

NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI

BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH PER STRAND	APPLIED PRESTRESS FORCE PER STRAND
1/2"	270 L.R.	0.153	41,300#	30,980#
0.6"	270 L.R.	0.217	58,600#	43,940#

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN THE STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

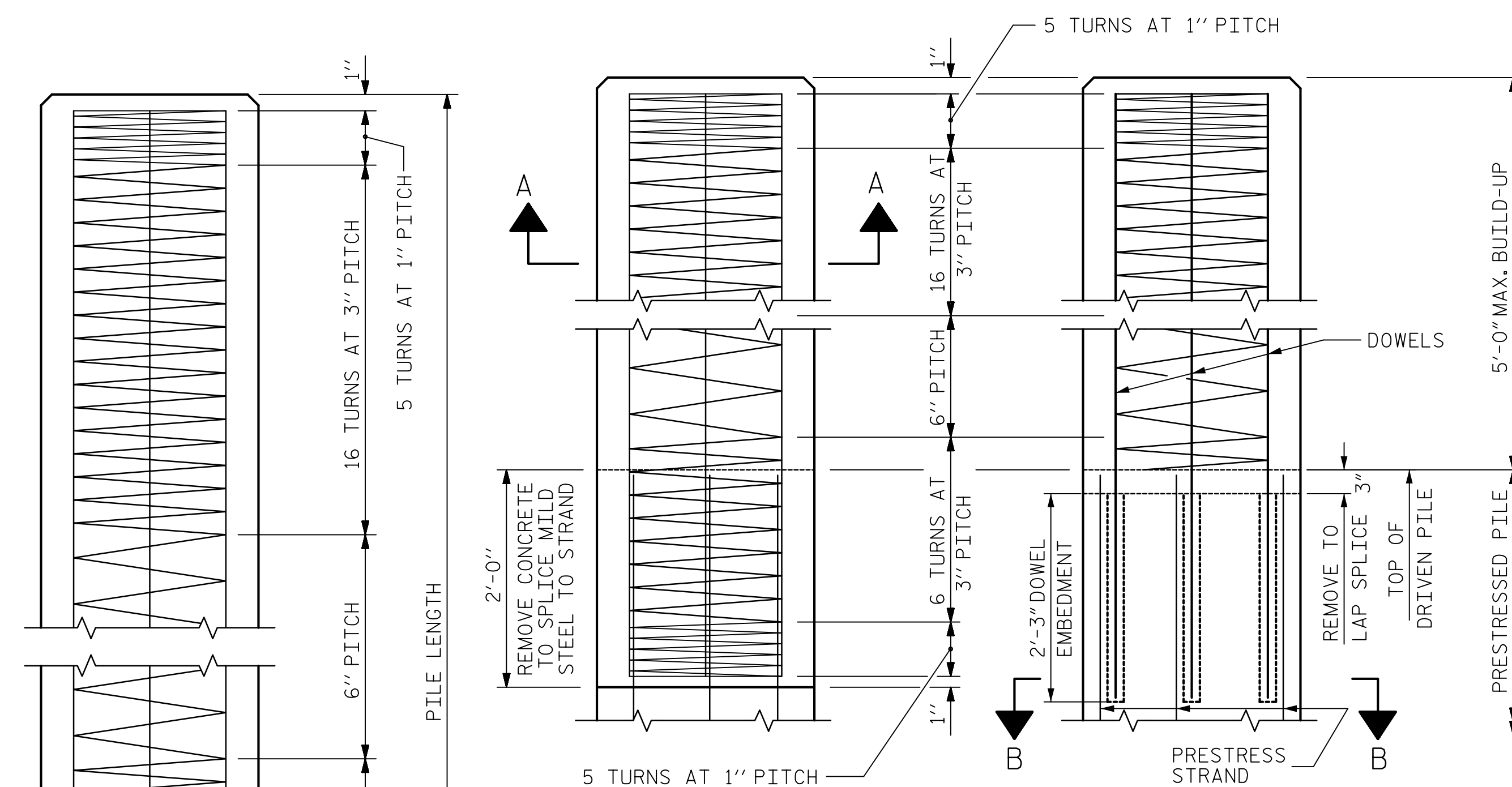
DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

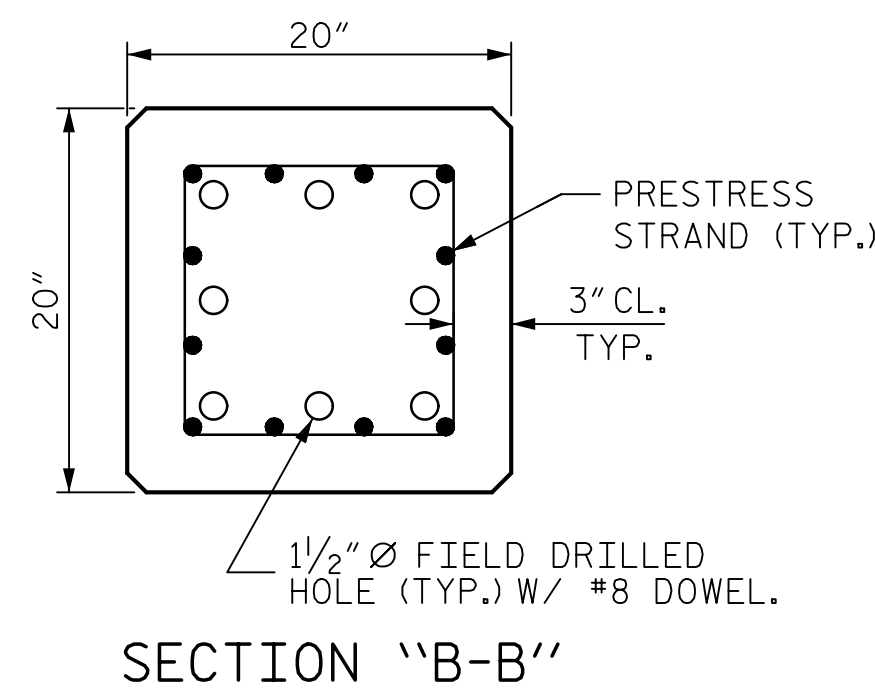
PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. SEE STANDARD SPECIFICATIONS FOR CALCIUM NITRITE CORROSION INHIBITOR.

THE CONCRETE IN THE PILES OF BENT NO. 1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB (1.0 KG) OF FLY ASH PER 1.0 LB (1.0 KG) OF PORTLAND CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

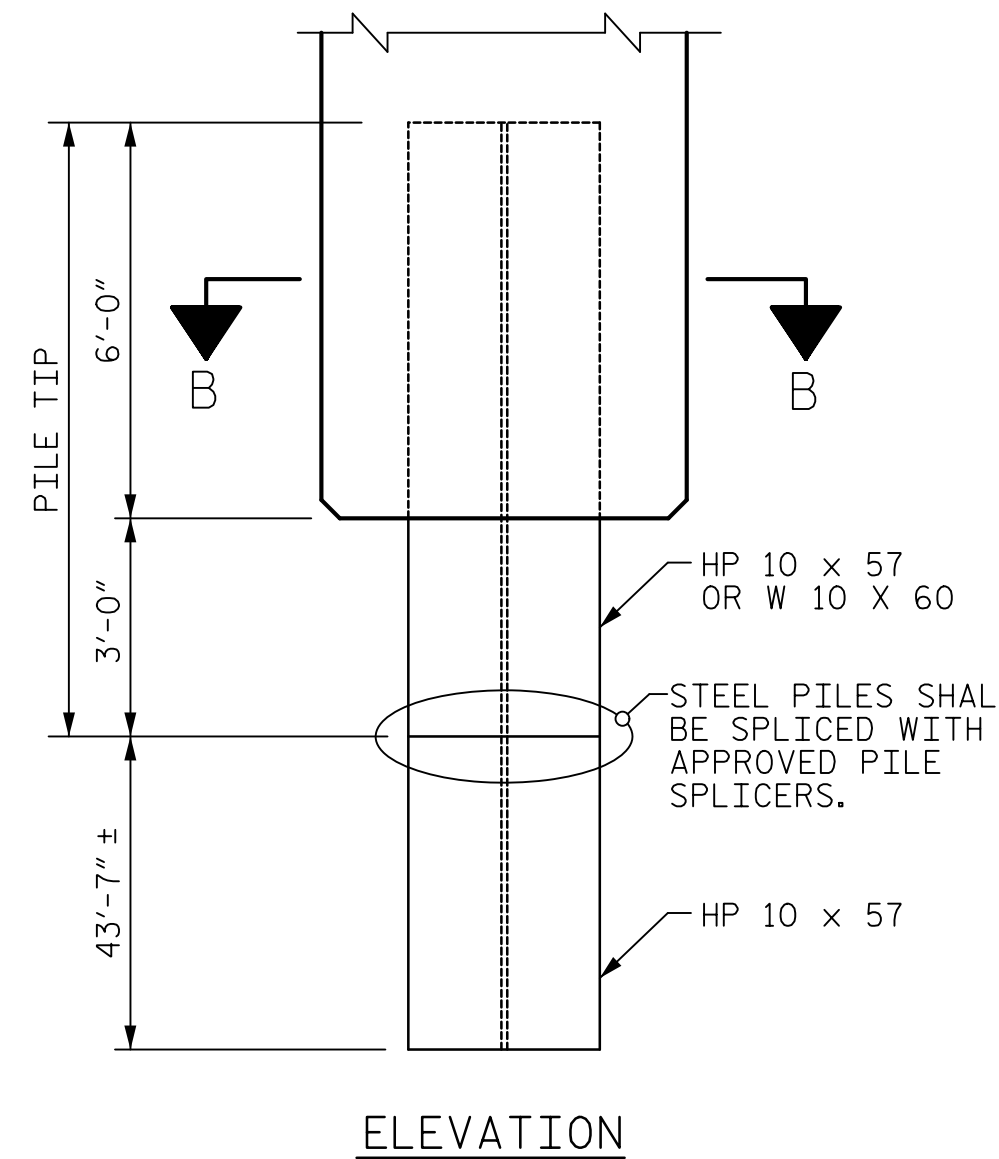


BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS



SECTION "B-B"
(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



ELEVATION

QUANTITIES FOR ONE 20" SQUARE PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.3L	0.7L	0.207L	0.586L
25'-0"	2.56	5.18	7'-6"	17'-6"		
30'-0"	3.07	6.22	9'-0"	21'-0"		
35'-0"	3.58	7.26	10'-6"	24'-6"		
40'-0"	4.09	8.29	12'-0"	28'-0"		
45'-0"	4.61	9.33	13'-6"	31'-6"		
50'-0"	5.12	10.36	15'-0"	35'-0"		
55'-0"	5.63	11.40	16'-6"	38'-6"		
60'-0"	6.14	12.44	18'-0"	42'-0"		
65'-0"	6.65	13.47			13'-5 1/2"	38'-1"
70'-0"	7.17	14.51			14'-6"	41'-0"
75'-0"	7.68	15.55			15'-6 1/2"	43'-11"
80'-0"	8.19	16.58			16'-6 1/2"	46'-11"
85'-0"	8.70	17.62			17'-7"	49'-10"

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

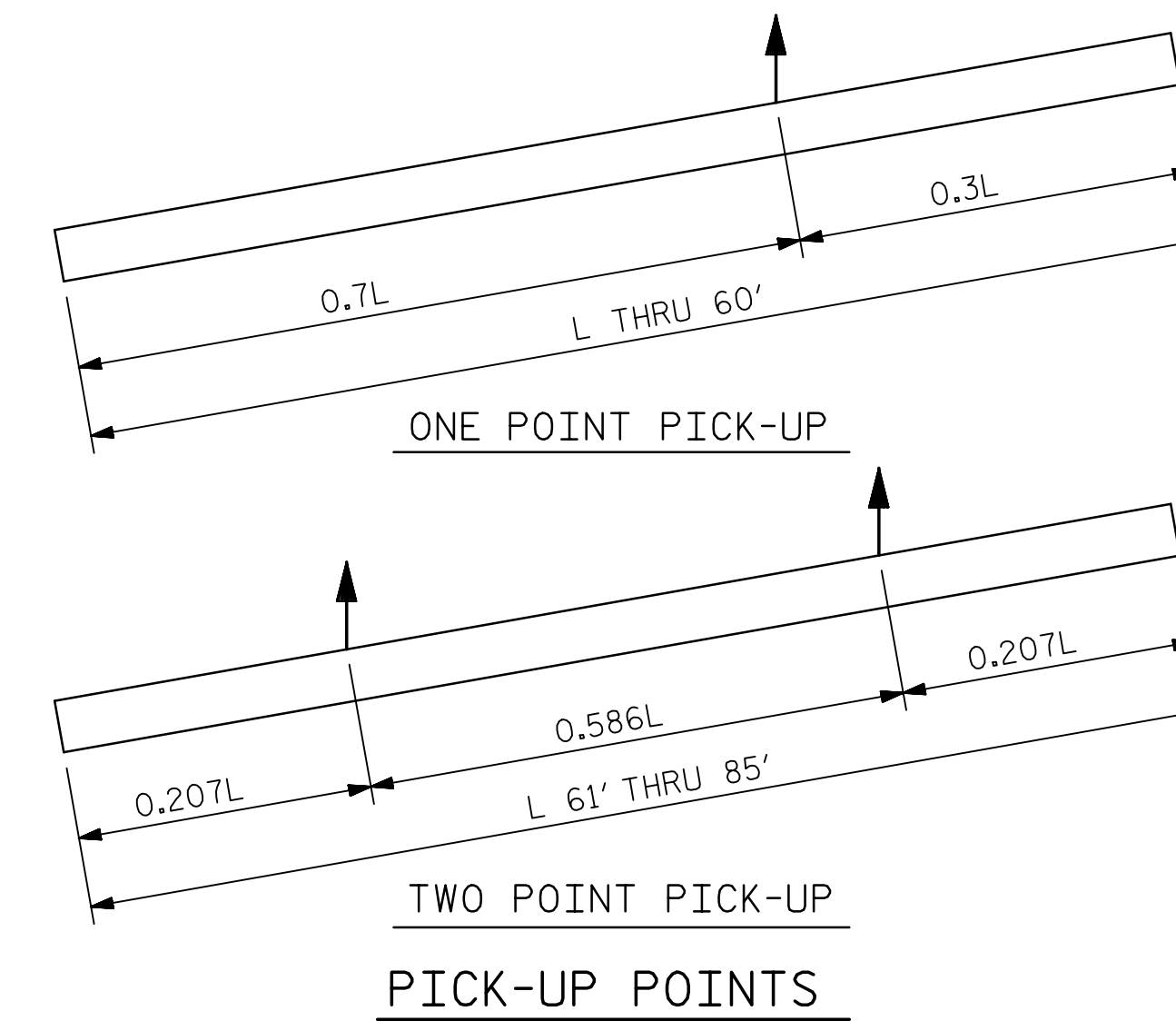
BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

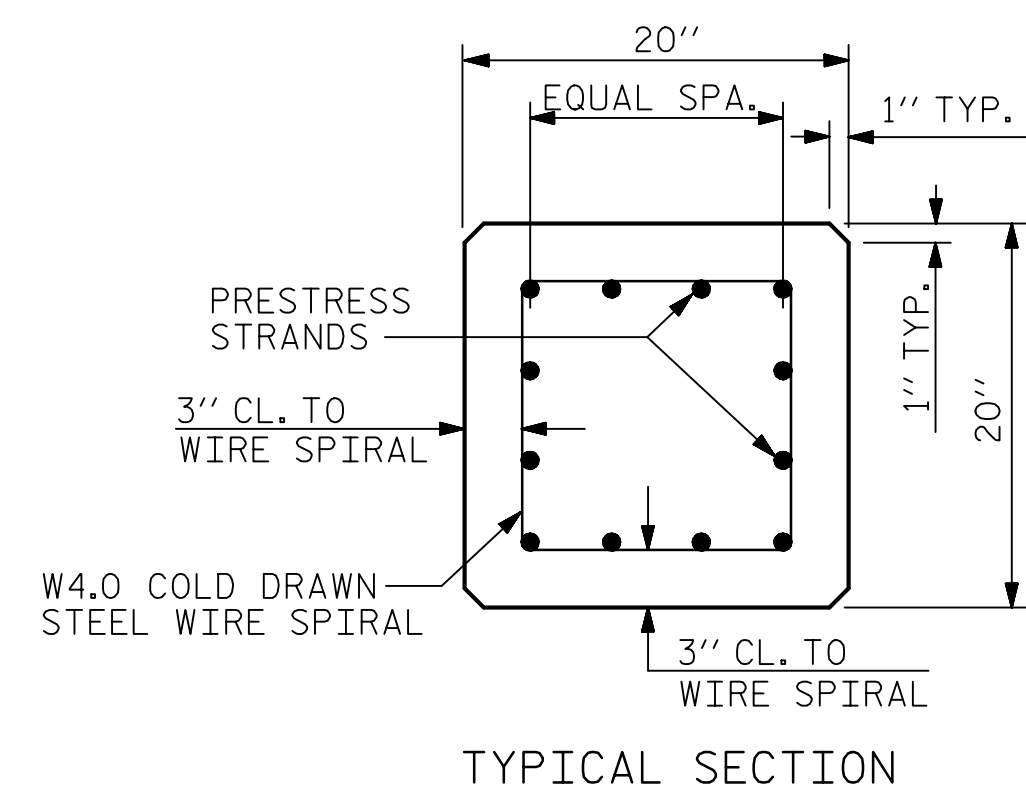
FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

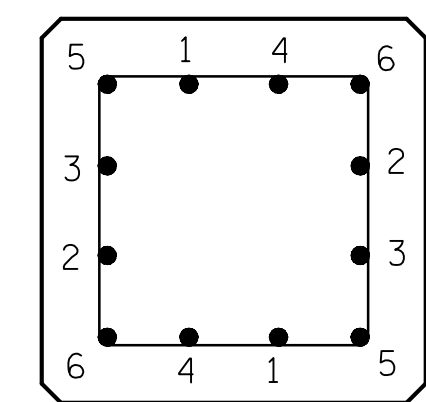
THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.



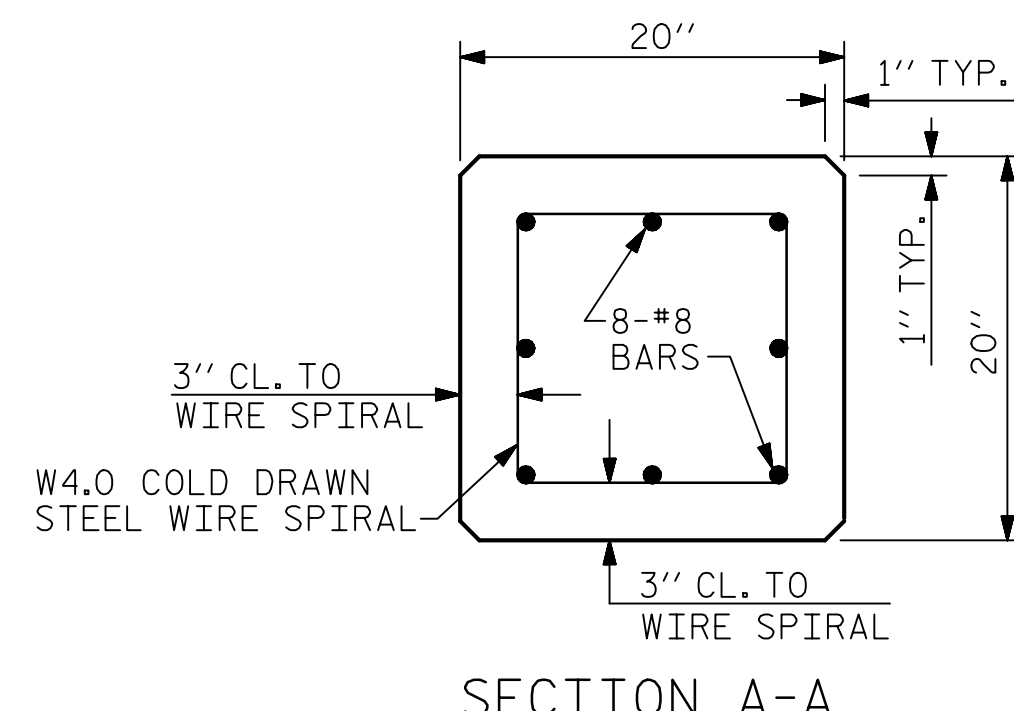
PICK-UP POINTS



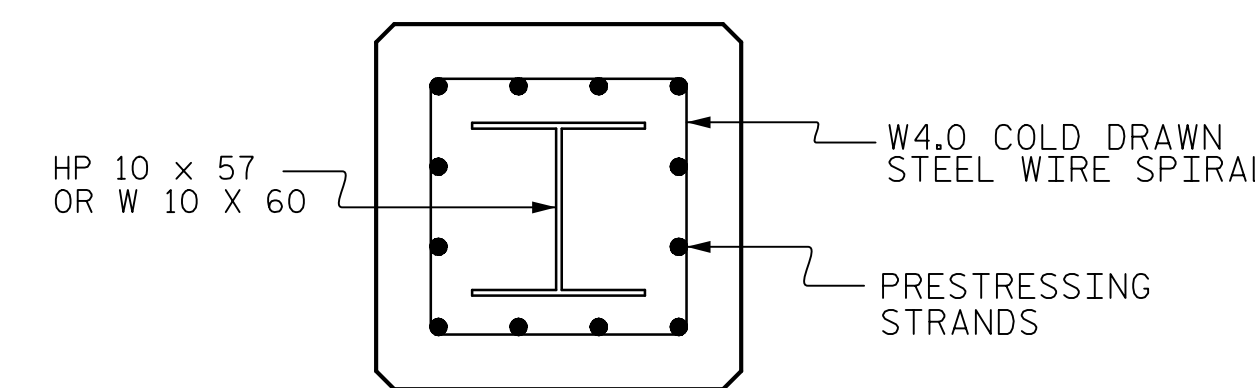
TYPICAL SECTION



TYPICAL PATTERN FOR BURNING STRANDS



SECTION A-A

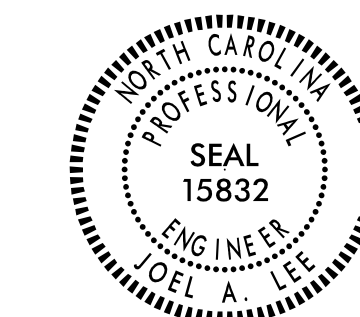


SECTION B-B PILE TIP DETAILS

FOR 20" SQUARE PRESTRESSED CONCRETE PILE

Mead & Hunt

127 W. Hargett Street
Suite 504
Raleigh, NC 27601
919-714-8670
meadhunt.com
NC License No. F-1235



PROJECT NO. B-4440
BRUNSWICK COUNTY
STATION: 18+90.36 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

20" PRESTRESSED CONCRETE PILE

ASSEMBLED BY : J.S. HOBSON	DATE : 3/27/15
CHECKED BY : J.A. LEE	DATE : 3/30/15
DRAWN BY : WJH 1/89	REV. 11/30/10 WMC/GM
CHECKED BY : CRK 3/89	REV. 10/1/11 MAA/GM
	REV. 12/14 MAA/TMG

1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

THESE PLANS HAVE BEEN PROPERLY EXAMINED BY THE UNDERSIGNED. I HAVE DETERMINED THAT THEY COMPLY WITH EXISTING NORTH CAROLINA CODES, AND HAVE BEEN PROPERLY ADAPTED FOR USE IN THIS AREA.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			22