

STATE	FEDERAL AID	STATE	SHEET NO.
VA.	PROJECT	ROUTE PROJECT	

POINTS	PICK UP POINTS
1	0.292L, 0.708L
2	0.207L, 0.586L, 0.207L
3	0.145L, 0.355L, 0.355L, 0.145L
4	0.107L, 0.262L, 0.262L, 0.262L, 0.107L

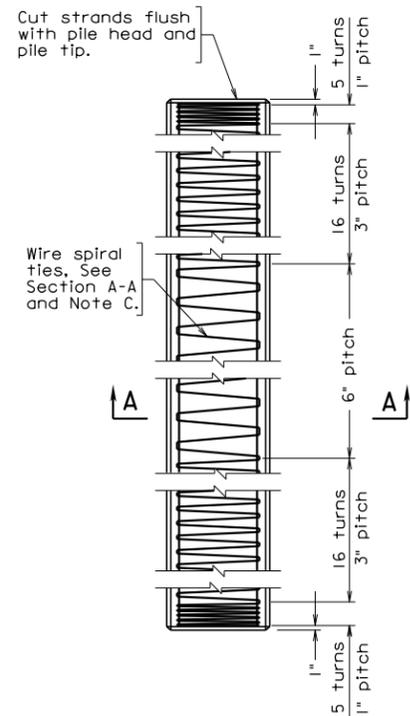
Unless special lifting devices are attached for pick-up, pick-up points shall be plainly marked on all piles after removal of the forms. The pile shall be supported only at the indicated pick-up points while in storage or while being handled.

The use of proper rigging is required to ensure that the pick-up points remain in a straight line during lifting and when positioning the pile for driving.

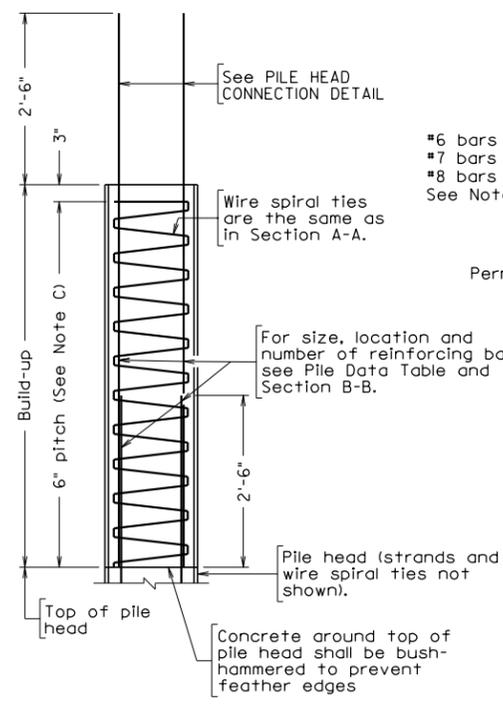
The use of special embedded or attached lifting devices, the employment of other pick-up points or any other method of pick-up shall be subject to approval by the Engineer.

Pile size	Approx. Wt. per LF	Maximum lengths for various pick-up systems			
		1-Point	2-Point	3-Point	4-Point
W	Lbs.	L	L	L	L
12"	150	49'	69'	98'	133'
14"	204	54'	77'	110'	149'
18"	338	62'	88'	125'	170'
20"	417	65'	91'	131'	177'
24"	600	69'	97'	139'	189'

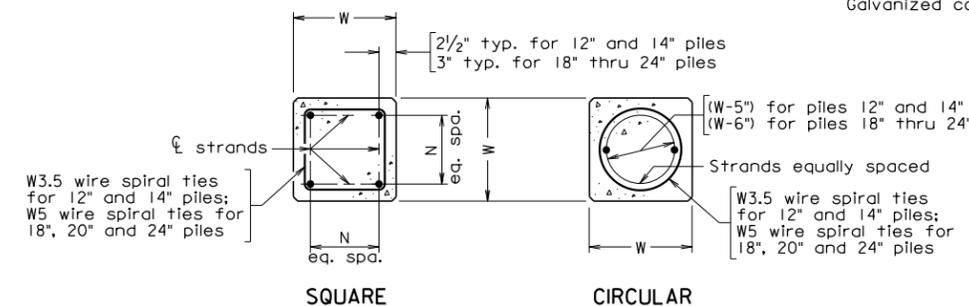
Maximum lengths are determined from impact loads. L is the maximum pick-up length based on a concrete compressive strength of 5000 psi. If piles are picked up when concrete strength is less than 5000 psi, the maximum pick-up length shall be the tabulated length reduced by 1% for every 250 psi below 5000 psi.



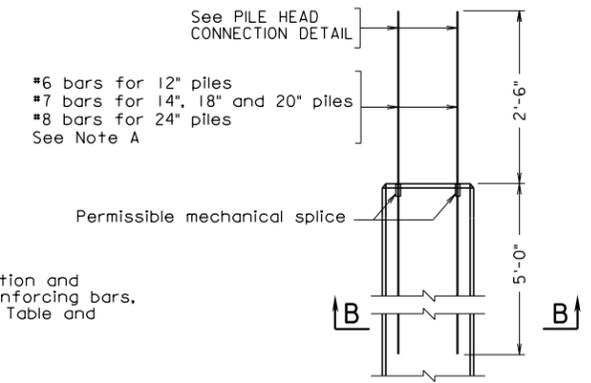
PILE ELEVATION



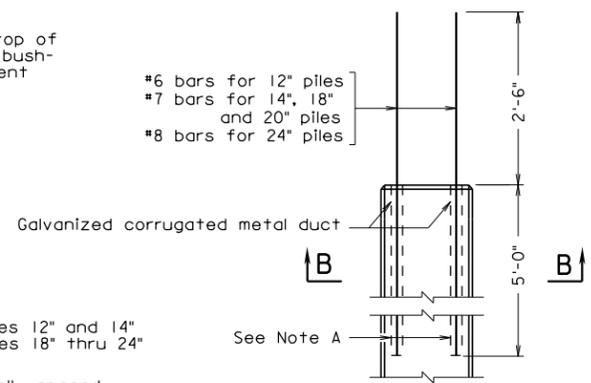
PILE BUILD-UP ELEVATION  
See Note B



SECTION A-A: STRAND PATTERN FOR PILE



PILE HEAD PROJECTING BAR DETAIL  
Strands and wire spiral ties not shown



ALTERNATE PILE HEAD PROJECTING BAR DETAIL  
Strands and spirals not shown

Note:

All concrete shall be Class A5 having a minimum compressive cylinder strength at 28 days equal to 5000 psi and a minimum compressive cylinder strength at time of release of strands equal to 3500 psi.

All strands shall be low relaxation and shall have an ultimate strength of 270 ksi.

Deformed reinforcing bars shall conform to ASTM A615, Grade 60.

Wire spiral ties shall conform to ASTM A82.

Splicing is not permitted, unless authorized by the Engineer.

Build-ups shall be used only with written permission by the Engineer and then only after driving is complete.

Mechanical splices for reinforcing bars shall be in accordance with Section 406.03(e) of the Specifications. The Contractor shall provide adequate shielding to protect the ends of the reinforcing bars until the pile is driven and the bars are spliced.

When pile cut-off is greater than 2'-6" at least 30 inches of all the strands shall project into the cap or footing to serve for anchorage.

Where piles are exposed in bridges over tidal water such as in pile bents and in footings constructed above Mean High Tide elevation, the spiral ties and all other reinforcing bars in the pile shall be hot dip galvanized.

Note A:

In lieu of the reinforcing bars projecting from the head:

1. The pile may be cast 2'-6" longer than required. After driving the concrete pile, remove the concrete from the added length to expose the strands. The strands must be thoroughly cleaned and undamaged before casting the footing or cap; or

2. The top of the pile shall be cast with 1 3/8" diameter preformed holes (the holes shall be serrated to provide a mechanical bond) or 2" diameter holes formed with galvanized corrugated metal duct. The duct shall be a single section and shall be capped at the bottom. After driving the pile and cleaning out the holes, an approved high strength grout shall be placed in the holes and the #6, #7 or #8 reinforcing bars shall be installed immediately. The grout shall have a flow time between 10 to 30 seconds tested in accordance with ASTM C939.

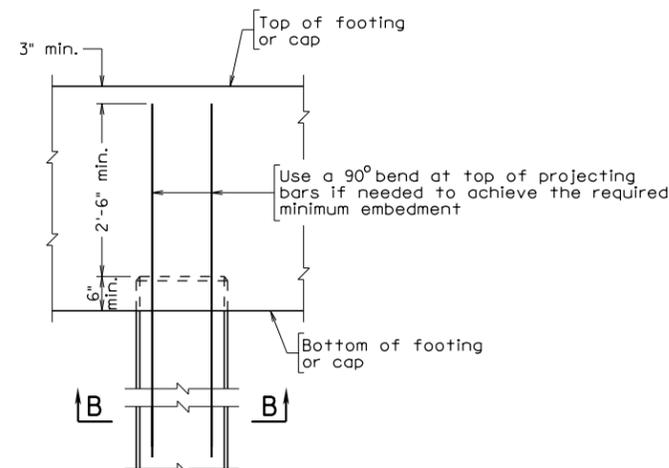
Note B:

If alternate circular strand arrangement is used, bar extension must be placed to fit.

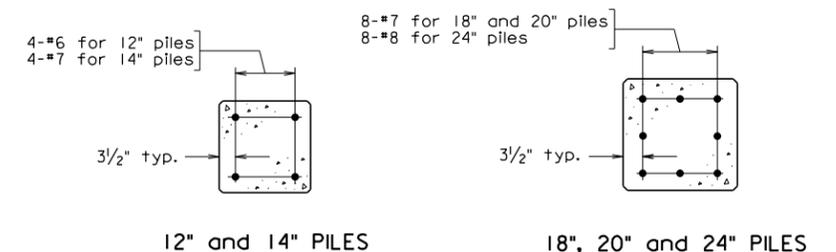
Note C:

For Seismic Performance Zone 2 bridges (structures), W12 wire or #3 bars shall be used and the pitch shall be 3".

Pile size W (in.)	Strand pattern	Total no. of strands in pile	Diameter of strands (in.)	Strand spacings	Prestressing force per strand (pounds)	Effective prestress after losses (psi)
				N		
12"	Square	4	1/2	1	30,980	751
	Circular	4	1/2	—	30,980	751
14"	Square	8	1/2	2	24,790	834
	Circular	6	1/2	—	30,980	820
18"	Square	12	1/2	3	26,850	835
	Circular	10	1/2	—	30,980	827
20"	Square	12	1/2	3	30,980	806
	Circular	12	1/2	—	30,980	806
24"	Square	16	1/2	4	30,980	751
	Circular	16	1/2	—	30,980	751



PILE HEAD CONNECTION DETAIL  
Strands and ties not shown



12" and 14" PILES      18", 20" and 24" PILES

SECTION B-B: PILE HEAD

See Note B

bpp1.dgn

12-28-2016

BPP-1

Sealed and Signed by:  
Junyi Meng  
Lic. No. 033572  
On the date of  
Dec 28, 2016

A copy of the original sealed and signed standard drawing is on file in the Central Office.

VDOT S&B DIVISION  
RICHMOND, VA  
STRUCTURAL ENGINEER

COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION					
STRUCTURE AND BRIDGE DIVISION					
PRESTRESSED CONCRETE PILES SQUARE: 12" THRU 24"					
No.	Description	Date	Designed: S&B...DIV	Date	Plan No.
			Drawn: ...S&B...DIV		BPP-1
			Checked: S&B...DIV		
Revisions					

Not to scale

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**PRESTRESSED CONCRETE PILES**

**SQUARE: 12" THRU 24"**

**NOTES TO DESIGNER:**

Section properties for piles:

Pile Size	Area (A) in <sup>2</sup>	Moment of Inertia (I) in <sup>4</sup>	Section Modulus (S) in <sup>3</sup>
12"	144	1728	288
14"	196	3201	457
18"	324	8748	972
20"	400	13,333	1333
22"	576	27,648	2304

**ADD THE FOLLOWING NOTES, DIMENSIONS, DETAILS, ETC. TO STANDARD:**

None