DESCRIPTION:
This Design Standard includes details for five types of piles with two thicknesses. Types "B1", "B2", "C1" and "C2" piles (corner piles) are of reinforced concrete construction, and Type "A" is of prestressed concrete construction. The piles shall be manufactured, cured and installed in accordance with the requirements of the contract documents.

MATERIALS: (for materials not listed refer to the Specifications)
CONCRETE
Class: V (Special) for slightly and moderately aggressive environments
V (Special w/ Silica Fume) for extremely aggressive environment
Unit weight: 150pcf
Modulus of Elasticity: Based on the use of Florida limerock concrete

REINFORCING STEEL
ASTM A615 Grade 60

PRESTRESSING STEEL
ASTM A416 Grade 270 (Low-Relaxation Strand)

DESIGN PARAMETERS:
Type "A"
Concrete Compressive Strength at release of prestressing: 4000 psi minimum
Uniform compression after prestressing losses: 1000 psi minimum
Pick-up, Storage and Transportation: 2'-6" Sheet Pile dimension is nominal. This dimension may be shortened by the Manufacturer up to 1/2" to allow for Sheet Pile fit-up in its final position. Minimum Sheet Pile width is 2'-5b". No changes shall be made to the tongues or grooves.

ENVIRONMENT:
The pile designs are applicable to all Environments.

PLASTIC FILTER FABRIC:
The plastic filter fabric shall extend to the bottom of the "X" dimension.

PILE STORAGE AND TRANSPORTATION SUPPORT DETAILS:
The plastic filter fabric shall extend to the bottom of the "X" dimension.

PILE PICK-UP AND HANDLING:
Types "B1", "B2", "C1" and "C2" Pile pick-up may be either a single point pick-up or a two point pick-up as shown below. Types "B1", "B2", "C1" and "C2" Two point pick-up for lifting out of forms & two point support for storage & transportation. Single point pick-up for installation only.

PILE FIT-UP:
The 2'-6" Sheet Pile dimension is nominal. This dimension may be shortened by the Manufacturer up to 1/2" to allow for Sheet Pile fit-up in its final position. Minimum Sheet Pile width is 2'-5b". No changes shall be made to the tongues or grooves.

NOTES AND DETAILS:
See Bulkhead plans for actual Cap outline. See Bulkhead plans for actual Plan View.

DETAIL "A"
(Cap and anchoring System Not Shown)
(Section Taken Above Dimension X)
NOTE: Detail "A" shows a Part-Plan View of an assumed bulkhead. See Bulkhead plans for actual Plan View.
NOTES:
1. Intermediate Prestress Strands not shown in Elevations and Sections.
2. All bar dimensions are out-to-out.
3. Bars A are #5 and Bars S are #4.
4. At the Contractor's option Bars S may be fabricated as a two piece bar as shown in the Bar Bending Diagram.
5. The Contractor may use Deformed Welded Wire Reinforcement meeting the requirements of Specification Section 931 in lieu of Bars A and Bars S if the wire size and spacing provide the same area of reinforcing steel per foot as the Bars shown.
6. For Dimensions L and X see Sheet Pile Data Table in Structures Plans.

TYPICAL PILE

STARTER PILE

Sheet Pile Dimensions

<table>
<thead>
<tr>
<th>Thickness (in)</th>
<th>strand Dia. (in)</th>
<th>MAXIMUM L</th>
<th>n</th>
<th>D (in)</th>
<th>TOTAL # of StrandS</th>
<th>SECTION MODULUS (in³)</th>
<th>* STRESS (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1'-10&quot;</td>
<td>0.5</td>
<td>28'-0&quot;</td>
<td>6</td>
<td>3/8</td>
<td>14</td>
<td>500</td>
<td>1150</td>
</tr>
<tr>
<td>1'-0&quot;</td>
<td>0.6</td>
<td>27'-0&quot;</td>
<td>4</td>
<td>5</td>
<td>10</td>
<td>500</td>
<td>1160</td>
</tr>
<tr>
<td>1'-9&quot;</td>
<td>0.5</td>
<td>31'-0&quot;</td>
<td>7</td>
<td>3/8</td>
<td>16</td>
<td>720</td>
<td>1100</td>
</tr>
<tr>
<td>1'-3&quot;</td>
<td>0.6</td>
<td>30'-0&quot;</td>
<td>5</td>
<td>4</td>
<td>12</td>
<td>720</td>
<td>1160</td>
</tr>
</tbody>
</table>

* Unit Prestress after losses.