

Karl Bareis - Builder

Experiences in the Field of Historic Restoration

1980-2020 Historic restoration related projects

Founding member Timber Framers Guild of North America (TFG)1986

August 1988 - TFG & Brattleboro Museum, Vermont.

Designer / Builder 18th century Japanese Farm House Project.

Public beam raising of two farm houses, filmed by TFG, WGBH Boston.

- Museum Auctioned both structures - to be rebuilt on private lands after 2-month exhibit.

Experience in forensic assessment of buildings:

2008-2009 Hakone Garden in Saratoga CA

As-built HABS documentation for Hakone Foundation, City of Saratoga.

2013-2015 UCSC Hay Barn restoration

- State required expert contractor  
Specialty - Historic American Timber Framing  
Forensic HABS restoration with cooperation Ca. State Architect & UCSC Cowell Historic District

2016 Wilder Ranch State Park

Wilder Ranch Cow Barn restoration recommendations - California State Parks, preferred contractor.

Wilder Ranch Cow Barn restoration recommendations

co-author Wilder Cow Barn Recommendations with TFG Committee

Structural Redwood - grading expertise, for State Parks with Structural P.E.

Recycling timbers into restoration processes

Modeling / scale reproductions for structural analysis

2016 Peninsula Open Space Trust Farm Futures Project.

San Mateo Farmland initiative to restore old barns, and build new barns on open space properties.

The California Coastal Barn -

2016

Root Down Barn

1869 Barn - replacement

Modeling / scale reproduction for structural analysis

- Flood Plain Rehabilitation Project

- POST,-sponsored seismic re-design

- Historic Barn replaced without plywood, using timber bracing

- Structural retrofit, (4) historic barns San Mateo County.

- Barn 5400 square foot, use of structural redwood timbers harvested

for

San Vicente Creek Watershed Management (POST)

2018

Johnston Ranch Barn Restoration

1853 Ranch Barn

Replaced timber, dry rot repairs, splicing timbers using traditional joinery.

DAVENPORT Project

The Davenport Cooperage Barn Built circa 1890

2018 1/24th scale Model of original barn

- Frame partially intact - reference size of timbers, materials
- Original footprint of building still intact.

## FEATURES

Post and Brace-style barn. Two-story redwood structure, with full-sawn joisting and original flooring intact. The utilitarian structure had only four openings focused on transport of wagons and materials. Sliding barn door and light weight truss spanning 33 feet. With attached 16-foot shed on ocean side of building.

The post and beam module of 10'-0" bents is typical of most California barns.

California barns have two distinctive characteristics not shared by earlier colonial barns.

The California barns mostly constructed of redwood and clad in redwood 1x12 plank siding.

The California Barns evolved from hay barns, and utilized mass-produced lumber from 1870 onward. Original California Barns were built with either hand-split or broadaxes; timbers felled locally.

Once lumber manufacturing began. Materials could be ordered direct from mills. The light truss barns could span a wide gallery and sheds were added later as operations expanded and requirements for additional livestock increased. Eastern barns where snowfall was prevalent could not support sheds, and had steep roof pitches. California's warm climate allowed for lower roof pitches and hence the iconic low and wide barns which spread across the vernacular landscape.

## Architectural Features to be Retained

**Exterior planking**, copying the original barn with local 1x12 redwood.

Interior framing, to retain the 10'-0" span of all perimeter posts.

**Bracing** - to be retained but scaled up to current seismic codes standards.  
redwood 5x5 braces.

**Rafters** -original 2x6 rafters to be slightly enlarged to reflect structural weight-bearing capacity of redwood. To be 3x6s or larger.

**Trusses**- to be uniform and retain original span, with additional bracing. (see model).

**Flooring** - retain redwood plank floor, random-width 1 1/4" thickness to match original. Custom planing to be milled to match original type and style.

**Doors**- Some original doors remain, maintain original sizes where possible, upgraded to match architectural design parameters (to be decided).

**Roof Pitch** - The original Barn had the same 7/12 pitch (as most later buildings in town). The restoration will keep the same pitch and the shed will follow the typical California Barn, with a slightly lower pitch angle.

Note the original barn had very low ceilings, only 5'0" at the west facing eave. We have increased the eave height to accommodate minimum 8'-0" rafter height at eave.

The main barn will also be raised by an equivalent amount to accommodate minimum head height requirements.

## Mezzanine

The restored barn will have one significant feature which was not in the original Barn—the addition of a loft or mezzanine, added to improve and stabilize the lightweight post and brace system. The additional area will serve as a gallery space and be open to the public.

**Roofing** - original redwood shingles, to be replaced by simple corrugated metal roofing, Corten, pre-rusted architectural grade roofing preferred.

**Additional Features** .

**Original retaining walls** were 3x12 redwood, all have recently collapsed or been buried by erosion.

**SLOPE** - replace existing wood retaining walls with concrete block masonry walls, to be faced above grade with quarried limestone (sourced locally).

**Foundations:** Original foundations 3x6 redwood plates on grade. 90% of original sill plates have disintegrated with time, to be replaced with concrete footings and typical seismic hold-downs.

- attempt will be made to hide any metal fittings and concrete stem walls to be finished with minimum above-grade profile.



UCSC -Hay Barn 2015

