

Index 21900 Fender System - Polymeric Piles

Design Criteria

Structures Design Guidelines (SDG) 3.14

Design Assumptions and Limitations

Design Standards Index 21900 includes standard geometry and details for Polymeric Fender Systems.

Refer to **SDG 3.14** for Fender System design criteria, assumptions and limitations.

Use this standard with Index 21220.

Plan Content Requirements

In the Structures Plans:

Prepare and include in the plans supplemental project specific designs and details for the following items:

- Electrical service for navigation lights including conduit path from bridge to fender system and identification of service point. Coordinate design with Index 21220 and **Specification** Section 510.
- Access ladders and catwalks from bridge to fender system are optional and may be included at the discretion of the District.

Designate in the plans the type of decking material to be used for catwalks: 2" x 12" Plastic Lumber or Fiberglass Open Grating. Catwalk decking material shall be determined by the District.

Complete the following "Data Tables" and include them in the plans. One "Estimated Bill of Materials Table", one "Fender System Table of Variables" and one "Estimated Quantities Block" are required for each Fender System location within a project. For projects with multiple fender systems or configurations, clearly note which Fender System the Tables and Blocks are applicable to. Place the value for "Required Energy" of each Fender System in the note provided. The Contractor will use this "Required Energy" value to select the appropriate fender system from the QPL. See [Introduction I.3](#) for more information regarding use of Data Tables.

Table for use with Index 21900 Fender System - Polymeric Piles:

ESTIMATED BILL OF MATERIALS FENDER SYSTEM - POLYMERIC PILES DESIGN STANDARDS INDEX NO. 21900				Table Date 07-01-11
MARK	NO. REQ'D.	UNIT	QUANTITY	
A1		MB		
A2		MB		
A3		MB		
A4		MB		
A5		MB		
A6		MB		
B		MB		
C		MB		
D		MB		
* E		MB		
F1		MB		
F2		MB		
F3		MB		
F4		MB		
F5		MB		
F6		MB		
G1		MB		
G2		MB		
H1		MB		
H2		MB		

NOTE: For Member Marks, Sizes and Dimensions see Design Standards Index No. 21900, Sheet 7.

Bill of Materials Table above is for an entire fender system (left and right fenders).

* Provide 2'-6" wide Fiberglass Open Grating for full length of fender in lieu of 2" X 12" Plastic Lumber when called for in Plans. Provide Stainless Steel Mounting Hardware and install per Manufacturer's recommendations. See Index 21900 for notes. Include the cost of Fiberglass Open Grating and miscellaneous items required to install the grating in the price for Plastic Marine Lumber (Non-Reinforced).

ESTIMATED QUANTITIES, INDEX NO. 21900			Table Date 07-01-11
MARK	UNIT	QUANTITY	
Plastic Marine Lumber (Reinforced)	MB		
Plastic Marine Lumber (Non-Reinforced)	MB		
Polymeric Piles	LS		

NOTE: Estimated Quantities are for one entire fender system (left and right fenders).

FENDER SYSTEM TABLE OF VARIABLES INDEX NO. 21900			Table Date 07-01-11
CONTROL POINTS	STATION	OFFSET Lt. or Rt.	
A			
B			
C			
D			
DIMENSION "L"			
CLEAR CHANNEL WIDTH			
CHANNEL SKEW ANGLE			
MHW or NHW ELEVATION			
MLW or NLW ELEVATION			
PILE CUTOFF ELEVATION			
MINIMUM PILE TIP ELEVATION LEFT FENDER		**	
PILE LENGTH LEFT FENDER		**	
MINIMUM PILE TIP ELEVATION RIGHT FENDER		**	
PILE LENGTH RIGHT FENDER		**	
NUMBER OF WALE ROWS			

NOTE: Work this Table with Design Standards Index 21900.

** See QPL drawings for required pile embedment lengths to determine pile tip elevations and pile lengths.

See the Qualified Products List for approved fender system pile configurations. Select a pile configuration having an Energy Capacity greater than the following Required Energy: Fender System Required Energy = _____ ft-k

Payment

Include quantity for Composite Marine Lumber 10" X 10" Wales Mark A under Pay Item for Plastic Marine Lumber (Reinforced). Include quantity for all other Plastic Lumber under Pay Item for Plastic Marine Lumber (Non-Reinforced).

Item number	Item description	Unit Measure
471-1-1	Fender System, Plastic Marine Lumber, Reinforced	MB
471-1-2	Fender System, Plastic Marine Lumber, Non- Reinforced	MB
471-2	Fender System, Polymeric Piles	LS