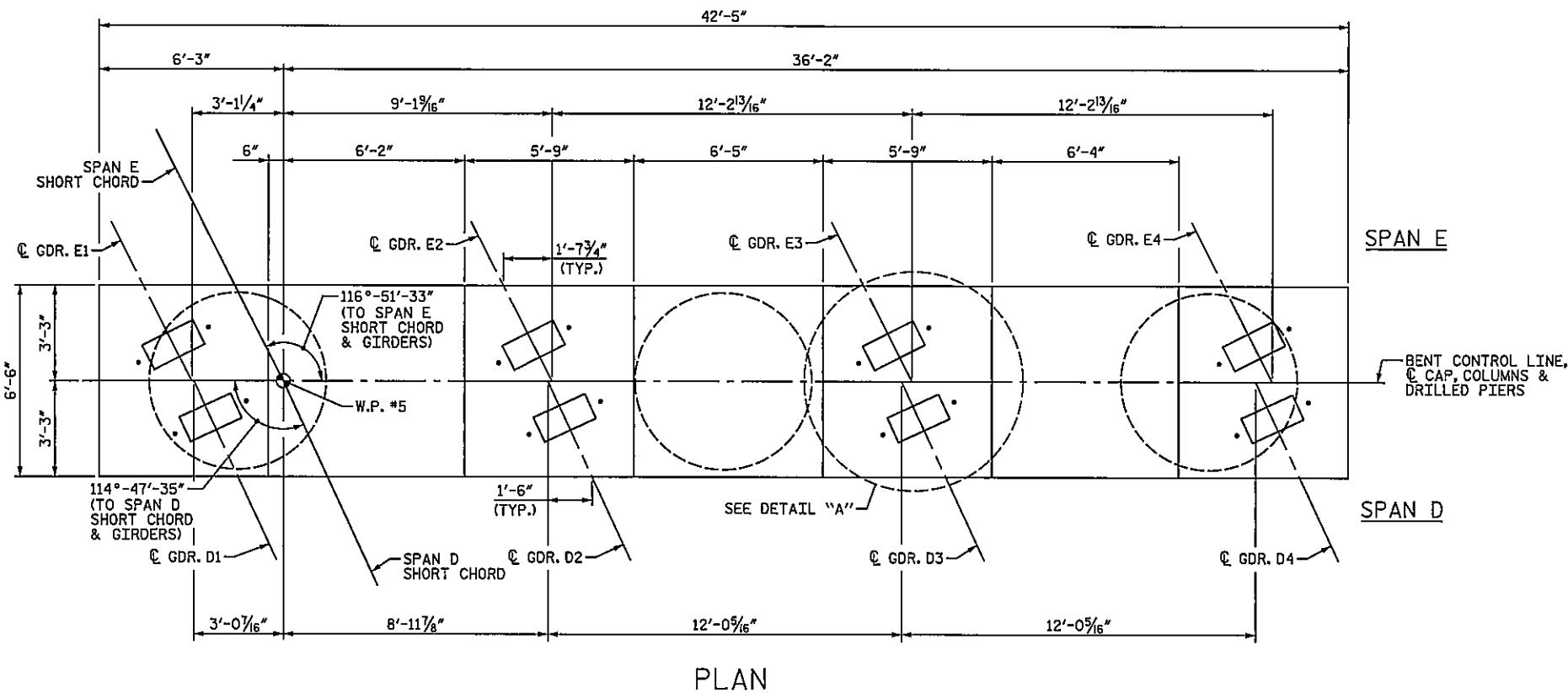
PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-



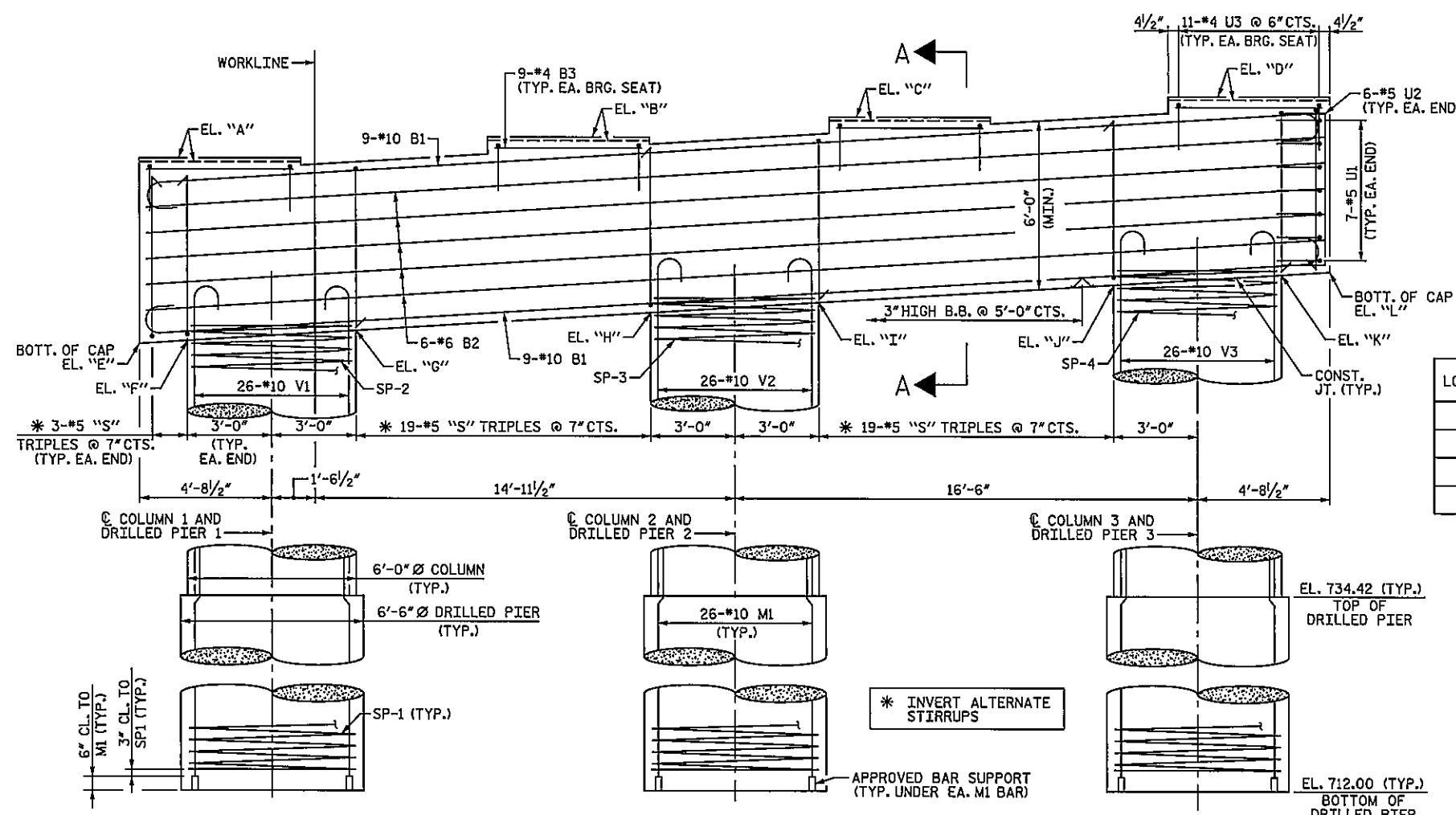
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 3 DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					RIGHT LANE				
Michael Baker International					SHEET NO. S2-50				
REVISIONS					TOTAL SHEETS 63				
NO.	BY	DATE	NO.	BY	DATE				
1			3						
2			4						

DRAWN BY: C.E.M./N.B.S. DATE: 5-21-18
 CHECKED BY: A.H. SHARPE DATE: 5-21-18

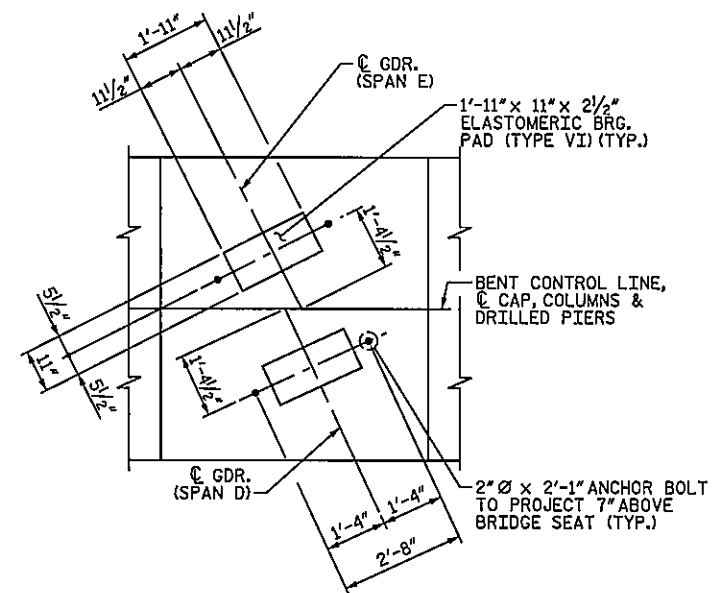


NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR SECTION A-A, SEE "BENT 4 DETAILS" SHEET.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
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 FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.



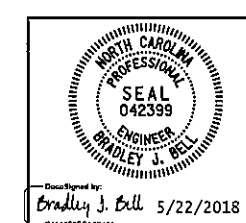
LOCATION	ELEVATION SPAN D	ELEVATION SPAN E
A	786.95	786.84
B	787.69	787.59
C	788.44	788.35
D	789.18	789.11

LOCATION	ELEVATION
E	780.33
F	780.44
G	780.82
H	781.47
I	781.85
J	782.50
K	782.87
L	782.98



DETAIL "A"
(TYP. EA. BRIDGE SEAT)

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+23.34 -L-



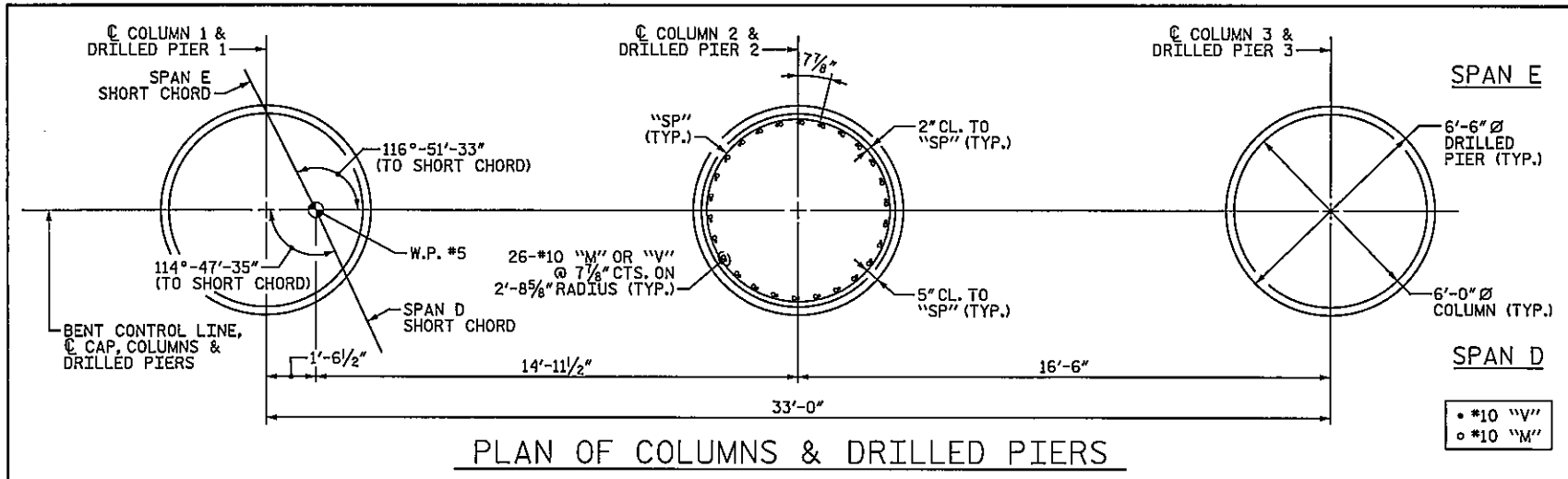
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 4
 RIGHT LANE

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 UNLESS ALL SIGNATURES COMPLETED
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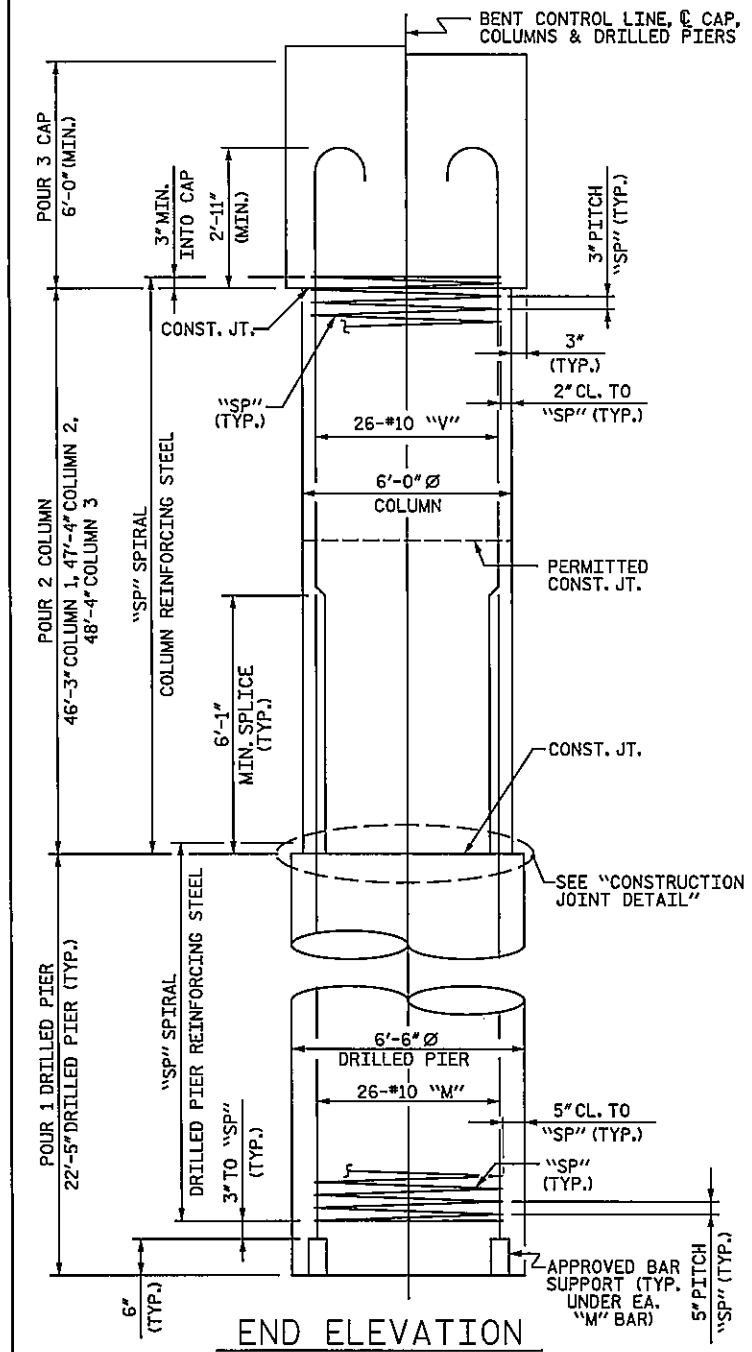
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			63
2			4			

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: A. H. SHARPE DATE: 5-21-18

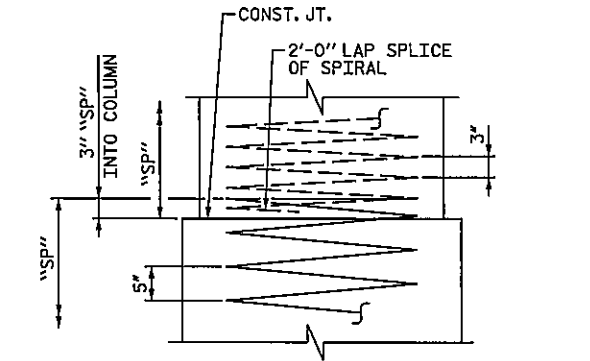
ELEVATION



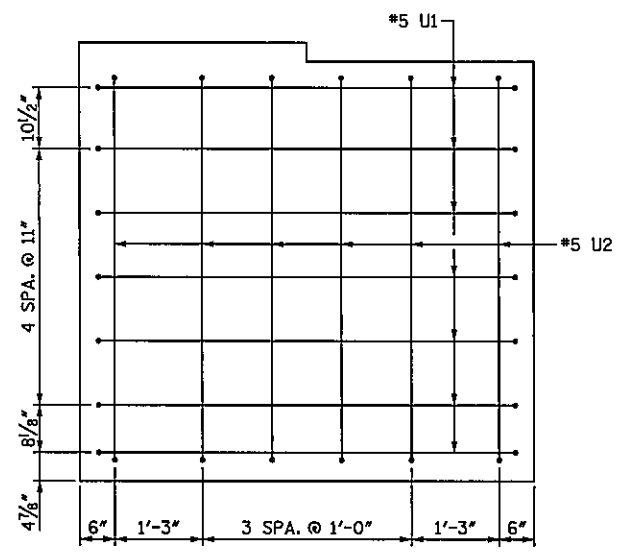
PLAN OF COLUMNS & DRILLED PIERS



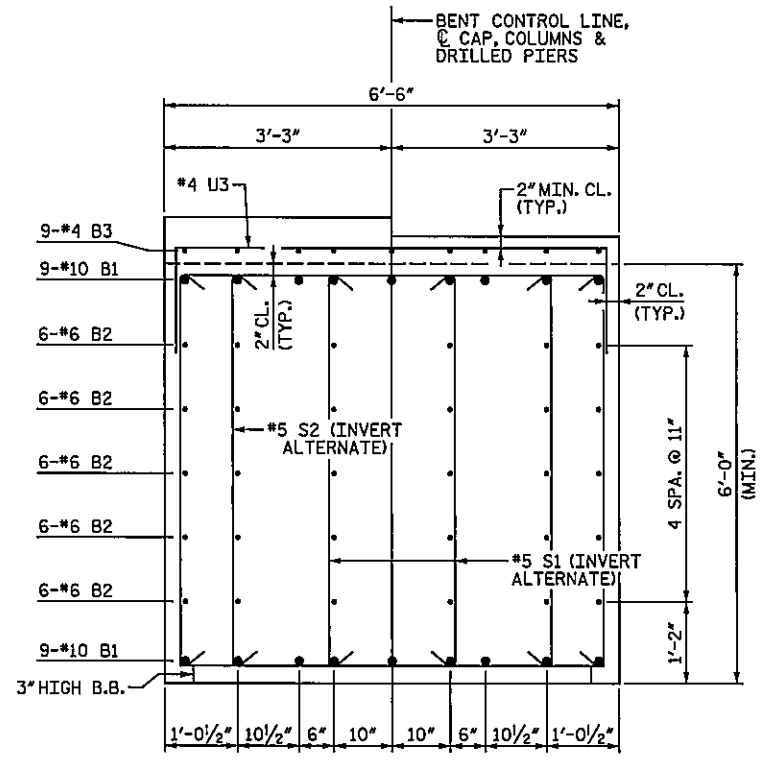
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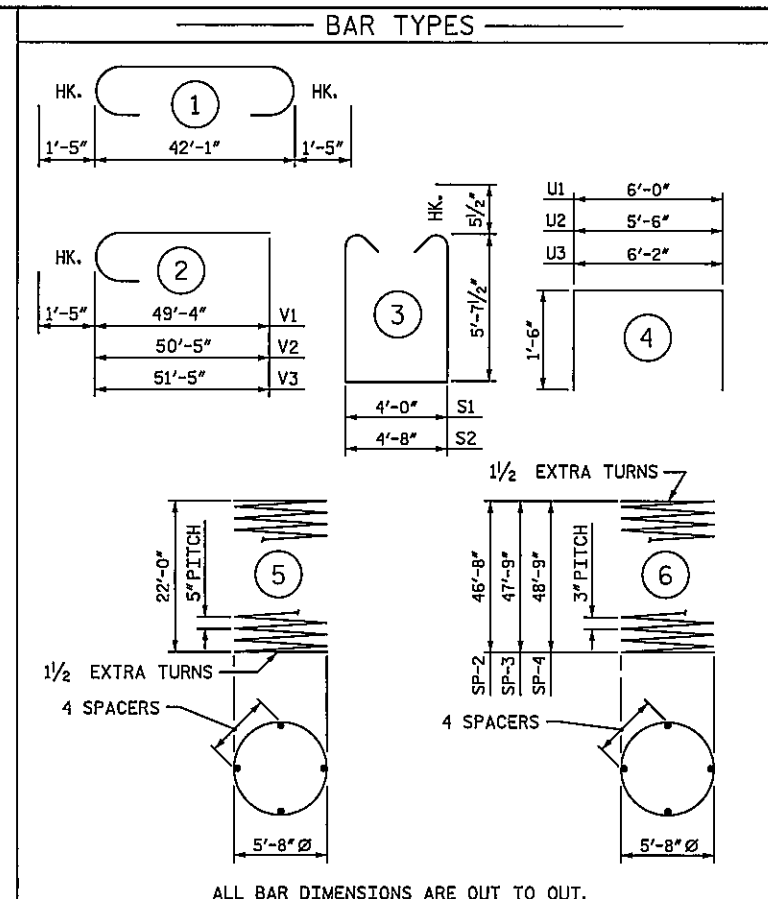
CONSTRUCTION JOINT DETAIL



END VIEW



SECTION A-A



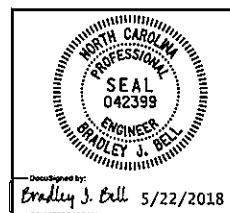
ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-2 THRU SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL

BENT 4					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	18	*10	1	44' - 11"	3,479
B2	30	*6	STR.	42' - 1"	1,896
B3	36	*4	STR.	5' - 5"	130
M1	78	*10	STR.	31' - 1"	10,433
S1	88	*5	3	16' - 2"	1,484
S2	44	*5	3	16' - 10"	773
U1	14	*5	4	9' - 0"	131
U2	12	*5	4	8' - 6"	106
U3	44	*4	4	9' - 2"	269
V1	26	*10	2	50' - 9"	5,678
V2	26	*10	2	51' - 10"	5,799
V3	26	*10	2	52' - 10"	5,911
REINFORCING STEEL				LBS.	36,089
SP-1	3	*	5	958' - 1"	2,997
SP-2	1	**	6	3325' - 6"	2,221
SP-3	1	**	6	3402' - 1"	2,273
SP-4	1	**	6	3472' - 9"	2,320
SPIRAL COLUMN REINFORCING STEEL				LBS.	9,811
CLASS A CONCRETE					
POUR 2 - COLUMNS			C.Y.	148.5	
POUR 3 - CAP			C.Y.	63.3	
TOTAL CLASS A CONCRETE				C.Y.	211.8
DRILLED PIER CONCRETE					
POUR 1 - DRILLED PIERS			C.Y.	82.7	
6'-6" DIA. DRILLED PIERS IN SOIL			LIN. FT.	22.25	
6'-6" DIA. DRILLED PIERS NOT IN SOIL			LIN. FT.	45.00	
PERMANENT STEEL CASING FOR 6'-6" DIA. DRILLED PIER				LIN. FT.	27.26
SID INSPECTIONS			EA.	1	
CSL TESTING			EA.	1	
CSL TUBES			LIN. FT.	502.25	

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+23.34 -L-



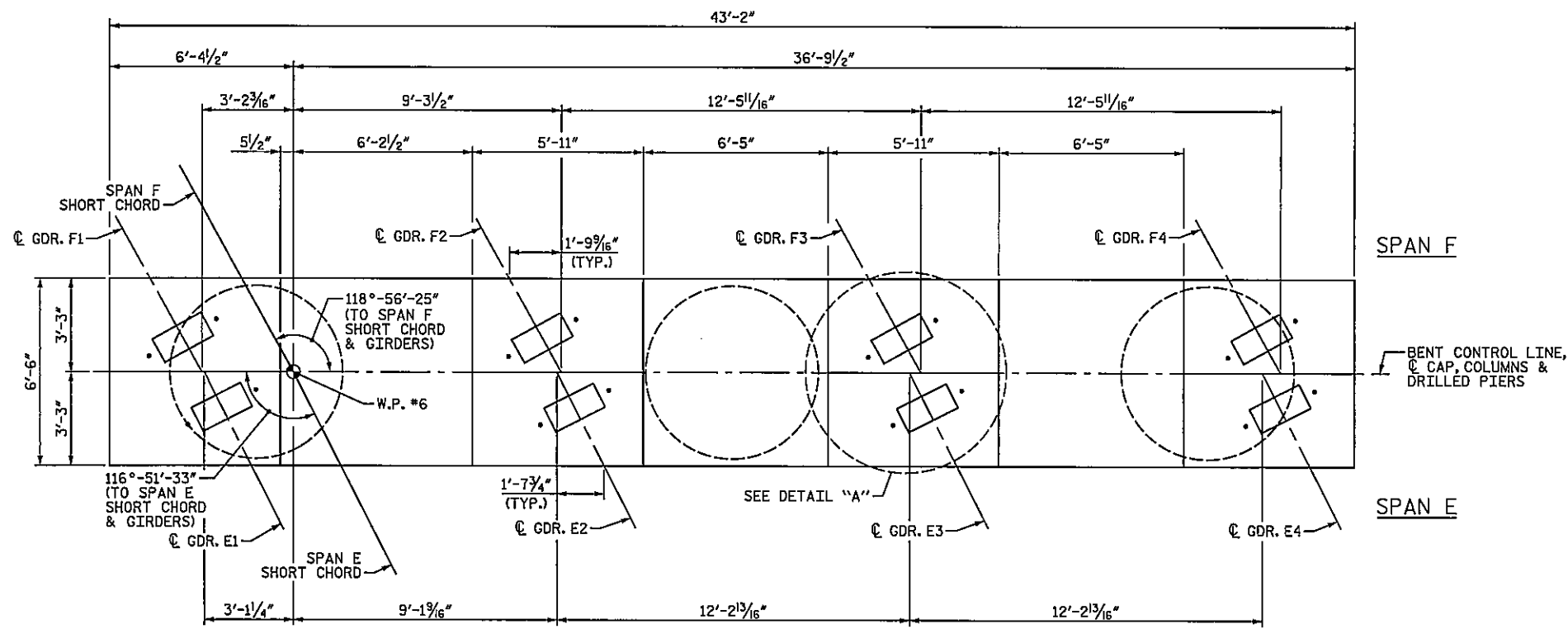
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 4 DETAILS

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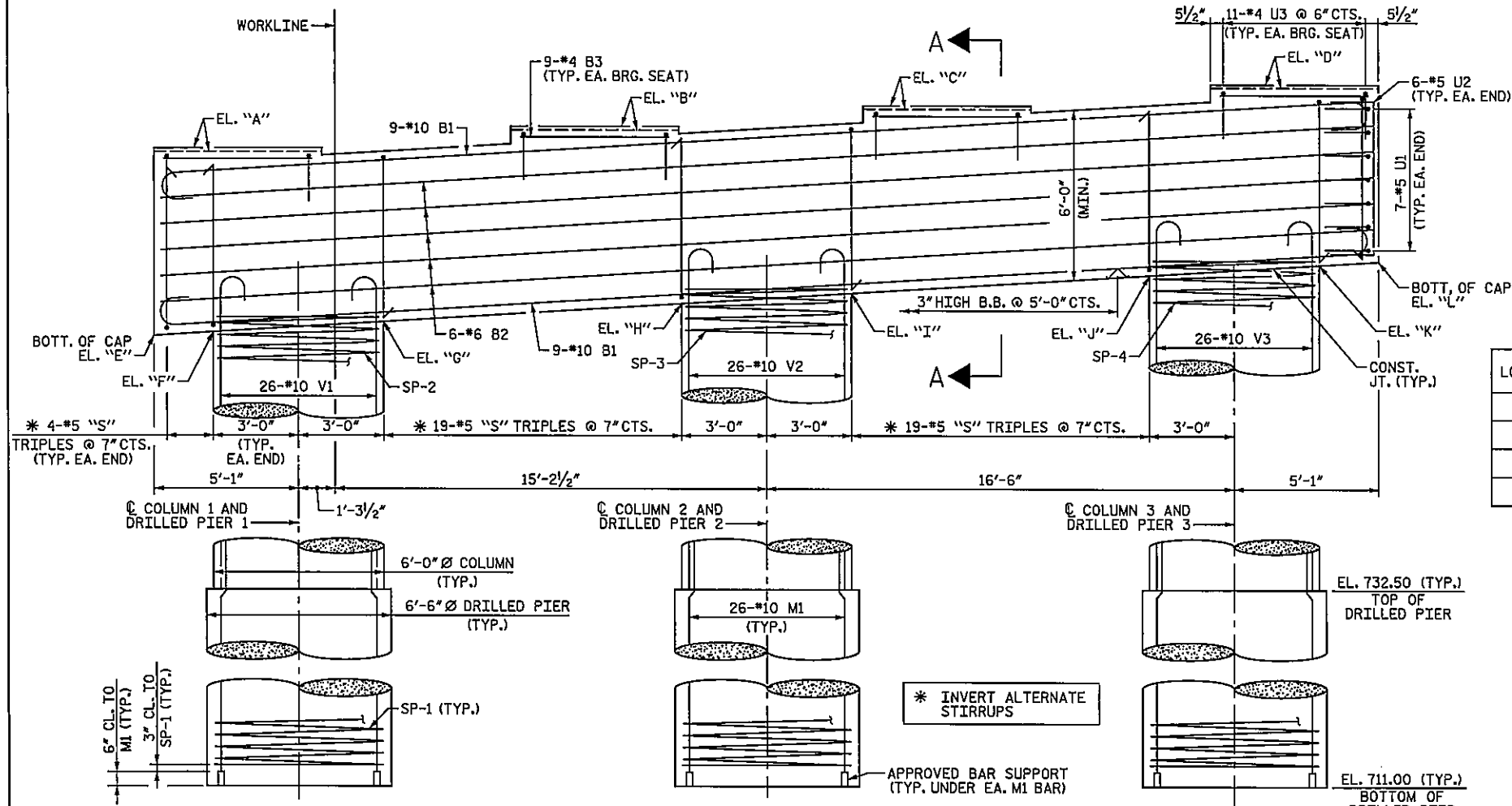
REVISIONS						SHEET NO. S2-52
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 63
2			4			

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 CHECKED BY: A. H. SHARPE DATE: 5-21-18

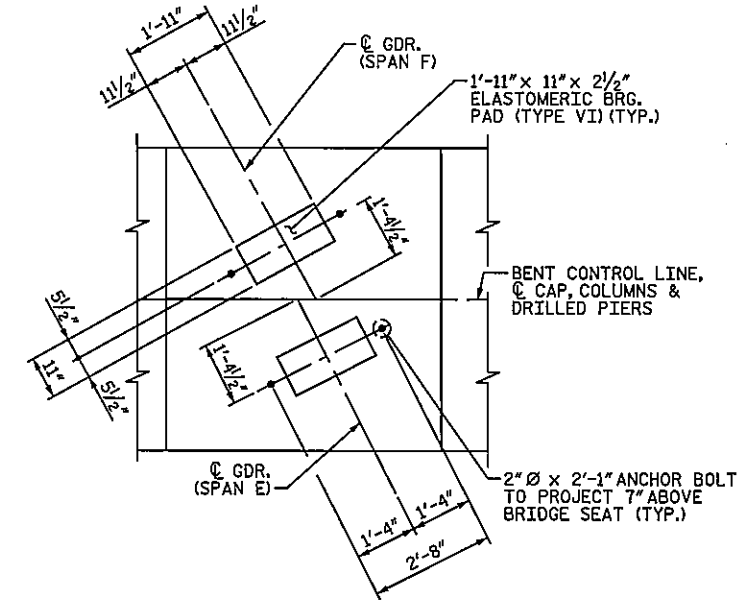


PLAN

NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR SECTION A-A, SEE "BENT 5 DETAILS" SHEET.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.
 FOR MASS CONCRETE, SEE SPECIAL PROVISIONS.



ELEVATION

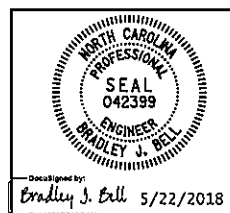


DETAIL "A"
(TYP. EA. BRIDGE SEAT)

LOCATION	ELEVATION SPAN E	ELEVATION SPAN F
A	782.70	782.59
B	783.47	783.37
C	784.23	784.15
D	784.99	784.92

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-

LOCATION	ELEVATION
E	776.08
F	776.21
G	776.59
H	777.25
I	777.63
J	778.29
K	778.66
L	778.79

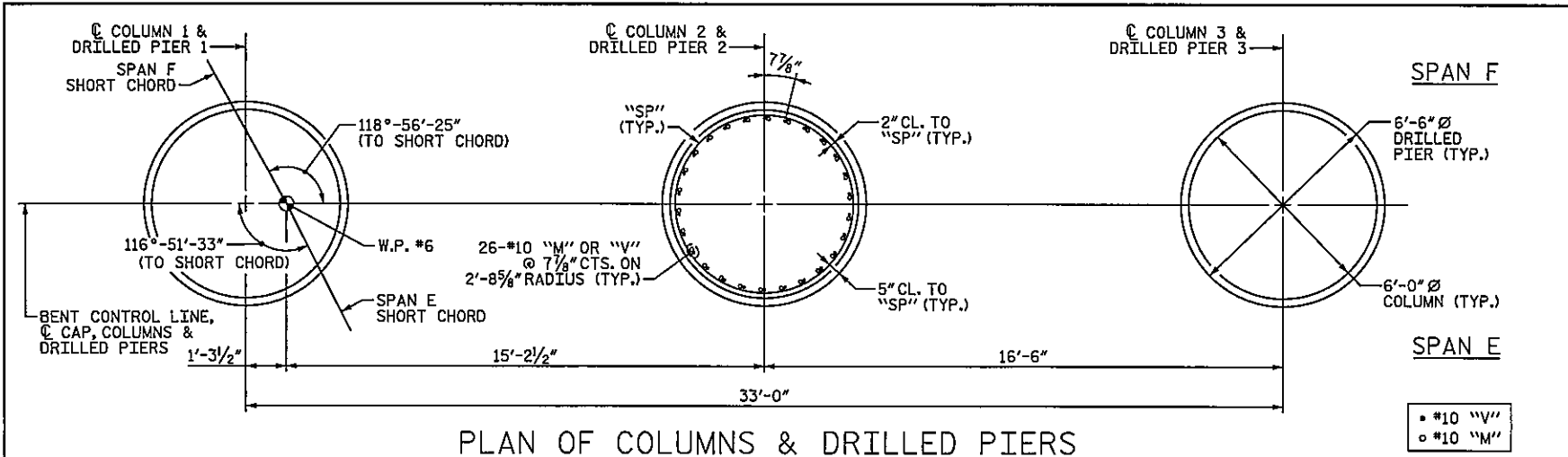


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 5
 RIGHT LANE

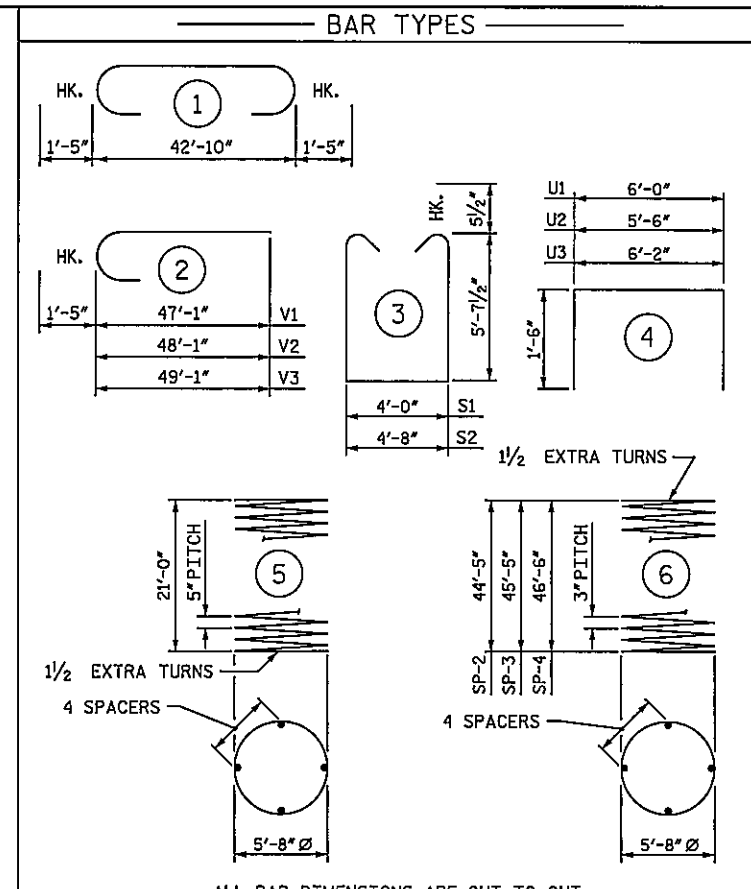
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NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS
1			3			63
2			4			

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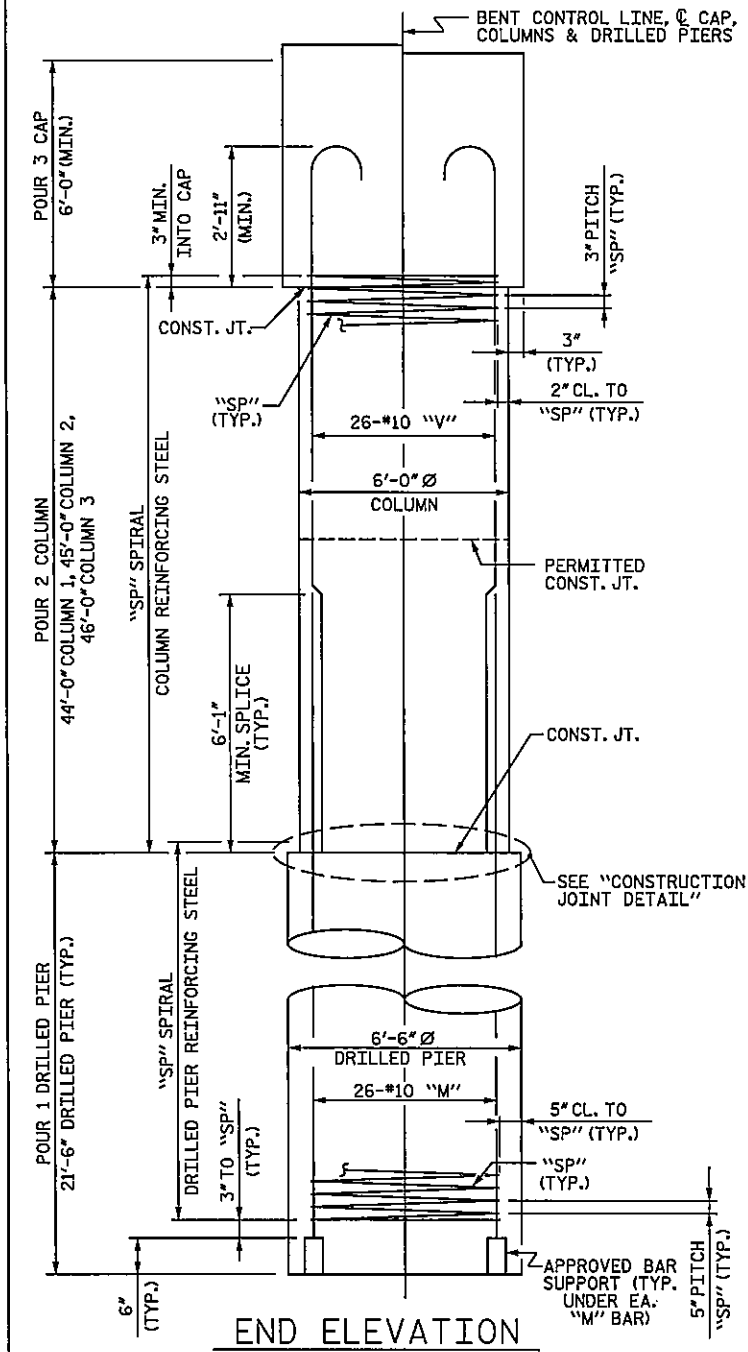
PLAN OF COLUMNS & DRILLED PIERS



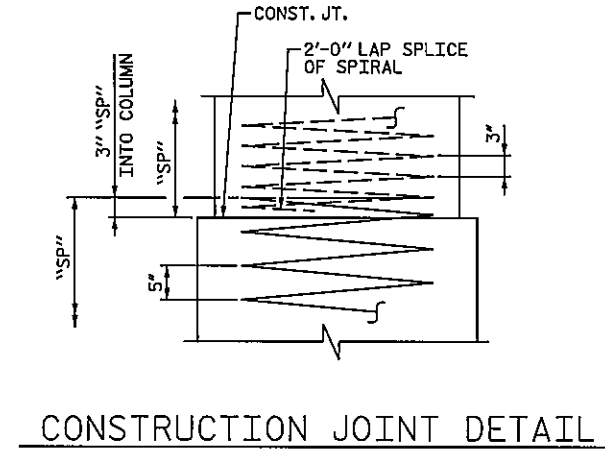
ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE #31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-2 THRU SP-4 SPIRAL REINFORCING STEEL SHALL BE #20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

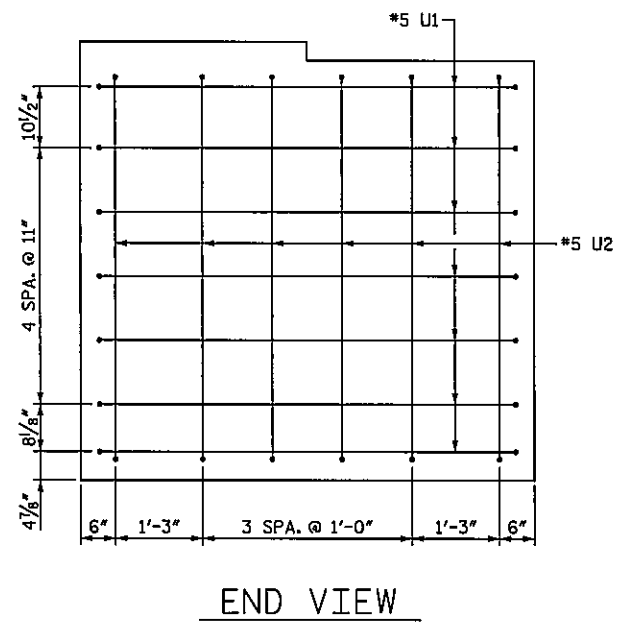
BILL OF MATERIAL						
BENT 5						
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	18	#10	1	45' - 8"	3,537	
B2	30	#6	STR.	42' - 10"	1,930	
B3	36	#4	STR.	5' - 7"	134	
M1	78	#10	STR.	30' - 1"	10,097	
S1	92	#5	3	16' - 2"	1,551	
S2	46	#5	3	16' - 10"	808	
U1	14	#5	4	9' - 0"	131	
U2	12	#5	4	8' - 6"	106	
U3	44	#4	4	9' - 2"	269	
V1	26	#10	2	48' - 6"	5,426	
V2	26	#10	2	49' - 6"	5,538	
V3	26	#10	2	50' - 6"	5,650	
REINFORCING STEEL				LBS.	35,177	
SP-1	3	*	5	915' - 8"	2,865	
SP-2	1	**	6	3166' - 5"	2,115	
SP-3	1	**	6	3237' - 2"	2,162	
SP-4	1	**	6	3307' - 10"	2,210	
SPIRAL COLUMN REINFORCING STEEL				LBS.	9,352	
CLASS A CONCRETE						
POUR 2 - COLUMNS				C.Y.	141.2	
POUR 3 - CAP				C.Y.	64.5	
TOTAL CLASS A CONCRETE				C.Y.	205.7	
DRILLED PIER CONCRETE						
POUR 1 - DRILLED PIERS				C.Y.	79.3	
6'-6" DIA. DRILLED PIERS IN SOIL				LIN. FT.	14.50	
6'-6" DIA. DRILLED PIERS NOT IN SOIL				LIN. FT.	50.00	
PERMANENT STEEL CASING FOR 6'-6" DIA. DRILLED PIER					LIN. FT.	22.50
SID INSPECTIONS				EA.	1	
CSL TESTING				EA.	1	
CSL TUBES				LIN. FT.	483.00	



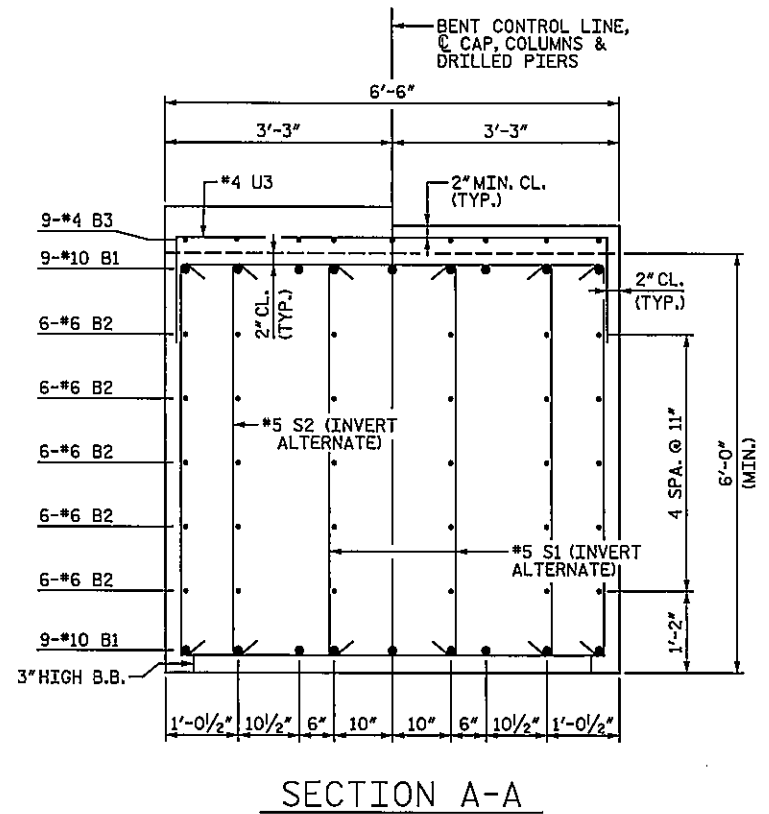
END ELEVATION



CONSTRUCTION JOINT DETAIL



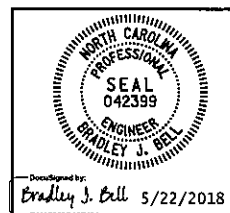
END VIEW



SECTION A-A

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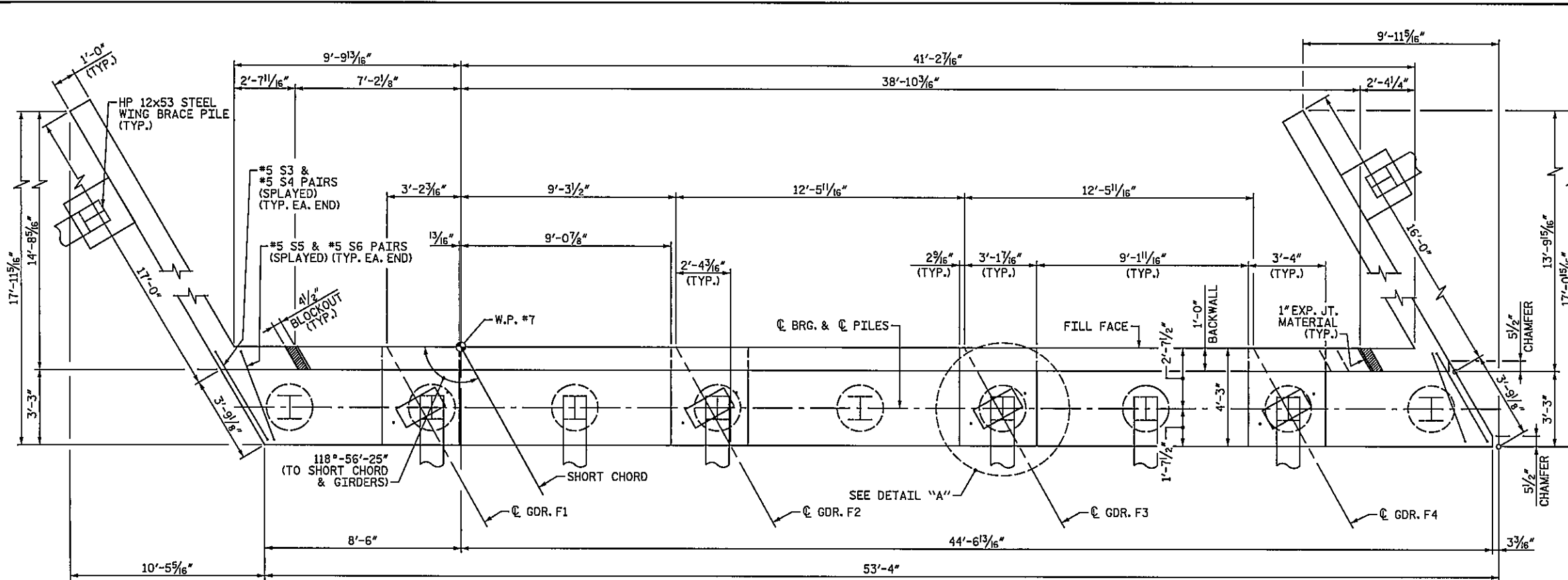


PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+23.34 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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 SUBSTRUCTURE
 BENT 5 DETAILS

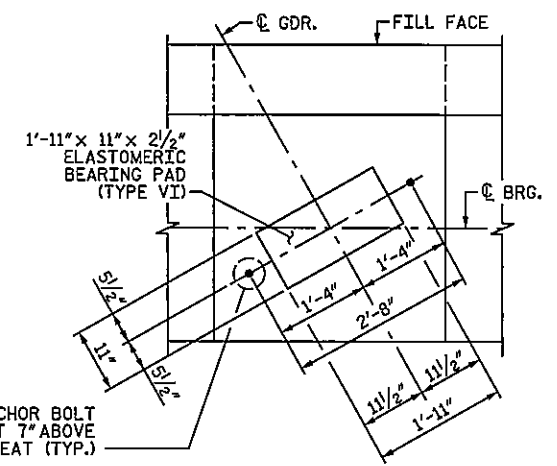
RIGHT LANE

REVISIONS						SHEET NO. S2-54
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 63
2			4			

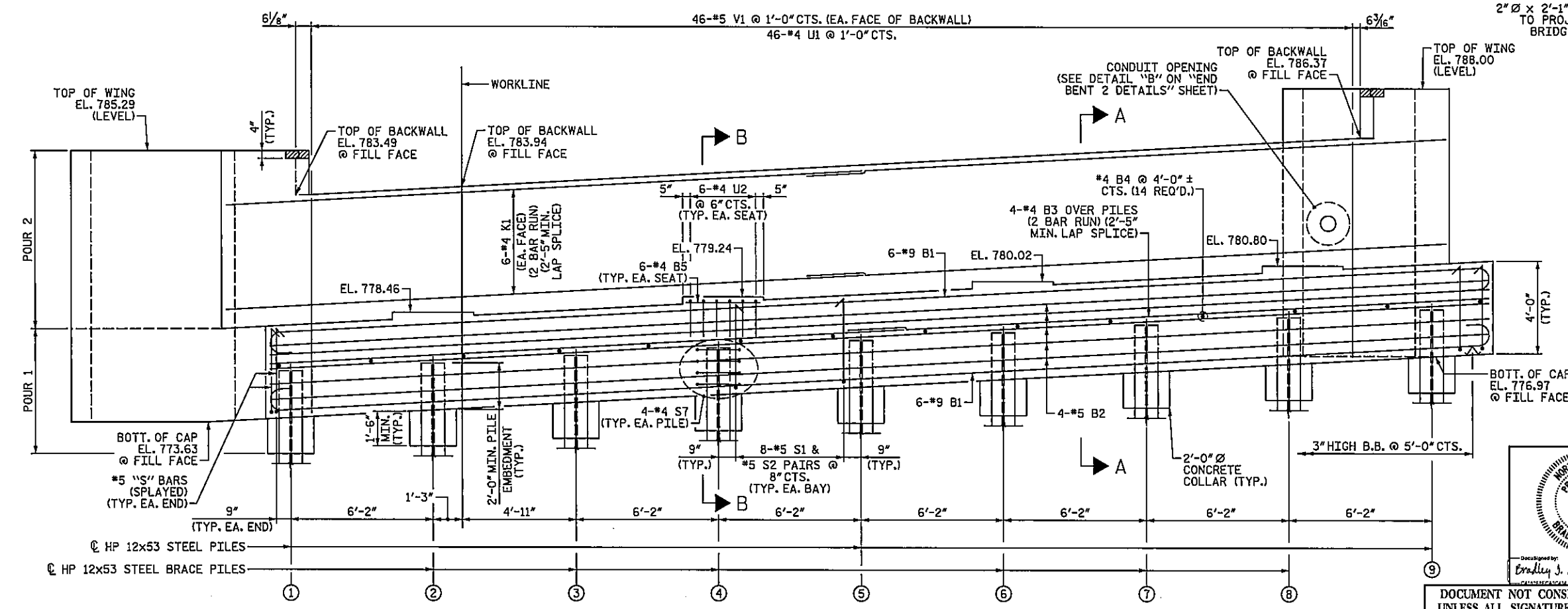


PLAN

- NOTES:**
- SEE "GENERAL DRAWING" SHEET 4 OF 6 FOR LOCATIONS OF BRACE PILES IN WINGS.
 - FOR "SECTION A-A" AND "SECTION B-B", SEE "END BENT 2 DETAILS" SHEET.
 - STIRRUPS & U2 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 - BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
 - THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 - THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT A RATE OF 2%.
 - THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 - V1 & K1 BARS IN BACKWALL MAY BE SHIFTED AS NECESSARY TO CLEAR CONDUIT OPENING.



DETAIL "A"
(TYP. EA. BRIDGE SEAT)



ELEVATION

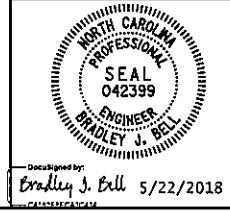
(BRACE PILES AND PILE CAPS IN WINGS NOT SHOWN FOR CLARITY)

TOP OF PILE ELEVATIONS

PILE	ELEVATION
1	775.88
2	776.27
3	776.65
4	777.04
5	777.42
6	777.81
7	778.20
8	778.58
9	778.97

PROJECT NO. U-2412A
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SHEET 1 OF 2



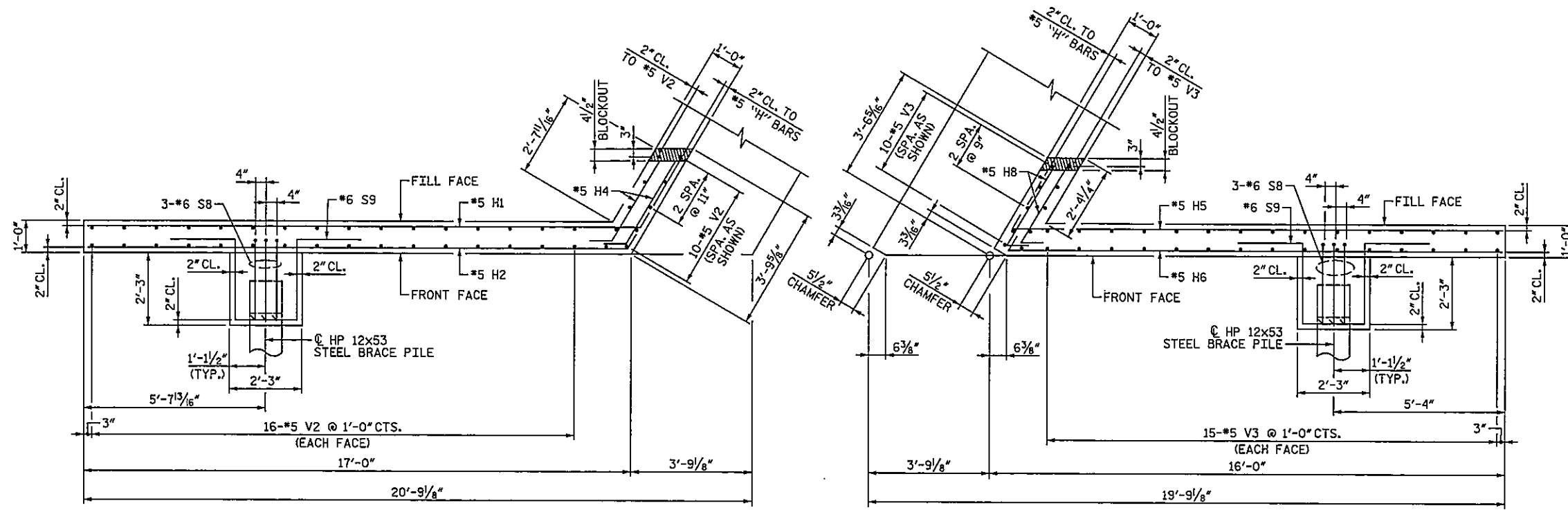
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 END BENT 2
 RIGHT LANE

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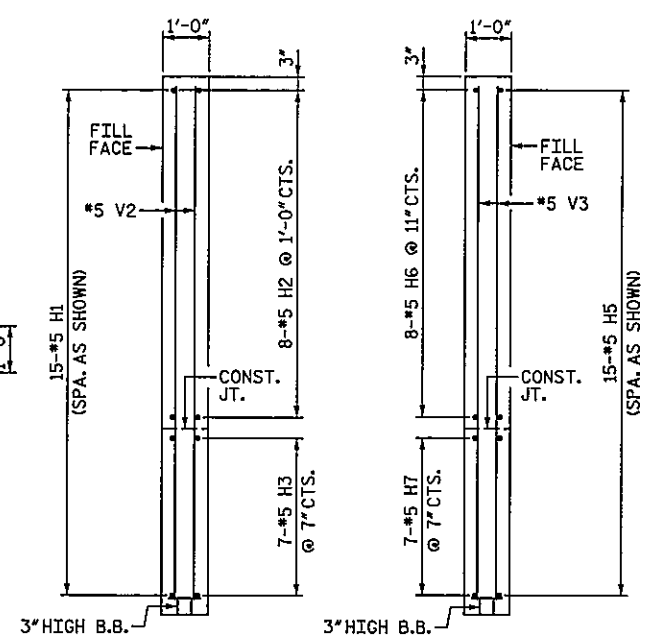
NO.	BY	DATE	REVISIONS		SHEET NO.
			NO.	DATE	
1			3		S2-55
2			4		TOTAL SHEETS 63

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 CHECKED BY: T. M. GARRISON DATE: 5-21-18

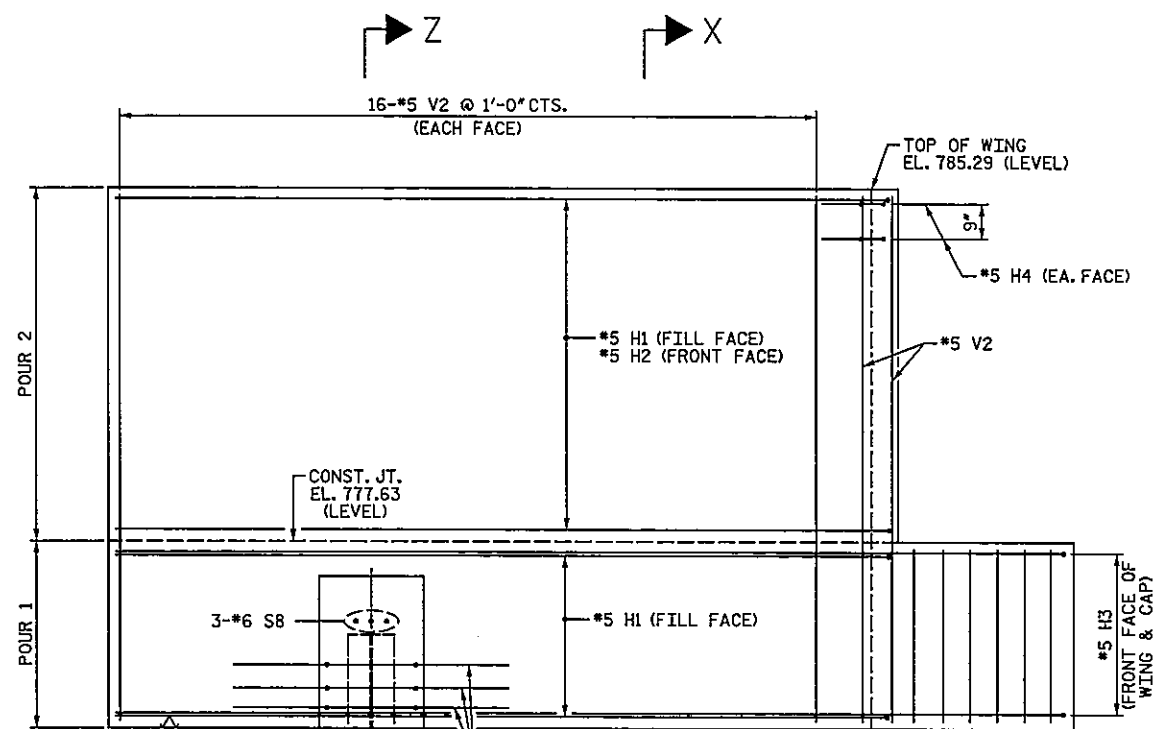


PLAN OF LEFT WING
(H3 & V4 BARS NOT SHOWN FOR CLARITY)

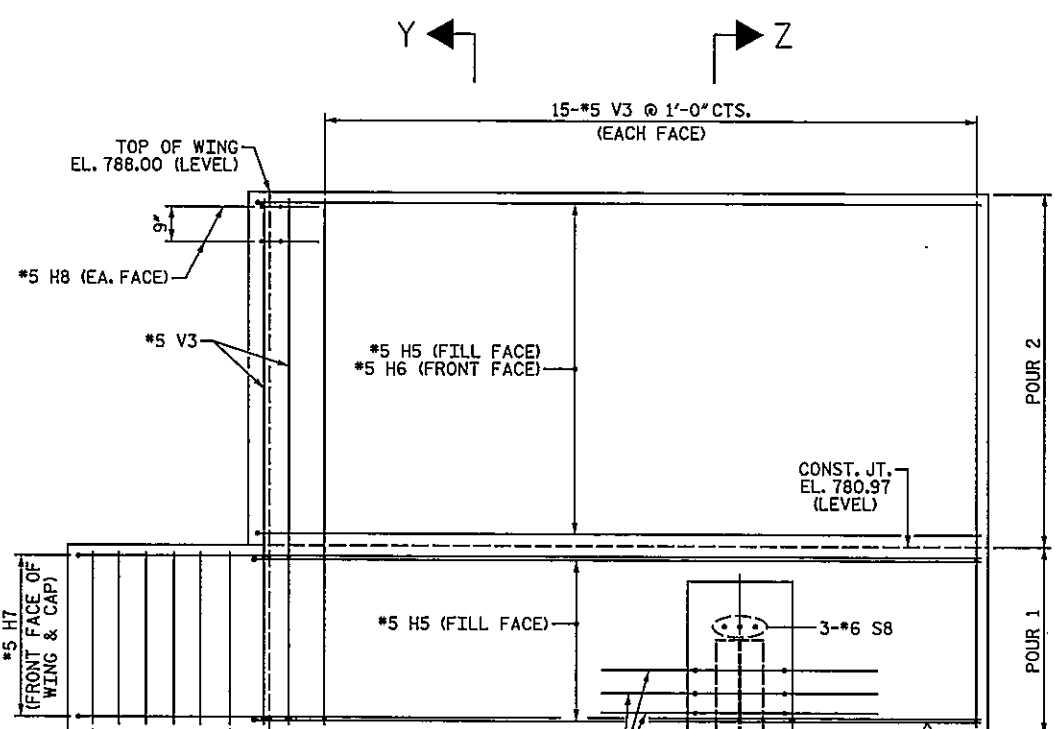
PLAN OF RIGHT WING
(H7 & V4 BARS NOT SHOWN FOR CLARITY)



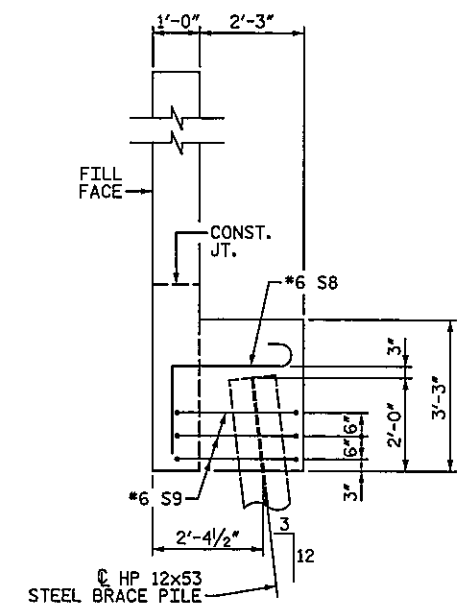
SECTION X-X SECTION Y-Y



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION Z-Z

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 93+23.34 -L-
 SHEET 2 OF 2



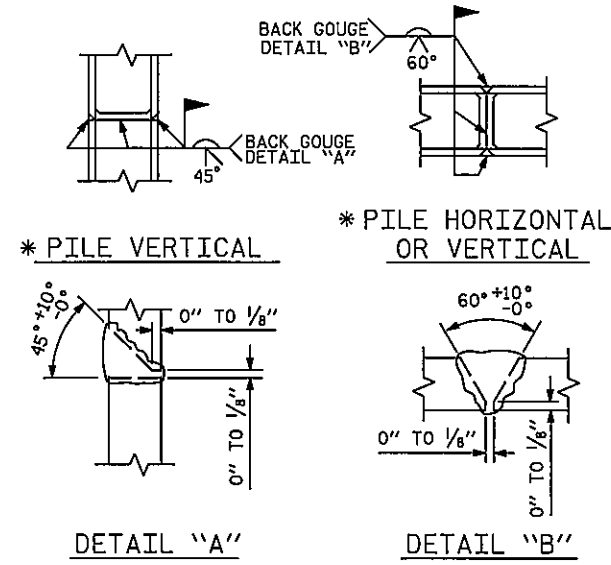
STATE OF NORTH CAROLINA
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 END BENT 2
 RIGHT LANE

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: J. M. GARRISON DATE: 5-21-18

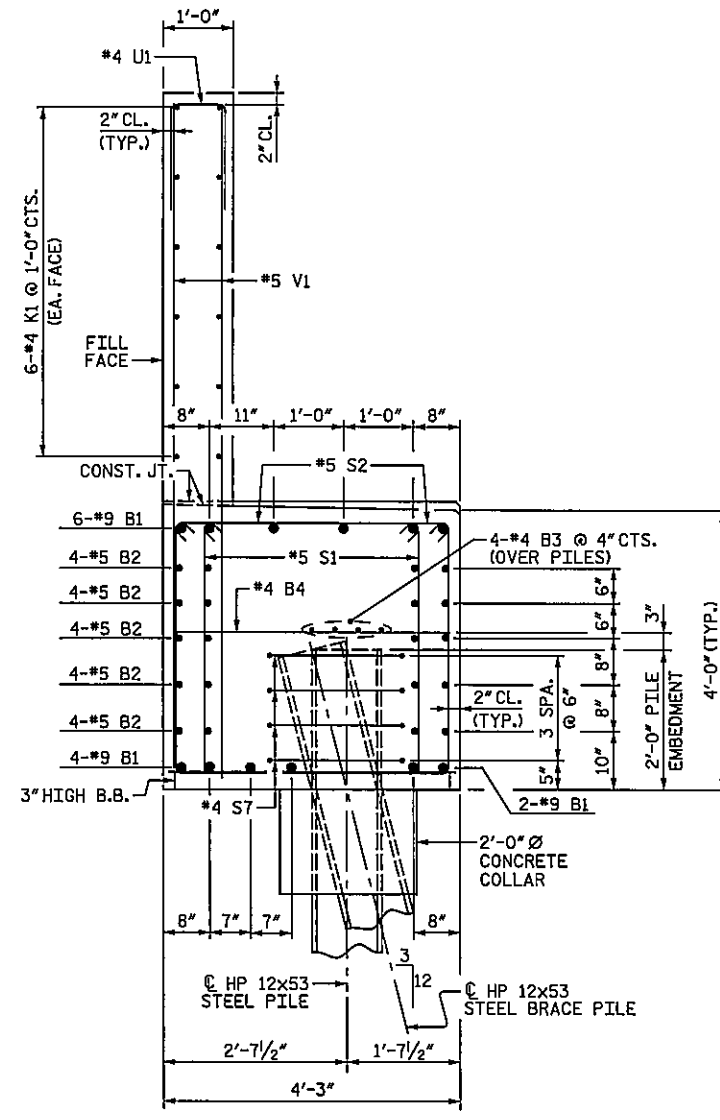
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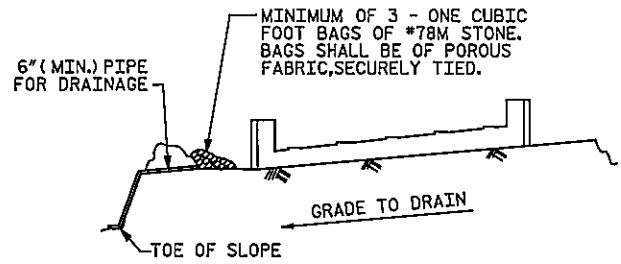
REVISIONS						SHEET NO. S2-56
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			



PILE SPLICE DETAILS
* POSITION OF PILE DURING WELDING



SECTION A-A



MINIMUM OF 3 - ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

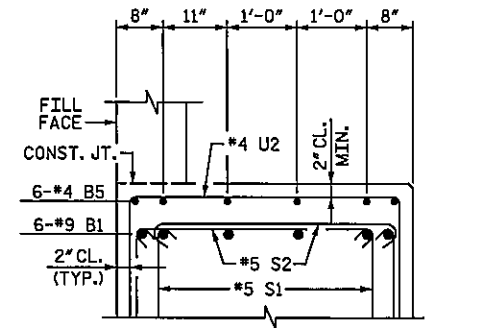
TOE OF SLOPE

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

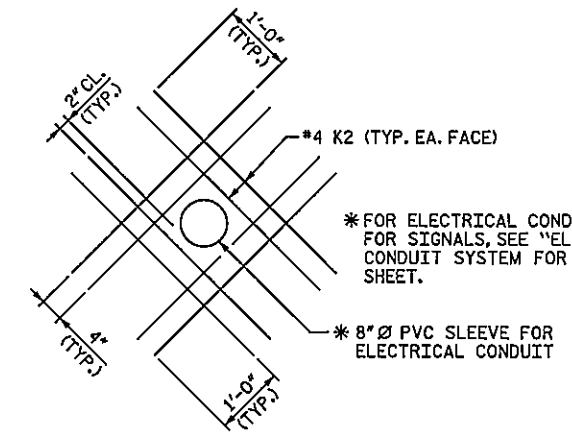
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

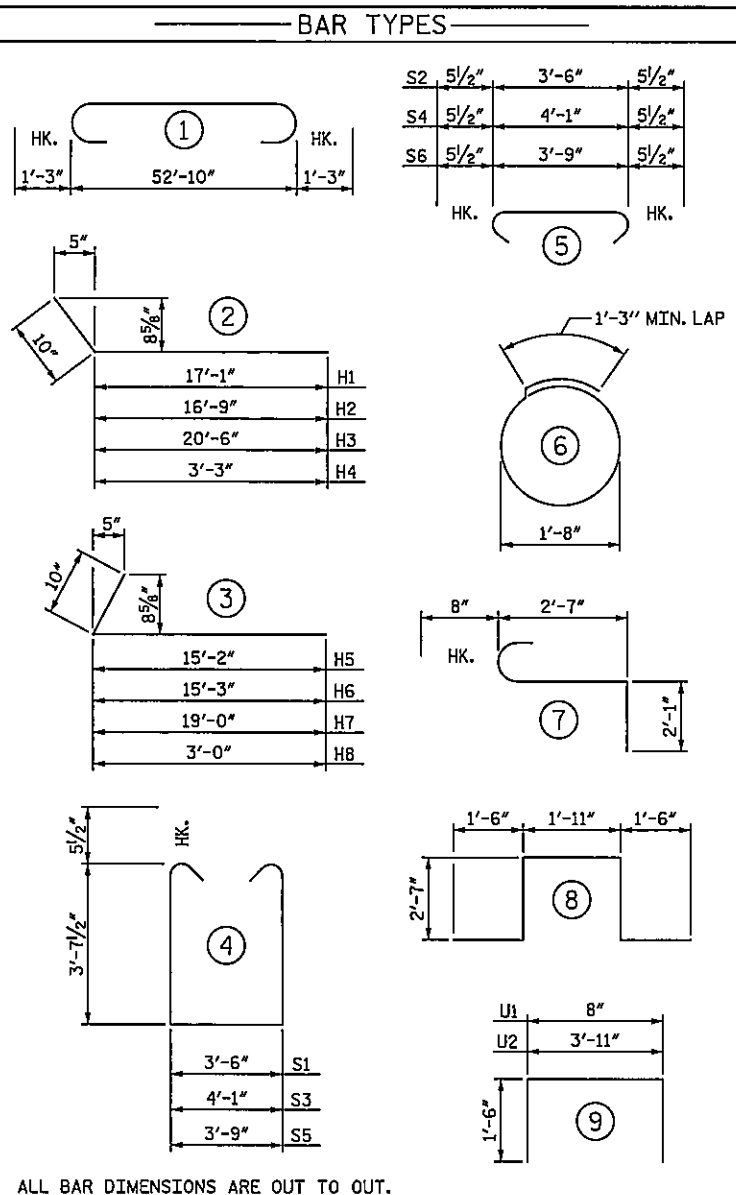
TEMPORARY DRAINAGE AT END BENT



PARTIAL SECTION B-B



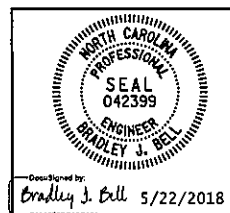
DETAIL "B"
THE PVC SLEEVE THROUGH THE BACKWALL SHALL BE LOCATED BY THE ENGINEER. THE K2 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR TOP OF CAP.



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	#9		55' - 4"	2,258
B2	20	#5	STR.	52' - 10"	1,102
B3	8	#4	STR.	27' - 9"	148
B4	14	#4	STR.	3' - 11"	37
B5	24	#4	STR.	3' - 0"	48
H1	15	#5		17' - 11"	280
H2	8	#5		17' - 7"	147
H3	7	#5		21' - 4"	156
H4	4	#5		4' - 1"	17
H5	15	#5		16' - 0"	250
H6	8	#5		16' - 1"	134
H7	7	#5		19' - 10"	145
H8	4	#5		3' - 10"	16
K1	24	#4	STR.	27' - 9"	445
K2	8	#4	STR.	3' - 8"	20
S1	128	#5		11' - 8"	1,558
S2	128	#5		4' - 5"	590
S3	4	#5		12' - 2"	51
S4	4	#5		4' - 11"	21
S5	4	#5		11' - 11"	50
S6	4	#5		4' - 8"	19
S7	36	#4		6' - 6"	156
S8	6	#6		5' - 4"	48
S9	6	#6		10' - 1"	91
U1	46	#4		3' - 8"	113
U2	24	#4		6' - 11"	111
V1	92	#5	STR.	9' - 3"	888
V2	42	#5	STR.	11' - 3"	493
V3	40	#5	STR.	10' - 8"	445
V4	12	#5	STR.	3' - 8"	46
REINFORCING STEEL				LBS.	9,883
CLASS A CONCRETE					
POUR 1 -					
CAP, COLLARS, LOWER PART OF WINGS, & PILE CAPS IN WINGS					
				C.Y.	41.5
POUR 2 -					
BACKWALL & UPPER PART OF WINGS					
				C.Y.	19.9
TOTAL				C.Y.	61.4
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES					
				EA.	11
HP 12x53 STEEL PILES					
				NO.	11
				LIN. FT.	475

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 93+23.34 -L-



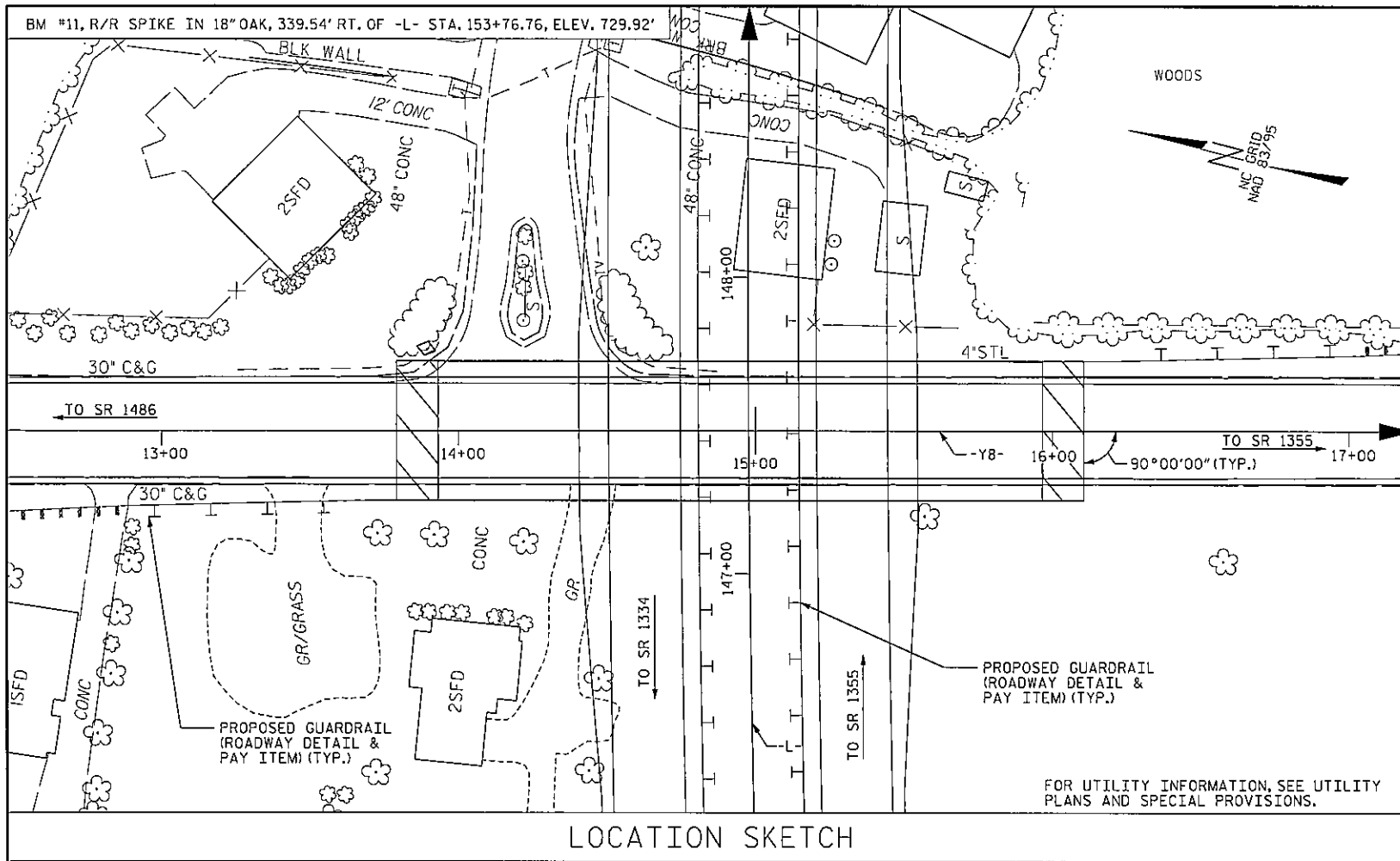
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 END BENT 2
 DETAILS
 RIGHT LANE

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NO.	BY	DATE	NO.	BY	DATE	S2-57
1			3			TOTAL SHEETS
2			4			63

DRAWN BY: C. E. MAYHEW DATE: 5-21-18
 CHECKED BY: T. M. GARRISON DATE: 5-21-18



- ### NOTES
1. ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING
 2. THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
 3. THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
 4. FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 5. FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 6. FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 7. FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 8. FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 9. FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 10. NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
 11. REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 12. THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
 13. FOR FOUNDATION NOTES, SEE SHEET S7-2.
 14. THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS (360,000 KG) OF REINFORCING STEEL, ONE 30 INCH (760 MM) SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS (360,000 KG) OF REINFORCING STEEL, TWO 30 INCH (760 MM) SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION FOR BENT NO. 1	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOOR	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES	STEEL PILE POINTS	THREE BAR METAL RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	
										NO.	LIN. FT.							EACH
SUPERSTRUCTURE	LUMP SUM	LIN. FT.	LIN. FT.	SQ. FT.	SQ. FT.	CY. YDS.	LUMP SUM	LBS	LBS	NO.	LIN. FT.	EACH	NO.	LIN. FT.	EACH	LIN. FT.	SQ. YDS.	LUMP SUM
END BENT No. 1		35	15	10,281	7,832	48.6		7,467		10	1027.92	7	7	80	7		321	LUMP SUM
BENT No. 1	LUMP SUM					111.1		18,769	1,737									
END BENT No. 2		25	5			47.7		7,287				7	7	85	7		292	
TOTAL	LUMP SUM	60	20	10,281	7,832	207.4	LUMP SUM	33,523	1,737	10	1027.92	14	14	165	14	399.67	613	LUMP SUM

PROJECT NO. U-2412A
GUILFORD COUNTY
 STATION: 14+97.65 -Y8- POT

SHEET 3 OF 4



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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER
 SR 1486/SR 4121
 (GREENSBORO/HIGH POINT RD)
 ON SR 1352 (OAKDALE RD)
 BETWEEN SR 1486 AND SR 1355

REVISIONS						SHEET NO. S7-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

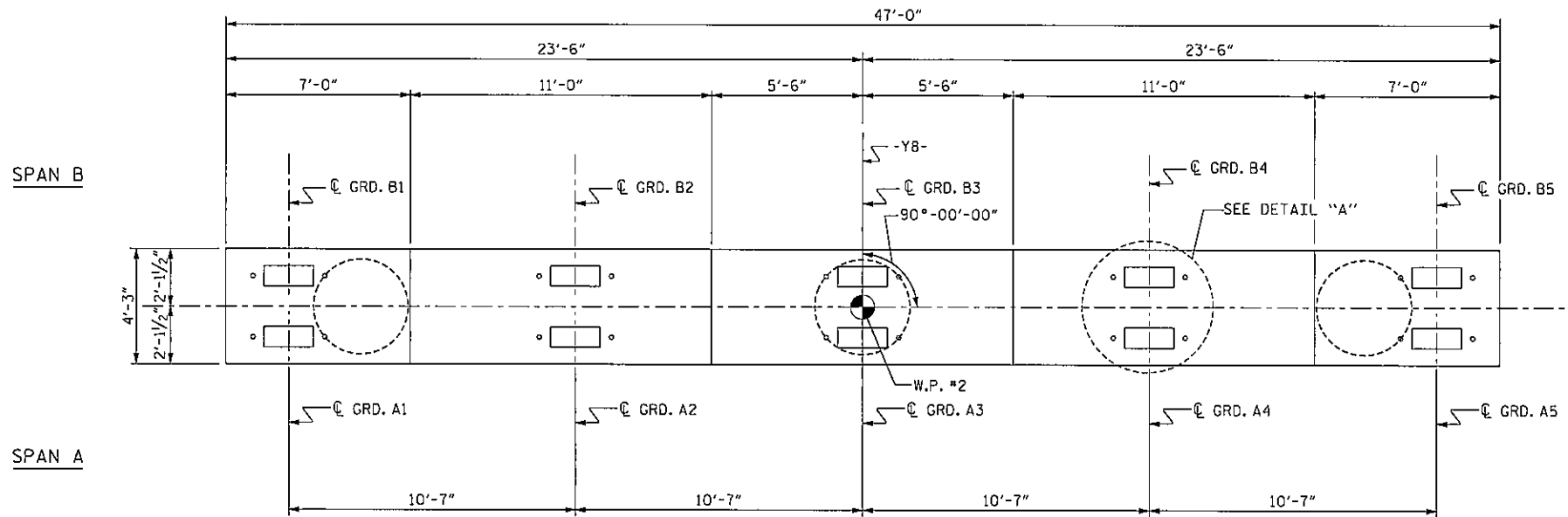
STR. #7

U-2412A
 5/18/2018
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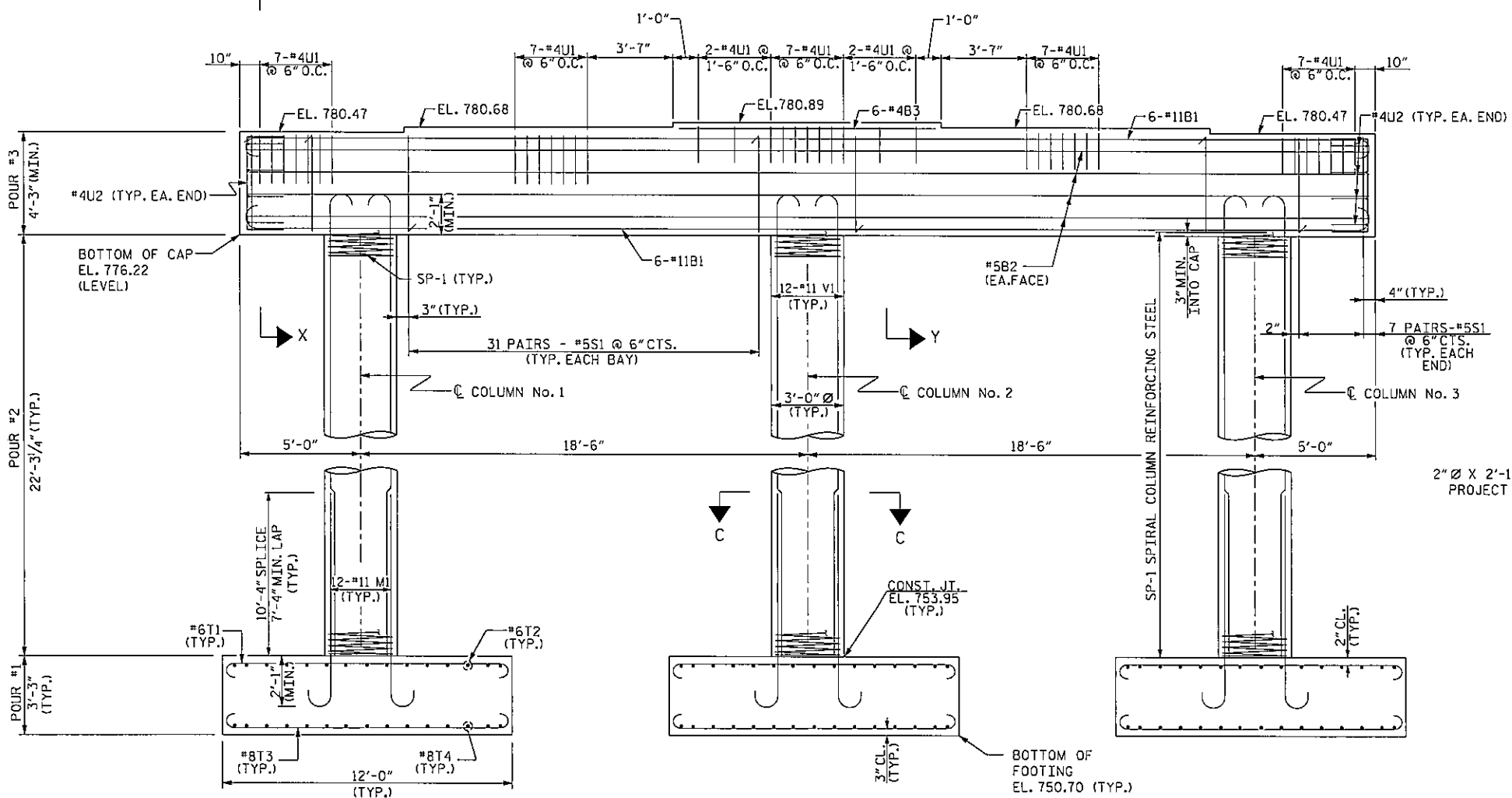
DRAWN BY: J. LOFTUS DATE: 01-18
 CHECKED BY: E. PHELPS DATE: 02-18
 DESIGN ENGINEER OF RECORD: J. LOFTUS DATE: 02-18

NOTES

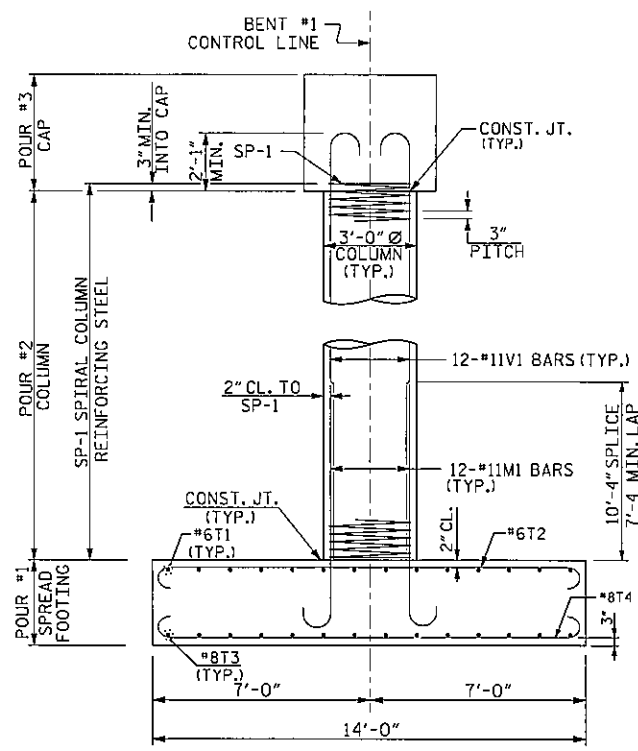
STIRRUPS TO BE PLACED VERTICALLY AND INVERTED ALTERNATELY.
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE COLUMN REINFORCEMENT IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



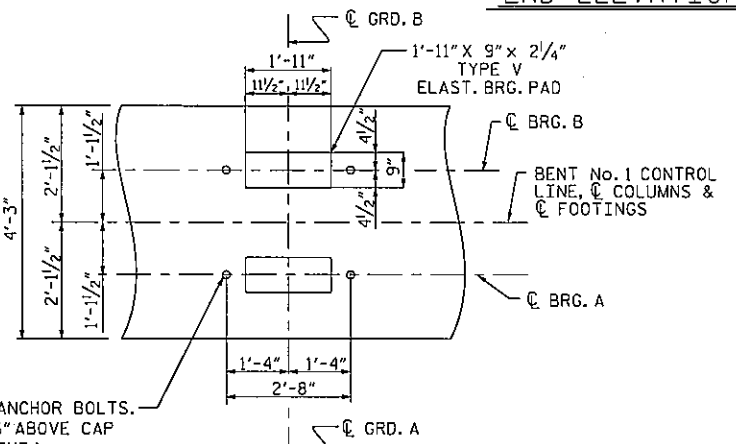
PLAN



ELEVATION



END ELEVATION



DETAIL "A"

(DIMENSIONS ARE TYP. FOR EACH GIRDER)
 (COLUMNS NOT SHOWN FOR CLARITY)

PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 14+97.65 -Y8- POT

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT NO. 1



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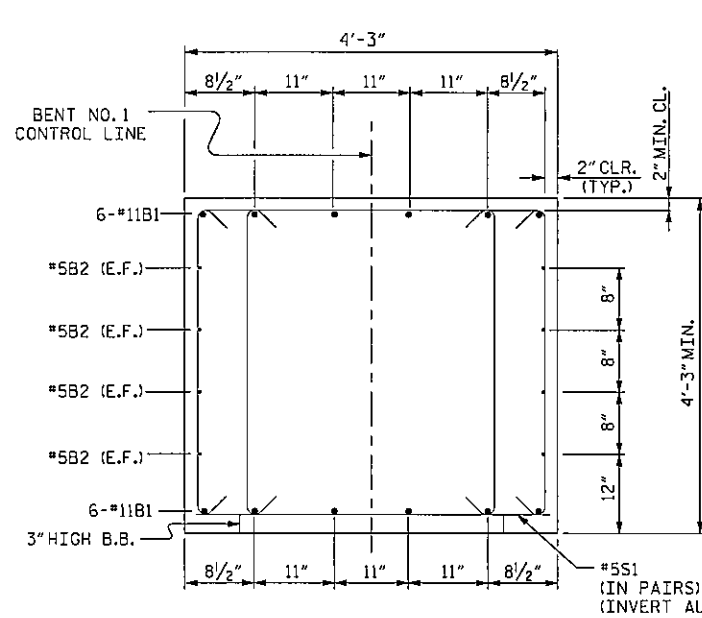
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REVISIONS						SHEET NO. S7-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			2			TOTAL SHEETS 35
2			4			

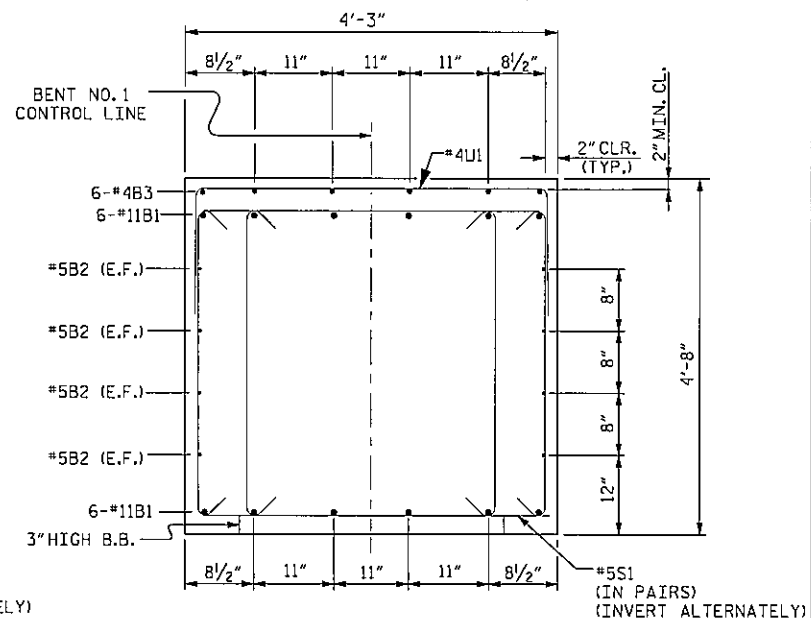
STR. #7

U-2412A
 5/18/2018
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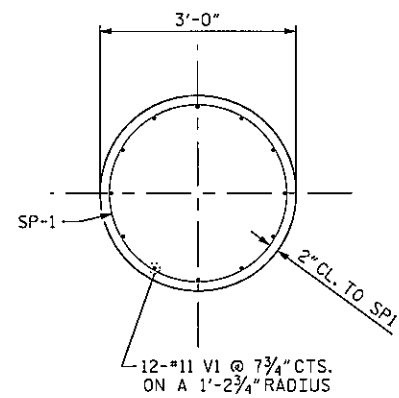
DRAWN BY: E. PHELPS	DATE: 01-18
CHECKED BY: J. LOFTUS	DATE: 02-18
DESIGN ENGINEER OF RECORD: J. LOFTUS	DATE: 02-18



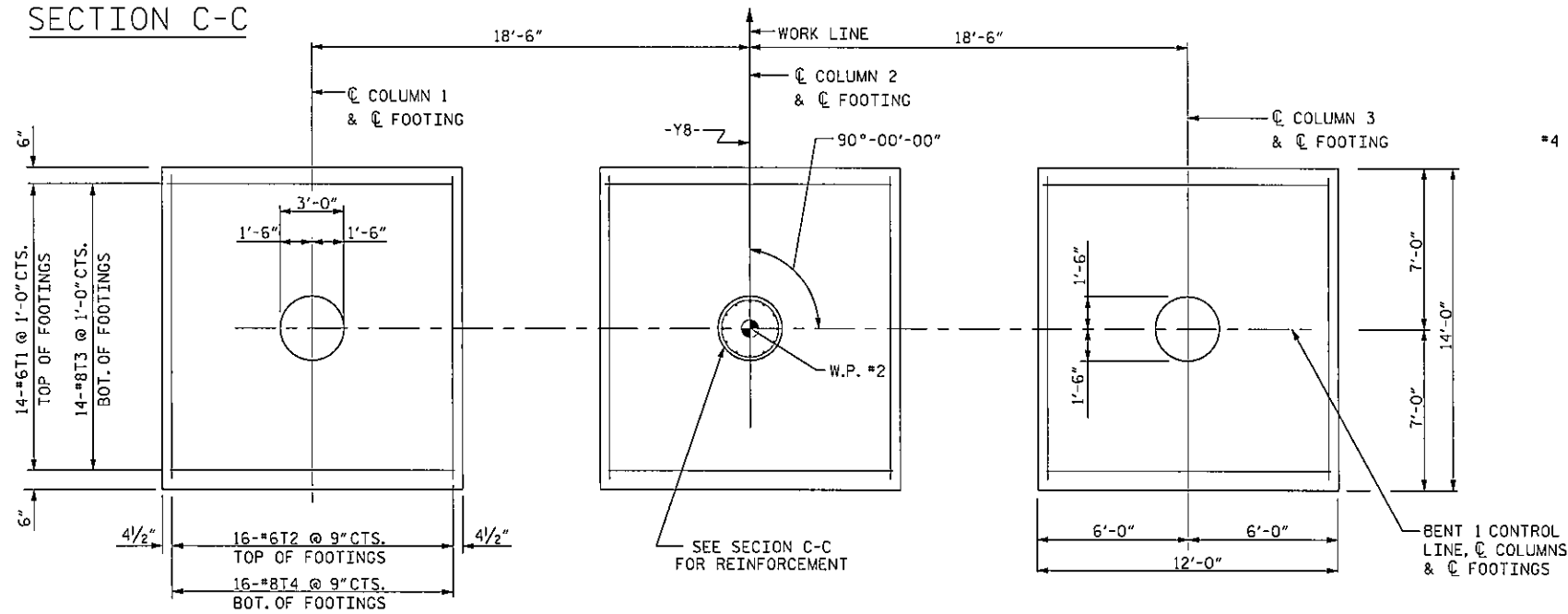
SECTION X-X



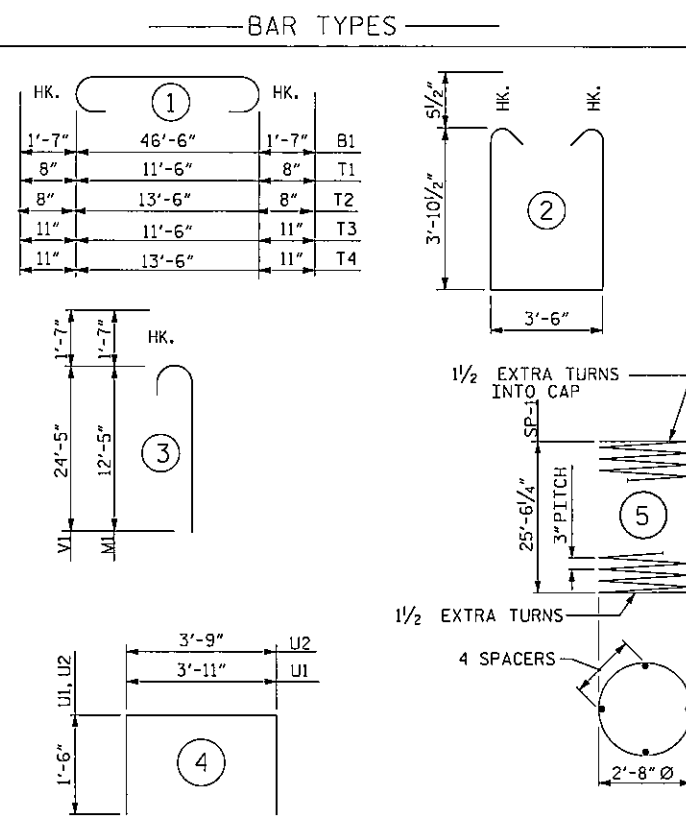
SECTION Y-Y



SECTION C-C



PLAN OF FOOTINGS

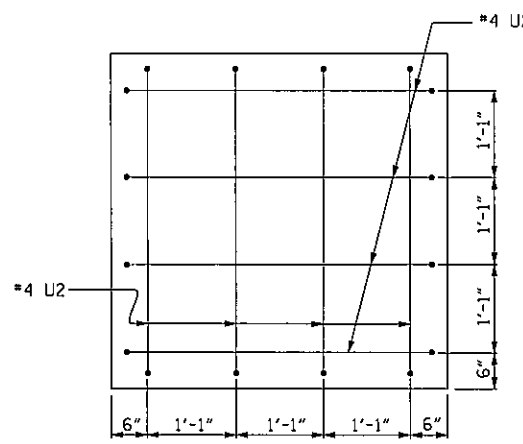


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR BENT NO. 1

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#11	1	49'-8"	3,167
B2	#5	STR	46'-8"	389
B3	#4	STR	10'-6"	42
M1	#11	3	14'-0"	2,678
S1	#5	2	12'-2"	1,929
T1	#6	1	12'-10"	810
T2	#6	1	14'-10"	1,069
T3	#8	1	13'-4"	1,495
T4	#8	1	15'-4"	1,965
U1	#4	4	6'-11"	180
U2	#4	4	6'-9"	72
V1	#11	3	26'-0"	4,973

REINFORCING STEEL (BENT NO. 1)					18,769 LBS.
SP-1	3	*	5	867'-00"	1,737
SPIRAL COLUMN REINFORCING STEEL (BENT NO. 1)					1,737 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)					
POUR #1 (FOOTINGS)				60.7 C.Y.	
POUR #2 (COLUMNS)				17.5 C.Y.	
POUR #3 (CAP)				32.9 C.Y.	
TOTAL CLASS A CONCRETE				111.1 C.Y.	
FOUNDATION EXCAVATION				LUMP SUM	



END OF CAP VIEW



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PROJECT NO. U-2412A
 GUILFORD COUNTY
 STATION: 14+97.65 -Y8- POT

SHEET 2 OF 2

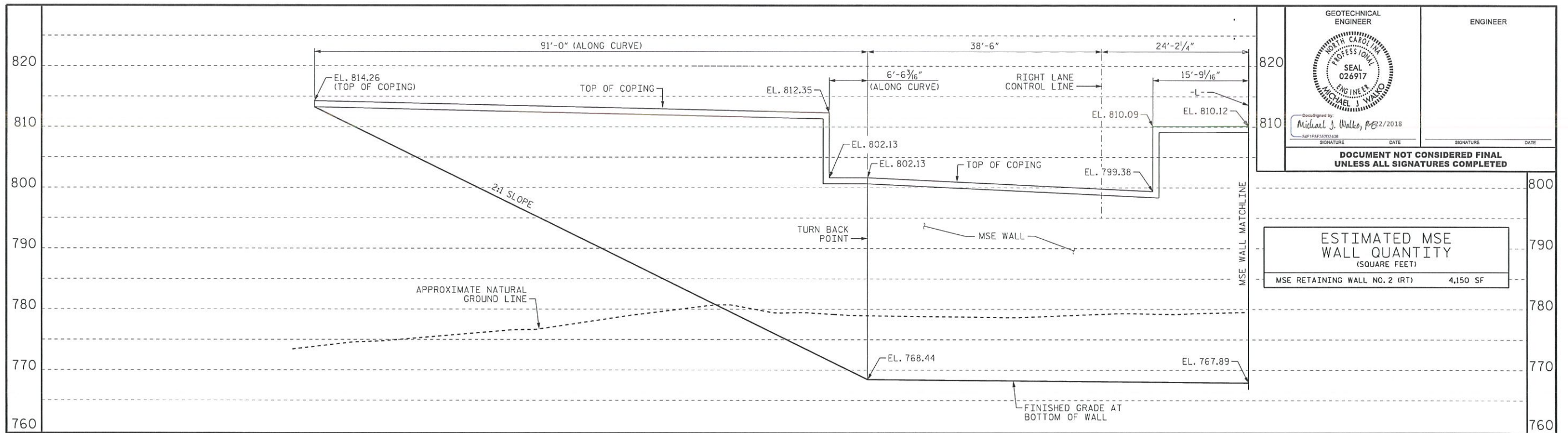
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT NO. 1

REVISIONS						SHEET NO. S7-28
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 35
2			4			

5/18/2018
 U-2412A
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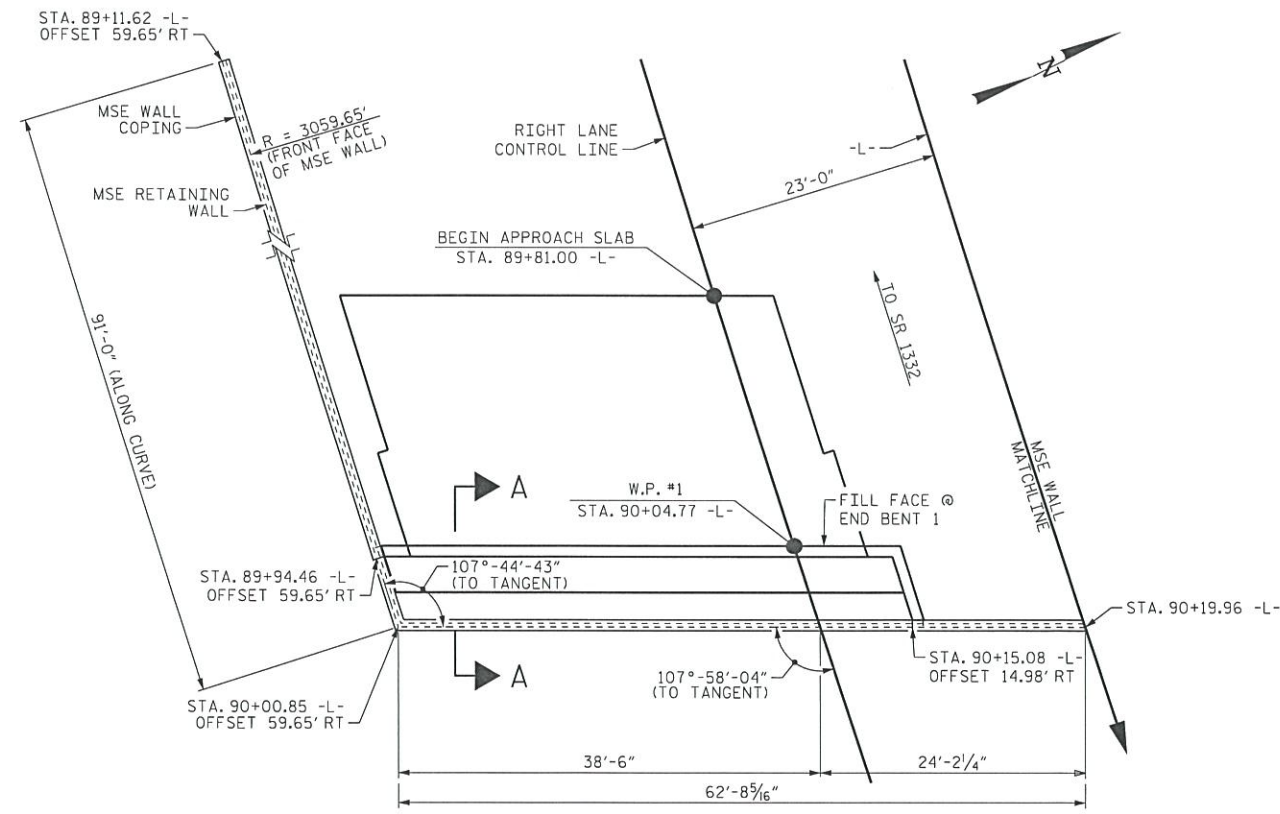
DRAWN BY: E. PHELES DATE: 01-18
 CHECKED BY: J. LOFTUS DATE: 02-18
 DESIGN ENGINEER OF RECORD: J. LOFTUS DATE: 02-18



GEOTECHNICAL ENGINEER
 ENGINEER
 PROFESSIONAL SEAL 026917
 MICHAEL J. WALKO
 Designated by: Michael J. Walko, P.E. 2/2018
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ESTIMATED MSE WALL QUANTITY (SQUARE FEET)	
MSE RETAINING WALL NO. 2 (RT)	4,150 SF

LOOKING BACKSTATION (-L-) AT FRONT FACE OF MSE WALL AT END BENT 1



PLAN

PROJECT NO.: U-2412A
 GUILFORD COUNTY
 STATION: -L- 93+23.34
 SHEET 1 OF 5

PREPARED BY: T. CRUMP	DATE: 5/21/18
REVIEWED BY: M. WALKO, P.E.	DATE: 5/21/18

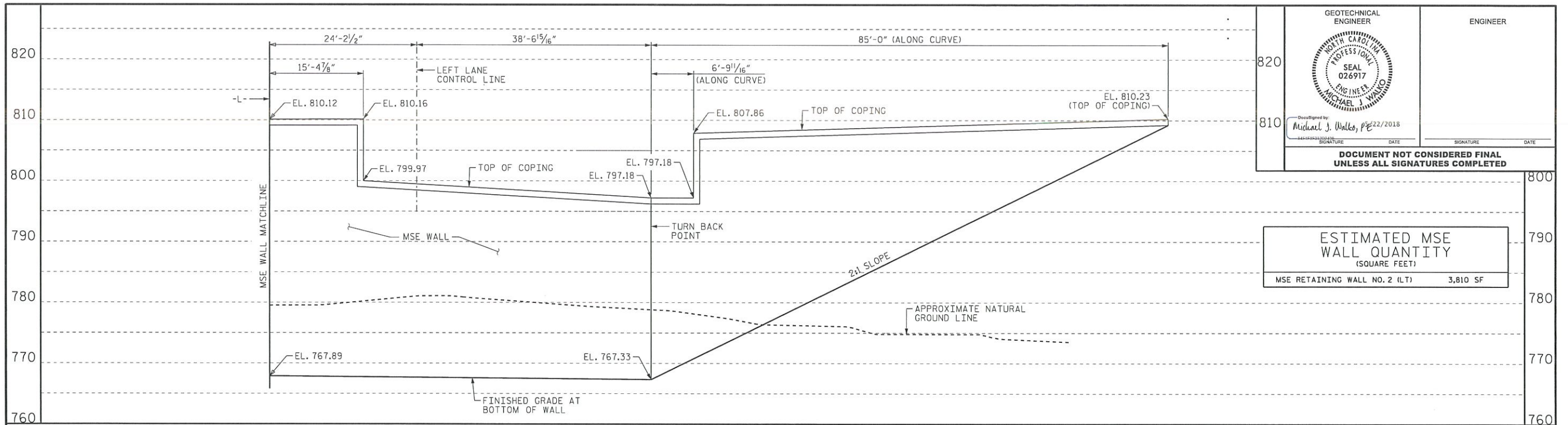
Prepared in the Office of:
ECS
 ECS SOUTHEAST, LLP
 1812 CENTER PARK DRIVE, SUITE D
 CHARLOTTE, NC 28217
 (704) 525-5152 [PHONE]
 (704) 357-0023 [FAX]
 NC REGISTERED ENGINEERING FIRM # F-1078

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

MSE RETAINING WALL NO. 2
END BENT 1 (RT)
WALL ENVELOPE & PLAN VIEW

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

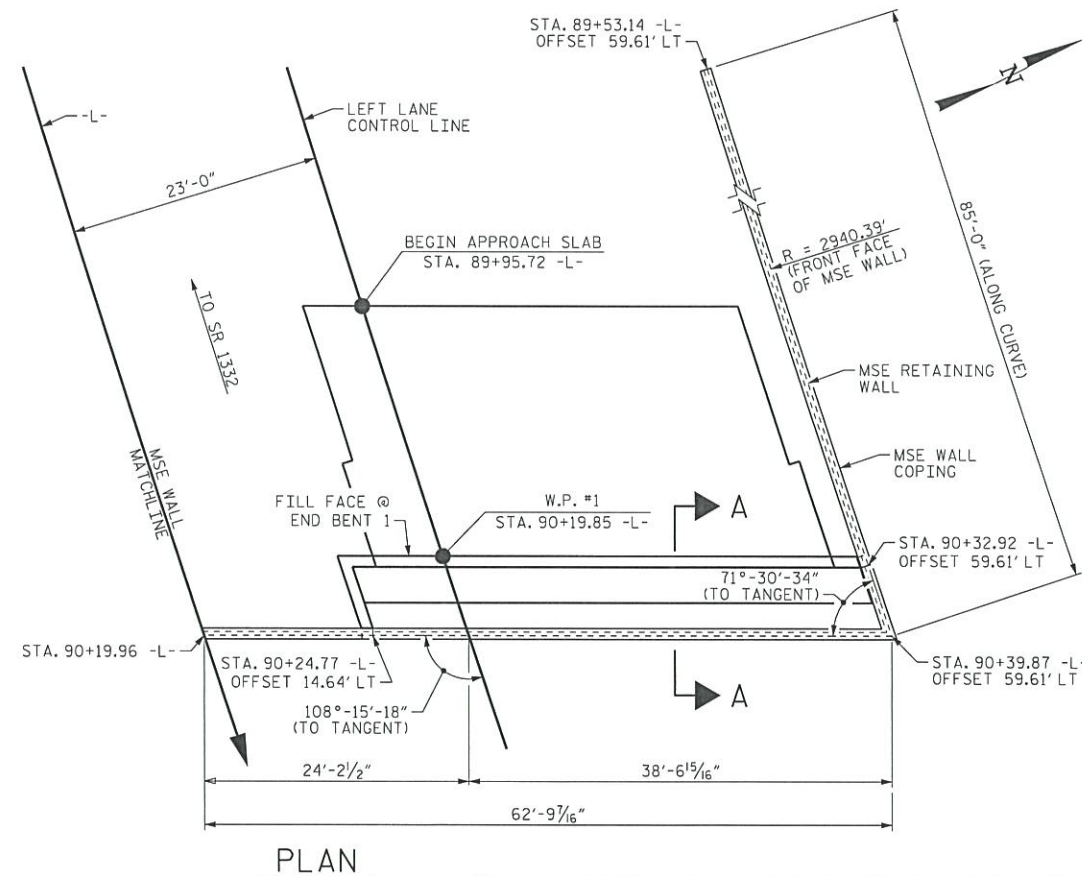
SHEET NO. W-5



GEOTECHNICAL ENGINEER
 ENGINEER
 NORTH CAROLINA PROFESSIONAL SEAL 026917
 MICHAEL J. WALKO
 Designed by: Michael J. Walko, P.E. 5/22/2018
 SIGNATURE DATE SIGNATURE DATE
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ESTIMATED MSE WALL QUANTITY (SQUARE FEET)	
MSE RETAINING WALL NO. 2 (LT)	3,810 SF

LOOKING BACKSTATION (-L-) AT FRONT FACE OF MSE WALL AT END BENT 1



PLAN

PROJECT NO.: U-2412A
 GUILFORD COUNTY
 STATION: -L- 93+43.36
 SHEET 2 OF 5

PREPARED BY: T. CRUMP	DATE: 5/21/18
REVIEWED BY: M. WALKO, P.E.	DATE: 5/21/18


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 NC REGISTERED ENGINEERING FIRM # F-1078

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

MSE RETAINING WALL NO. 2
END BENT 1 (LT)
WALL ENVELOPE & PLAN VIEW

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

SHEET NO. W-6

GEOTECHNICAL ENGINEER  Discussed by: Michael J. Walko, PE DATE: 5/22/2018 SIGNATURE: _____ DATE: _____	ENGINEER SIGNATURE: _____ DATE: _____
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.
 FOR TYPE III REINFORCED BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY DETAIL DRAWING NO. 422D10.
 FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF MSE RETAINING WALL NO.1.
 A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR MSE RETAINING WALL NO.1.
 A DRAIN IS REQUIRED FOR MSE RETAINING WALL NO.1.
 BEFORE BEGINNING MSE WALL DESIGN FOR MSE RETAINING WALL NO.1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

- DESIGN MSE RETAINING WALL NO.1 FOR THE FOLLOWING:
- 1) H = DESIGN HEIGHT + EMBEDMENT
 - 2) DESIGN LIFE = 100 YEARS
 - 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 9,500 PSF
 - 4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7H OR 6 FT, WHICHEVER IS LONGER
 - 5) MINIMUM EMBEDMENT FOR ABUTMENT FRONT FACE = 2 FT BELOW PROPOSED GRADE
 - 6) MINIMUM EMBEDMENT DEPTH FOR SIDE WALLS SHALL BE AS SHOWN BELOW. EMBEDMENT DEPTH SHALL BE MEASURED BELOW A THEORETICAL 4 FT WIDE HORIZONTAL BENCH, SEE STRUCTURE PLANS.

SLOPE IN FRONT OF WALL	MIN. EMBEDMENT DEPTH
3H:1V OR FLATTER	2 FT
2H:1V	2 FT

7) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
FINE	115	34	0

*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.

8) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
BACKFILL	120	30	0
FOUNDATION	120	30	0

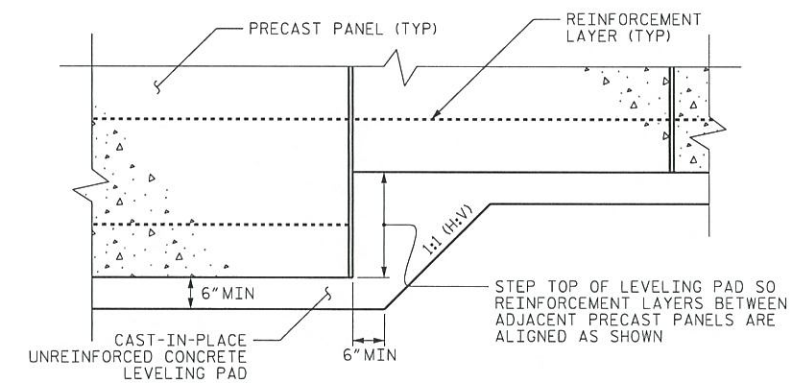
WITHIN 55 FT OF CENTERLINE, DESIGN MSE RETAINING WALL NO.1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO.1 LOCATED AT STATION 90+04.77 (RT) AND 90+19.85 (LT). MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT FOR MSE RETAINING WALL NO.1.

FOUNDATIONS FOR END BENT NO.1 LOCATED AT STATION 90+04.77 (RT) AND 90+19.85 (LT) WILL INTERFERE WITH REINFORCEMENT FOR MSE RETAINING WALL NO.1. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR MSE RETAINING WALL NO.1 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.




PRECAST CONCRETE PANELS

LEVELING PAD STEP DETAILS


PROJECT NO.: U-2412A
 GUILFORD COUNTY
 STATION: -L- 93+23.34 & 93+43.36
 SHEET 3 OF 5

PREPARED BY: T. CRUMP	DATE: 5/21/18
REVIEWED BY: M. WALKO, P.E.	DATE: 5/21/18

Prepared in the Office of:



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 NC REGISTERED
 ENGINEERING
 FIRM # F-1078



**NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS**

**GEOTECHNICAL
 ENGINEERING UNIT**

**MSE RETAINING WALL NO.2
 NOTES & DETAILS**

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

SHEET NO. W-7

GEO TECHNICAL ENGINEER

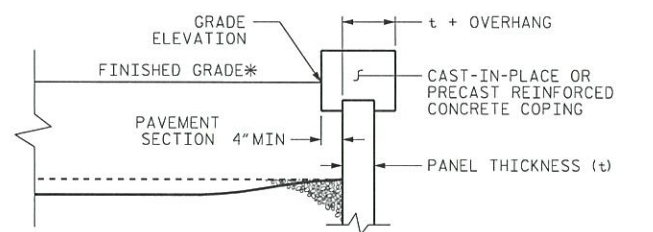
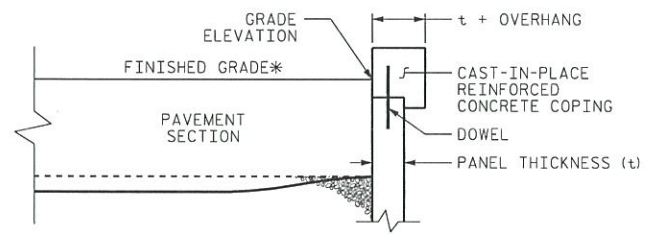
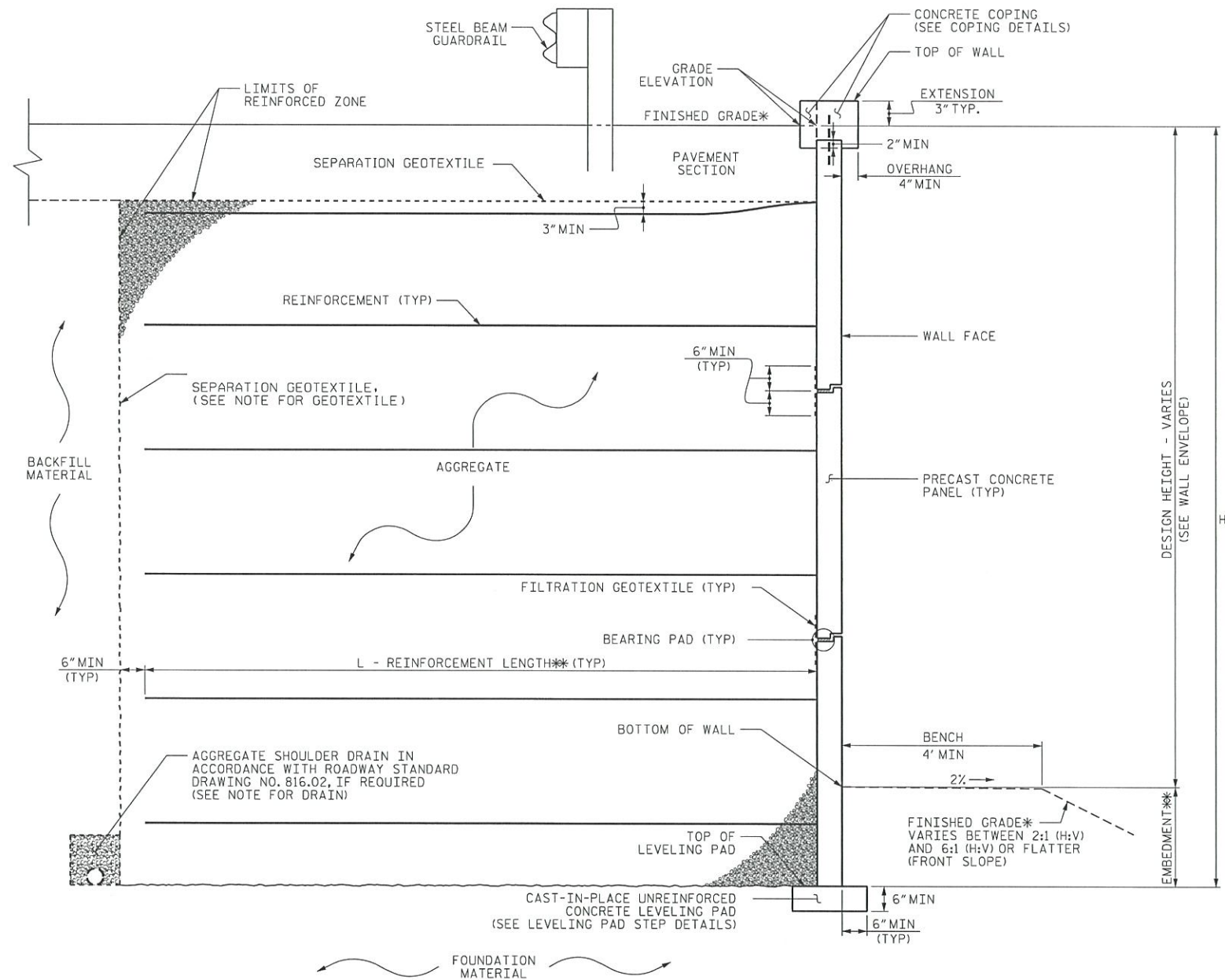
Seal No. 026917
Michael J. Walko
Engineer

ENGINEER

Designed by: Michael J. Walko, P.E. 5/22/2018

SIGNATURE DATE SIGNATURE DATE

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COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.
*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.

MSE WALL WITH PRECAST PANELS - SECTION THRU WALL

*SEE COPING DETAILS AND PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

PROJECT NO.: U-2412A
 GUILFORD COUNTY
 STATION: -L- 93+23.34 & 93+43.36
 SHEET 4 OF 5

PREPARED BY: T. CRUMP	DATE: 5/21/18
REVIEWED BY: M. WALKO, P.E.	DATE: 5/21/18

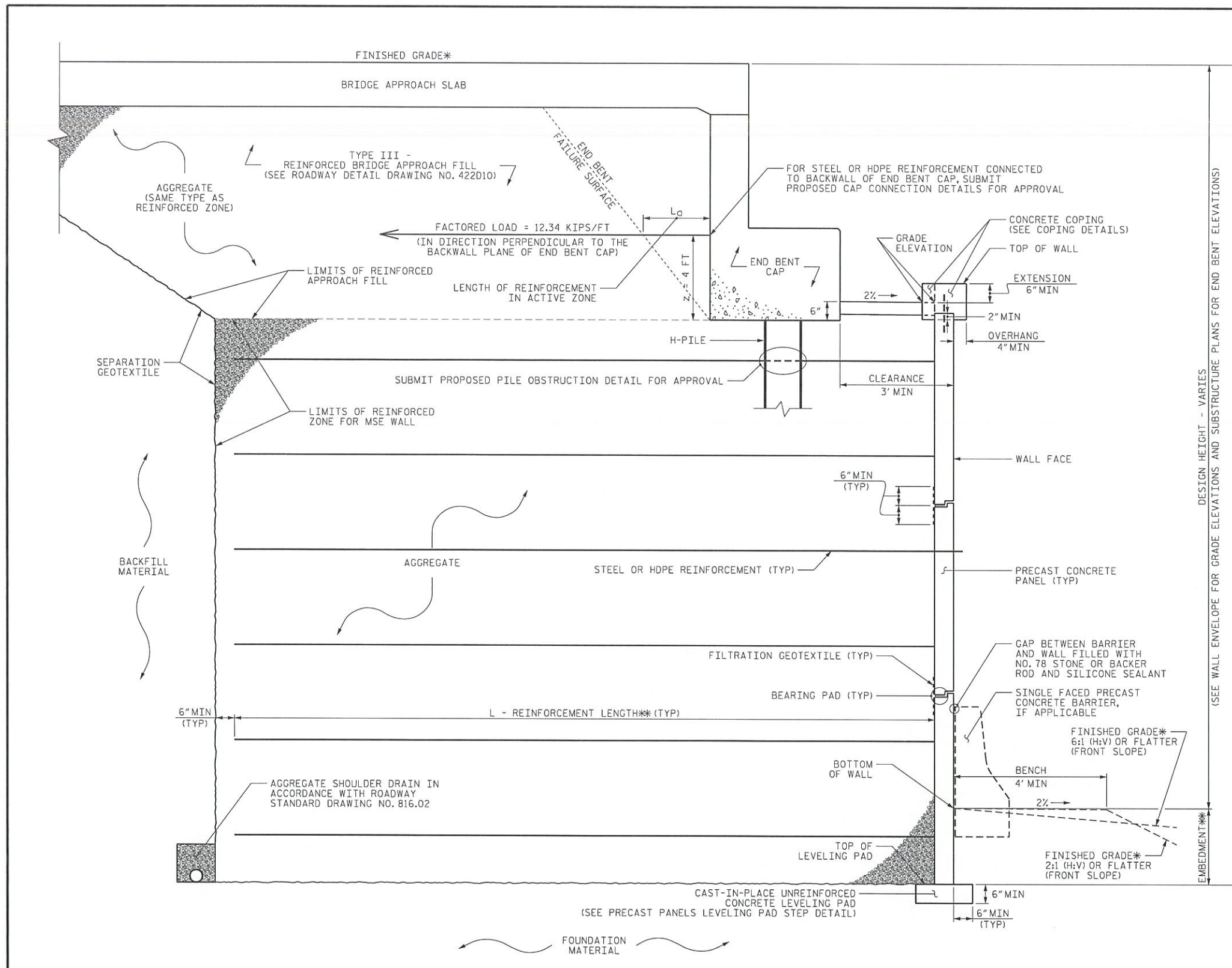
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NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

GEO TECHNICAL ENGINEERING UNIT

REVISIONS						SHEET NO. W-8
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			



MSE ABUTMENT WALL WITH PRECAST PANELS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
 **SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE,
 MSE WALL NOTES FOR EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

GEOTECHNICAL ENGINEER

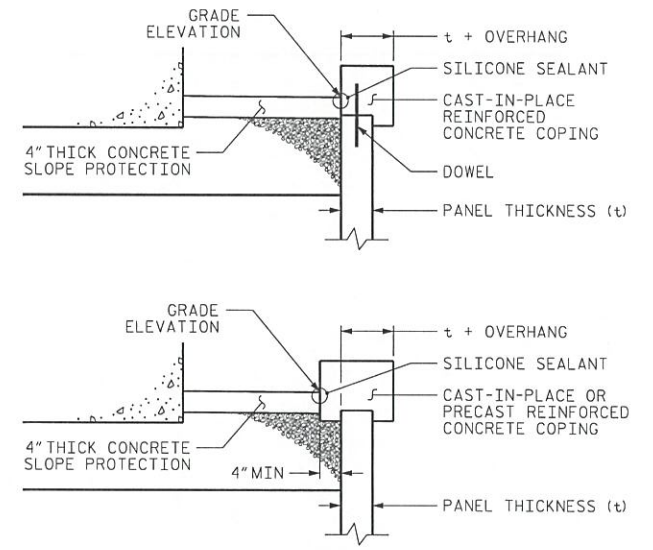
ENGINEER

SEAL 026917

Michael J. Walko, P.E. 5/2/2018

DATE SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS.

PROJECT NO.: U-2412A
 GUILFORD COUNTY
 STATION: -L- 93+23.34 & 93+43.36
 SHEET 5 OF 5

PREPARED BY: T. CRUMP DATE: 5/21/18
 REVIEWED BY: M. WALKO, P.E. DATE: 5/21/18

Prepared in the Office of:

ECS

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

MSE RETAINING WALL NO. 2 WALL WITH PANELS, END BENT ON H-PILES TYPICAL & COPING DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-9
2			4			