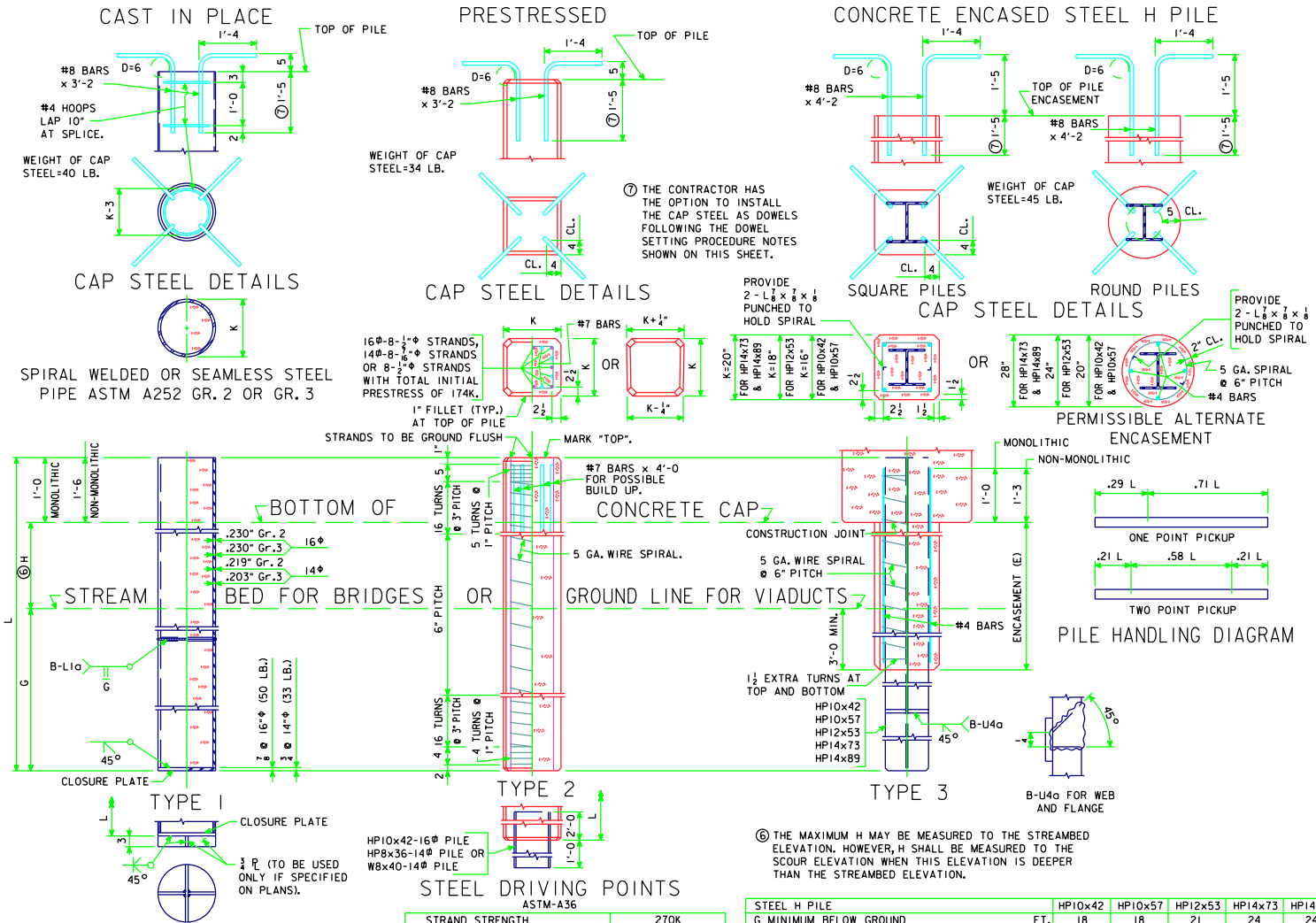

⑦ THE CONTRACTOR HAS THE OPTION TO INSTALL THE CAP STEEL AS DOWELS FOLLOWING THE DOWEL SETTING PROCEDURE NOTES SHOWN ON THIS SHEET.

⑥ 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.

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 DETAILED ON THIS SHEET (D=PIN DIAMETER). IT SHOULD BE USED IF PILE EMBEDMENT IS LESS THAN 1'-6.

"BEARING VALUE", "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.

BEARING VALUE AND PILE SIZE REQUIRED SHALL IN ALL CASES BE AS SPECIFIED ON THE PLANS.

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

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

WIRE SPIRAL SHALL CONFORM TO ASTM A-82.

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 ¾".

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

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 BEARING 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 LINEAL FOOT OF PILE.

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

TYPE 3 PILING WILL BE BID PER LINEAL FOOT OF PILE AND LINEAL 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: _____
BRIDGE ENGINEER

STEEL DRIVING POINTS
ASTM-A36

K DIMENSION	IN.	14Φ		16Φ	
G MIN. BELOW GROUND	FT.	24		27	
⑥H MAX. ABOVE GROUND	FT.	18		22	
SHELL ASTM A-252		GR. 2	GR. 3	GR. 2	GR. 3
CONCRETE (L=40')	C.Y.	1.49	1.49	1.95	1.95
CONCRETE 1' CHANGE	C.Y.	0.0372	0.0373	0.0488	0.0488
① WT. OF SHELL (L=40')	LB.	1325	1231	1600	1600
WT. OF SHELL 1' CHANGE	LB.	32.26	29.94	38.77	38.77
f'c	PSI	3500	3500	3500	3500
⑤NOMINAL RESISTANCE	Pn KIPS	119	119	137	137
BEARING VALUE	TON	33T	33T	38T	38T

① INCLUDES WEIGHT OF CLOSURE PLATE.

STEEL DRIVING POINTS
ASTM-A36

STRAND STRENGTH		270K	
K DIMENSION	IN.	14Φ	16Φ
G MIN. BELOW GROUND	FT.	24	27
⑥H MAX. ABOVE GROUND	FT.	18	22
CONCRETE (L=40')	C.Y.	2.01	2.62
CONCRETE 1' CHANGE	C.Y.	0.050	0.066
② REINFORCING (L=40')	LB.	232	280
REINFORCING 1' CHANGE	LB.	3.93	5.10
MAX. L 1 PT. PICK-UP	FT.	57	60
MAX. L 2 PT. PICK-UP	FT.	82	86
f'c	PSI	5000	5000
⑤NOMINAL RESISTANCE Pn	KIPS	127	146
BEARING VALUE	TON	33T	38T
③ INITIAL PRESTRESS	KIPS	174	231

② INCLUDES PRESTRESSING STRANDS.
③ INCREASE 5% FOR ARTIFICIAL CURING.

STEEL H PILE		HP10x42	HP10x57	HP12x53	HP14x73	HP14x89
G MINIMUM BELOW GROUND	FT.	18	18	21	24	24
⑥H MAX. ABOVE GROUND W/MONOLITHIC	FT.	19	19	23	28	29
⑥H MAX. ABOVE GROUND W/NON-MONOLITHIC	FT.	15	16	20	25	26
SQUARE CONCRETE (E=18')	C.Y.	1.12	1.10	1.41	1.74	1.72
SQUARE CONCRETE 1' CHANGE	C.Y.	0.062	0.061	0.078	0.097	0.096
SQUARE ④REINFORCING (E=18')	LB.	96	96	99	103	103
SQUARE ④REINFORCING 1' CHANGE	LB.	4.98	4.98	5.13	5.28	5.28
ROUND CONCRETE (E=18')	C.Y.	1.40	1.38	2.02	2.75	2.73
ROUND CONCRETE 1' CHANGE	C.Y.	0.078	0.076	0.112	0.153	0.152
ROUND ④REINFORCING (E=18')	LB.	97	97	102	107	107
ROUND ④REINFORCING 1' CHANGE	LB.	5.02	5.02	5.26	5.50	5.50
⑤NOMINAL RESISTANCE	Pn KIPS	154	208	192	265	324
BEARING VALUE MAX.	TON	37T	50T	46T	64T	78T
f'c = 3500 PSI						

④ INCLUDES WEIGHT OF PUNCHED L 7/8 x 7/8 x 1/8
⑤ SEE BRIDGE DESIGN MANUAL 6.6.4.2 FOR ADDITIONAL INFORMATION

REVISION 11-09 - CHANGED THE DIMENSIONS FOR NON & MONOLITHIC BAR EMBEDMENT. REWROTE NOTE ⑥. REMOVED THE a36 STEEL NOTATION FOR TYPE 3 PILES.
ENGLISH\MISCELLANEOUSBRIDGES.DGN - PIOL - THIS SHEET ISSUED 01-09.

LATEST REVISION DATE: 11-09

STANDARD DESIGN

CONCRETE AND STEEL PILES

CAST IN PLACE, PRESTRESSED AND ENCASED FOR USE IN

LRFD TRESTLE PILE BENTS - PIOL

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	LRFD DESIGNED TRESTLE PILE BENTS	STANDARD PIOL	COUNTY	PROJECT NUMBER	SHEET NUMBER