BEDFORD TECHNOLOGY

SMARTER LUMBER

Marine Brochure

BUILD IT AND FORGET IT

APPLICATIONS

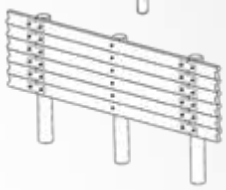
Bedford Technology offers complete solutions for bridge and pier protection systems and other common marine applications. Our marine-grade plastic lumber can be used in the following applications and more to help you achieve long-term project success and provides a sustainable and durable solution.

MARINA SUBSTRUCTURE

Substructure applications consist of pier and marina substructure components. These components consist of support piles, joists, beams and cross bracing.

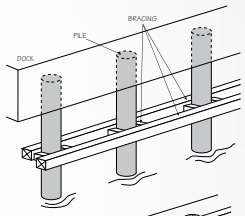
SHORELINE MAINTENANCE

This includes groynes, retaining walls and wave attenuation. Groynes are used as a barrier to protect from erosion and drifting. Retaining walls also protect against erosion and are commonly used where elevation changes occur. Wave attenuation applications help reduce the energy produced by waves in marinas or along a shoreline and can be constructed as a low wall or fencing system.



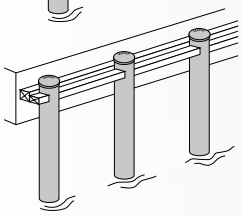
LIGHT-DUTY PILING

Small water piles are used as a foundation to support docks, piers, navigational aids, seawalls and bulkheads. These piles offer durability and sustainability while protecting structures from damage from leisure craft and small boats.



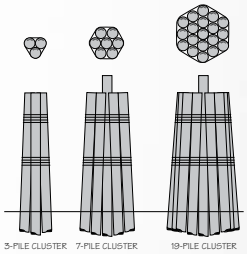
FENDER PILING

Fender piles are generally constructed beside ferry slips and wharves. These piles are components of a larger fender system and act as a buffer to absorb and dissipate the impact energy of the vessel and provide a barrier to prevent the vessel from going underneath the pier.



DOLPHIN CLUSTERS

Dolphins are groups of piles that are placed near piers and wharves that help guide vessels away from structures, or to serve as mooring points. They are also used to hold navigational aids and advertising.

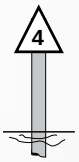


BRIDGE PIER PROTECTION

Bridge pier protection consists of piles and wales in a engineered system designed to dissipate energy from vessel impacts to the bridge piers going through navigation channels under a bridge.

NAVIGATIONAL AIDS

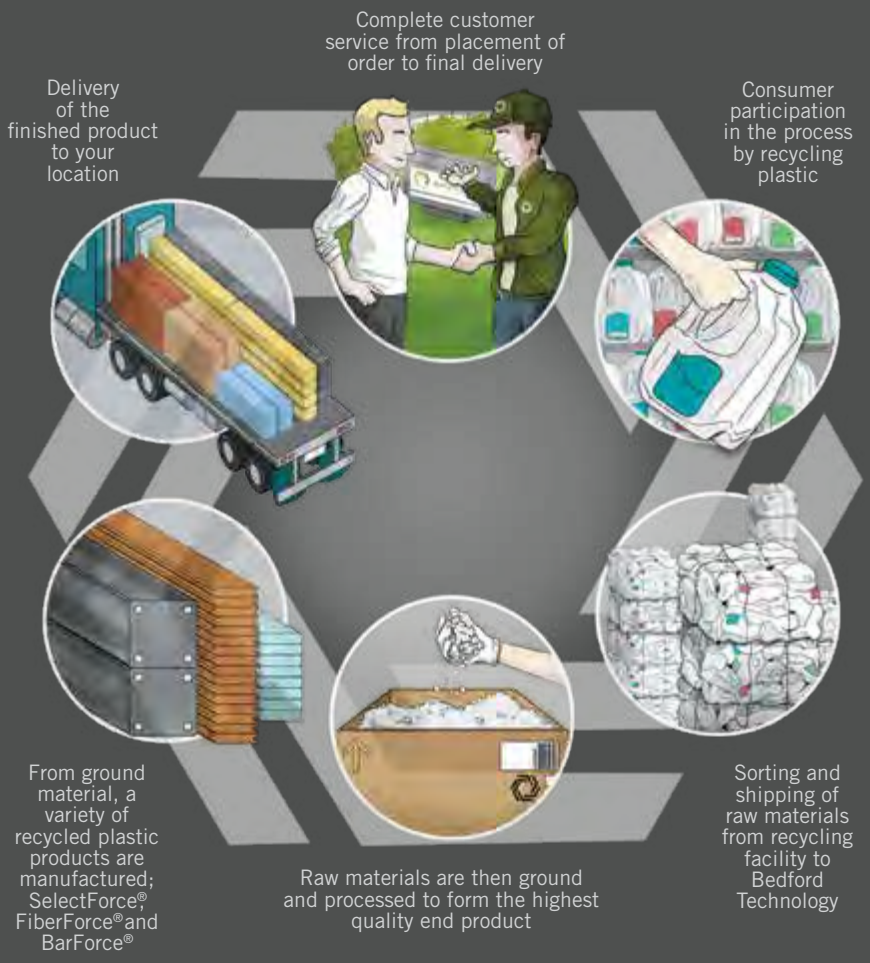
Navigational aids are markers that guide boats and vessels safely through the water. Examples include support lights, day beacons, fog signals and radar beacons.



BEDFORD TECHNOLOGY MARINE PRODUCTS

Proven for long-term strength and durability in a variety of marine applications, Bedford Technology products are engineered to last. With a diverse portfolio of product lines to choose from, we have a product that is best suited for your marine projects.

BEDFORD DIFFERENCE



YOUR NEW BEGINNING

Since the beginning, Bedford Technology has built a reputation for manufacturing the strongest recycled plastic products in the industry. It's a reputation that we've earned with innovative engineering, advanced manufacturing techniques, ingenuity and hard work.

Bedford Technology has been supplying the marine industry with high-quality and high-perfomance products for over 25 years with proven success. Our team of creative problem-solvers is constantly working on ways to improve our durable, weather-resistant, environmentally-friendly products that solve your marine-specific challenges.

FIBER® FORCE BAR® FORCE SEATIMBER® SEAPILE®

BEDFORD TECHNOLOGY MARINE INDUSTRY PRODUCTS

Bedford Technology offers a full line of recycled plastic products for the marine industry including FiberForce®,BarForce®, SeaPile® and SeaTimber®. While these products each have unique characteristics that are well-suited for a wide range of applications, each offer strength, durability and are a great alternative to traditional timber, metal and concrete.

Our environmentally-friendly products are made from recycled plastic, keeping plastic out of the landfills and oceans. They also don't need to be chemically treated like wood to be resistant to moisture, ensuring that chemicals don't leach into our waters.

Bedford Technology products are made from HDPE with no organic filler so they're resistant to moisture, rot, marine borers, ice jacking, and corrosion. With higher energy absorption through recoverable deflection, our marine products help keep your structures safe. With virtually no maintenance, our products create a high and sustainable return on investment for you. **Now isn't that Smarter?**

FIBER® FORCE

FiberForce® by Bedford Technology utilizes fiberglass strands to increase rigidity. Due to the increased strength and its resistance to environmental elements, structural recycled HDPE plastic lumber is well suited for marine applications where structural support or load bearing is required.

FIBERFORCE® PILE PERFORMANCE DATA

FiberForce® Nominal Section	Actual Diameter		Rebar Quantity	Rebar Size		M.O.R.	Flex Modulus	Flex Rigidity	Moment Capacity	Max. Length	Weight
	Inch	mm		Inch	mm	psi	psi	lb-in^2	kip-ft	ft	lb/ft
8" Round	7.6	193.0	0	-	-	2,750	306,080	5.01E+07	9.8	35.0	18.0
10" Round	9.8	249.7	0	-	-	2,750	306,080	1.40E+08	21.4	24.0	28.3
13" Round	12.8	325.9	0	-	-	2,750	306,080	4.07E+08	47.5	45.0	49.0

All values are ultimate. Load and resistance factors (LRFD) or safety factors (ASD) must be applied to these values.
Section dimensions are target values based upon anticipated HDPE compound shrink rates. Dimensions will vary with temperature.
M.O.R. = modulus of rupture = flexural strength.

BAR® FORCE

BarForce® by Bedford Technology is an industrial-strength commercial grade product that is reinforced with fiber polymer rebar which increases rigidity and dimensional stability. The rebar is manufactured in-house and added at the time of production to ensure that this high-quality product is the right solution for applications requiring additional structural integrity.

BARFORCE® PILE PERFORMANCE DATA

BarForce® Nominal Section	Actual Diameter		Rebar Quantity	Rebar Size		M.O.R.	Flex Modulus	Flex Rigidity	Moment Capacity	Max. Length	Weight
	Inch	mm		Inch	mm	psi	psi	lb-in^2	kip-ft	ft	lb/ft
8BF4F04	7.6	193.0	4	0.5	12.7	5,900	318,00	5.20E+07	21.2	35.0	18.5
8BF4F08	7.6	193.0	4	1	25.4	7,200	609,000	1.00E+08	25.9	35.0	20.0
10BF6F08	9.8	249.7	6	1	25.4	4,250	435,000	1.99E+08	33.0	24.0	32.0
10BF6F10	9.8	249.7	6	1.25	31.8	5,700	595,000	2.73E+08	44.3	24.0	32.0
13BF6F08	12.8	325.9	6	1	25.4	2,700	350,000	4.65E+08	46.7	45.0	55.5
13BF6F10	12.8	325.9	6	1.25	31.8	3,500	460,000	6.12E+09	60.5	45.0	55.5

All values are ultimate. Load and resistance factors (LRFD) or safety factors (ASD) must be applied to these values.
Section dimensions are target values based upon anticipated HDPE compound shrink rates. Dimensions will vary with temperature.
M.O.R. = modulus of rupture = flexural strength.

SEAPILE®

SEATIMBER®

SeaPile® and SeaTimber® by Bedford Technology are fortified with fiber-reinforced polymer rebar, making it ideal for heavy-duty applications in the marine industry. These products are engineered using our Multi-X Technology process, and through this process, the product provides greater dimensional stability than single extruded products.

SeaPile® and SeaTimber® products can withstand heavy impacts by absorption of energy through recoverable deflection and are non-polluting. SeaPile® has a rounded shape and is a great solution for piling and SeaTimber® has a square or rectangular shape that is most commonly used for beams and wales. Both product lines offer strength, stability and can lower maintenance costs over the project life-cycle.

PERFORMANCE THAT IS BUILT TO LAST

Bedford Technology's manufacturing process establishes uniform structure and composition throughout the entire product. We use blended glass fiber, fiberglass polymer rebar and recycled plastic HDPE to ensure a top-quality product with superior strength. The rebar is manufactured in-house and can be manufactured in sizes up to 1.75", which allows us to further customize your complete solutions to fit your specific project need. Each product line holds unique performance characteristics and each product is tested against ASTM standards to ensure the highest-quality product.

With structural plastic lumber, you can expect a low life-cycle cost and low maintenance costs and time, meaning you won't have to spend a lot of time repairing or replacing broken timbers. Our products do not rot, mold, corrode or decay and are impenetrable by marine borers so you can spend less time repairing and maintaining your marine systems. They come in a variety of colors and unlimited lengths (subject to transport restrictions) and can be pile driven, fastened and drilled for installation similar to traditional wood.

SEAPILE® PERFORMANCE DATA

SeaPile® Nominal Section	Actual Diameter		Rebar Quantity	Rebar Size		M.O.R. psi	Flex Modulus psi	Flex Rigidity lb-in^2	Moment Capacity kip-ft	Weight lb/ft
	Inch	mm		Inch	mm					
10 SP 6F08	10.25	260.4	6	1	25.4	4,830	302,000	1.48E+08	42.6	28-35
10 SP 8F08	10.25	260.4	8	1	25.4	5,910	369,000	1.81E+08	52.1	29-36
13 SP 8F08	13.125	333.4	8	1	25.4	5,170	345,000	4.84E+08	95.7	43-50
13 SP 8F10	13.125	333.4	8	1.25	31.8	8,180	481,000	6.74E+08	151.4	44-52
13 SP 8F11	13.125	333.4	8	1.375	34.9	9,830	562,000	7.88E+08	181.9	45-53
13 SP 12F08	13.125	333.4	12	1	25.4	5,740	377,000	5.29E+08	106.2	44-52
13 SP 12F10	13.125	333.4	12	1.25	31.8	10,110	613,000	8.59E+08	187.1	46-54
13 SP 12F11	13.125	333.4	12	1.375	34.9	11,380	759,000	1.06E+09	210.6	47-55
13 SP 12F12	13.125	333.4	12	1.5	38.1	12,840	885,000	1.24E+09	237.6	49-57
13 SP 12F13	13.125	333.4	12	1.625	41.3	14,960	1,023,000	1.43E+09	276.8	51-59
16 SP 16F08	16.25	412.8	16	1	25.4	6,750	394,000	1.27E+09	348.4	71-79
16 SP 16F10	16.25	412.8	16	1.25	31.8	9,860	548,000	1.76E+09	362.8	74-82
16 SP 16F11	16.25	412.8	16	1.375	34.9	11,330	687,000	2.21E+09	416.9	76-83
16 SP 16F12	16.25	412.8	16	1.5	38.1	12,750	830,000	2.67E+09	469.2	77-85
16 SP 16F13	16.25	412.8	16	1.625	41.3	14,550	898,000	2.89E+09	535.4	78-86
16 SP 16F14	16.25	412.8	16	1.75	44.5	16,430	988,000	3.18E+09	604.6	80-89

All values are ultimate. Load and resistance factors (LRFD) or safety factors (ASD) must be applied to these values.
Section dimensions are target values based upon anticipated HDPE compound shrink rates. Dimensions will vary with temperature.
M.O.R. = modulus of rupture = flexural strength.

SEATIMBER® PERFORMANCE DATA

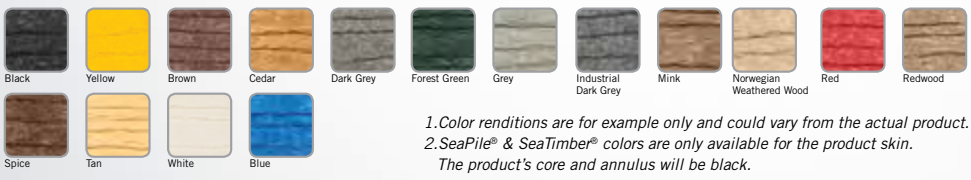
SeaTimber® Nominal Section	Actual Height		Actual Width		Rebar Qty	Rebar Size		M.O.R. psi	Flex Modulus psi	Flex Rigidity lb-in^2	Moment Capacity kip-ft	Weight lb/ft
	Inch	mm	Inch	mm		Inch	mm					
8x12ST0F00	7.5	190.5	11.625	295.3	0	-	-	2,620	154,000	5.73E+07	21.7	31-38
8x12ST4F08	7.5	190.5	11.625	295.3	4	1	25.4	3,720	219,000	8.16E+07	30.8	32-39
8x12ST4F10	7.5	190.5	11.625	295.3	4	1.25	31.8	4,360	290,000	1.08E+08	36.1	33-40
8x12ST4F11	7.5	190.5	11.625	295.3	4	1.375	34.9	4,670	311,000	1.16E+08	38.6	33-41
8x12ST4F12	7.5	190.5	11.625	295.3	4	1.5	38.1	5,140	343,000	1.28E+08	42.5	34-41
8x12ST4F13	7.5	190.5	11.625	295.3	4	1.625	41.3	5,450	379,000	1.41E+08	45.1	34-42
8x12ST4F14	7.5	190.5	11.625	295.3	4	1.75	44.5	5,800	414,000	1.54E+08	48.0	35-42
12x8ST0F00	11.625	295.3	7.5	190.5	0	-	-	2,740	161,000	1.40E+08	34.5	31-38
12x8ST4F08	11.625	295.3	7.5	190.5	4	1	25.4	3,660	242,000	2.10E+08	46.1	32-39
12x8ST4F10	11.625	295.3	7.5	190.5	4	1.25	31.8	4,360	349,000	3.03E+08	54.9	33-40
12x8ST4F11	11.625	295.3	7.5	190.5	4	1.375	34.9	4,860	389,000	3.38E+08	61.2	33-41
12x8ST4F12	11.625	295.3	7.5	190.5	4	1.5	38.1	5,190	433,000	3.77E+08	65.4	34-41
12x8ST4F13	11.625	295.3	7.5	190.5	4	1.625	41.3	5,680	486,000	4.23E+08	71.6	34-42
12x8ST4F14	11.625	295.3	7.5	190.5	4	1.75	44.5	5,850	532,000	4.63E+08	73.7	35-42
10x10ST0F00	9.875	250.8	9.875	250.8	0	-	-	2,700	159,000	1.38E+08	33.5	33-40
10x10ST4F08	9.875	250.8	9.875	250.8	4	1	25.4	4,610	278,000	2.05E+08	45.4	34-41
10x10ST4F10	9.875	250.8	9.875	250.8	4	1.25	31.8	6,140	351,000	2.59E+08	76.1	34-42
10x10ST4F11	9.875	250.8	9.875	250.8	4	1.375	34.9	6,960	398,000	2.94E+08	86.3	35-42
10x10ST4F12	9.875	250.8	9.875	250.8	4	1.5	38.1	8,280	460,000	3.39E+08	102.7	35-43
10x10ST4F13	9.875	250.8	9.875	250.8	4	1.625	41.3	8,810	503,000	3.71E+08	109.2	36-44
10x10ST4F14	9.875	250.8	9.875	250.8	4	1.75	44.5	9,790	560,000	4.13E+08	121.4	37-45
12x12ST0F00	11.875	301.6	11.875	301.6	0	-	-	2,600	155,000	1.14E+08	56.6	42-51
12x12ST4F08	11.875	301.6	11.875	301.6	4	1	25.4	4,410	252,000	1.86E+08	96.1	43-52
12x12ST4F10	11.875	301.6	11.875	301.6	4	1.25	31.8	5,310	395,000	4.58E+08	115.8	44-52
12x12ST4F11	11.875	301.6	11.875	301.6	4	1.375	34.9	6,020	334,000	5.19E+08	131.2	45-53
12x12ST4F12	11.875	301.6	11.875	301.6	4	1.5	38.1	6,740	375,000	5.82E+08	147.0	46-53
12x12ST4F13	11.875	301.6	11.875	301.6	4	1.625	41.3	7,110	406,000	6.31E+08	155.0	46-54
12x12ST8F10	11.875	301.6	11.875	301.6	8	1.25	31.8	11,055	635,000	9.86E+08	238.3	48-56
12x12ST8F11	11.875	301.6	11.875	301.6	8	1.375	34.9	12,535	723,000	1.12E+09	270.4	49-57
12x12ST8F12	11.875	301.6	11.875	301.6	8	1.5	38.1	14,060	811,000	1.26E+09	303.0	50-59
12x12ST8F13	11.875	301.6	11.875	301.6	8	1.625	41.3	14,800	882,000	1.37E+09	325.0	52-60

All flexural values are ultimate. Load and resistance factors (LRFD) or safety factors (ASD) must be applied to these values.
Section dimensions are target values based upon anticipated HDPE compound shrink rates. Dimensions will vary with temperature.
M.O.R. = modulus of rupture = flexural strength.
Some values for intermediate configurations have been calculated.

EXPERIENCE THE BEDFORD DIFFERENCE

Contact us today to get all of your questions answered! Our knowledgeable sales and customer service teams will work with you to find the best complete solution for your marine project. We also have a full engineering staff that is available to value-engineer designs to ensure that our products will work with your application. When you partner with us, you'll experience the Bedford Difference.

AVAILABLE COLORS[1,2]



1.Color renditions are for example only and could vary from the actual product.
2.SeaPile® & SeaTimber® colors are only available for the product skin. The product's core and annulus will be black.

BEDFORD TECHNOLOGY
SMARTER LUMBER

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