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

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

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.

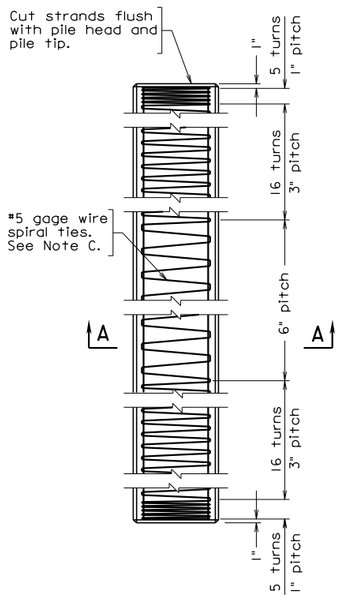
The use of proper rigging is required to insure that the pick-up points remain in a straight line during lifting and when positioning the pile for driving.

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.

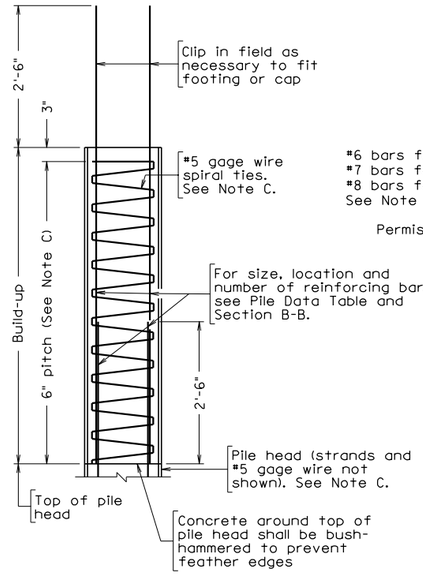
PILE PICK-UP DATA

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
10"	140	47'	66'	95'	129'
12"	150	51'	73'	104'	141'
14"	204	55'	78'	112'	152'
16"	267	62'	88'	126'	171'
18"	338	64'	90'	129'	175'
20"	417	69'	97'	138'	188'
24"	600	72'	102'	146'	198'

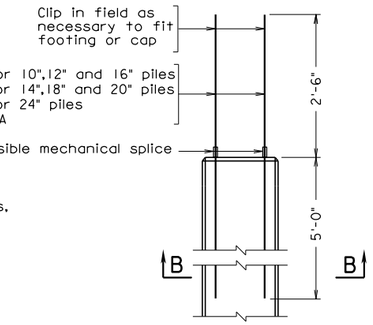
Maximum lengths are determined from impact loads. L is the maximum pick-up length based on a concrete compressive strength of 5000 psi. If piles are picked up when concrete strength is less than 5000 psi, the maximum pick-up length shall be the tabulated length reduced by 1% for every 250 psi below 5000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



PILE ELEVATION



PILE BUILD-UP ELEVATION
See Note B



PILE HEAD PROJECTING BAR DETAIL
Strands and #5 gage wire 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.

One splice will be permitted where the length of pile required is greater than the maximum for 2-point pick-up unless specifically prohibited.

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

Subject to approval by the Engineer, the bars projecting from the pile head may be cut prior to driving and rewelded upon completion of driving. The method of welding used shall develop the tensile strength of the bar.

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.

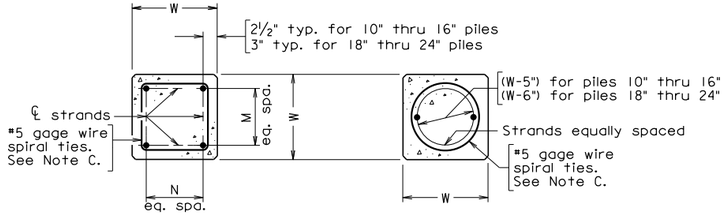
When pile cut-off is greater than 2'-6" at least 30 inches of all the strands shall project into the cap or footing to serve for anchorage.

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 before casting the footing or cap; or
2. 1⅜" ø preformed plain holes or 2" ø holes formed with galvanized corrugated metal may be used. After driving the pile and cleaning out the holes, the #6, #7 or #8 reinforcing bars shall be installed and the holes shall be filled with approved non-shrink grout.

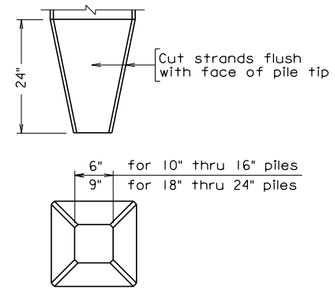
Note B:
If alternate circular strand arrangement is used, bar extension must be placed to fit.

Note C:
For Seismic Performance Category B bridges (structures), #4/0 gage wire or #3 bars shall be used and the pitch shall be 3".



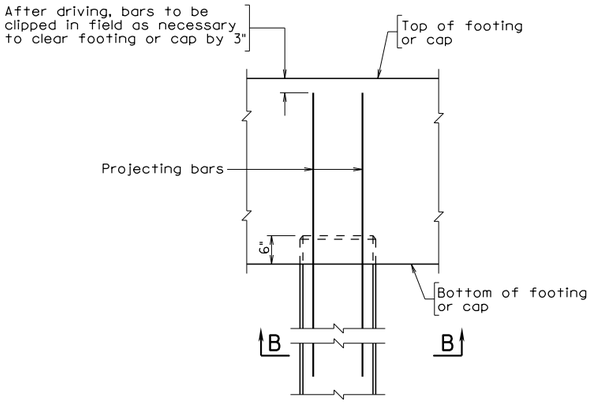
SQUARE CIRCULAR

SECTION A-A: STRAND PATTERN FOR PILE



PILE TIP

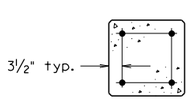
Pile tip(s) shall be used only when specified. Strands not shown.



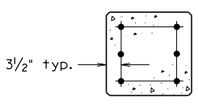
PROJECTING BAR CLIP DETAIL
Strands and #5 gage wire not shown

PILE DATA

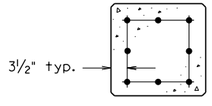
Pile size W (in.)	Strand pattern	Total no. of strands in pile	Diameter of strands in.	Strand spacings M	Strand spacings N	Prestressing force per strand pounds	Effective prestress after losses psi
10"	Square	4	½	4	4	28,910	966
	Circular	4	½	—	—	28,910	966
12"	Square	4	½	4	4	30,970	751
	Circular	4	½	—	—	30,970	751
14"	Square	6	½	2	4	30,970	820
	Circular	6	½	—	—	30,970	820
16"	Square	8	½	2	2	30,970	836
	Circular	8	½	—	—	30,970	836
18"	Square	10	½	3	2	30,970	826
	Circular	10	½	—	—	30,970	826
20"	Square	12	½	3	3	30,970	805
	Circular	12	½	—	—	30,970	805
24"	Square	16	½	4	4	30,970	751
	Circular	16	½	—	—	30,970	751



10", 12" and 14" PILES



16" and 18" PILES



20" and 24" PILES

SECTION B-B: PILE HEAD
See Note B

Not to scale

bppi.dgn

08-07-2012.

BPP-1

Sealed and Signed by:
Julius F.J. Volgyi Jr.
Lic. No. 010487
On the date of
Aug. 7, 2012

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

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

PRESTRESSED CONCRETE PILES SQUARE: 10" THRU 24"

Designed: S&B...DIV	Date	Plan No.	Sheet No.
Drawn: ....S&B...DIV		BPP-1	
Checked: S&B...DIV			

PRESTRESSED CONCRETE PILES

SQUARE: 10" THRU 24"

NOTES TO DESIGNER:

Section properties for piles:

Pile Size	Area (A) in^2	Moment of Inertia (I) in^4	Section Modulus(S) in^3
10"	100	833	167
12"	144	1728	288
14"	196	3201	457
16"	256	5461	683
18"	324	8748	972
20"	400	13,333	1333
24"	576	27,648	2304

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

None