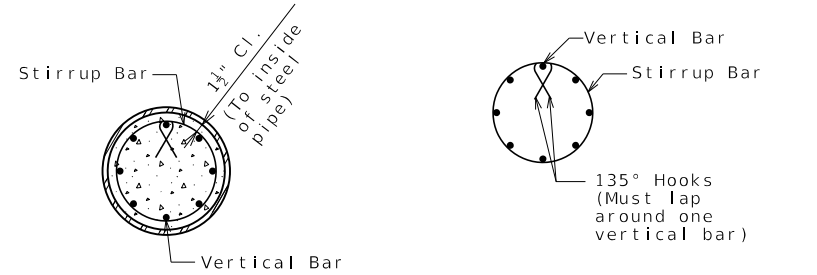
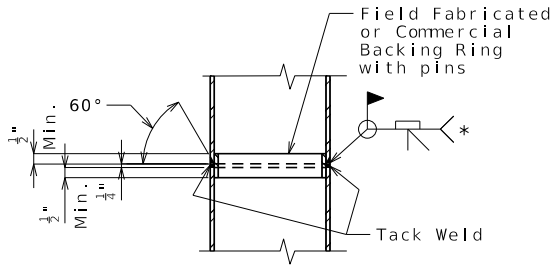


GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE WITHOUT PILE POINT REINFORCEMENT



SECTION A-A **DETAIL OF SEISMIC STIRRUP BAR**



STEEL PIPE PILE SPLICE

* Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.

1 Cruciform Pile Point Reinforcement Data

D1, CECIP Pile (O.D.)	14"	16"	20"	24"
B1	14"	16"	20"	24"
B2	6"	7"	8 7/8"	10 5/8"
B3	5 7/8"	6 7/8"	8 3/4"	10 1/2"
B4	6 5/8"	7 5/8"	9 1/2"	11 1/4"
B5	2"	2"	2 1/4"	2 3/4"
B6	3/4"	3/4"	1"	1 1/2"
H1	9 1/8"	10 1/2"	13"	15 3/8"
H2	8 1/8"	9 1/2"	12"	14 3/8"
H3	8 3/8"	9 3/4"	12 1/4"	14 5/8"
T1 and T2 Plate Thickness	3/4"	3/4"	1"	1 1/2"

1 Galvanized Closed Ended Cast-In-Place (CECIP) Concrete Pile Data

Bent Number	1	2	3	4
D1, CECIP Pile (O.D.)	x			
Min. Nominal Wall Thickness	x			
Closure Plate Thickness	x			
Pile Point Reinforcement	x			
Vertical Bars	x			
L1, Length of Vertical Bars	x			
Upper Stirrup Bars	x			
Lower Stirrup Bars	x			

Notes:
 Welded or seamless steel shell (pipe) shall be ASTM A252 Grade 3 (fy = 45,000 psi).
 Concrete for cast-in-place pile shall be Class B-1.
 Steel for closure plate shall be ASTM A709 Grade 50.
 Steel for cruciform pile point reinforcement shall be ASTM A709 Grade 50.

3 Steel casting for conical pile point reinforcement shall be ASTM A27 Grade 65-35 ASTM A148 Grade 90-60.

The minimum wall thickness of any spot or local area of any type shall not be more than 12.5% under the specified nominal wall thickness.

The contractor shall determine the pile wall thickness required to avoid damage from all driving activities, but wall thickness shall not be less than the minimum specified. No additional payment will be made for furnishing a thicker pile wall than specified on the plans.

Closure plate shall not project beyond the outside diameter of the pipe pile. Satisfactory weldments may be made by beveling tip end of pipe or by use of inside backing rings. In either case, proper gaps shall be used to obtain weld penetration full thickness of pipe. Payment for furnishing and installing closure plate will be considered completely covered by the contract unit price for Galvanized Cast-In-Place Concrete Piles.

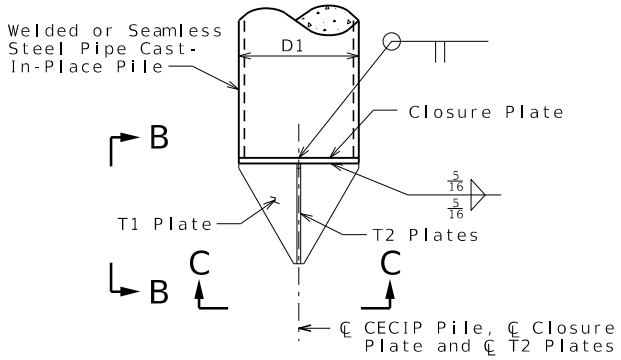
Splices of pipe for cast-in-place concrete pile shall be made watertight and to the full strength of the pipe above and below the splice to permit hard driving without damage. Pipe damaged during driving shall be replaced without cost to the state. Pipe sections used for splicing shall be at least 5 feet in length.

5 At the contractor's option, the hooks of vertical bars embedded in the beam cap may be oriented inward or outward.

The hooks of vertical bars embedded in the beam cap should not be turned outward, away from the pile core.

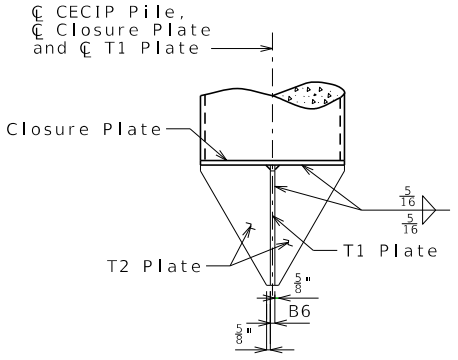
The hook of vertical bars embedded in the pile cap footing should be oriented outward for all seismic categories.

Closure plate need not be galvanized.
 Reinforcing steel for cast-in-place piles is included in the Bill of Reinforcing Steel.
 All reinforcement for cast-in-place pile is included in the estimated quantities for bents.
 For Foundation Data table, see Sheet No. .

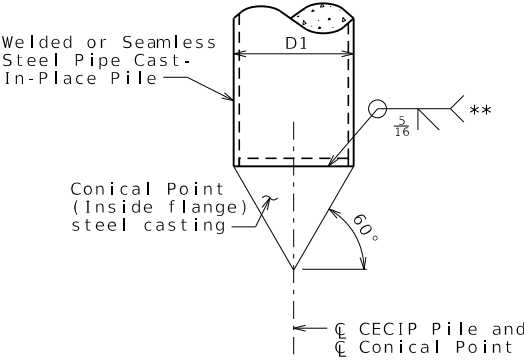


CRUCIFORM PILE POINT

Note: Cost of closure plate is included with cast-in-place concrete pile.



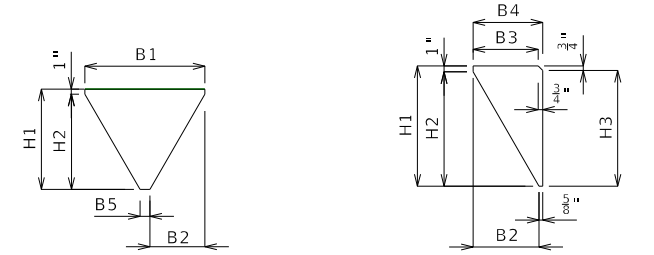
ELEVATION B-B



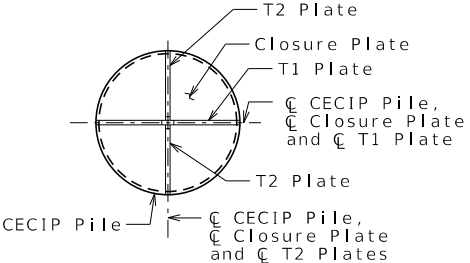
MANUFACTURED CONICAL PILE POINT

(Omit closure plate)

** If the conical pile point is not pre-beveled, place a 3/8" bevel at 40 degrees on the pipe.



T1 PLATE DETAILS **T2 PLATE DETAILS (2 REQUIRED)**



SECTION C-C

CRUCIFORM PILE POINT REINFORCEMENT

GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE

Detailed Checked

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

DATE PREPARED: 4/27/2023

ROUTE: MO

DISTRICT: BR SHEET NO.: PILE01

COUNTY:

JOB NO.:

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.:

DESCRIPTION:

DATE:

105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

PILE01_CECIP Guidance

Standard Drawing Guidance (do not show on plans):

Do not use 20" and 24" diameter closed ended cast-in-place (CECIP) concrete pile without approval of Structural Project Manager or Liaison.

①

Typical Data for CECIP Piles				
D1, CECIP Pile (O.D.) (by design)	14"	16"	20"	24"
Min. Nominal Wall Thickness (by design)	1/2" (See EPG 751.36.2.2.2 for commonly available nominal wall thicknesses.)			
Closure Plate Thickness ④	3/4"		1"	1 1/2"
Pile Point Reinforcement	"Cruciform", "Conical" or "None"			
Vertical Bars	6-#5-Vxxx	6-#6-Vxxx	8-#6-Vxxx	12-#6-Vxxx
L1, Length of Vertical Bars	5'-3"		7'-3"	
Upper Stirrup Bars	3-#4-Pxxx			
Lower Stirrup Bars	5-#4-Pxxx		7-#4-Pxxx	

② For LFD seismic performance category (SPC) A and LRFD seismic design category (SDC) A, minimum number of vertical bars, size and length and seismic stirrup bar information is provided in Galvanized Closed Ended Cast-In-Place (CECIP) Concrete Pile Data. Modify reinforcement size, length of vertical bars (L1), number of vertical bars, number of stirrup bars, and bar mark information as needed for specific project.

Min. L1 = 5'-3" for 14"Ø and 16"Ø CECIP &
7'-3" for 20"Ø and 24"Ø CECIP

Min. Lower Stirrup Bars = 5-#4 for 14"Ø and 16"Ø CECIP &
7-#4 for 20"Ø and 24"Ø CECIP

Min. Vertical Bars = 6-#5 for 14"Ø CECIP,
6-#6 for 16"Ø CECIP,
8-#6 for 20"Ø CECIP &
12-#6 for 24"Ø CECIP

For SPC B, C and D, modify reinforcement as needed to meet AASHTO 17th edition (LFD) and for SDC B, C and D, modify reinforcement as needed to meet AASHTO Guide Specification for LRFD Seismic Bridge Design (SGS).

③ For hard driving conditions consider ASTM A148 Grade 90-60. If conical pile points are not used, this note may be removed.

④

Minimum Closure Plate Thickness		
CECIP Pile (O.D.), D1	No pile point reinforcement required	Cruciform pile point reinforcement required
14"	3/4"	3/4"
16"	3/4"	3/4"
20"	3/4"	1"
24"	3/4"	1 1/2"

⑤ Use appropriate note based on seismic category (See EPG 751.50, Notes G5a9a & G5a9b)

⑥ These details of bar array 6, 8 and 12 count, can be used as needed in sheet details "Section A-A" & "DETAIL OF SEISMIC STIRRUP BAR" by using centroid as the handle.

