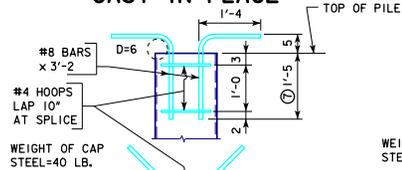
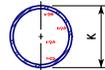


REVISED 03-2022; UPDATED SPIRAL REQUIREMENTS TO ASTM A1064 GRADE TO (WAS ASTM A82). ENGLISH MISCELLANEOUS BRIDGES.DGN - P10L - THIS SHEET ISSUED 01-09.

CAST IN PLACE

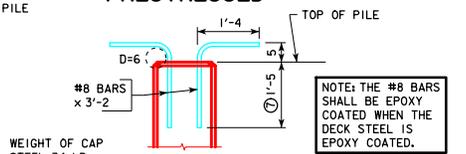


CAP STEEL DETAILS

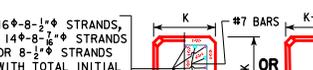


SPIRAL WELDED OR SEAMLESS STEEL PIPE ASTM A252 GR. 2 OR GR. 3

PRESTRESSED

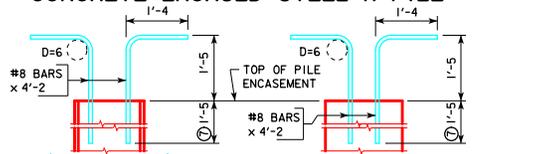


CAP STEEL DETAILS

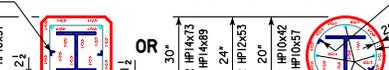


16#-8-1/2" STRANDS, 14#-8-1/2" STRANDS OR 8-1/2" STRANDS WITH TOTAL INITIAL PRESTRESS OF 174K

CONCRETE ENCASED STEEL H PILE



SQUARE PILES CAP STEEL DETAILS



ROUND PILES CAP STEEL DETAILS



NOTE: THE #8 BARS SHALL BE EPOXY COATED WHEN THE DECK STEEL IS EPOXY COATED.

THE CONTRACTOR HAS THE OPTION TO INSTALL THE CAP STEEL AS DOWELS FOLLOWING THE DOWEL SETTING PROCEDURE NOTES SHOWN ON THIS SHEET.

PROVIDE 2-1/4" x 1/4" x 1/4" PUNCHED TO HOLD SPIRAL

PROVIDE 2-1/4" x 1/4" x 1/4" PUNCHED TO HOLD SPIRAL

GENERAL NOTES:

EXCEPT AS NOTED ELSEWHERE, MATERIAL, CONSTRUCTION, DRIVING AND EXTENSIONS OR BUILD UPS WHEN NECESSARY SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS OF THE IOWA D.O.T. AND CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE.

CAP STEEL SHALL BE AS DETAILLED ON THIS SHEET (D=PIN DIAMETER). IT SHALL BE USED IF PILE EMBEDMENT IS LESS THAN 1'-6".

NOMINAL RESISTANCE Pn, "G", "G", AND "H" AS GIVEN IN TABLES ARE RECOMMENDED DESIGN VALUES FOR ORDINARY CONDITIONS, BUT MAY BE MODIFIED FOR SPECIAL CONDITIONS ON ANY GIVEN JOB.

NOMINAL RESISTANCE Pn AND PILE SIZE REQUIRED SHALL IN ALL CASES BE AS SPECIFIED ON THE PLANS.

NOMINAL RESISTANCE Pn SHOWN ARE FOR FRICTION RESISTANCE EXCEPT FOR TYPE 3 PILING WHERE THE RESISTANCE VALUES SHOWN COULD BE EITHER FRICTION OR POINT RESISTANCE.

COST OF ALL DRIVING POINTS AND CAP STEEL IS TO BE INCLUDED IN THE PRICE BID PER LINEAR FOOT FOR PILING.

WIRE SPIRAL SHALL CONFORM TO ASTM A1064 GRADE 70.

CAST IN PLACE PILE NOTES:

SHELL THICKNESSES SHOWN ARE MINIMUM REQUIREMENTS. THE METHOD OF DRIVING STEEL SHELL PILES SHALL BE ADAPTED TO THE TYPE AND THICKNESS OF SHELL SPECIFIED. ANY SHELLS WHICH HAVE BEEN IMPROPERLY DRIVEN, BROKEN OR ARE OTHERWISE DEFECTIVE SHALL BE REMOVED AND REPLACED BY THE BRIDGE CONTRACTOR.

ALL CAST IN PLACE PILES SHALL HAVE A CLOSURE PLATE. DRIVING POINTS SHALL BE USED IF SPECIFIED ON THE PLANS.

PRESTRESSED PILE NOTES:

EXCEPT AS OTHERWISE NOTED ALL EXPOSED CORNERS 90° OR SHARPER SHALL BE FILLETED 1/4".

DRIVING POINTS FOR PRESTRESSED PILES, IF CALLED FOR ON THE PLANS, SHALL BE AS DETAILLED.

HEADS OF PRESTRESSED PILES TO BE FINISHED SMOOTH AND NORMAL TO AXIS OF PILE.

BIDDING NOTES:

THE PLANS SHALL DESIGNATE THE SIZE OF PILE TO BE USED. THEY SHALL ALSO SPECIFY THE TYPE, EITHER TYPE 1, TYPE 2, OR TYPE 3. IF THE OPTION OF TYPE 1 OR 2 IS GIVEN ON THE PLANS, THE CONTRACTOR SHALL CHOOSE THE TYPE TO BE USED. IF TYPE 3 IS SPECIFIED, TYPE 3 SHALL BE USED, BUT THE CONTRACTOR MAY CHOOSE THE SHAPE OF THE ENCASEMENT. IT SHOULD BE KEPT IN MIND THAT FOR A GIVEN SIZE AND RESISTANCE VALUE, LENGTH MAY VARY WITH THE SHAPE (SQUARE OR ROUND).

PILES SHALL BE BID DESIGNATING THE SIZE, TYPE AND LENGTH.

TYPE 1 PILING WILL BE BID PER LINEAR FOOT OF PILE.

TYPE 2 PILING WILL BE BID PER LINEAR FOOT OF PILE.

TYPE 3 PILING WILL BE BID PER LINEAR FOOT OF PILE AND LINEAR FOOT OF ENCASEMENT. PRICE BID FOR ENCASEMENT SHALL BE FULL PAYMENT FOR NECESSARY EXCAVATION AND FOR FURNISHING AND PLACING ALL MATERIAL.

DOWEL SETTING PROCEDURE:

IF CAP STEEL IS REQUIRED FOR THE PRESTRESSED PILES THE #8 DEFORMED BARS ARE TO BE SET AS DOWELS INTO THE PILES WITH POLYMER GROUT IN ACCORDANCE WITH ARTICLE 2301.03, E, OF THE STANDARD SPECIFICATIONS OR BY THE FOLLOWING PROCEDURE.

-A) DRILL HOLE APPROXIMATELY TWICE THE DIAMETER OF THE DOWEL BAR AND TO THE DEPTH INDICATED.

-B) FILL HOLE WITH WATER AND ALLOW TO STAND LONG ENOUGH TO THOROUGHLY SATURATE THE SURROUNDING CONCRETE (ABOUT FOUR HOURS).

-C) BLOW OUT ALL FREE WATER AND FILL HOLE 2/3 FULL OF MORTAR.

-D) INSERT DOWEL BY DRIVING, IF NECESSARY, AND MANIPULATE OR TAP WITH A HAMMER TO CONSOLIDATE MORTAR AND SECURE COMPLETE EMBEDMENT.

-E) ADD MORE MORTAR, IF NECESSARY, TO FILL HOLE.

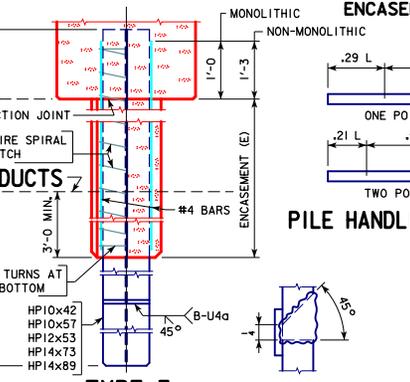
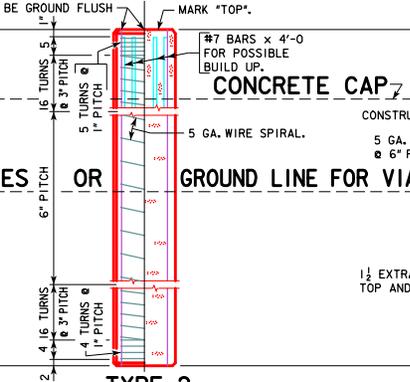
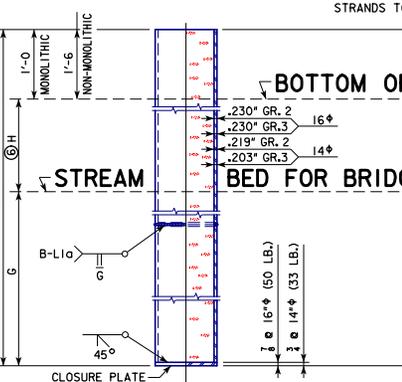
-F) MORTAR SHALL CONSIST OF EQUAL PARTS PORTLAND CEMENT AND SAND WITH JUST ENOUGH WATER TO MAKE A WORKABLE MIX.

APPROVED BY: *[Signature]*
BRIDGE ENGINEER

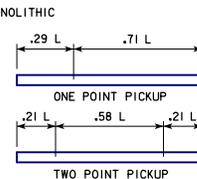
STANDARD DESIGN
CONCRETE AND STEEL PILES
CAST IN PLACE, PRESTRESSED AND ENCASED
FOR USE IN
LRFD TRESTLE PILE BENTS - P10L

LATEST REVISION
DATE: 03-2022

IOWA DEPARTMENT OF TRANSPORTATION
DESIGN SHEET NO. _____ OF _____ FILE NO. _____ DESIGN NO. _____



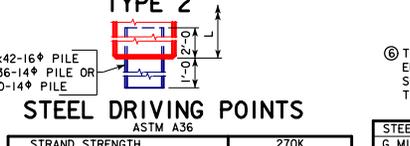
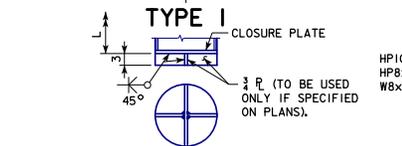
PERMISSIBLE ALTERNATE ENCASEMENT



PILE HANDLING DIAGRAM



THE MAXIMUM H MAY BE MEASURED TO THE STREAMBED ELEVATION. HOWEVER, H SHALL BE MEASURED TO THE SCOUR ELEVATION WHEN THIS ELEVATION IS DEEPER THAN THE STREAMBED ELEVATION.



STEEL DRIVING POINTS

| K DIMENSION | ASTM A36 | | | |
|------------------------|----------|--------|--------|--------|
| | IN. | 14# | 16# | |
| G MIN. BELOW GROUND | FT. | 24 | 27 | |
| G H MAX. ABOVE GROUND | FT. | 18 | 22 | |
| SHELL ASTM A-252 | | GR. 2 | GR. 3 | GR. 2 |
| CONCRETE (L=40') | C.Y. | 1.49 | 1.49 | 1.95 |
| CONCRETE 1' CHANGE | C.Y. | 0.0372 | 0.0373 | 0.0488 |
| WT. OF SHELL (L=40') | LB. | 1325 | 1231 | 1600 |
| WT. OF SHELL 1' CHANGE | LB. | 32.26 | 29.94 | 38.77 |
| f'c | KSI | 4.0 | 4.0 | 4.0 |
| NOMINAL RESISTANCE Pn | KIPS | 119 | 119 | 137 |

STEEL DRIVING POINTS

| STRAND STRENGTH | 270K | | |
|-----------------------|------|-------|-------|
| | IN. | 14# | 16# |
| K DIMENSION | IN. | 14# | 16# |
| G MIN. BELOW GROUND | FT. | 24 | 27 |
| G H MAX. ABOVE GROUND | FT. | 18 | 22 |
| CONCRETE (L=40') | C.Y. | 2.01 | 2.62 |
| CONCRETE 1' CHANGE | C.Y. | 0.050 | 0.066 |
| REINFORCING (L=40') | LB. | 232 | 280 |
| REINFORCING 1' CHANGE | LB. | 3.93 | 5.10 |
| MAX. L 1 FT. PICK-UP | FT. | 57 | 60 |
| MAX. L 2 FT. PICK-UP | FT. | 82 | 86 |
| f'c | KSI | 5.0 | 5.0 |
| NOMINAL RESISTANCE Pn | KIPS | 127 | 146 |
| INITIAL PRESTRESS | KIPS | 174 | 231 |

INCLUDES WEIGHT OF CLOSURE PLATE.

INCLUDES PRESTRESSING STRANDS.
INCREASE 5% FOR ARTIFICIAL CURING.

| STEEL H PILE | ASTM A36 | | | | |
|--|----------|---------|---------|---------|---------|
| | HP10x42 | HP10x57 | HP12x53 | HP14x73 | HP14x89 |
| G MINIMUM BELOW GROUND | FT. | 18 | 21 | 24 | 24 |
| G H MAX. ABOVE GROUND W/MONOLITHIC | FT. | 19 | 19 | 23 | 28 |
| G H MAX. ABOVE GROUND W/NON-MONOLITHIC | FT. | 15 | 16 | 20 | 25 |
| CONCRETE (E=18') | C.Y. | 1.12 | 1.10 | 1.41 | 1.74 |
| CONCRETE 1' CHANGE | C.Y. | 0.062 | 0.061 | 0.078 | 0.097 |
| REINFORCING (E=18') | LB. | 96 | 96 | 99 | 103 |
| REINFORCING 1' CHANGE | LB. | 4.98 | 4.98 | 5.13 | 5.28 |
| CONCRETE (E=18') | C.Y. | 1.40 | 1.38 | 2.02 | 3.17 |
| CONCRETE 1' CHANGE | C.Y. | 0.078 | 0.076 | 0.112 | 0.176 |
| REINFORCING (E=18') | LB. | 97 | 97 | 102 | 110 |
| REINFORCING 1' CHANGE | LB. | 5.02 | 5.02 | 5.26 | 5.62 |
| NOMINAL RESISTANCE Pn | KIPS | 154 | 208 | 192 | 265 |

f'c = 4.0 KSI
INCLUDES WEIGHT OF PUNCHED L 1/2" x 1/4" x 1/4"
SEE BRIDGE DESIGN MANUAL 6.6.4.2 FOR ADDITIONAL INFORMATION