Building Products Plus'

Wood Pilings Guide

A reference guide to selecting the right pilings for your project including comparisons of round, square, and no-taper Gun Barrel pilings.

Building Products Plus

Wood + Technology + Sales

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1st edition

The Building Products Plus Wood Pilings Guide was written by Lead Optimize Outsourced Marketing (agency) under the direction of the wood experts at Building Products Plus, LLP. This booklet is wholly the property of Building Products Plus, LLP and intended to be used for informational purposes only.

Please consult an engineer or other design professional before selecting pilings and other building materials for your project.

Additional Information is Available

If you have questions about any of the pilings or treatments covered in this booklet or would like **additional information regarding availability and prices for your next project, please call 1 (800) 460-8627**.

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Round Wood Pilings

Largely due to their abundance and excellent strength and compression properties, round pilings are commonly used in the construction of raised homes, building foundations, bulkheads, highways, railroads, piers and docks, marinas, and other structures that require strong low-cost foundations.

Pros & Cons of Buildling with Round Wood Pilings

For most applications, the benefits of building with round wood pilings outweigh their weaknesses when compared to comparable square pilings.

Round pilings are stronger than square pilings with an **allowable bending moment that is about 60% higher than that of square timber pilings**. For those building in surge-prone areas, it is worth noting that the resistance factor for round pilings is about 22% lower than that of square timber pilings so damaging surge water flows around more easily.

Refer to ASTM D25 and D2899 for internationally accepted design standards for round pilings.

Driving round pilings is simple and their natural taper compacts the soil around them as they are driven.

They are also cheaper than comparably sized square pilings - often as much as 50% cheaper, depending upon size.

Round wood pilings last longer, on average, than comparably treated and sized square timber pilings because they have no exposed heartwood (the center part of the tree/piling). **It is reasonable to expect a properly treated round piling to last 30 years in water** and much longer on land.

The cons of round wood pilings are few but important for many applications. First, while driving round pilings is simple their **lack of uniformity can create headaches during construction**. The randomness of their taper and straightness when connecting joists and stringers often adds unforseen challenges that require on-the-spot customization and additional labor costs.

Lastly, many designers and owners do not like the rough and uneven appearance of natural round wood pilings especially for high end applications where straight lines and uniformity are preferrred.

Availability

Round pilings are highly abundant in most practical sizes. The chart below represents availability at well stocked pole and piling suppliers.

		Butt Diameter (Inches)						
		8	9	10	11	12	13	14+
Length (Feet)	12	✓	✓	●	●	●	●	●
	14	✓	✓	●	●	●	●	●
	16	✓	✓	✓	✓	●	●	●
	18	●	✓	✓	✓	●	●	●
	20	●	✓	✓	✓	✓	✓	●
	25	●	✓	✓	✓	✓	✓	●
	30	✗	✓	✓	✓	✓	✓	✓
	35	✗	✓	✓	✓	✓	✓	✓
	40	✗	●	✓	✓	✓	✓	✓
	45	✗	✗	●	✓	✓	✓	✓
	50	✗	✗	●	●	✓	✓	✓
	50+	✗	✗	✗	●	✓	✓	✓
	✓	=	standard					
	●	=	non-standard					
	✗	=	not available					

Square Timber Pilings

10x10-32' treated pilings at Building Products Plus

Square timber pilings are used for every kind of construction from bridges to beach homes and are often chosen because of their dimensional uniformity which is valued for both aesthetics and ease of use during design and construction.

Square pilings are commonly used in the foundations of pedestrian, road, and rail bridges, beach home pilings, bulkheads, docks and piers - basically the same projects where round pilings are used but square pilings are often selected over round when aesthetics and/or uniformity are a major factor in the design and purchasing decisions.

Pros & Cons of Building with Square Timber Pilings

As mentioned previously the top reason to use square timbers is for their aesthetic value. They are dimensionally uniform and give a project straight lines and sharp edges.

From a construction standpoint, attaching joists, stringers, and other members to properly set square pilings is easier than attaching to round pilings.

All pilings tend to twist while being driven. This is not a major problem for round pilings but adds headaches to square piling construction because while round pilings can usually be built onto from any angle, square pilings must be rotated so a face is squared to the member to be attached.

Lastly, square pilings often have exposed heartwood which, because of its density, does not accept pressure treatment. This exposed heartwood makes pilings more susceptible to attack by shipworms, mollusks, and other harmful organisms thereby potentially reducing longevity.

Availability

Square timbers are widely available in most practical sizes. The chart at the bottom of this page represents availability you might expect at well stocked pole and piling suppliers. Square timbers will generally be less available in long lengths than round pilings of comparable dimensions.

		Lengths (Feet)																
		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40+
Width (Inches)	6x6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	●	●	●	●	●	●	●
	8x8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	●	●	●
	10x10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	●
	12x12	●	●	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	●	●	●	●
	larger	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

✓	=	standard
●	=	non-standard
X	=	not available

Gun Barrel Pilings

The new Gun Barrel pilings from Building Products Plus were developed to combine the strengths of round wood pilings with those of square timber pilings.

Gun Barrel pilings are most commonly **used in projects where strength and aesthetics are equally important**.

Because of their unique appearance - fine, straight edges while retaining a natural look - Gun Barrel pilings are commonly used as columns in zoos, parks, and other commercial and public projects.

Pros & Cons of Building with Gun Barrel Pilings

With strength and design values approximately matching those of regular round pilings, Gun Barrel pilings from Building Products Plus have a **bending moment about 60% higher than comparably sized square timber pilings** and a water surge resistance factor more than 20% lower.

Gun Barrel pilings create the beautifully designed entrance to the tiger exhibit at the Erie Zoo.

Gun Barrel pilings, about the same cost as square timbers, are stronger and have better storm surge properties.

Properly setting Gun Barrel pilings is easier than setting square pilings because there is no "face" to be squared to the planned structure.

With virtually no exposed heartwood properly treated Gun Barrel pilings are expected to last as long as regular round wood pilings -- 30+ years in water and much longer when used on land.

Finally, because they can be produced with smaller trees than needed to produce comparably sized square timbers, **Gun Barrel pilings cost about the same or less than square timber pilings** in most dimensions. For the same reason, they produce less waste and are considered by professionals to be a "greener" and more responsible building material.

Availability - Made to Order

Gun Barrel pilings are available in almost any dimension up to 42 feet long and 18 inches wide in Southern Yellow pine. Size availability varies by species.

Gun Barrel Pilings are Uniform on All Sides

Gun Barrel pilings from Building Products Plus are uniform on *all* sides - not just along their **non-tapered** lengths. They impose a natural-yet-refined look with the straight, uniform edges of square timbers - excellent for custom homes and other projects where beauty is a must.

Piling Treatment & Protection Options

There are four main treatment options for wood pilings used on land and two truly proven and practical choices for pilings used in water.

Pilings used above ground may be treated with Chromated Copper Arsenate (CCA), Alkaline Copper Quaternary (ACQ), Micronized Copper Quaternary (MCQ), or creosote.

Pilings intended for freshwater and saltwater should be treated with CCA or creosote for the best protection but ACQ and MCQ are both *approved* for freshwater applications.

Double the Life of Treated Pilings

The **longest lasting pilings are polymer coated pilings from American Pole and Timber**. With Polymer coated pilings you could build two generations of docks on the same set of pilings giving you the lowest lifecycle cost by far.

Poly coated pilings from America Pole and Timber can double the life of treated pilings.

.60 CCA is often used to treat house pilings such as these no-taper Gun Barrel pilings installed by a Texas shoreline.

The durable polymer coating encapsulates the pilings to protect them from harm by insects, marine-boring organisms, fungus, and the sun's UV rays.

The poly coating from American Pole and Timber also protects the environment by preventing the treatment chemicals from leaching into the surrounding water.

The pilings for this Texas coastal pier are treated for use in saltwater (treated 2.5 pef with CCA).

Proper Treatment Level Required

To ensure your structure has a long useable life and retains a pleasing appearance it is important to select the best chemical and retention level for your project. Use the chart below for guidance.

Standard Retention Levels for Treated Wood Pilings

Application	Treatment Retention
Ground Contact	.40 ACQ, .40 CCA, .40 MCQ, or 9.0 Creosote
Freshwater	.60 or .80 ACQ, .60 or .80 CCA, or 12.0 Creosote
Saltwater & Brackish	2.5 CCA or 20.0 Creosote

CCA is regarded by most professionals as the cleanest and most dependable treatment.

Piling Comparison

The chart below compares comparably sized and comparably treated round, square, and Gun Barrel pilings.

This chart is intended for informative purposes only. You should consult a design and/or construction professional before selecting the best pilings or columns for your project.

	Traditional Round Pilings	Square Pilings	Gun Barrel Pilings
Cost / Affordability	1	2	2
Strength	1	2	1
Large Size Availability	1	3	2
Uniform Dimensions	2	1	1
Uniform Appearance	2	1	1
Ease of Driving/Setting	2	3	1
Ease of Construction	3	1	2
Longevity*	1	3	2
Attractive Appearance	2	1	1

*** all pilings have approximately the same longevity when 100% poly coated**

You have more wood piling options.

Gun Barrel pilings are stronger than square pilings and cost less but deliver the same uniform appearance.

Poly coated pilings can double the life of treated pilings in water.

Make your project better looking and stand twice as long with the right pilings, treatments, and coatings.

These 18" diameter Gun Barrel poles are used as columns in front of a high end retail store.

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Information About:

- **Round Pilings**
- **Square Pilings**
- **Gun Barrel Pilings**
- **Poly Coated Pilings**
- **Treatment Levels**
- **Piling Comparisons**
- **Piling Availability**

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