GENERAL NOTES:

U.S. COAST GUARD NOTIFICATION: Notify the local office of the U.S. Coast Guard at least 30 days prior to beginning of construction of the Fender System.

14" SQUARE PRESTRESSED CONCRETE PILES: Provide 14" Square Prestressed Concrete Piles of sufficient length to achieve a minimum embedment of 20' into soil having a blow count greater than or equal to 6 (N ≥ 6). Pile splices and build-up are not permitted. Use only 14" Square Prestressed Concrete Piles with 8 - ½" diameter Low Relaxation Strands fabricated in accordance with Index 455-014.

PLASTIC LUMBER AND STRUCTURAL COMPOSITE LUMBER WALES: Provide only Plastic Lumber (Thermoplastic Structural Shapes) and Structural Composite Lumber (Reinforced Thermoplastic Structural Shapes) Wales in accordance with Specification Section 973. Wales shall be continuous and spliced only at locations shown on the plans.

PLASTIC LUMBER DECKING FOR CATWALKS: Provide Plastic Lumber decking for catwalks when called for in the Plans in accordance with Specification Section 973.

Install Plastic Lumber Decking according to manufacturer's recommendations using stainless steel #10 x 3" (minimum) deck screws.

FIBERGLASS OPEN GRATING FOR CATWALKS: Provide Fiberglass Open Grating for catwalks when called for in the Plans. Fiberglass Open Grating shall be a heavy duty design suitable for exterior installations. Maximum gap openings on the walkway surface shall be ½". Design live loads and deflections shall be a 50 psf uniformly distributed load with a maximum deflection of ½" or L/120 at the center of a simple span and a concentrated load of 250 pounds with a maximum deflection of 1/2" at the center of a simple span. Color of Fiberglass Open Grating shall be gray or black.

Install Fiberglass Open Grating according to manufacturer's recommendations using stainless steel hardware, screws, bolts, nuts and washers. Attach Fiberglass Open Grating to Wales and Deck Supports at a 2'-0" maximum spacing so as to resist pedestrian live loads and uplift forces from wind, buoyancy and wave action.

CLEARANCE GAUGE AND LIGHT: Clearance Gauge to be furnished and installed by the Contractor. Clearance Gauge width and numeral height is dependent on visibility distance. The required visibility distance shall be determined by the United States Coast Guard District Commander. Provide and Install Clearance Gauge Light in accordance with Specification Section 510 and Index 510-001.

NAVIGATION LIGHTS: Provide and install Navigation Lights in accordance with Specification Section 510. Index 510-001 and/or project specific details. Provide and maintain Temporary Navigation Lights during construction until permanent Navigation Lights are operational.

BOLTS, THREADED BARS, NUTS, SCREWS AND WASHERS: Furnish stainless steel Bolts in accordance with ASTM F593 Type 316. Furnish stainless steel Threaded Bars in accordance with ASTM A193 Grade B8M. Furnish stainless steel Nuts in accordance with ASTM F594 Type 316. Furnish stainless steel Screws in accordance with ASTM A479 Type 316. Furnish stainless steel Threaded Bars in accordance with ASTM A193 Grade B7M. Furnish stainless steel WASHERS in accordance with ASTM F593 Type 316.

SPlice PLATES: Furnish Splice Plates in accordance with ASTM A240 Type 316.

WIRE ROPE: Provide wire rope meeting one of the following requirements:

1. ½" diameter 6x19, 6x25 or 6x37 class IWRC Type 316 stainless steel wire rope with a minimum breaking strength of 18,000 lbs.

2. ½" diameter 6x19 galvanized wire rope with ultraviolet ray resistant polypropylene impregnation having an outside diameter of 5/8" with a minimum breaking strength of 22,000 lbs. Protect all ends with heat shrinkable end caps compatible with the rope's polypropylene that provide an effective water-tight seal.
**See Structures Plans, Plan and Elevation and Foundation Layout Sheets for magnitude and orientation of Channel Skew Angle.**

**SCHEMATIC OF FENDER SYSTEM SHOWING TREATMENT OF SINGLE FIXED BRIDGE WITH NONSKEWED CHANNEL**

**SCHEMATIC OF FENDER SYSTEM SHOWING TREATMENT OF DUAL FIXED BRIDGES WITH NONSKEWED CHANNEL** (PARALLEL DUAL FIXED BRIDGES SHOWN, NONPARALLEL DUAL FIXED BRIDGES SIMILAR)

**SCHEMATIC OF FENDER SYSTEM SHOWING TREATMENT OF SINGLE FIXED BRIDGE WITH SKEWED CHANNEL**

**SCHEMATIC OF FENDER SYSTEM SHOWING TREATMENT OF DUAL FIXED BRIDGES WITH SKEWED CHANNEL** (PARALLEL DUAL FIXED BRIDGES SHOWN, NONPARALLEL DUAL FIXED BRIDGES SIMILAR)

*CROSS REFERENCES:*

For Stations and Offsets of referenced Control Points A, B, C and D, Dimension "L" and Clear Channel Width see Fender System Table of Variables in Structures Plans. For Navigation Light Details see Design Standards Index 510-001.

---

**LAYOUT GEOMETRY**

**REVISION DESCRIPTION:**

**07/01/11 07/01/11**

**LAST REV: FY 2019-20**

**STANDARD PLANS**

**PREFER SYSTEM - PRESTRESSED CONCRETE PILES & FRP WALES**

**INDEX SHEET 471-030 2 of 7**
PLASTIC LUMBER 6" x 10" Mark F (Back Face, Top)

Composite Lumber 10" x 10" Wales Mark A (along Front Face of Fender) (Typ.)

14" Sq. Prestressed Concrete Piles (Typ.)
Composite Lumber 10" x 10" Wales Mark A (Typ.)

14" Sq. Prestressed Concrete Piles

Plastic Lumber 8" x 8"
Spacer Block Mark B (Typ.)

1'-9" (Typ.)
See Detail "A"

See Detail "B"

Splice Plate top and bottom of Wale, center plate about splice and 1/2 Wale (Typ. at each Wale splice location, except along top Wale)

1" Ø Stainless Steel Threaded Bars, Locking Nuts and Washers (Typ.)

2" Ø Stainless Steel Threaded Bars, Locking Nuts and Washers (Typ.)

1/2" Ø x 12" Stainless Steel Lag Screw (Recess head flush with top of Spacer Block)

3/8" Ø 12" Stainless Steel Lag Screw (Recess head flush with top of Spacer Block)

Splice Plate top and bottom of Wale, center plate about splice and 1/2 Wale (Typ. at each Wale splice location, except along top Wale)

Composite Lumber 10" x 10" Wales Mark A

" Ø Stainless Steel Threaded Bars, Locking Nuts and Washers (Typ.)

" Ø x 12" Stainless Steel Lag Screw (Recess head flush with top of Spacer Block)

" Ø x 12" Stainless Steel Lag Screw (Recess head flush with top of Spacer Block)

Splice Plate top and bottom of Wale, center plate about splice and 1/2 Wale (Typ. at each Wale splice location, except along top Wale)

Composite Lumber 10" x 10" Wales Mark A

PARTIAL VIEW F-F
(SHOWING FENDER END; DECKING AND HANDRAIL NOT SHOWN FOR CLARITY)

VIEW F-F
(SHOWING FENDER END WITH CLEARANCE GAUGE)

SECTION E-E
TYPICAL FLARED SECTION
(8° TURN SHOWN, 4° TURN SIMILAR)

SECTION E-E
TYPICAL STRAIGHT SECTION

CROSS REFERENCES:
For Navigation Lights and SCH 80 PVC Electrical Conduit Details see Index 510-001.
For View G-G and Clearance Gauge Details see Sheet 4.
For Detail "B" and location of Section E-E see Sheet 2.
For location of View F-F see Sheet 1.

SPLICE PLATE DETAIL

VIEW F-F
(SHOWING FENDER END WITH CLEARANCE GAUGE)
### Structural Composite Lumber Bill of Materials

<table>
<thead>
<tr>
<th>MARK</th>
<th>SIZE (NOMINAL)</th>
<th>DIMENSIONS</th>
<th>BOARD FT. PER EACH</th>
<th>NO. REQD.</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>10&quot; X 10&quot; COMPOSITE LUMBER</td>
<td>32'-0&quot; (STRAIGHT)</td>
<td>266.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>10&quot; X 10&quot; COMPOSITE LUMBER</td>
<td>32'-0&quot;</td>
<td>266.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>10&quot; X 10&quot; COMPOSITE LUMBER</td>
<td>16'-0&quot;</td>
<td>133.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>10&quot; X 10&quot; COMPOSITE LUMBER</td>
<td>15'-1&quot;</td>
<td>133.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5</td>
<td>10&quot; X 10&quot; COMPOSITE LUMBER</td>
<td>15'-1&quot;</td>
<td>133.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>10&quot; X 10&quot; COMPOSITE LUMBER</td>
<td>15'-1&quot;</td>
<td>133.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Plastic Lumber Bill of Materials

<table>
<thead>
<tr>
<th>MARK</th>
<th>SIZE (NOMINAL)</th>
<th>DIMENSIONS</th>
<th>BOARD FT. PER EACH</th>
<th>NO. REQD.</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>8&quot; X 8&quot; PLASTIC LUMBER</td>
<td>8&quot; (STRAIGHT)</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>2&quot; X 6&quot; PLASTIC LUMBER</td>
<td>16'-0&quot; (STRAIGHT)</td>
<td>16.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>4&quot; X 8&quot; PLASTIC LUMBER</td>
<td>4'-0&quot; (STRAIGHT)</td>
<td>8.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>2&quot; X 12&quot; PLASTIC LUMBER</td>
<td>2'-0&quot; (STRAIGHT)</td>
<td>5.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F1</td>
<td>6&quot; X 10&quot; PLASTIC LUMBER</td>
<td>32'-0&quot; (STRAIGHT)</td>
<td>16.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td>6&quot; X 10&quot; PLASTIC LUMBER</td>
<td>31'-11&quot;</td>
<td>159.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td>6&quot; X 10&quot; PLASTIC LUMBER</td>
<td>15'-11&quot;</td>
<td>79.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F4</td>
<td>6&quot; X 10&quot; PLASTIC LUMBER</td>
<td>10'-10&quot;</td>
<td>78.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F5</td>
<td>6&quot; X 10&quot; PLASTIC LUMBER</td>
<td>15'-8&quot;</td>
<td>78.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F6</td>
<td>6&quot; X 10&quot; PLASTIC LUMBER</td>
<td>15'-10&quot;</td>
<td>79.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1</td>
<td>6&quot; X 8&quot; PLASTIC LUMBER</td>
<td>3'-8&quot; (STRAIGHT)</td>
<td>18.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2</td>
<td>6&quot; X 6&quot; PLASTIC LUMBER</td>
<td>4'-1&quot; (STRAIGHT)</td>
<td>12.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>4&quot; X 4&quot; PLASTIC LUMBER</td>
<td>PILE CUTOFF ELEV. MINUS NLW OR MLW ELEV. PLUS 5'-0&quot; (STRAIGHT)</td>
<td>1.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2</td>
<td>2&quot; X 6&quot; PLASTIC LUMBER</td>
<td>1'-2&quot; (STRAIGHT)</td>
<td>1.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* All Plastic Lumber and Composite Lumber Dimensions and Quantities shown are based on Nominal Lumber Dimensions and may vary depending on Actual Lumber Dimension.

** Provide Fiberglass Open Grating in lieu of 2" X 12" Plastic Lumber when called for in the Plans. Mounting hardware shall be Stainless Steel, install per Manufacturer’s recommendations. See Structures Plans for Notes and Details.