

CODE NUMBER	PAY ITEM	CONSTRUCTION TYPE CODE 0011	
		UNIT	076-0031, FUNDING
			80% FEDERAL, 20% STATE
50200100	STRUCTURE EXCAVATION	CU YD	188
50300100	FLOOR DRAINS	EACH	20
50300225	CONCRETE STRUCTURES	CU YD	233.3
50300255	CONCRETE SUPERSTRUCTURE	CU YD	353.9
50300260	BRIDGE DECK GROOVING	SQ YD	871
50300280	CONCRETE ENCASEMENT	CU YD	2.4
50300300	PROTECTIVE COAT	SQ YD	1,127
50500105	FURNISHING AND ERECTING STRUCTURAL STEEL	L SUM	1
50500505	STUD SHEAR CONNECTORS	EACH	4,464
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	157,430
50800515	BAR SPLICERS	EACH	1,535
50800530	MECHANICAL SPLICERS	EACH	192
51201600	FURNISHING STEEL PILES HP12X53	FOOT	189
51202305	DRIVING PILES	FOOT	189

157,430



FILE NAME: \\snp\work\pudob\1\evenderba\02181431\78088-1st-cover.dgn

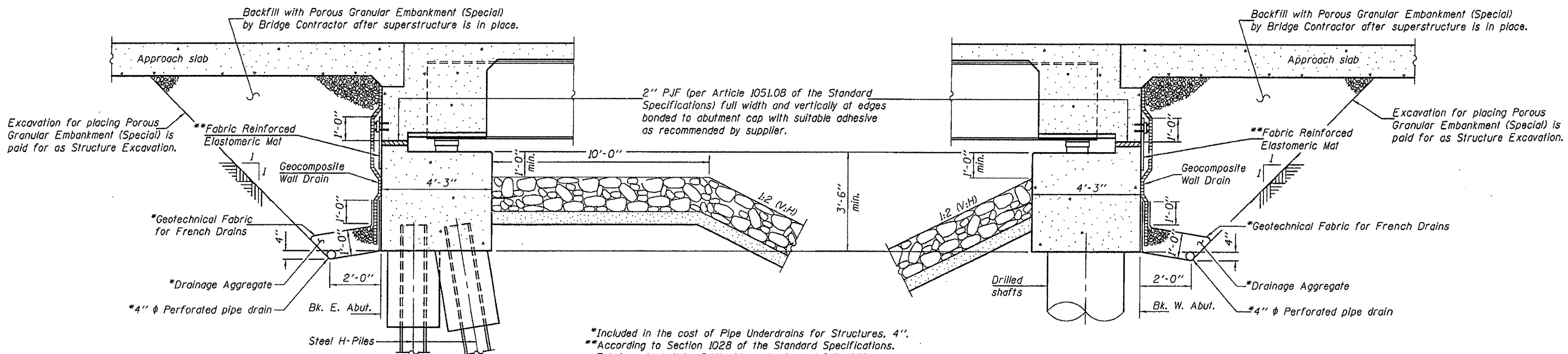
USER NAME : #USER#	DESIGNED -	REVISED <b>4-16-2012</b>
	DRAWN -	REVISED -
PLOT SCALE : 100.0000 1/16"	CHECKED -	REVISED -
PLOT DATE : 2/2/2012	DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**SUMMARY OF QUANTITIES**

SCALE:	SHEET NO.	OF	SHEETS	STA.	TO STA.
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F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
885	6B-2	POPE	51	5
CONTRACT NO. 78168			ILLINOIS FED. AID PROJECT	

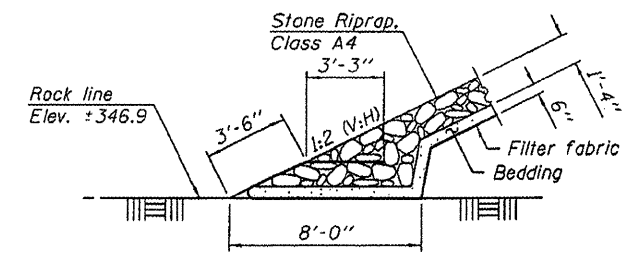


SECTION THRU SEMI-INTEGRAL EAST ABUTMENT

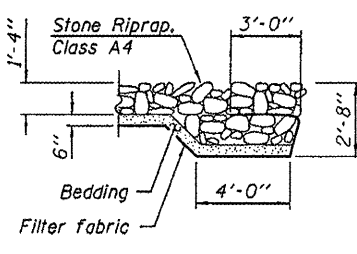
SECTION THRU SEMI-INTEGRAL WEST ABUTMENT

\*Included in the cost of Pipe Underdrains for Structures, 4".  
 \*\*According to Section 1028 of the Standard Specifications. Fabric mat shall be 24" wide and attached full width and vertically at edges to the abutment cap with a 3/8" x 5" steel plate and 1/2" φ studs with nuts & washers at 12" cts. Cost included with Concrete Superstructures.

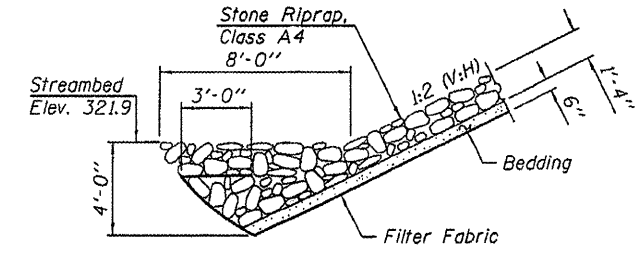
Note: All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601101).



SECTION A-A



SECTION B-B



SECTION C-C

GENERAL NOTES

Fasteners shall be ASTM A 325 Type 3. Bolts 7/8" φ, holes 15/16" φ, unless otherwise noted.  
 Calculated weight of Structural Steel = 176410 lbs (M 270 Grade 50W).  
 All structural steel shall be AASHTO M 270 Grade 50W.  
 No field welding is permitted except as specified in the contract documents.  
 Reinforcement bars designated (E) shall be epoxy coated.  
 Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.  
 Structural steel shall only be painted for a distance equal to the depth of embedment into the concrete cap plus 3 inches. Painted areas shall be primed in the shop with a Department approved zinc rich primer. Field painting will not be required.  
 Layout of slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.  
 The embankment configuration shown shall be the minimum that must be placed and compacted prior to construction of the abutments.  
 Excavation behind existing west abutment wall shall be performed to balance front and back soil pressure before removing the existing superstructure. The Contractor shall sawcut the upper portion of the existing west abutment only at the stage removal line before Stage 1 removal to ensure the remaining portion will not be prematurely damaged.  
 Slipforming of the parapets is not allowed.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Porous Granular Embankment (Special)	Cu. Yd.		121	121
Stone Riprap, Class A4	Sq. Yd.		1040	1040
Filter Fabric	Sq. Yd.		1040	1040
Removal of Existing Structures	Each		1	1
Structure Excavation	Cu. Yd.		188	188
Floor Drains	Each	20		20
Concrete Structures	Cu. Yd.		233.3	233.3
Concrete Superstructure	Cu. Yd.	353.9		353.9
Bridge Deck Grooving	Sq. Yd.		871	871
Concrete Encasement	Cu. Yd.		2.4	2.4
Protective Coat	Sq. Yd.	1127		1127
Furnishing and Erecting Structural Steel	L. Sum	1		1
Stud Shear Connectors	Each	4464		4464
Reinforcement Bars, Epoxy Coated	Pound	87350	70080	157430
Bar Splicers	Each	829	706	1535
Furnishing Steel Piles HPI2x53	Foot		189	189
Driving Piles	Foot		189	189
Temporary Soil Retention System	Sq. Ft.		558	558
Name Plates	Each	1		1
Drilled Shaft in Soil	Cu. Yd.		33.9	33.9
Drilled Shaft in Rock	Cu. Yd.		62.7	62.7
Elastomeric Bearing Assembly, Type I	Each		12	12
Anchor Bolts 1"	Each		24	24
Anchor Bolts 1 1/4"	Each		24	24
Geocomposite Wall Drain	Sq. Yd.		65	65
Pipe Underdrains for Structures, 4"	Foot		138	138
Mechanical Splicers	Each		192	192
Asbestos Bearing Pad Removal	Each	36		36

DESIGN SCOUR ELEVATION TABLE

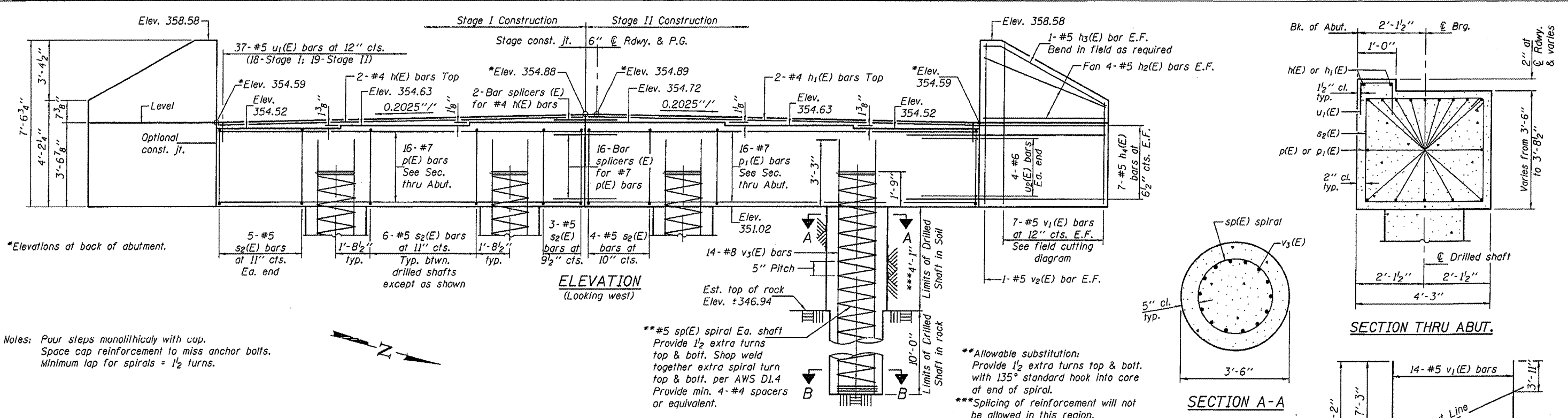
Design Scour Elevation (ft.)	E. Abut.	Pier 1	Pier 2	W. Abut.
	351.02	321.9	321.9	351.02

WATERWAY INFORMATION

Existing Low Grade Elev. 358.37 @ Sta. 1258+00  
 Proposed Low Grade Elev. 358.78 @ Sta. 1258+00  
 Drainage Area = 56.9 mi.<sup>2</sup>

Flood	Freq. Yr.	C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head - Ft.		Headwater El.	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
Design	50	10900	2756.0	3185.0	350.9	0.1	0.1	350.9	350.9
Base	100	12400	2770.0	3201.0	351.0	0.1	0.1	351.1	351.1
Max. Calc.	500	16200	2770.0	3201.0	351.0	0.2	0.2	351.2	351.2

10 year velocity through existing bridge = 2.7 ft/s  
 10 year velocity through proposed bridge = 2.4 ft/s

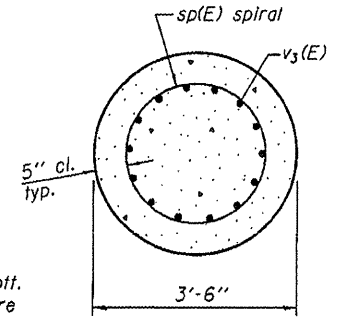
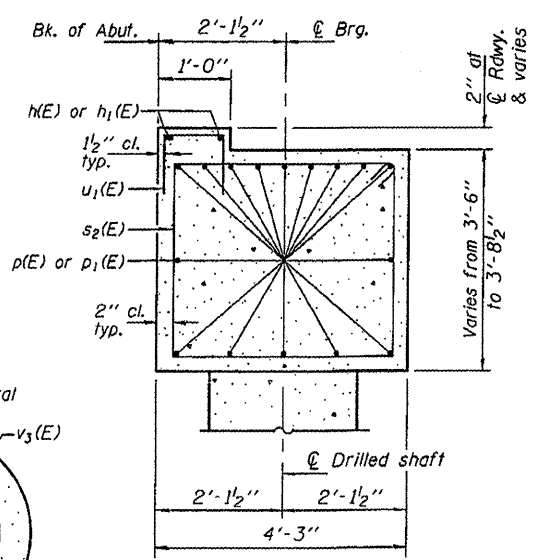


\*Elevations at back of abutment.

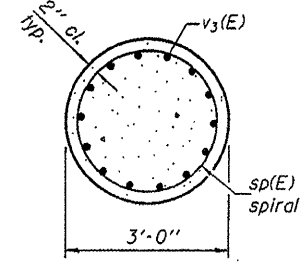
Notes: Pour steps monolithically with cap. Space cap reinforcement to miss anchor bolts. Minimum lap for spirals = 1 1/2 turns.

\*\*#5 sp(E) spiral Ea. shaft Provide 1/2 extra turns top & bott. Shop weld together extra spiral turn top & bott. per AWS D1.4 Provide min. 4-#4 spacers or equivalent.

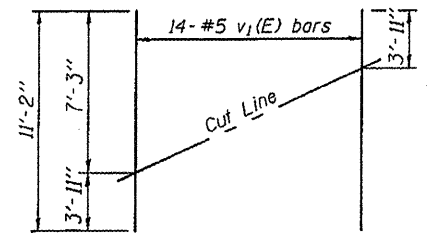
\*\*Allowable substitution: Provide 1/2 extra turns top & bott. with 135° standard hook into core at end of spiral. \*\*\*Splicing of reinforcement will not be allowed in this region.



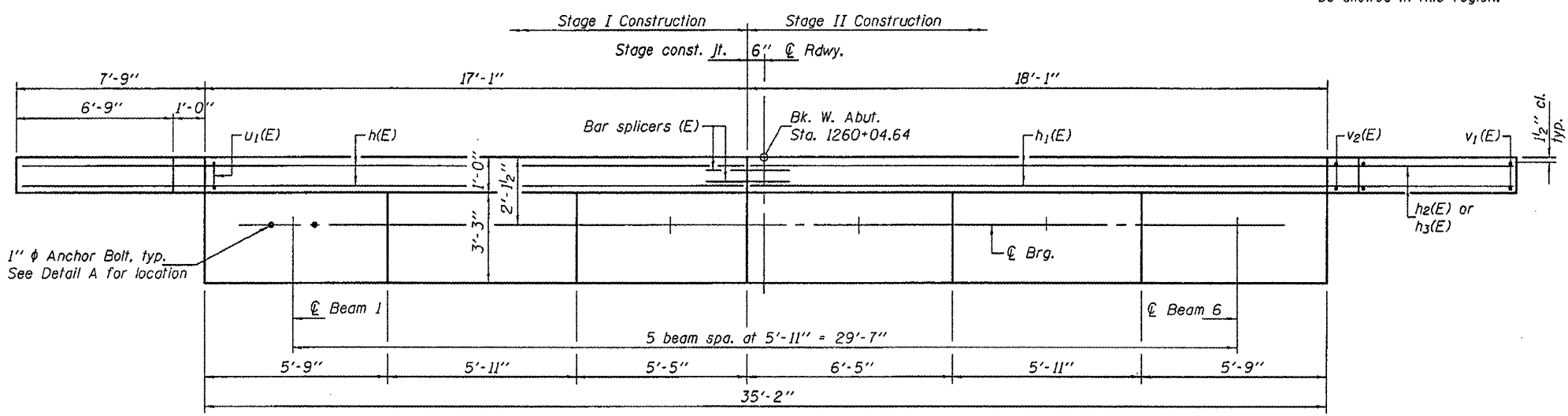
SECTION A-A



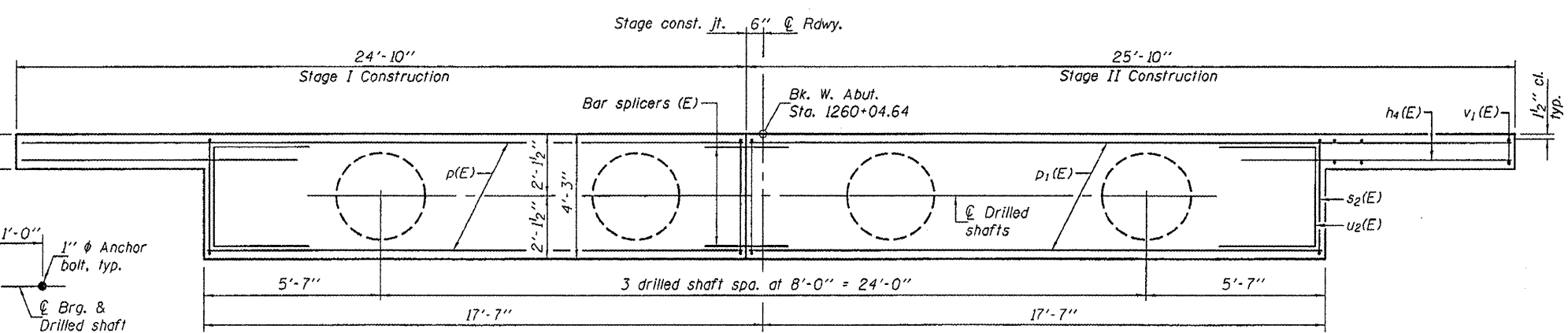
SECTION B-B



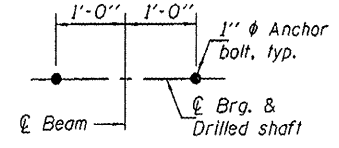
FIELD CUTTING DIAGRAM  
Order v1(E) full length. Cut as shown and use remainder of bars in opposite face.



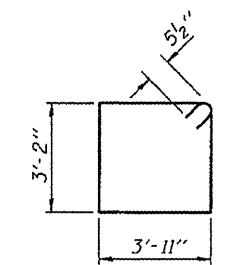
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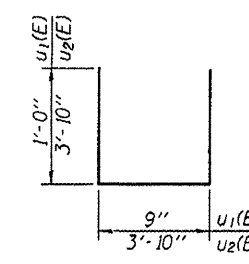
PLAN - CAP



DETAIL A



BAR s2(E)



BARS u1(E) & u2(E)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	2	#4	24'-6"	—
h1(E)	2	#4	25'-6"	—
h2(E)	16	#5	7'-6"	—
h3(E)	4	#5	7'-10"	—
h4(E)	28	#5	9'-9"	—
p(E)	16	#7	16'-9"	—
p1(E)	16	#7	17'-9"	—
s2(E)	29	#5	15'-1"	□
sp(E)	4	#5	15'-10"	⋈
u1(E)	37	#5	2'-9"	—
u2(E)	8	#6	11'-6"	—
v1(E)	14	#5	11'-2"	—
v2(E)	4	#5	7'-3"	—
v3(E)	56	#8	17'-1"	—
Structure Excavation			Cu. Yd.	52
Concrete Structures			Cu. Yd.	23.7
Reinforcement Bars, Epoxy Coated			Pound	6780
Drilled Shaft in Soil			Cu. Yd.	5.8
Drilled Shaft in Rock			Cu. Yd.	10.5
Anchor Bolts, 1" φ			Each	12

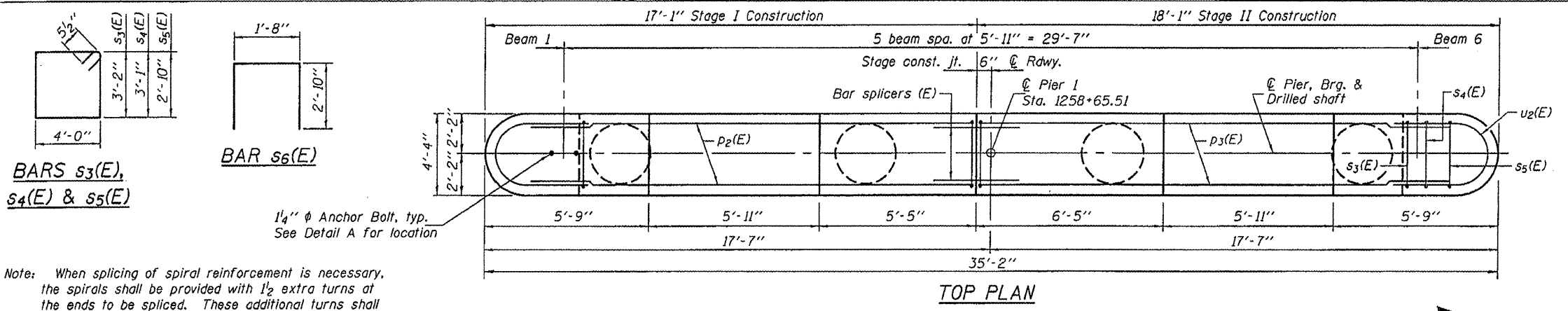
† Length is height of spiral. For details of bar splicers, see sheet 23 of 25.

DESIGNED - Nicholas R. Barnett	EXAMINED - Thomas J. Domagala	DATE - MARCH 20, 2012
CHECKED - Michael D. Rolape	ENGINEER OF BRIDGE DESIGN	
DRAWN - h.t. duong	REVISOR	REVISED 4-16-2012, NRB
CHECKED - NRB/MDR	ENGINEER OF BRIDGES AND STRUCTURES	REVISED

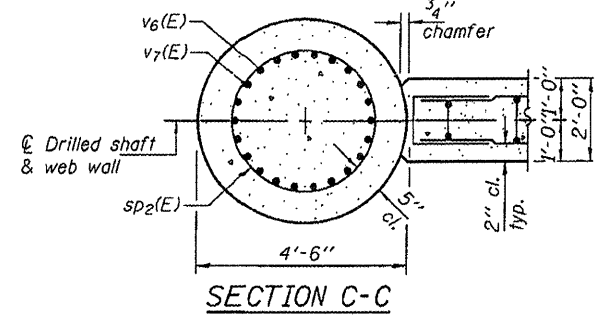
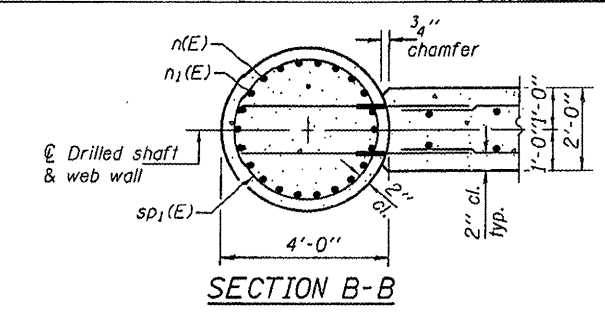
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT  
STRUCTURE NO. 076-0031  
SHEET NO. 19 OF 25 SHEETS

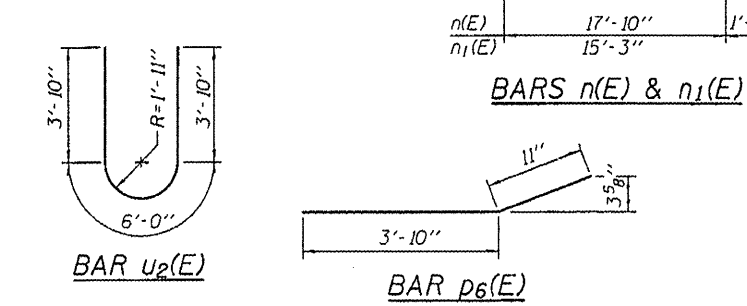
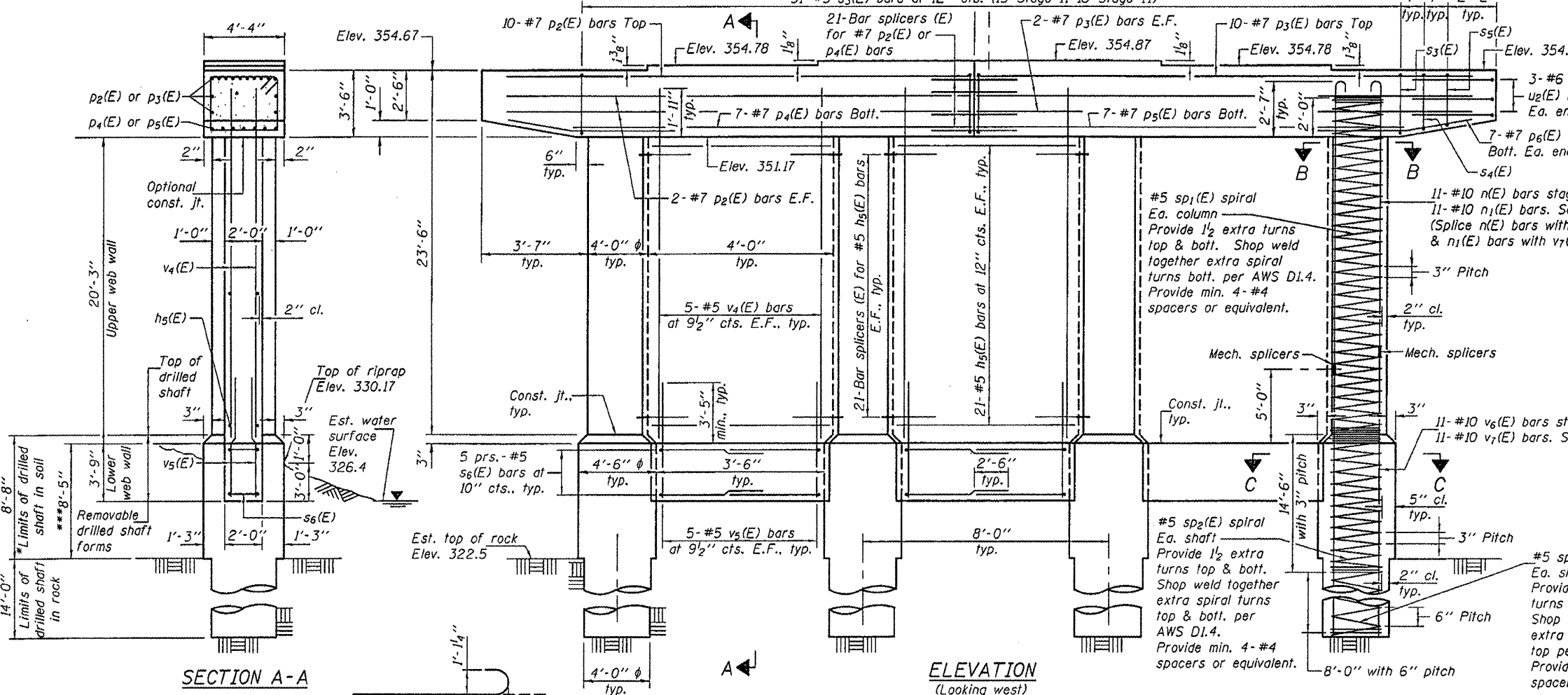
F.A.P. R.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
885	6B-2	POPE	51	36
			CONTRACT NO. 78168	
ILLINOIS FED. AID PROJECT				



Note: When splicing of spiral reinforcement is necessary, the spirals shall be provided with 1/2 extra turns at the ends to be spliced. These additional turns shall either be welded together according to AWS D1.4 or shall both terminate with a 135° standard hook.  
Center web wall shall be constructed during Stage II Construction.



DETAIL A



BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h5(E)	126	#5	3'-8"	—
n(E)	44	#10	19'-3"	U
n1(E)	44	#10	16'-8"	U
p2(E)	14	#7	14'-9"	—
p3(E)	14	#7	15'-9"	—
p4(E)	7	#7	13'-10"	—
p5(E)	7	#7	14'-10"	—
p6(E)	14	#7	4'-9"	—
s3(E)	31	#5	15'-3"	□
s4(E)	2	#5	15'-1"	□
s5(E)	2	#5	14'-7"	□
s6(E)	30	#5	7'-4"	□
sp1(E)	4	#5	22'-0"	~
sp2(E)	4	#5	14'-6"	~
sp3(E)	4	#5	8'-0"	~
u2(E)	6	#6	13'-8"	U
v4(E)	30	#5	22'-0"	—
v5(E)	30	#5	7'-0"	—
v6(E)	44	#10	27'-2"	—
v7(E)	44	#10	29'-9"	—
Concrete Structures	Cu. Yd.	77.5		
Reinforcement Bars, Epoxy Coated	Pound	30230		
Drilled Shaft in Soil	Cu. Yd.	20.4		
Drilled Shaft in Rock	Cu. Yd.	26.1		
Structure Excavation	Cu. Yd.	8		

- Construction Sequence for Web Wall:
- Excavate between shafts to elevation of web wall base and set lower web wall forms through water to bear on the circular edge of drilled shafts. Secure in place with fill, struts or tie forms together as required.
  - Place the lower web wall reinforcement cage into the forms using spacers to maintain proper clearances.
  - If the forms can be sealed against the shafts and streambed to allow dewatering, the reinforcement and the concrete placement may be completed in the dry. Alternatively, the rebar cage can be lowered into position through water and the concrete discharged at the base of the excavation through a tremie pipe or pump hose, displacing water, sediment, and tainted concrete out the top of the forms.
  - Construct columns.
  - Construct upper web walls.

DESIGNED - Nicholas R. Barnett  
CHECKED - Michael D. Rolap  
DRAWN - h.t. duong  
CHECKED - NRB/MDR

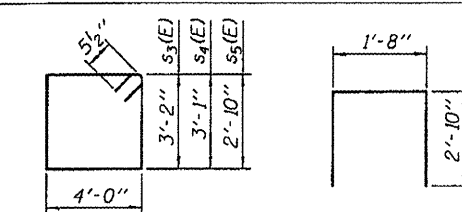
EXAMINED - Thomas J. Donagallo  
PASSED - [Signature]  
ENGINEER OF BRIDGES AND STRUCTURES

DATE - MARCH 20, 2012  
REVISED 4-16-2012, NRB  
REVISED

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

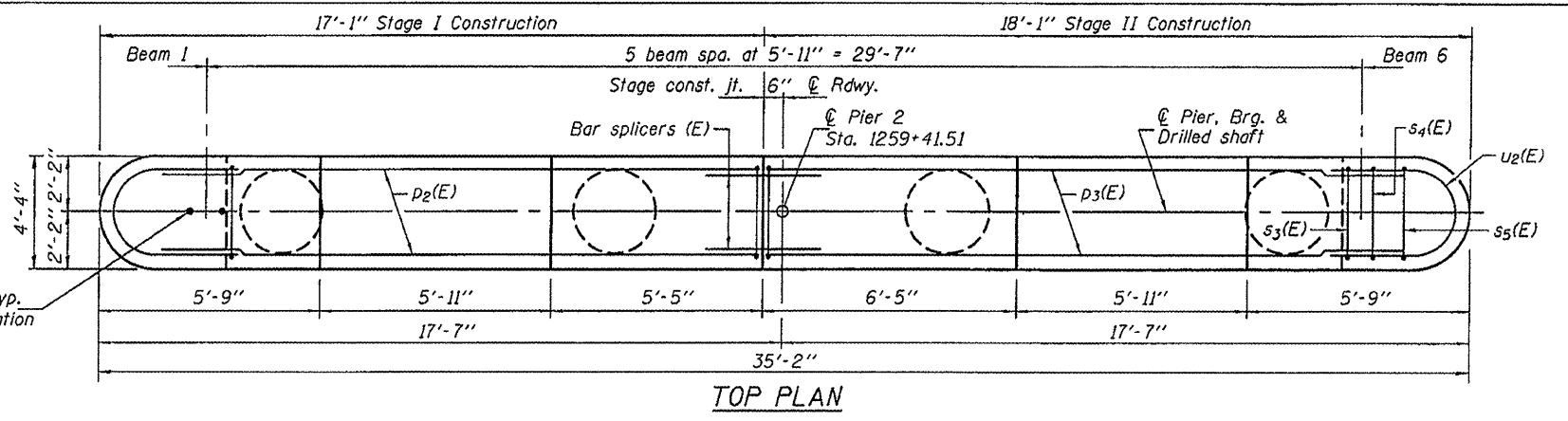
PIER 1  
STRUCTURE NO. 076-0031  
SHEET NO. 20 OF 25 SHEETS

F.A.P. SECTION COUNTY TOTAL SHEET SHEET NO.  
885 68-2 POPE 51 37  
CONTRACT NO. 78168  
ILLINOIS FED. AID PROJECT

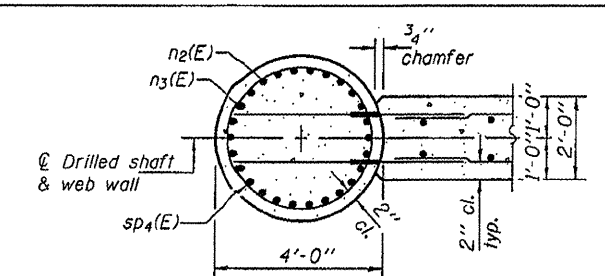


**BARS s<sub>3</sub>(E), s<sub>4</sub>(E) & s<sub>5</sub>(E)**

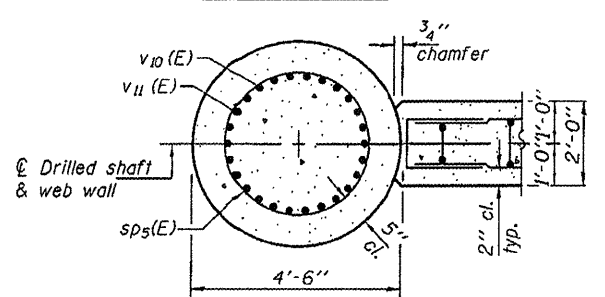
Note: When splicing of spiral reinforcement is necessary, the spirals shall be provided with 1/2 extra turns at the ends to be spliced. These additional turns shall either be welded together according to AWS D1.4 or shall both terminate with a 135° standard hook. Center web wall shall be constructed during Stage II Construction.



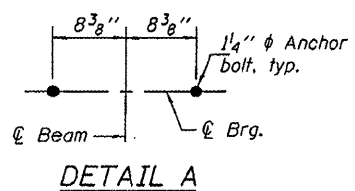
**TOP PLAN**



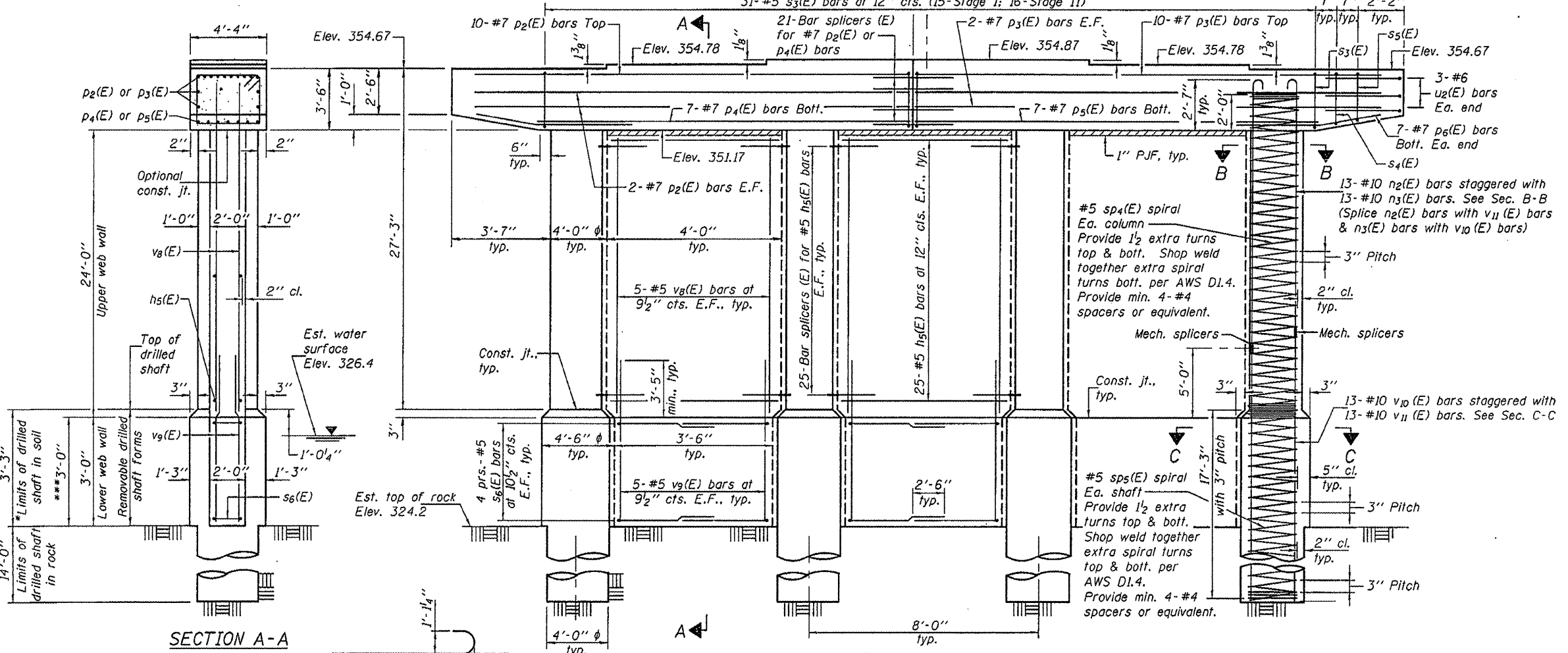
**SECTION B-B**



**SECTION C-C**

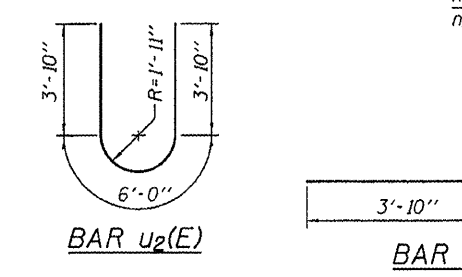


**DETAIL A**



**SECTION A-A**

**ELEVATION (Looking west)**



**BAR u<sub>2</sub>(E) and BAR p<sub>6</sub>(E)**

**BARS n<sub>2</sub>(E) & n<sub>3</sub>(E)**

\*If the prevailing water surface elevation during construction is consistently different than estimated on the plans, the contractor may propose an adjustment to the top of the drilled shaft elevation as part of their installation procedure. The top of all drilled shafts within a substructure unit shall be constructed to the same elevation and extend above the prevailing water surface. The quantities and reinforcement detailing are based on the top of shaft and the estimated elevations shown and may change based on the actual elevations encountered at each shaft and the final top of shaft elevation. \*\*\*Splicing of reinforcement shall not be allowed in this region, typ. ea. column shaft.

- Construction Sequence for Web Wall:**
- Excavate between shafts to elevation of web wall base and set lower web wall forms through water to bear on the circular edge of drilled shafts. Secure in place with fill, struts or tie forms together as required.
  - Place the lower web wall reinforcement cage into the forms using spacers to maintain proper clearances.
  - If the forms can be sealed against the shafts and streambed to allow dewatering, the reinforcement and the concrete placement may be completed in the dry. Alternatively, the rebar cage can be lowered into position through water and the concrete discharged at the base of the excavation through a tremie pipe or pump hose, displacing water, sediment, and tainted concrete out the top of the forms.
  - Construct columns.
  - Construct upper web walls.

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h <sub>5</sub> (E)	150	#5	3'-8"	—
n <sub>2</sub> (E)	52	#10	23'-0"	U
n <sub>3</sub> (E)	52	#10	20'-5"	U
p <sub>2</sub> (E)	14	#7	14'-9"	—
p <sub>3</sub> (E)	14	#7	15'-9"	—
p <sub>4</sub> (E)	7	#7	13'-10"	—
p <sub>5</sub> (E)	7	#7	14'-10"	—
p <sub>6</sub> (E)	14	#7	4'-9"	—
s <sub>3</sub> (E)	31	#5	15'-3"	□
s <sub>4</sub> (E)	2	#5	15'-1"	□
s <sub>5</sub> (E)	2	#5	14'-7"	□
s <sub>6</sub> (E)	24	#5	7'-4"	U
**s <sub>D4</sub> (E)	4	#5	25'-9"	MM
**s <sub>D5</sub> (E)	4	#5	17'-3"	MM
u <sub>2</sub> (E)	6	#6	13'-8"	U
v <sub>8</sub> (E)	30	#5	23'-7"	—
v <sub>9</sub> (E)	30	#5	6'-6"	—
v <sub>10</sub> (E)	52	#10	24'-4"	—
v <sub>11</sub> (E)	52	#10	21'-9"	—
Concrete Structures	Cu. Yd.		87.5	
Reinforcement Bars, Epoxy Coated	Pound		33070	
Drilled Shaft in Soil	Cu. Yd.		7.7	
Drilled Shaft in Rock	Cu. Yd.		26.1	

Cast steps monolithically with cap. Space cap reinforcement to miss anchor bolts. \*\*Length is height of spiral.

DESIGNED - Nicholas R. Barnett	EXAMINED - Thomas J. Domagalak	DATE - MARCH 20, 2012
CHECKED - Michael D. Rolape	PASSED - [Signature]	REVISED 4-16-2012, NRB
DRAWN - h.t. duong		REVISIONS
CHECKED - NRB/MOR		

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION		PIER 2 STRUCTURE NO. 076-0031
SHEET NO. 21 OF 25 SHEETS		SHEET NO. 21 OF 25 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
B85	6B-2	POPE	51	38
CONTRACT NO. 78168			ILLINOIS FED. AID PROJECT	