1. Provide fender systems in accordance with Specifications Section 471.

2. Do not use the following materials for pile or wale members in the design of the fender system:
   - Timber
   - Concrete containing ferrous metal strands and reinforcing

3. Use the following information to complete the fender system design meeting the Specifications and the requirements stated herein:
   - Maximum Allowable Fender System Deflection (ft) = 2.5
   - Required EAC (k-ft) = 38
   - 1/2 of 100-yr Scour Elevation (ft) = -15.0
   - Channel Depth (ft) = 10.0
   - MHWE Elevation (ft) = 0.25
   - MLW Elevation (ft) = -2.13

4. 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.

5. PILES: Provide Reinforced Thermoplastic Structural Shapes for piles in accordance with Specifications Section 973. Install all piles plumb and in accordance with manufacturer’s recommendations. Pile splices are not allowed.

6. WALES: Provide Reinforced Thermoplastic Structural Shapes for wales in accordance with Specifications Section 973. Provide continuous wales with splices only at locations shown on the plans.

7. FRP DECKING FOR CATWALKS: Provide 2” x 12” (nominal) Thermoplastic Structural Shapes for decking for catwalks in accordance with Specifications Section 973. Install decking according to manufacturer’s recommendations using stainless steel #10 x 3” (minimum) deck screws.

8. FRP HANDRAILS: Provide Thermoplastic Structural Shapes for handrails in accordance with Specifications Section 973.

9. CLEARANCE GAUGES AND LIGHTS: Provide Clearance Gauges and Minimum Clearance Signs in accordance with Specifications Section 750 and that are a minimum of 0.08 inches thick. Include complete details of the Clearance Gauges, Minimum Clearance Signs and their associated support/attachment systems in the Shop Drawings. Provide and Install Clearance Gauge Lights in accordance with Specifications Section 510 and Design Standards Index 21220.

10. NAVIGATION LIGHTS: Provide and install Navigation Lights in accordance with Specifications Section 510, Design Standards Index 21220, and/or if appropriate, project specific details.

11. BOLTS, THREADED BARS, NUTS, SCREWS AND WASHERS: Furnish stainless steel bolts in accordance with ASTM F593 Type 305. Furnish stainless steel Threaded Bars in accordance with ASTM F593 Grade B8M. Furnish stainless steel Nuts in accordance with ASTM F594 Type 316. Furnish stainless steel Screws in accordance with ASTM F593 Type 305. Furnish stainless steel Washers compatible with Bolts, Threaded Bars and Nuts under heads and nuts. Torque Nuts on 1” diameter Bolts and Threaded Bars to 150 lb-ft. Keep the threads on Bolts, Threaded Bars and Nuts free from dirt, coarse grime and sand to prevent galling and seizing during tightening. Reinsert hardware a minimum of 1/2 from front face of wales.

12. WALE SPLICE PLATES: Provide FRP or stainless steel wale splice plates. Stainless steel wale splice plates shall be in accordance with ASTM A240 Type 316. FRP wale splice plates shall be in accordance with Specifications Section 973.
SCHEMATIC PLAN VIEW OF FENDER SYSTEM

CGL - Clearance Gauge Light
GCL - Green Clearance Light (Mounted on Bridge)
RFL - Red Fender Light

LEGEND:

For Flared Section Details, see the Partial Schematic Plan View Details Sheet.
For Navigation Light Details, see Design Standards Index 21220.

CROSS REFERENCES:

NOTE:
PARTIAL SCHEMATIC PLAN VIEW (TYPICAL FLARE)
(FLARE AT CONTROL POINT D SHOWN, CONTROL POINTS A, B & C SIMILAR)
(PILES, CATWALK AND HANDRAIL NOT SHOWN FOR CLARITY)
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</tr>
<tr>
<td>20</td>
<td>20</td>
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</tbody>
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### Minimum Clearance

- Border: R = 1.5'
- Clearance: 3'-0"

### General Notes

- Fixtures Spacing
- No. of Light Fixtures
- Photometric Curve
- Watt
- Voltage

### General Notes

- Fixtures Spacing
- No. of Light Fixtures
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- Voltage

**Structures Design Office**

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**Sheet 4 of 4**

**Fender System Example 1**