Redwood

Landscape Architecture

Quality landscape architecture demands materials that are beautiful and long lasting. Wood used outdoors must withstand environmental elements, yet retain its symmetry and aesthetic purpose.

Redwood is the one wood that meets these landscaping requirements.

Redwood Decks are Outdoor Rooms

Redwood decks are living rooms. Breakfast rooms. Exercise rooms. Rooms for sunbathing. Rooms for gatherings of friends and family. Rooms for quiet times with a good book.

Outdoor rooms are different from ordinary rooms. They serve as an intermezzo between home and nature. The air is fresh. You can feel the sun's warmth and smell the garden. Nature air-conditions outdoor rooms with soft breezes, and outdoor rooms are the perfect place to watch shadows grow and the stars come out on a summer night.

Quality landscape architecture requires building materials that are beautiful and long lasting. Materials need to withstand environmental elements yet retain their symmetry and aesthetic purpose. Redwood has a well-earned reputation for meeting these requirements. Equally important, there are cost-effective redwood grades to specify for every project, whether it is a public plaza or a residential garden.

Performance is more than durability. Redwood has qualities not found in other woods—even woods treated with chemicals. Redwood performance characteristics include resistance to shrinking, warping and checking in addition to durability. This means redwood projects age beautifully. Decks, fences and shelters made with redwood simply look better ten, fifteen and twenty years after construction.

Total Performance

Dimensional Stability According to reports from the Forest Products Laboratory of the U.S. Department of Agriculture, redwood has less volumetric and tangential shrinkage than other common domestic softwoods. In exterior use, this means redwood stays flat and straight with minimal warping, cupping or checking.

Resistance to Decay and Insects Redwood heartwood has grown-in resistance to decay and insects that is present throughout the lumber, not just on the surface. The wood exposed through sawing, boring or nailing is as decay-resistant as the surface.

Finish Retention Redwood has an open celled structure and contains little or no pitch or resin. This enables redwood to absorb and retain all types of finishes extremely well.

Treating lumber with chemicals increases its decay resistance but doesn't improve other characteristics of the species. In many applications, other aspects of wood performance take precedence. For example, wood off the ground but exposed to harsh sunlight needs resistance to checking and warping. Beauty is usually the primary concern in highly visible applications such as decking surfaces, fences and overhead shelters. In most situations the wood's workability, finish retention or the absence of pitch and resin is important.

Performance Characteristics of Construction Woods	Total Performance	Freedom from Shrinking	Freedom from Warping	Decay Resistance (Heartwood)	Paint Holding	Freedom from Pitch (Resin)	Workability	Nail Holding	Bending Strength	Stiffness	Hardness
California redwood	26	3	3	3	3	3	2	3	2	2	2
Douglas fir-larch	23	2	2	2	1	2	2	2	3	3	3
Western cedar	22	3	3	3	3	3	1	3	1	1	1
Southern pine	22	2	2	2	1	1	3	2	3	3	3
Eastern hemlock	21	3	2	1	2	3	2	2	2	2	2
Hem-fir	19	2	2	1	1	3	2	2	2	2	2
Idaho white pine	19	2	3	1	3	3	1	3	1	1	1
Spruce-pine-fir (Canada)	17	2	2	1	1	3	2	1	2	2	1
Englemann spruce-lodgepole pine	15	2	2	1	1	3	1	3	1	1	1

3 Among woods relatively high in the characteristic listed.

2 Among the woods intermediate in the respect.

1 Among the woods relatively low in that respect.

Rankings of species taken from:
How to Buy Construction Lumber
University of Wisconsin-Extension/Madison, September 1979

Redwood Lumber Grades

Redwood grades are established in the *Standard Specifications for Grades of California Redwood Lumber* issued by the Redwood Inspection Service. Properly grademarked lumber will bear the RIS mark or that of another accredited inspection bureau.

Garden Grades These economical grades of redwood are tailor-made for outdoor applications. Their varied wood grains and knot-textured surfaces blend well with other natural materials. Garden grades are available dry or unseasoned and are usually surfaced on four sides (S4S). They are available in dimensions from timbers 20 feet in length to bender board, used for edging garden walkways.

Construction Heart/Deck Heart All-heartwood grades containing knots; recommended for work on or near the ground such as posts, beams, joists and decking. Deck Heart has similar appearance and uses as Construction Heart but is also graded for strength. Deck Heart is available in 2x4 and 2x6 only.

Construction Common/Deck Common Contain knots and combination of heartwood and sapwood; recommended for above-ground applications such as railings, fence boards, benches and decking. Deck Common has similar appearance and uses as Construction Common but is also graded for strength. Deck Common is available in 2x4 and 2x6 only.

Merchantable Heart Most economical all heartwood grade, allowing larger knots and some knotholes; used for retaining walls and garden or utility structures on or near the ground.

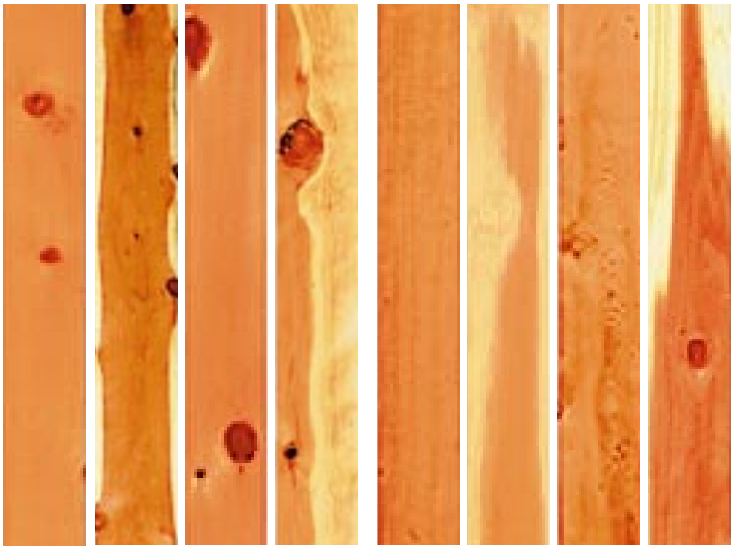
Merchantable Same characteristics as Merchantable Heart but containing sapwood; suitable for fence boards, trellises and above-ground garden and utility applications.

Architectural Grades Architectural grades of redwood should be specified where the visibility and design integrity call for the material to maintain its appearance long beyond initial application. These quality redwood grades are available Certified Kiln Dried, S-Dry or unseasoned. Unequaled in beauty and stability, they are the best choice for precision joinery and intricate or formal architectural designs.

Clear All Heart All heartwood, free of knots; recommended for highly visible applications.

	Garden Grades				Architectural Grades			
	Construction Heart/Deck Heart	Construction Common/Deck Common	Merchantable Heart	Merchantable	Clear All Heart	Clear	B Heart	B Grade
Architectural	—	—	—	—	■	■	■	■
Garden	■	■	■	■	—	—	—	—
Knots	■	■	■	■	—	—	■	■
Sapwood	—	■	—	■	—	■	—	■
Posts	■□	—	—	—	■	—	■	—
Beams	■□	—	—	—	■	—	■	—
Joists	■□	—	—	—	■	—	■	—
Decking	■	■□	—	—	■	■	■	■
Rails	■	■□	—	—	■	■	■	■
Fenceboards	■	■	■	■□	■	■	■	■
Benches	■	■	■	■□	■	■	■	■
Planters	■	—	■□	—	■	—	■	—
Trellises	■	■	■	■□	■	■	■	■
Furniture	■	■	■	■□	■	■	■	■

■ Suitable grade for use
□ Most economical grade for use



Clear Similar quality to Clear All Heart except containing sapwood; ideal for highly visible, above-ground applications.

B Heart Contains limited knots and characteristics not permitted in clear grades; uses similar to Clear All Heart.

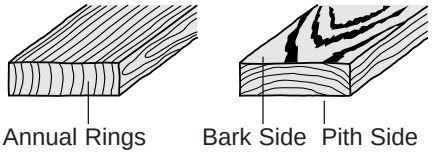
B Grade Similar characteristics as B Heart but containing sapwood; same uses as Clear.

Sizes of Garden Grade Lumber
Unseasoned Lumber, Nominal and Actual

Thickness		Width	
Nominal	Actual S2S	Nominal	Actual S2E
¾	11/16	2	1 9/16
1	25/32	3	2 9/16
1¼	1 1/32	4	3 9/16
1½	1 9/32	5	4 9/16
2	1 9/16	6	5 9/16
2½	2 1/16	8	7 3/8
3	2 9/16	10	9 3/8
4	3 9/16	12	11 3/8
5	4½	Over 12	Off 5/8
6	5½		
Over 6	Off ½		

Grain
Lumber has either flat or vertical grain. Orders for Clear All Heart and Clear may specify a grain. Garden grades are shipped as mixed grain but can be field-selected for desired use. When used for deck surfaces, flat grain redwood should be applied with the bark side up for best performance. Vertical grain lumber will provide the smoothest surface for railings and benches.

Vertical Grain **Flat Grain**



Texture
Redwood is generally available surfaced (S4S) or rough. Surfaced lumber is best for decking or areas that are to be painted.

Seasoning
Unseasoned redwood is suitable for most landscaping applications, but air-seasoned or kiln dried redwood often has a better appearance and provides enhanced stability and finish retention. Dry lumber is lightweight making it easy to work with.

Specifying Redwood
To ensure delivery of the right lumber for the purpose intended, the specification should include: use, grade, grain, seasoning, size and texture.

For example
Redwood lumber for (use) decking shall bear the Redwood Inspection Service grade mark and shall be (grade) Construction Common, (seasoning) unseasoned, (size) 2x6, (texture) S4S.

Redwood specifications should always require the use of top-quality corrosion resistant fasteners.

Redwood Decks

Redwood decks create a natural focal point for outdoor living environments. As walking surfaces and entertaining areas, decks organize large spaces and reclaim irregular or sloped land. Redwood stairs and walkways provide attractive footpaths.

Redwood decks range from simple platforms to multi-level projects using a variety of shapes and amenities. Openings in the deck surface can allow for plantings and incorporate elements of outdoor furniture. Decking may be parallel or diagonal. Redwood's superior stability also permits the use of parquet patterns.

Concrete footings provide the best support for deck framing. Tops of footings should extend 6 inches above ground and should be pitched outward to prevent water collection and inhibit decay and insects.

Deck framing tables shown on this page are for single spans of non-stress graded Construction Heart and Construction Common redwood. Design will support a uniform live load of 40 pounds/square foot with deflection limited to L/240.

Concentrated loads of planters, spas and other heavy objects may require additional joists and larger beams. Local building codes should be consulted regarding structural regulations.

Design loading, with deflection limited to L/180, sets a maximum 24-inch span for 2-inch-thick decking and 16-inch span for 5/4-inch-thick decking. Provide 1/8 inch minimum space between boards, and center all large knots and butt-jointed board ends over joists.

Beam span is the distance a beam extends from one post to the next. Beam spacing is the distance between beams. Deflection is limited to L/240.

Suggested Beam Spans

Beam Spacing	Beam Sizes 4x6	4x8	4x10
	Span	Span	Span
6 feet	4'0"	5'0"	7'3"
8 feet	3'3"	4'3"	6'3"
10 feet	3'0"	3'9"	5'6"
12 feet	2'9"	3'6"	5'0"

Suggested Joist Spans

Joist Size	Joist Spacing	Joist Span
2x6	16" on center	7'3"
	24" on center	6'0"
2x8	16" on center	10'9"
	24" on center	8'9"
2x10	16" on center	13'6"
	24" on center	11'0"

Redwood Shelters

Overhead structures of redwood give the finishing touch of shelter to comprehensive landscaping, creating shade and spatial definition. Post-and-beam frames support pitched or horizontal rafters, spaced for varying degrees of shade or to hold finer scale screening. Canvas or plastic coverings provide rain protection. In some situations permanent roofing is appropriate. Vertical trellis panels offer protection from sun and wind.

Redwood Planters and Seating

Because redwood is naturally stable, it is ideal for planters, seating and tables. These elements can be movable or built-in.

Planters use Construction Heart or other all-heartwood grades of redwood where there is soil contact. Large planters, with more than 1 foot of soil depth, may require 2-inch boards.

Seating is often as simple as providing 2x8 or 2x10 caps at low walls or planters. Platform or backed benches may be freestanding or components of other elements. Install seatboards bark side up to reduce grain raising and splintering.

Redwood Fences

Redwood garden grades create a pleasant fencing with excellent stability and durability. Fences of various heights and in many patterns can be designed to screen, protect, divide, decorate, shelter and shade.

Whether they are distinctive or subtly blended into an overall design, most fences serve many purposes. The “good neighbor” fence with its finished appearance on both sides, enhances the value of two properties. “Attractive nuisance” fences, such as those required around swimming pools, provide barriers. Retaining walls, shelters, planters and benches can be integrated with fence construction.

Finishes

Redwood weathers more gracefully than most woods. Exterior finishes such as water repellents, semitransparent stains and weathering stains enhance redwood's natural beauty and performance. Tests conducted by the Forest Products Laboratory of the U.S. Department of Agriculture have shown that no other domestic wood accepts and retains finishes better than redwood.

Always follow finish manufacturer's recommendations regarding application conditions, coverage and number of coats required. Brushing is the best method for applying finishes, followed by roller applications and spray applications. Finishes which contain water repellents and mildewcides will provide the greatest degree of protection. Linseed oil, if used alone, tends to attract dirt and mildew, resulting in discoloration.

Penetrating finishes should be applied to clean dry surfaces as soon as possible after construction is completed. Prefinishing is advantageous in that all surfaces of the lumber can be treated.

Oil-based solid-color stains and paints should be applied to unseasoned redwood only after the wood has become sufficiently dry. This may take from one to six months. If coatings must be applied to unseasoned wood before this time, water-borne products should be used over a stain-blocking latex primer formulated for redwood.

Finally, don't use clear film-forming varnishes, lacquers or "shake and shingle" type paints on exterior redwood.

Redwood Finishes	Water Repellents w/ Mildewcides	Bleaching and Weathering Stains	Semi-Transparent Stains	Solid-Color Stains	Latex Paints	Lacquers/ Varnishes
Uses						
Decks/Walkways	■	■	■○	■○	———	———
Fences	■	■	■	■	———	———
Planters/Retaining Walls	■	■	■	■	———	———
Seating	■□	■□	■□○	■□○	———	———
Tables	■□	■□	■□	■□	■□△	———
Garden Shelters	■	■	■	■	■△	———
Effect						
Color	Natural	Driftwood	Selected	Selected	Selected	———
Grain Visibility	High	Medium	Medium	None	None	———
Application						
Recommended Coats*	2	1-2	2	2	2	———
Primer Required	None	None	None	None	Oil/Alkyd	———
Refinish—Years	1-2	———	2-5	2-5	5-10	———

□ Non-toxic formulations ○ Traffic bearing formulations △ Certified Kiln Dried lumber only
*Follow manufacturer's recommendations.

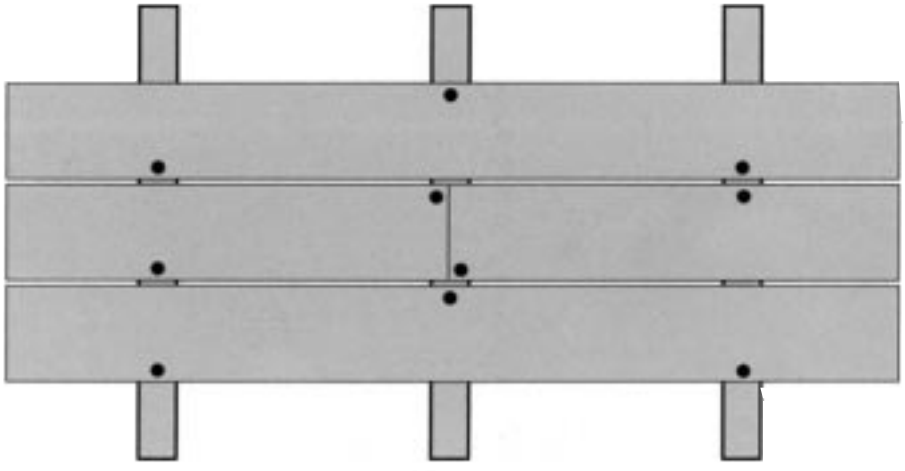
Fasteners

All nails, fasteners and hardware must be stainless steel, aluminum or top-quality, hot-dipped galvanized (electroplated galvanizing is not acceptable). Poor quality fasteners will react with redwood's natural, decay-resisting extractives causing unsightly stains.

A staggered nailing pattern helps to avoid splitting of redwood garden grade lumber by allowing slight movement during the wood's natural seasoning process.

Storage

Redwood lumber should be stacked flat, supported 6 inches off the ground and protected with a waterproof cover that permits air circulation. If stored more than a month, unseasoned lumber should be stored with stickers between boards to permit excess moisture to evaporate.



Additional Literature
Deck Construction
Decks, Grades, Nails, Finishes
Redwood Grades and Uses
Exterior Finishes

Plans
Redwood Fences For All Reasons
Redwood Design-A-Deck™ Plans Kit
Deck Around Tub
Deck Over Concrete
8x10 Deck
Shade Shelter

California Redwood Association

Redwood—our renewable resource