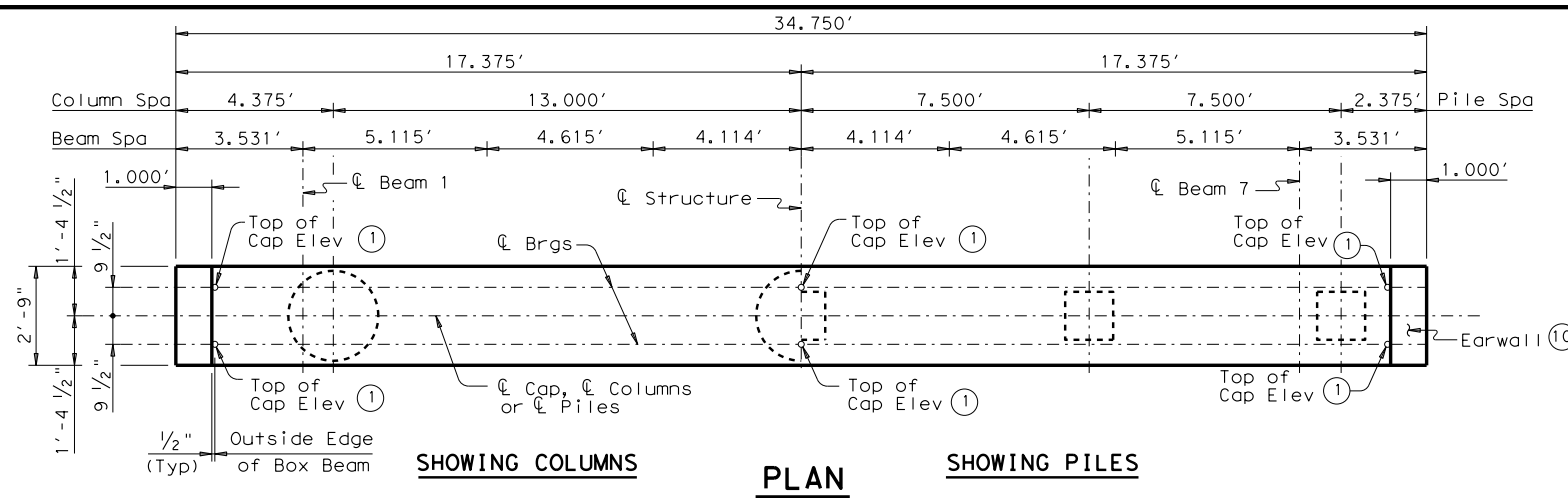
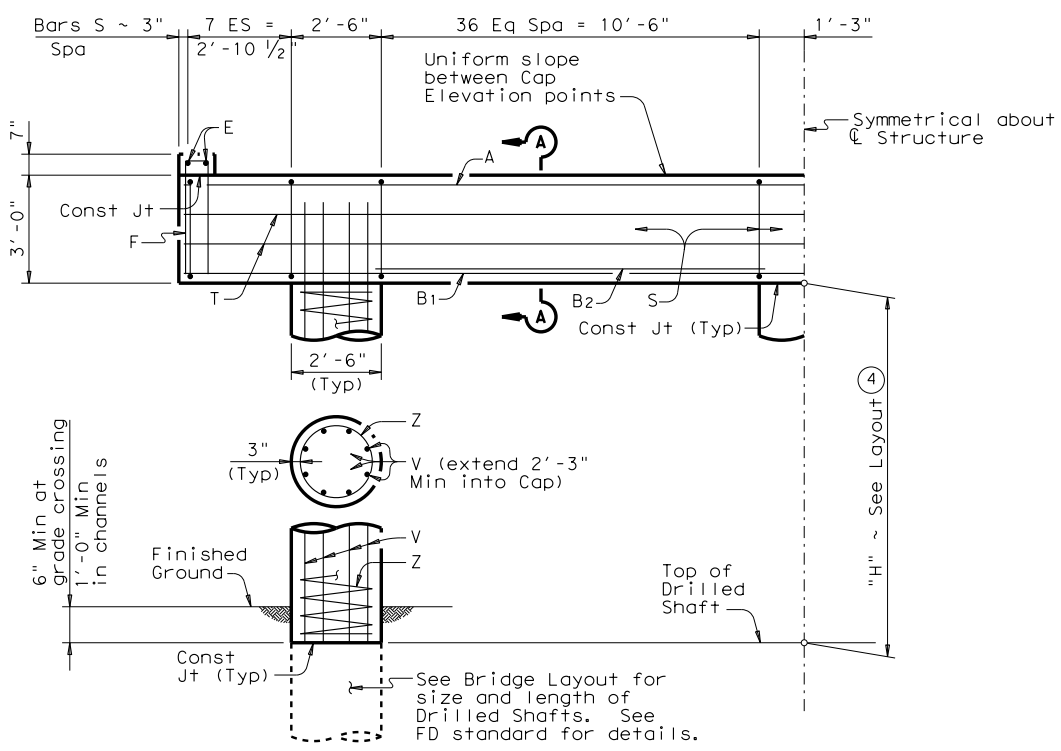


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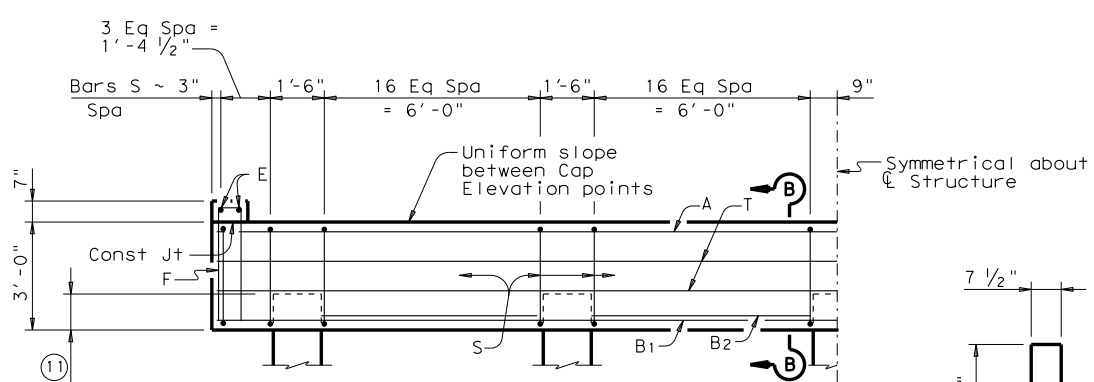
DATE: FILE:



SHOWING COLUMNS PLAN SHOWING PILES

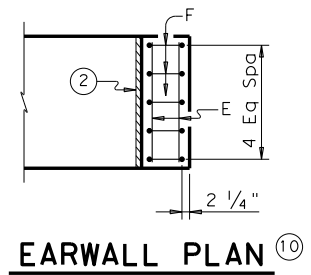


HALF ELEVATION ~ 3 COLUMN BENT

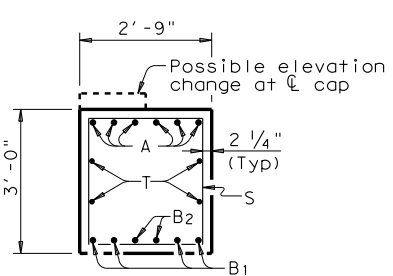


HALF ELEVATION ~ 5 PILE BENT

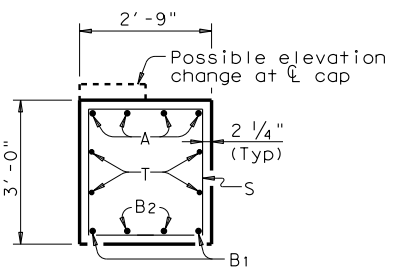
(Showing 16" Piles ~ for Piles larger than 16", adjust Bars S spacing as required to avoid Piling)



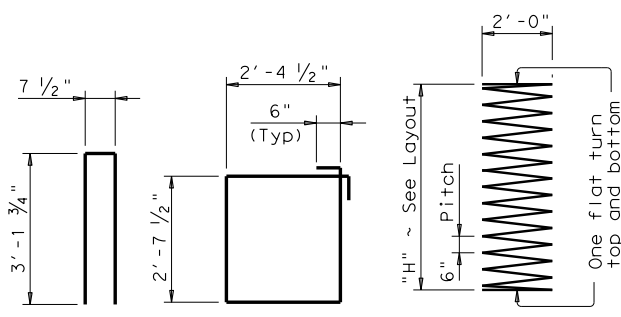
EARWALL PLAN



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 | 96 | 56 |
| 35 | 106 | 62 |
| 40 | 117 | 69 |
| 45 | 127 | 75 |
| 50 ⑦ | 138 | 81 |
| 55 ⑦ | 148 | 87 |
| 60 ⑧ | 158 | 93 |
| 65 ⑧ | 168 | 99 |
| 70 ⑧ | 178 | 105 |
| 75 ⑨ | 188 | --- |
| 80 ⑨ | 199 | --- |
| 85 ⑨ | 209 | --- |
| 90 ⑨ | 219 | --- |
| 95 ⑨ | 229 | --- |
| 100 ⑨ | 239 | --- |

| TABLE OF ESTIMATED QUANTITIES FOR 3-COLUMN BENT ③ | | | | |
|---|-----|------|---------|----------|
| Bar | No. | Size | Length | Weight |
| A | 6 | #11 | 34'-5" | 1,097 |
| B1 | 4 | #11 | 34'-5" | 731 |
| B2 | 4 | #11 | 10'-6" | 223 |
| E | 4 | #5 | 2'-5" | 10 |
| F | 10 | #5 | 6'-11" | 72 |
| S | 90 | #5 | 11'-0" | 1,033 |
| T | 4 | #5 | 34'-5" | 144 |
| V | 24 | #9 | 32'-3" | 2,632 |
| Z | 3 | #3 | 391'-0" | 441 |
| Reinforcing Steel | | | | Lb 6,383 |
| Class "C" Conc (Cap) | | | | CY 10.7 |
| Class "C" Conc (Column) | | | | CY 16.4 |

| TABLE OF ESTIMATED QUANTITIES FOR 5-PILE BENT | | | | |
|---|-----|------|--------|----------|
| Bar | No. | Size | Length | Weight |
| A | 4 | #11 | 34'-5" | 731 |
| B1 | 2 | #11 | 34'-5" | 366 |
| B2 | 8 | #11 | 6'-0" | 255 |
| E | 4 | #5 | 2'-5" | 10 |
| F | 10 | #5 | 6'-11" | 72 |
| S | 76 | #5 | 11'-0" | 872 |
| T | 4 | #5 | 34'-5" | 144 |
| Reinforcing Steel | | | | Lb 2,450 |
| Class "C" Conc (Cap) | | | | CY 10.7 |

| 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 |

- ① Top of Cap Elevations are based on section depths shown on span details.
- ② 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.
- ③ 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
- ④ 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.
- ⑤ Foundation loads based on "H" = 30'.
- ⑥ When HP14x117 steel piling is specified in the plans, the Contractor has the option of furnishing either HP14x117 or HP16x101 steel piling.
- ⑦ 16" square concrete piling and HP 14 x 73 piling may not be used.
- ⑧ 18" square concrete piling and HP 14 x 117 piling may not be used.
- ⑨ Pile supported bents not allowed at this average span length.
- ⑩ Do not cast earwalls until beams are erected in their final position.
- ⑪ 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-B20-30 or SBBO-B20-30
 SBBS-B28-30 or SBBO-B28-30
 SBBS-B34-30 or SBBO-B34-30

HL93 LOADING

| | | | |
|------------------------------|-----------|--------------------------|-----------|
| | | Bridge Division Standard | |
| INTERIOR BENTS | | | |
| PRESTR CONC BOX BEAMS | | | |
| 30' RDWY | | | |
| BBB-30 | | | |
| FILE: bbstde46.dgn | DN: TxDOT | CK: TxDOT | OW: TxDOT |
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| REVISIONS | | | |
| 02-2012: Piles and Notes | DIST | COUNTY | SHEET NO. |