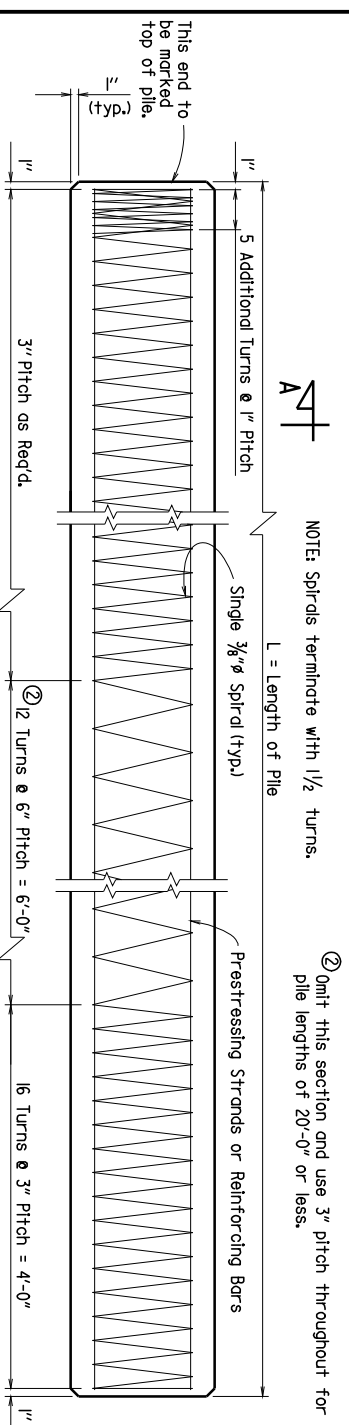


A1



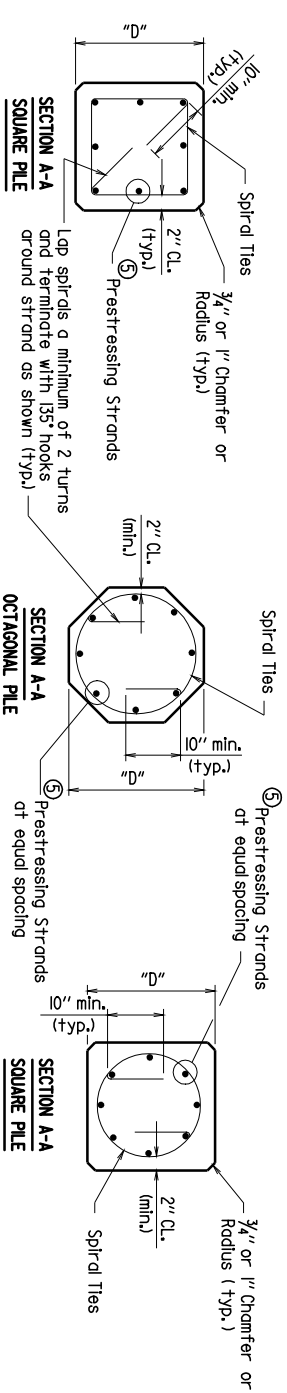
A1

PLAN OF PILE SHOWING SPIRAL TIE SPACING

NOTE: Strand location shall be symmetrical about the axis of the pile with no more than one strand difference between any two adjacent sides. Circular spiral ties are required for odd number of strands.

For anchorage of pile to bent, see Bent Details.

NOTE: Spirals terminate with 1/2 turns. Limit this section and use 3" pitch throughout for pile lengths of 20'-0" or less.

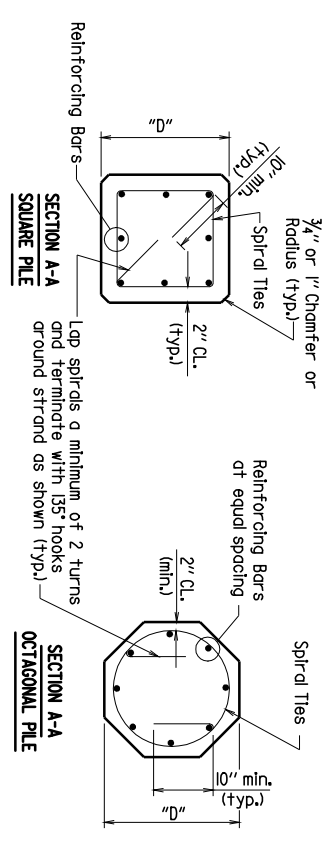


PRESTRESSED CONCRETE PILES

① Number based on initial pre-stress force of "B" x Ultimate Tensile Stress, Prestress Losses and min. 700 psi Unit Prestress on concrete after Losses.

PRESTRESSED CONCRETE PILE PROPERTIES

Grade	Strand Diameter	① Number of Strands per Size "D"			Minimum Ultimate Tensile Strength Per Strand (lbs.)	Initial Prestressing Force Per Strand (lbs.)
		6" Oct.	④ 14" Sq.	18" Sq.		
Stress-Relieved	7/8"	11	13	16	27,000	18,900
	1/2"	8	10	12	36,000	25,200
	3/8"	9	11	14	31,000	21,700
Low Relaxation	1/2"	7	9	10	41,300	28,900
	3/8"	9	11	14	27,000	20,200
	7/16"	7	9	10	36,000	27,000
	3/8"	8	10	12	31,000	23,300
	1/2"	6	8	9	41,300	31,000

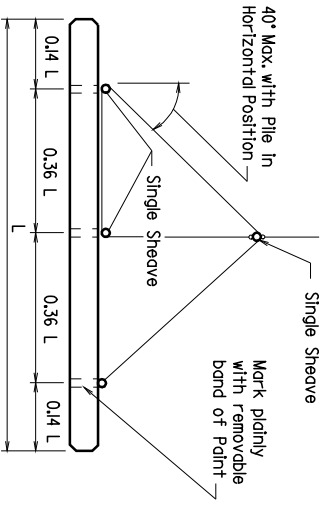
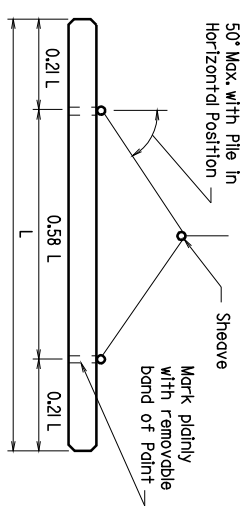
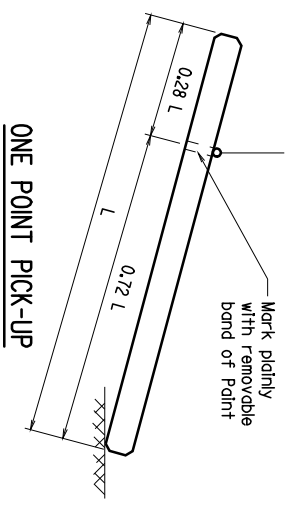


NON-PRESTRESSED PILE REINFORCING

Pile Size	Req'd. No.	Bar Size
6" Oct.	8	# 7
8" Oct.	8	# 7
④ 14" Sq.	8	# 7
18" Sq.	8	# 7
18" Sq.	8	# 8

④ 1/4" sq. piles to be used in Seismic Performance Zone 1 only.

NON-PRESTRESSED CONCRETE PILES



DATE REVISIONS	DATE FILLED	DATE REVISIONS	DATE FILLED	FED. ROAD DIST. NO.	STATE PARK	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
12-10-2009				6	ARK.			

MAXIMUM PICKUP LENGTHS "L"	
Type of Pick-Up	Non-Prestressed
6" Oct.	18" Oct.
52'	55'
80'	84'
105'	112'
46'	55'
67'	79'
93'	110'
117'	126'
131'	141'

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Arkansas State Highway and Transportation Department Standard Specifications for Highway Construction (2005 Edition) with applicable Supplemental Specifications and Special Provisions.
DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, Fourth Edition.
SEISMIC PERFORMANCE ZONES: 1 & 2
The Contractor may use prestressed piles or non-prestressed piles. Either type will be measured and paid for at the contract unit price bid for "Concrete Piling".
SPIRAL REINFORCING: Spiral reinforcing shall be steel wire meeting the requirements of AASHTO M 32 or M 225 or shall be plain round steel bars meeting the requirements of AASHTO M 31 or M 53, Gr. 60.

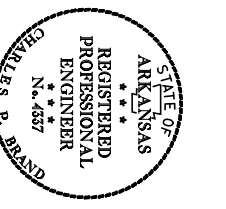
MANUFACTURE, TRANSPORTATION AND STORAGE: Shipment of piles from the plant site or pile driving will not be permitted until the required minimum compressive strength is reached, and in no case less than 10 days after pouring the concrete. Prestressed piles may be removed from the casting bed to nearby storage any time after transfer of stress. See Section 802 "Concrete for Structures" of the Standard Specifications for additional information.
Unless otherwise approved by the Engineer, all protruding or exposed pile lifting or transporting devices above the finished ground shall be removed after pile driving is complete. Removal shall be a minimum of 1' below the surface of the pile and the cavity shall be filled with a non-shrink grout listed on the Department's OPL.

FORMS: For forming exterior of piles, the use of steel forms on concrete-founded casting beds is required unless otherwise approved by the Engineer. Side forms may have a maximum drift on each side not exceeding 1/8" per foot.
TOLERANCES: Pile ends shall be plane surfaces perpendicular to the longitudinal axis of pile with a maximum tolerance of 1/8" per foot transversely.
The maximum sweep (deviation from straightness measured from end to end of the pile, while not subject to bending forces) shall not exceed 1/8" in 10 feet.

BUILD-UPS: To provide for build-ups of piles where authorized by the Engineer, concrete shall be cut back to expose the reinforcing steel for a distance sufficient to provide a lap of 60 diameters of the reinforcing bars required for build-up. Reinforcing for build-ups shall be the reinforcing shown for non-prestressed piles. INSTALLATION, MEASUREMENT AND PAYMENT: See Section 805 "Piling" of the Standard Specifications.
ADDITIONAL NOTES FOR PRESTRESSED PILES ONLY:
CONCRETE: Concrete in prestressed piles shall be Class (SAE) and shall have a minimum compressive strength (f'c) of 5,000 psi at 28 days. Compressive strength of transfer of the prestressing force shall be not less than 4,000 psi. Concrete in build-ups shall have a minimum compressive strength of 4,000 psi and shall be cured for a minimum of 10 days.
PRESTRESSING REINFORCING: Seven-wire stress-relieved or low relaxation strands shall conform to the general requirements of AASHTO M 203. Broken wires within individual strands will be permitted up to 2% of the total number of wires in each pile, providing that there is not more than one broken wire per strand. Two or more broken wires per strand will be cause for replacement of the strand, even though the two broken wires are within the 2% limitation.

ADDITIONAL NOTES FOR NON-PRESTRESSED PILES ONLY:
All concrete shall be Class (SAE) and shall have a minimum compressive strength (f'c) of 4,000 psi at 28 days. All longitudinal reinforcing bars shall be deformed bars and shall conform to the requirements of AASHTO M 31 or M 53, Gr. 60.

Added paragraph to General Notes KDH 12-10-2009
Checked by: CJF Date: 12-10-2009



STANDARD DETAILS OF CONCRETE PILES IN SEISMIC PERFORMANCE ZONES 1 & 2

ROUTE SEC.
ARKANSAS STATE HIGHWAY COMMISSION
LITTLE ROCK, ARK.

BRIDGE ENGINEER
DRAWN BY: KMY DATE: 11-7-08 FILENAME: b14964.std.dgn
CHECKED BY: JAC DATE: 11-7-08 SCALE: no scale
DESIGNED BY: STD DATE: DRAWING NO. 14964

③ The five additional turns of spiral reinforcing may be omitted for build-up without additional driving.

BUILD-UP

