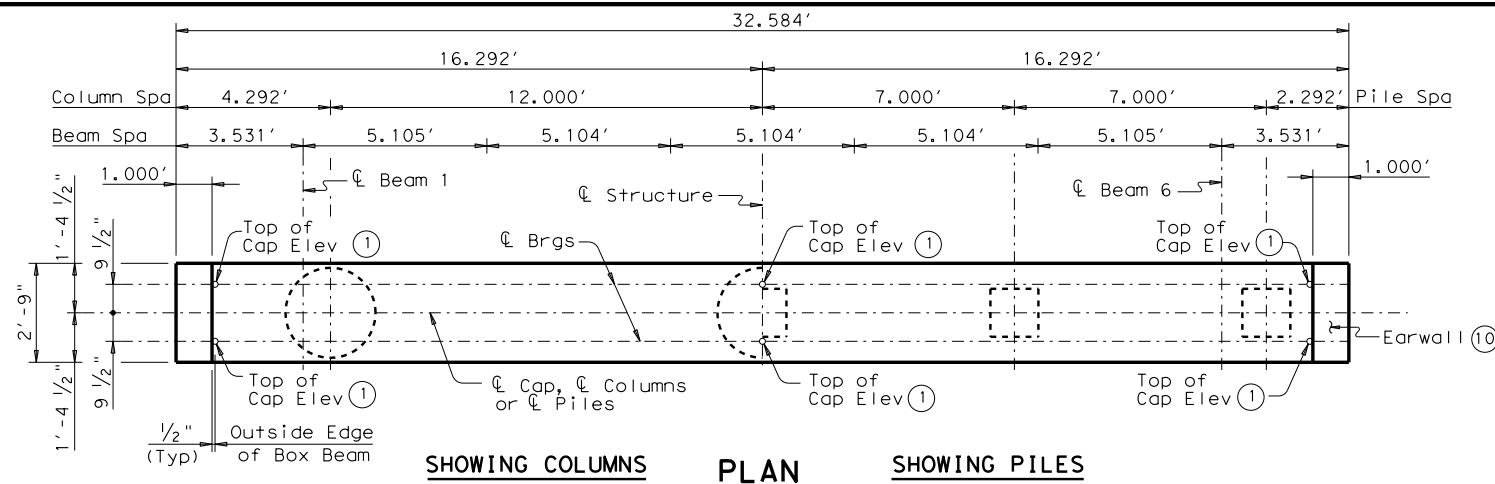
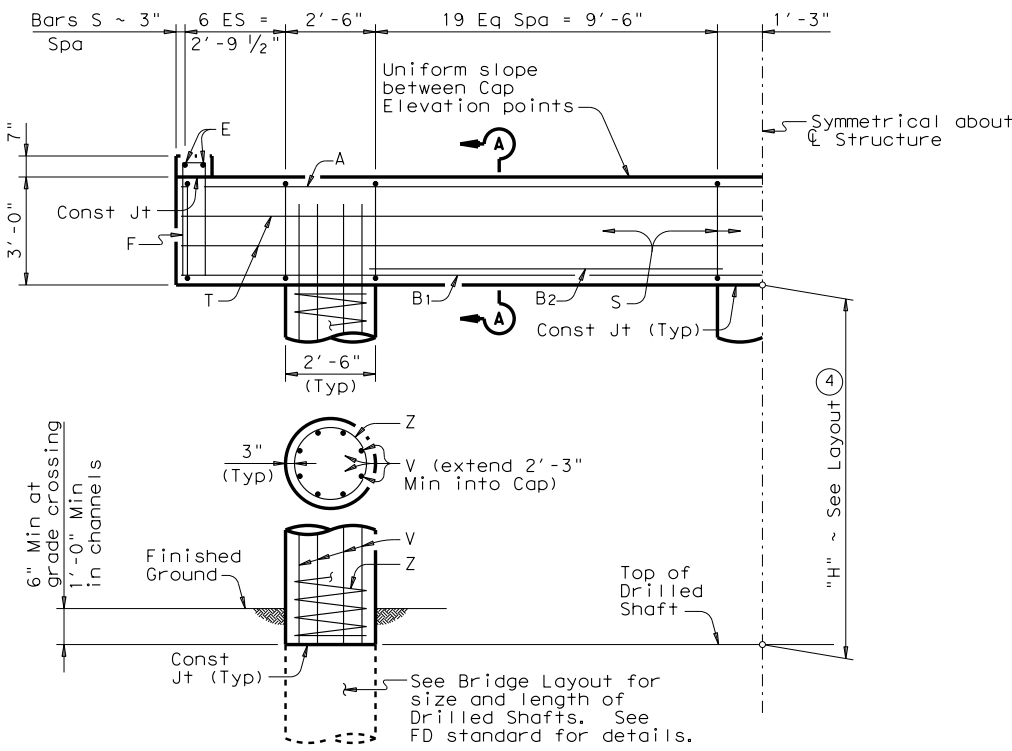


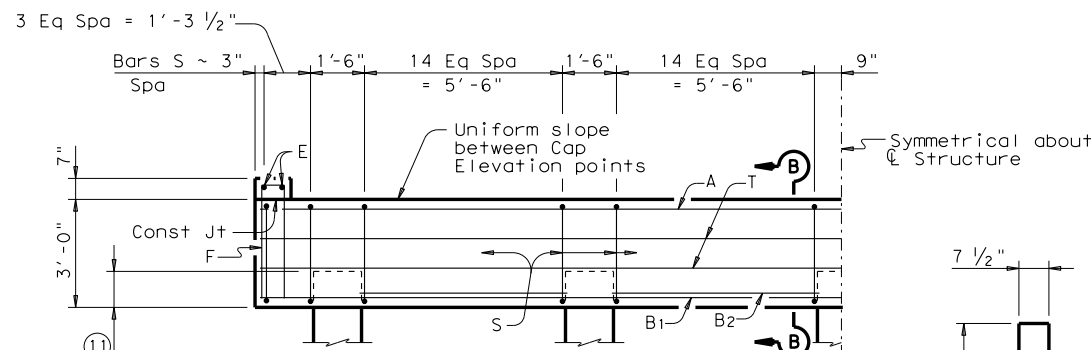
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SHOWING COLUMNS PLAN SHOWING PILES

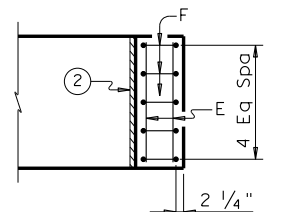


HALF ELEVATION ~ 3 COLUMN BENT

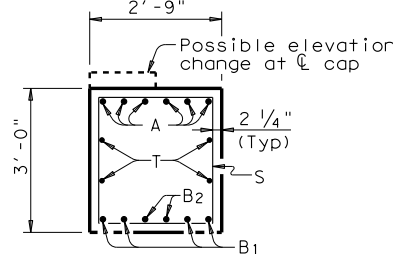


HALF ELEVATION ~ 5 PILE BENT

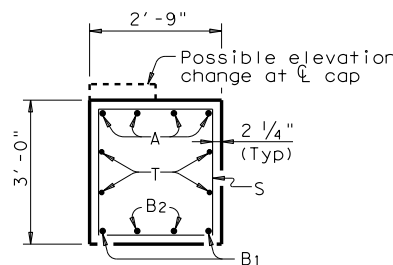
(Showing 16" Piles ~ for Piles larger than 16", adjust Bars S spacing as required to avoid Piling)



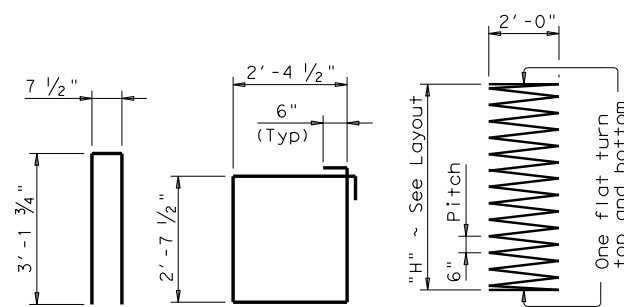
EARWALL PLAN



SECTION A-A



SECTION B-B



BARS F BARS S BARS Z

FOUNDATION LOADS		
Average Span Length	Drilled Shaft Loads (5)	Vertical Pile Loads
Ft	Tons/DS	Tons/Pile
30	90	53
35	101	59
40	110	65
45	120	70
50 (7)	129	76
55 (7)	139	82
60 (7)	148	87
65 (8)	158	93
70 (8)	167	99
75 (8)	177	104
80 (8)	186	110
85 (9)	195	---
90 (9)	204	---
95 (9)	214	---
100 (9)	224	---

TABLE OF ESTIMATED QUANTITIES FOR 3-COLUMN BENT (3)				
Bar	No.	Size	Length	Weight
A	6	#11	32'-3"	1028
B1	4	#11	32'-3"	685
B2	4	#11	9'-6"	202
E	4	#5	2'-5"	10
F	10	#5	6'-11"	72
S	54	#5	11'-0"	620
T	4	#5	32'-3"	135
V	24	#9	32'-3"	2,632
Z	3	#3	391'-0"	441
Reinforcing Steel				Lb 5,825
Class "C" Conc (Cap)				CY 10.1
Class "C" Conc (Column)				CY 16.4

TABLE OF ESTIMATED QUANTITIES FOR 5-PILE BENT				
Bar	No.	Size	Length	Weight
A	4	#11	32'-3"	685
B1	2	#11	32'-3"	343
B2	8	#11	5'-6"	234
E	4	#5	2'-5"	10
F	10	#5	6'-11"	72
S	68	#5	11'-0"	780
T	4	#5	32'-3"	135
Reinforcing Steel				Lb 2,259
Class "C" Conc (Cap)				CY 10.1

TABLE OF MAXIMUM ALLOWABLE EXPOSED PILE HEIGHTS AND PILE LOADS (4)			
Pile Type		Max Ht	Max Load
Concrete	Steel	Ft	Tons/Pile
16" Sq	HP14x73	16	75
18" Sq	HP14x117 (6)	20	90
20" Sq	HP18x135	24	110

- Top of Cap Elevations are based on section depths shown on span details.
- 1/2" Preformed Bituminous Fiber material between box beam and earwall. Bond to beam with an approved adhesive. Inside face of earwall to be cast with vertical side of beam.
- Quantities shown are based on an "H" value of 30'. For each linear foot variation in "H" value, make the following adjustments:  
 Bars V length.....1.000'  
 Bars Z length.....12.606'  
 Reinforcing Steel.....96 Lb  
 Cl "C" Conc (Column).....0.545 CY
- This standard may not be used for "H" heights exceeding 30' or exposed pile heights exceeding the values shown in the tables. In areas of very soft soil or where scour is anticipated, maximum allowable "H" heights or exposed pile heights must be evaluated by the engineer prior to the use of this standard.
- Foundation loads based on "H" = 30'.
- When HP14x117 steel piling is specified in the plans, the Contractor has the option of furnishing either HP14x117 or HP16x101 steel piling.
- 16" square concrete piling and HP 14 x 73 piling may not be used.
- 18" square concrete piling and HP 14 x 117 piling may not be used.
- Pile supported bents not allowed at this average span length.
- Do not cast earwalls until beams are erected in their final position.
- See FD standard.

**GENERAL NOTES:**  
 Designed according to AASHTO LRFD Specifications. For Pile Bents supporting unequal spans, the shorter span cannot be less than 80 percent of the longer span.  
 Concrete strength  $f'c = 3,600$  psi. All cap reinforcing must be Grade 60. Column and drilled shaft reinforcing may be Grade 40.  
 Bent selected will be based on the average span length rounded up to the next 5-foot increment. See Bridge Layout for foundation type, size and length.  
 See standard FD for all foundation details and notes. These standards do not support the use of multi-pile footings as shown on standard FD. These Bent details may be used only with the following Standards:  
 SBBS-B20-28 or SBBO-B20-28  
 SBBS-B28-28 or SBBO-B28-28  
 SBBS-B34-28 or SBBO-B34-28

HL93 LOADING

**Bridge Division Standard**

**INTERIOR BENTS  
 PRESTR CONC BOX BEAMS  
 28' RDWY**

**BBB-28**

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REVISIONS				
02-2012: Piles and Notes	DIST	COUNTY	SHEET NO.	

DATE: FILE: