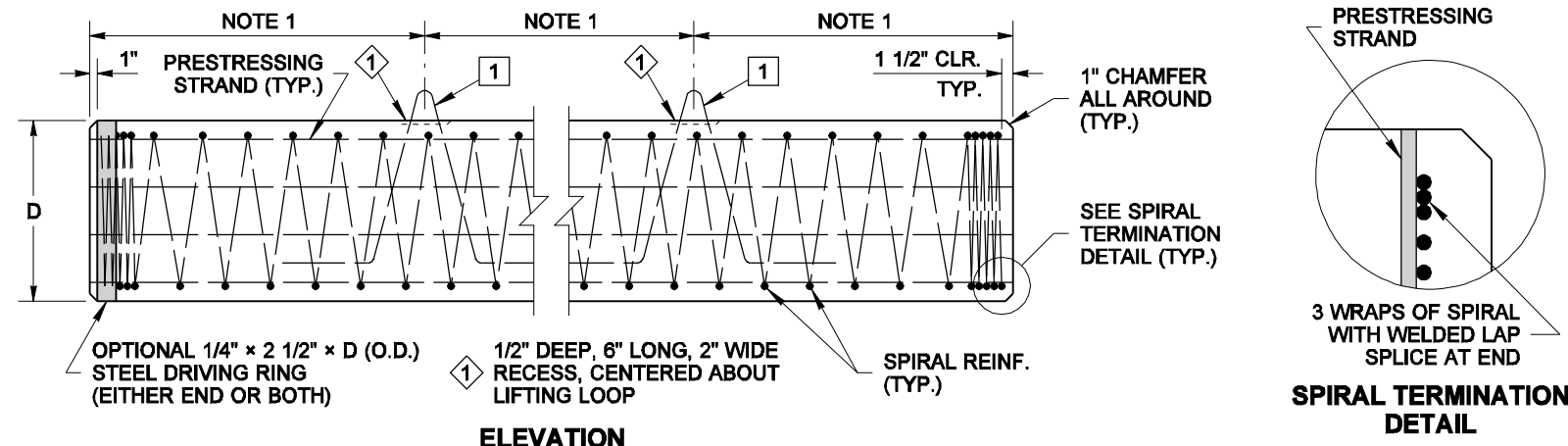


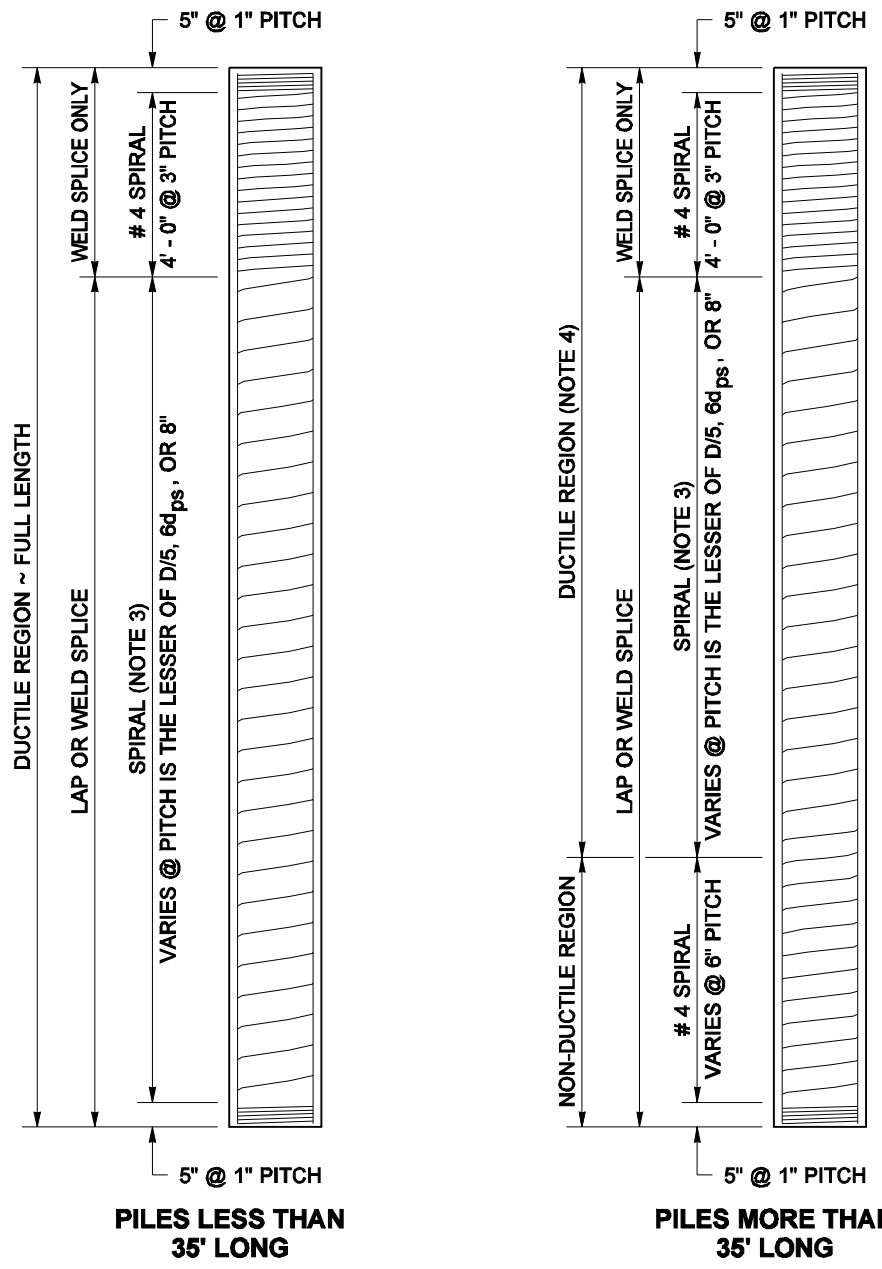
| PILE TYPE | D (in.) | PERIMETER (in.) | UNIT WEIGHT (lbs./ft.) | AREA (in. <sup>2</sup> ) | MOMENT OF INERTIA (in. <sup>4</sup> ) | RADIUS OF GYRATION (in.) | NUMBER OF STRANDS |         |
|-----------|---------|-----------------|------------------------|--------------------------|---------------------------------------|--------------------------|-------------------|---------|
|           |         |                 |                        |                          |                                       |                          | MINIMUM           | MAXIMUM |
| SQUARE    | 12      | 48.0            | 158                    | 144                      | 1728                                  | 3.5                      | 4                 | 7       |
|           | 14      | 56.0            | 215                    | 196                      | 3201                                  | 4.0                      | 6                 | 10      |
|           | 16      | 64.0            | 281                    | 256                      | 5461                                  | 4.6                      | 7                 | 13      |
| OCTAGONAL | 14      | 46.4            | 178                    | 162                      | 2103                                  | 3.6                      | 5                 | 8       |
|           | 16 1/2  | 54.7            | 247                    | 226                      | 4057                                  | 4.2                      | 7                 | 11      |
|           | 18      | 59.6            | 295                    | 268                      | 5746                                  | 4.6                      | 8                 | 13      |
|           | 20      | 66.3            | 364                    | 331                      | 8758                                  | 5.1                      | 9                 | 16      |
|           | 24      | 79.5            | 524                    | 477                      | 18161                                 | 6.2                      | 13                | 22      |



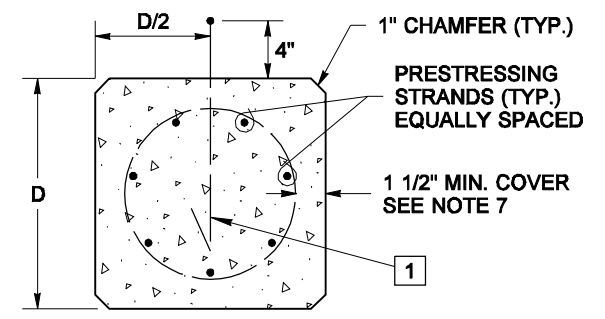
**ELEVATION**  
**PILE DETAILS**

**NOTES**

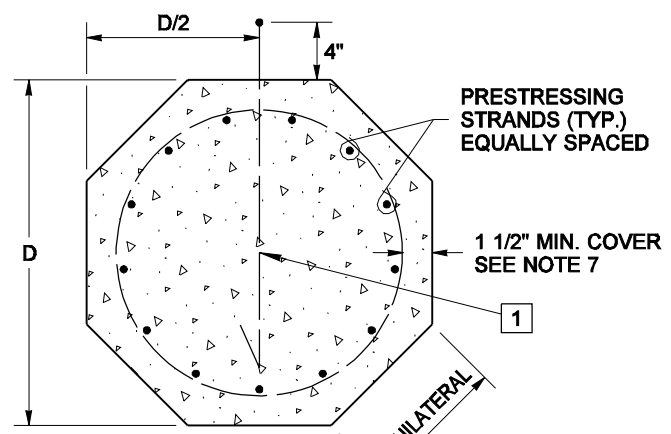
1. Place lifting loops at the lifting points shown in the PILE HANDLING DIAGRAM, Standard Plan E-4a, for the case stated in the contract.
2. Spirals shall be spliced either by lapping one full turn and bending the end of the spiral to a 135° seismic hook, by welding, or by the use of a mechanical connector that develops 125% of the minimum yield strength of the spiral. Welding shall meet the requirements of Standard Specification 6-02.3(24)E.
3. All prestressing strands are 1/2" or 0.6" diameter ( $d_{ps}$ ), Grade 270, uncoated strands, AASHTO M203, jack to 0.75 Fpu maximum.
4. Strength of concrete shall be 5.0 ksi at release and 7.0 ksi at final.
5. 2 1/2" cover if pile is exposed to salt water.



**SPIRAL REINFORCEMENT**

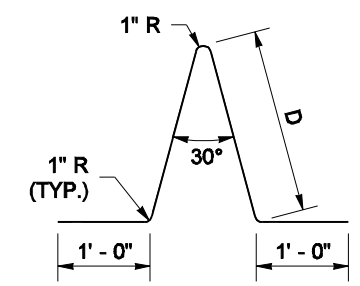


**SQUARE**



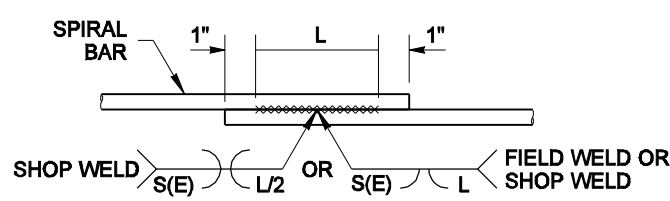
**OCTAGONAL**

**TYPICAL SECTIONS**

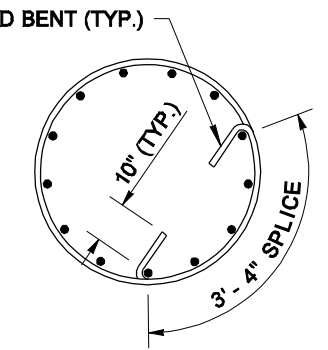


**1/2" DIAM., 270 ksi STRAND LIFTING LOOP**

**BENDING DIAGRAM**



**SEE TABLE FOR WELD DIMENSIONS**  
**SPIRAL WELDED LAP SPLICE DETAIL**



**SPIRAL LAP SPLICE DETAIL**

| DEFORMED BAR<br>AASHTO M 31 GR. 60 | PLAIN STEEL BAR<br>AASHTO M 31 GR. 60 | COLD DRAWN WIRE<br>AASHTO M 32 | DEFORMED WIRE<br>AASHTO M225 | WELD DIMENSIONS |   |            |
|------------------------------------|---------------------------------------|--------------------------------|------------------------------|-----------------|---|------------|
|                                    |                                       |                                |                              | S               | E | LENGTH (L) |
| # 4                                | 1/2" DIAM.                            | W 20                           | D 20                         | 6               | 3 | 4"         |
| # 5                                | 5/8" DIAM.                            | W 31                           | D 31                         | 8               | 5 | 6"         |



EXPIRES AUGUST 23, 2004

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE ORIGINAL, SIGNED BY THE ENGINEER AND APPROVED FOR PUBLICATION, IS KEPT ON FILE AT THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION. A COPY MAY BE OBTAINED UPON REQUEST.

**PRECAST PRESTRESSED CONCRETE PILES**  
**STANDARD PLAN E-4**

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION

**Harold J. Peterfeso** 08-27-03  
STATE DESIGN ENGINEER DATE

