

# HOME, SAFE HOME.

## SEISMIC SAFETY & REHABILITATING HISTORIC HOMES

Six webinars. A team of preservation professionals. One goal.

### Welcome.

**Jenan Saunders**

Deputy State Historic Preservation Officer and Tribal Liaison  
California Office of Historic Preservation



Office of Historic  
Preservation



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## SEISMIC SAFETY & REHABILITATING HISTORIC HOMES

Six webinars. A team of preservation professionals. One goal.

### Keep it Lookin' Great

Workshop #5 | November 8, 2022

Presented by

**John Lesak, AIA, FAPT**, Principal, Page & Turnbull

**Sarah Brummett, Assoc. AIA**, Senior Associate, Page & Turnbull



# HOME, SAFE HOME.

## SEISMIC SAFETY & REHABILITATING HISTORIC HOMES

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Workshop #1: What Makes My Home 'Historic'? | Thursday, June 23, 2022

Workshop #2: Is 'Compatible' 'Matchy-Matchy'? | Tuesday, July 26, 2022

Workshop #3: Seismic Retrofit Basics | Tuesday, August 30, 2022

Workshop #4: Retrofit Projects | Thursday, October 6, 2022

Workshop #5: Keep it Lookin' Great | Tuesday, November 8, 2022

Workshop #6: The Nuts and Bolts of Retrofits | Thursday, December 15, 2022

Program offered by:



Office of Historic  
Preservation

Grant funding from:



**FEMA**

Presented by:



**PAGE&TURNBULL**



# WORKSHOP #5 OBJECTIVES

Take pride in your historic home and keep it looking great. You will learn:

- Why historic home maintenance is critically important.
- How to differentiate between maintenance, repair, and replacement.
- Considerations in prioritizing, scheduling, and budgeting projects.
- The aspects of cyclical maintenance for roofs, windows, finishes and unique elements of historic homes
- Financing and Funding Tools and Resources



# Agenda

1. Workshop #4 Recap
2. Importance of Maintenance
  - a. Maintenance, Repair, or Replacement?
  - b. Aspects of Cyclical Maintenance
3. Project Priorities, Scheduling, and Budgeting
4. Financing & Funding Tools and Resources
5. Summary & Questions



In what region do you live?

Did you attend Workshop #4 or any of the prior workshops?



In what capacity are you interested in this topic?  
As a(n)...?



Do you have any specific maintenance concerns?





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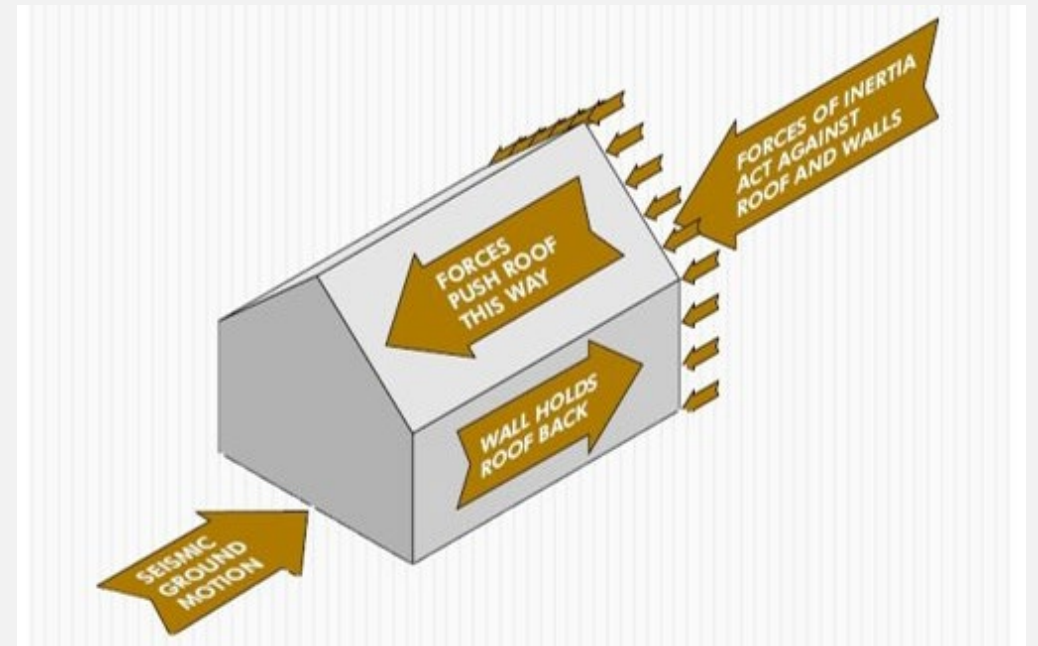
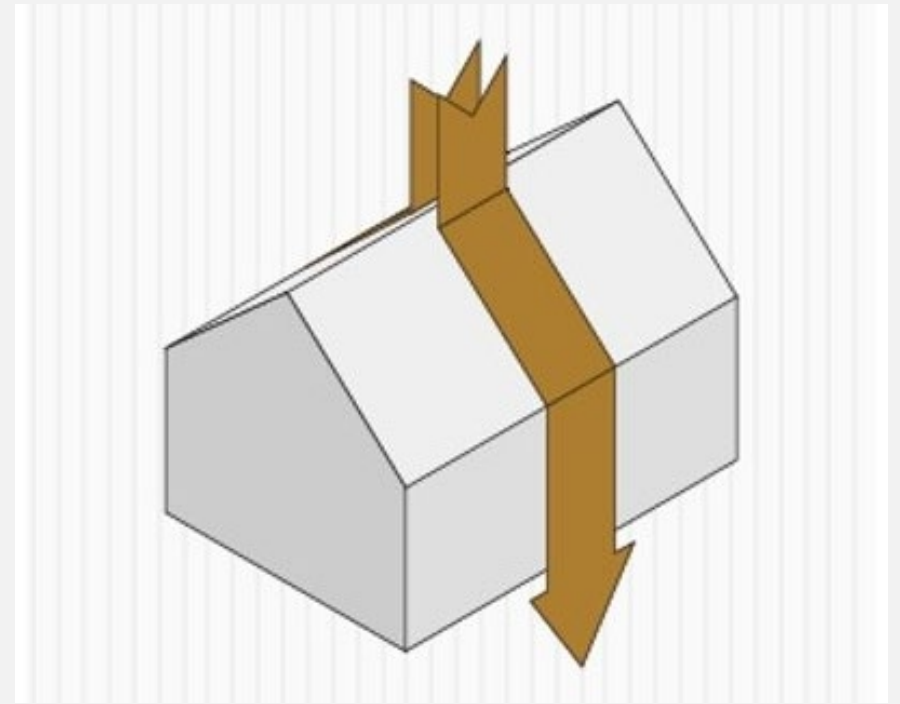
# WORKSHOP #4 RECAP

- Evaluate Your House
- Retrofit Strategies
- Retrofit Techniques & Examples
- **Priorities & Phasing**
- Every Improvement Helps!



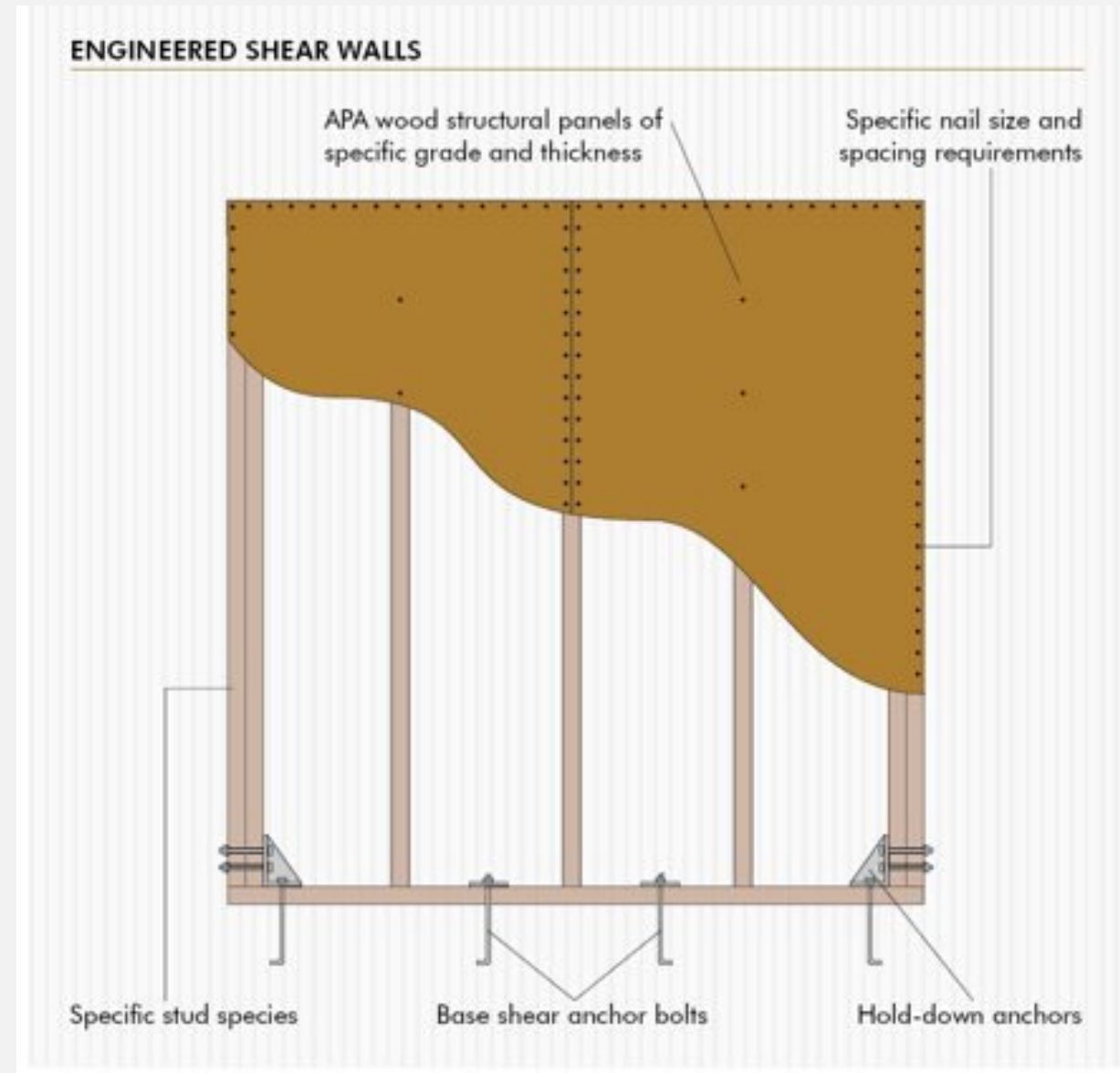
# Evaluate Your House

- Building Layout & Configuration
  - Box-Type Structure?
  - Re-Entrant Corners/Irregularities?
  - Open-Front Buildings/Areas?
- Load Path
  - Vertical Load Path
  - Lateral Load Path
- Connections
  - Roof, Walls, & Foundation
  - Projecting Elements
  - Equipment



# Retrofit Strategies

- Enhance Performance of Existing Elements
- Add Elements
- Improve Connections
- Identify & Address Weak Links



# Retrofit Techniques & Examples

- Roof Sheathing
- Collectors
- Shear Walls
- Foundation



Foundation anchors (Structural Focus)



Cripple Wall Bracing (Page & Turnbull)

# Priorities & Phasing

- Stand back and review the needs.
- What might be the priorities for my house construction type?
- Are there any home improvements that I might integrate seismic retrofit into?
- For much of this work a qualified Engineer (or Architect) will be necessary.

# Ranking Retrofit Measures

## Wood Frame Structures

1. Cripple Wall Bracing
2. Anchor Bolts to Foundation
3. Open Fronts
4. Porches / Falling Hazards
5. Shearwall Additions
6. Chimney

## Masonry Structures

1. Parapet and Gable Bracing (Chimney?)
2. Falling Hazards
3. Out-of-plane Wall Anchors (Chimney?)
4. Diaphragm Capacity
5. Wall Stability (h/t ratio)
6. In-plane shear

Reminder: Don't forget non-structural features!

[https://www.earthquakecountry.org/library/ECA\\_Step\\_1\\_SecureYourSpace\\_Document-EN.pdf](https://www.earthquakecountry.org/library/ECA_Step_1_SecureYourSpace_Document-EN.pdf)

Every Improvement  
Helps!

# Agenda

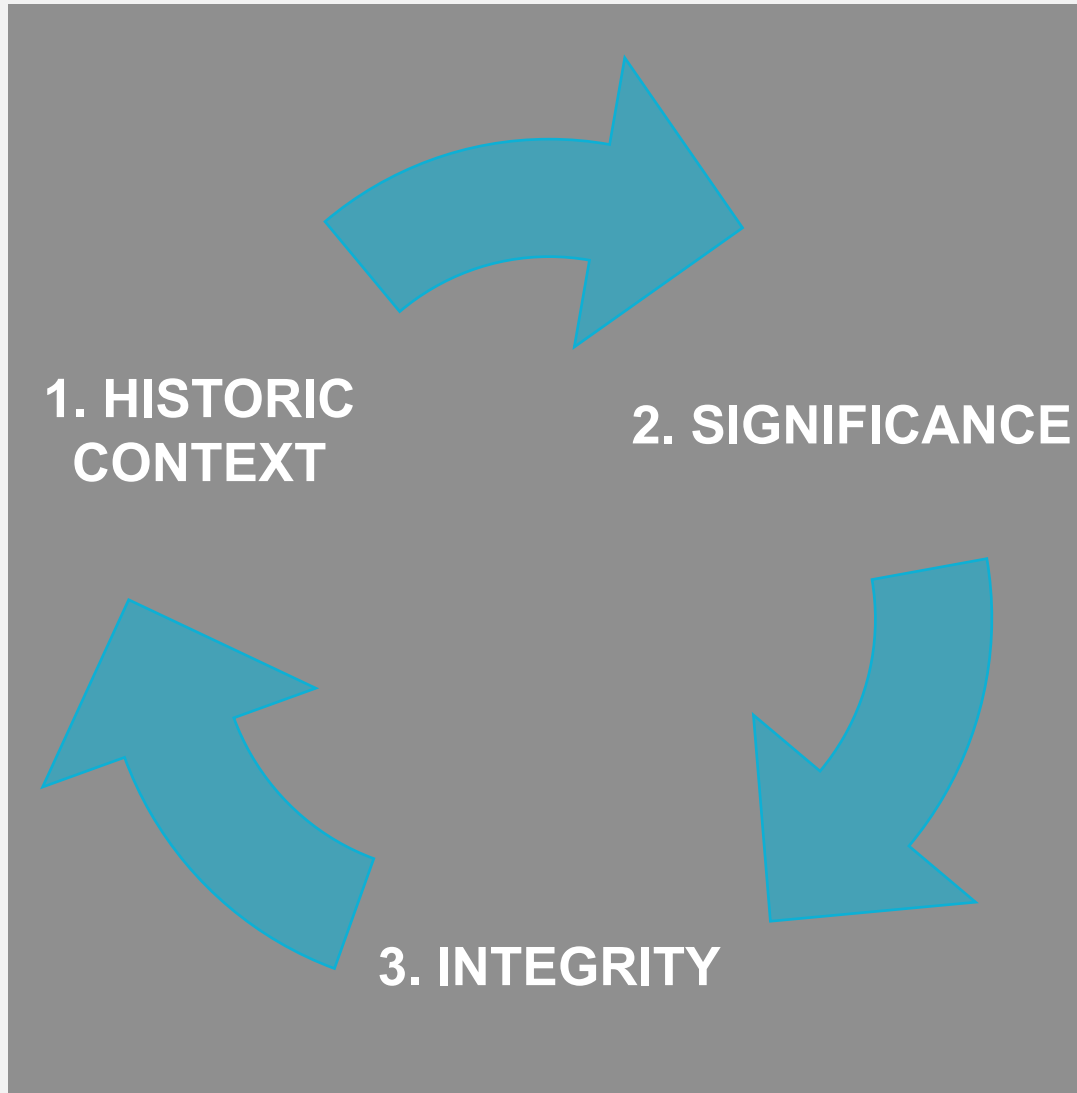
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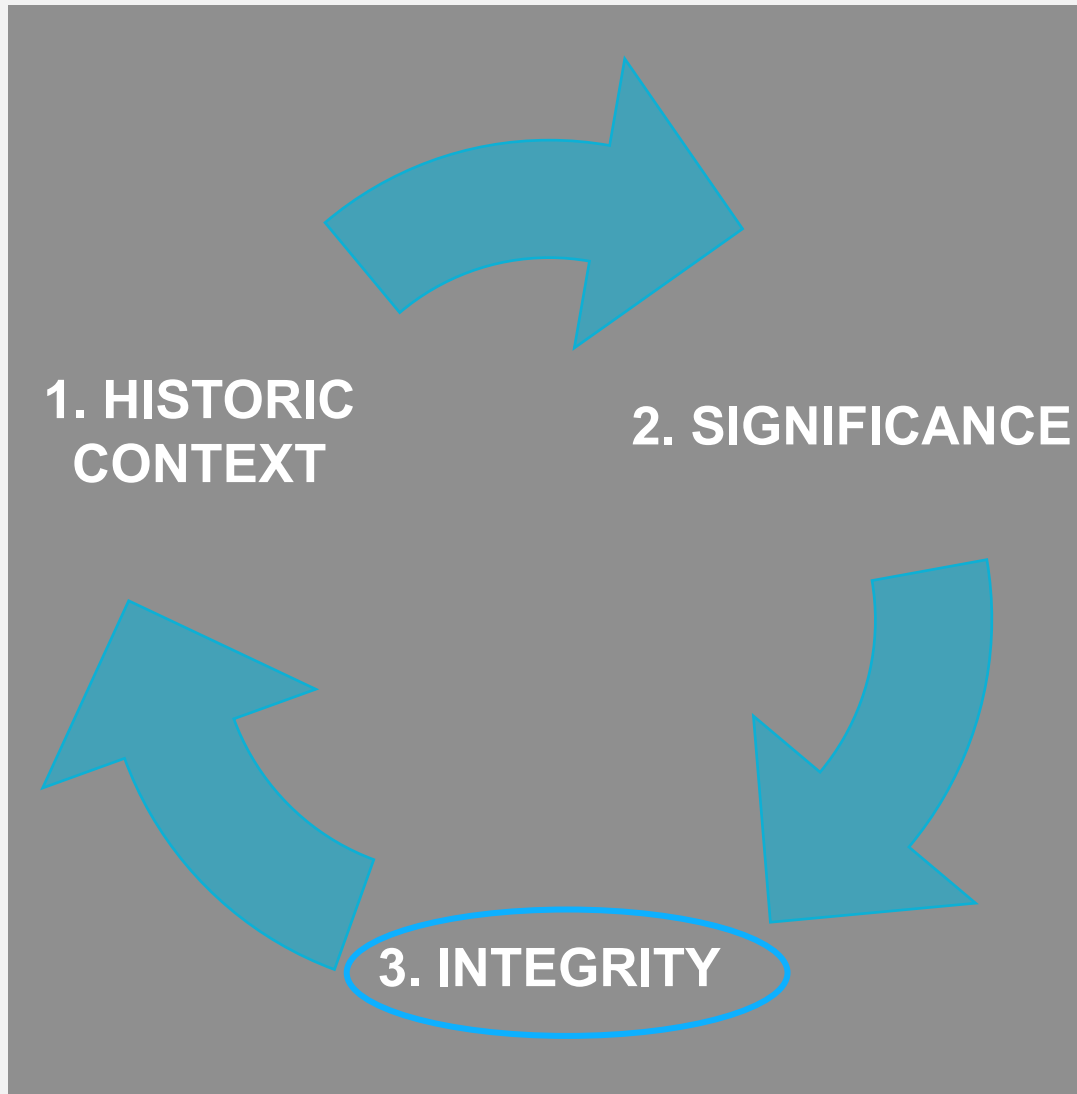




# What Makes a Home Historic?



# What Makes a Home Historic?



# Integrity & Maintenance

Integrity is judged by whether the significant features of the property are present, and whether the property retains the identity for which it is significant. Historic integrity is composed of seven qualities.

- 1. Materials**
- 2. Design**
- 3. Feeling**
4. Location
5. Association
- 6. Workmanship**
7. Setting



Materials



Design



Feeling



Workmanship

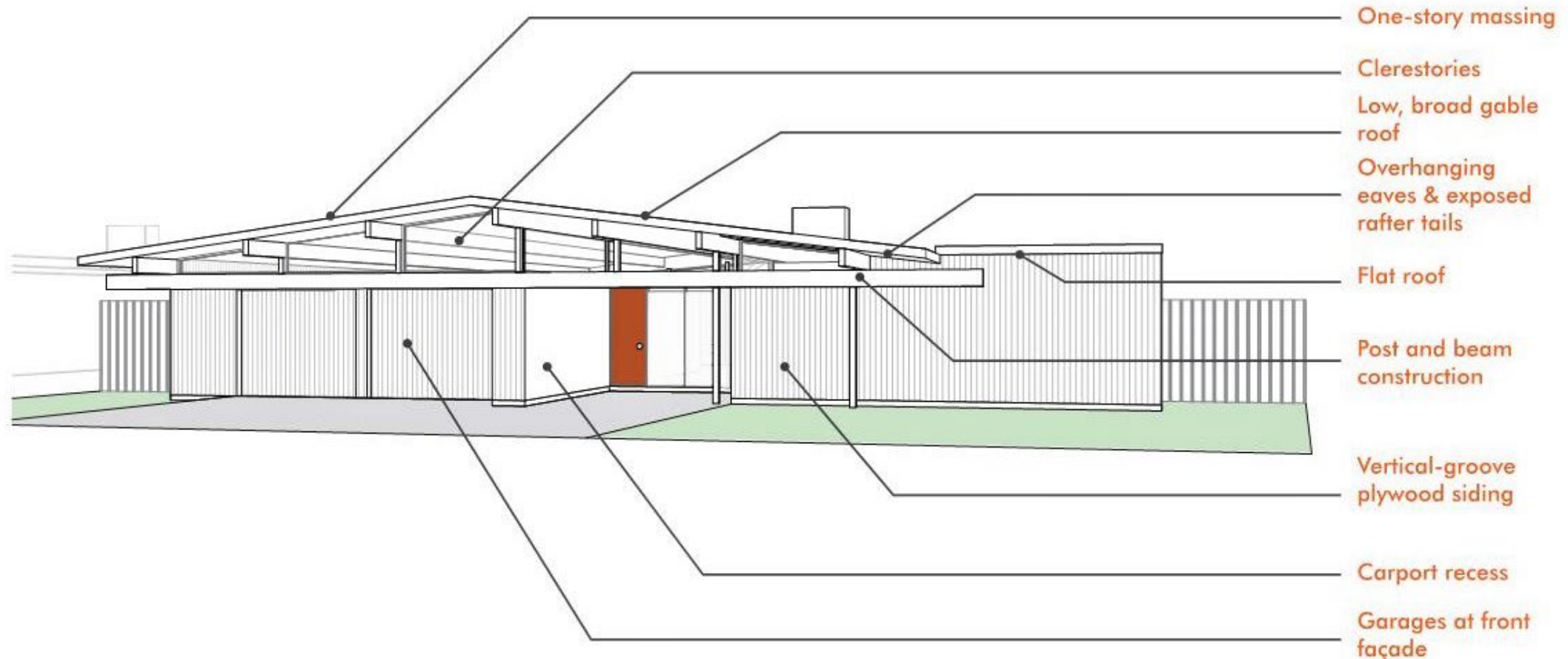
# Important Note About Integrity



Condition is NOT the same as historic integrity. Buildings with evident signs of deterioration can still retain eligibility for historic listing as long as it can be demonstrated that they retain enough character-defining features to convey their significance.

# Character-Defining Features

The elements or architectural components which establish the visual character of your home. They are the physical parts of both the exterior and interior that should be [retained and preserved](#).



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# Secretary of the Interior's Standards & Guidelines

The Standards are a series of concepts about maintaining, repairing, and replacing historic materials, as well as designing new additions or making alterations.

- Four distinct approaches (or treatments) with accompanying Guidelines
- Preservation, Restoration, Rehabilitation, and Reconstruction

The Standards and Guidelines together provide a framework and guidance for decision-making about work or changes to a historic property.



THE SECRETARY OF THE INTERIOR'S  
**STANDARDS** FOR  
THE TREATMENT  
OF HISTORIC  
PROPERTIES  
WITH  
**GUIDELINES** FOR  
PRESERVING,  
REHABILITATING,  
RESTORING &  
RECONSTRUCTING  
HISTORIC  
BUILDINGS

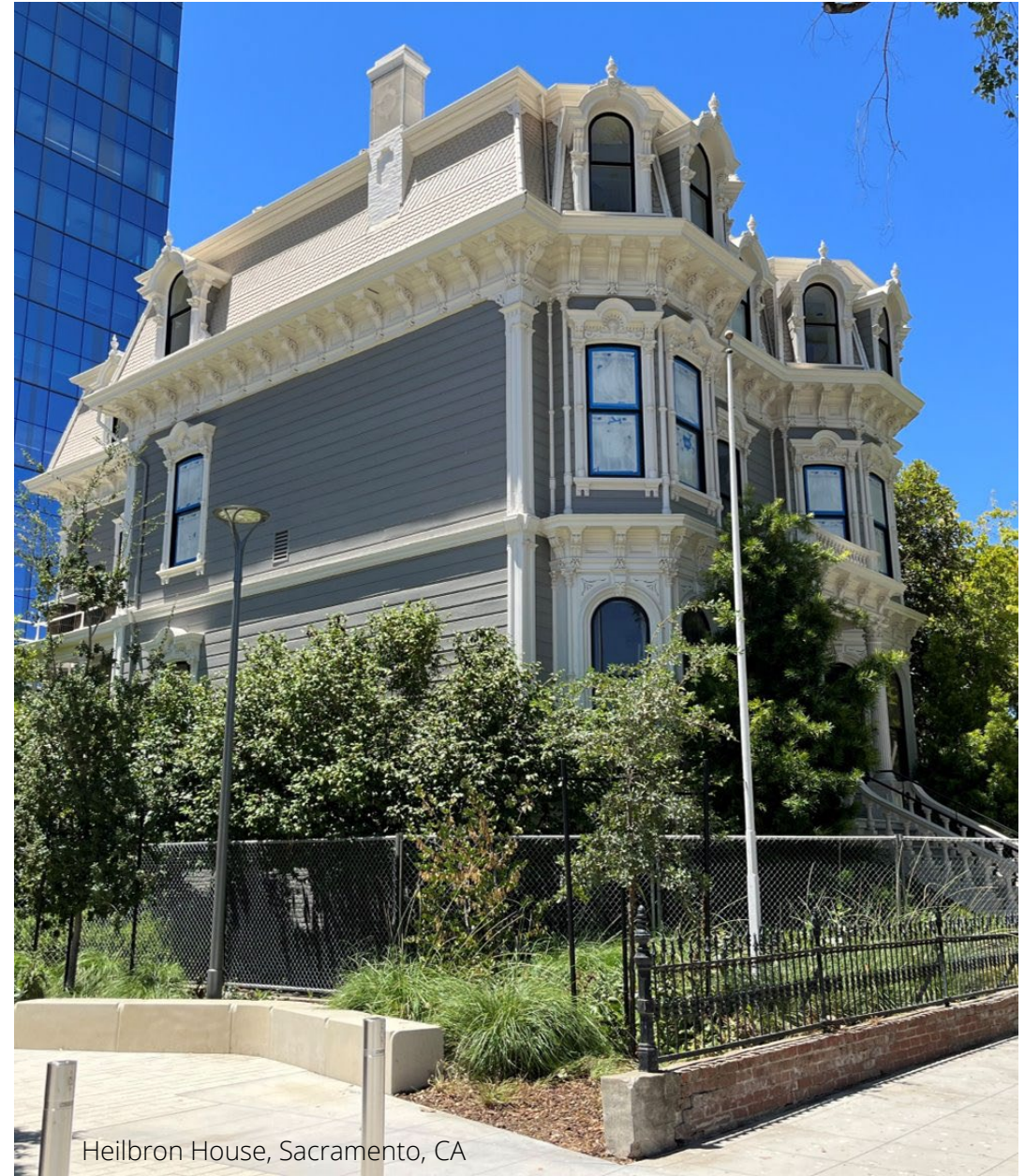


# Secretary of the Interior's Standards & Guidelines: Preservation

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property.

- Preliminary measures to protect and stabilize
- Focus on the ongoing maintenance and repair
- New exterior additions are not within the scope
- Limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate.

<https://www.nps.gov/articles/000/treatment-standards-preservation.htm>



Heilbron House, Sacramento, CA

# Secretary of the Interior's Standards & Guidelines: Restoration

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.

The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

<https://www.nps.gov/articles/000/treatment-standards-restoration.htm>



Rear side of Leland  
Stanford Mansion  
after restoration.

# Secretary of the Interior's Standards & Guidelines: Rehabilitation

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

*Rehabilitation is the most commonly used treatment.*

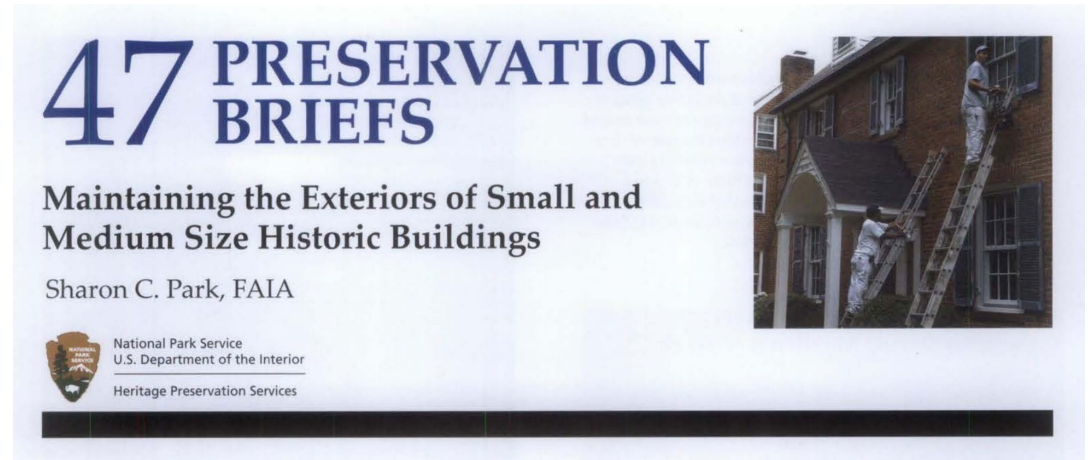
*Even if rehabilitation is the overall treatment approach, preservation/restoration/reconstruction treatments may be applied to specific areas/features as appropriate.*

<https://www.nps.gov/articles/000/treatment-standards-rehabilitation.htm>



# Guidelines & Briefs

- NPS Preservation Briefs – specific guidance for the maintenance and repair of common building materials and components
- SOI Guidelines – guidance for the treatment of historic building materials and character-defining features



STANDARDS FOR REHABILITATION & GUIDELINES  
FOR REHABILITATING HISTORIC BUILDINGS

## Rehabilitation

*Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.*



# Selecting an Appropriate Treatment

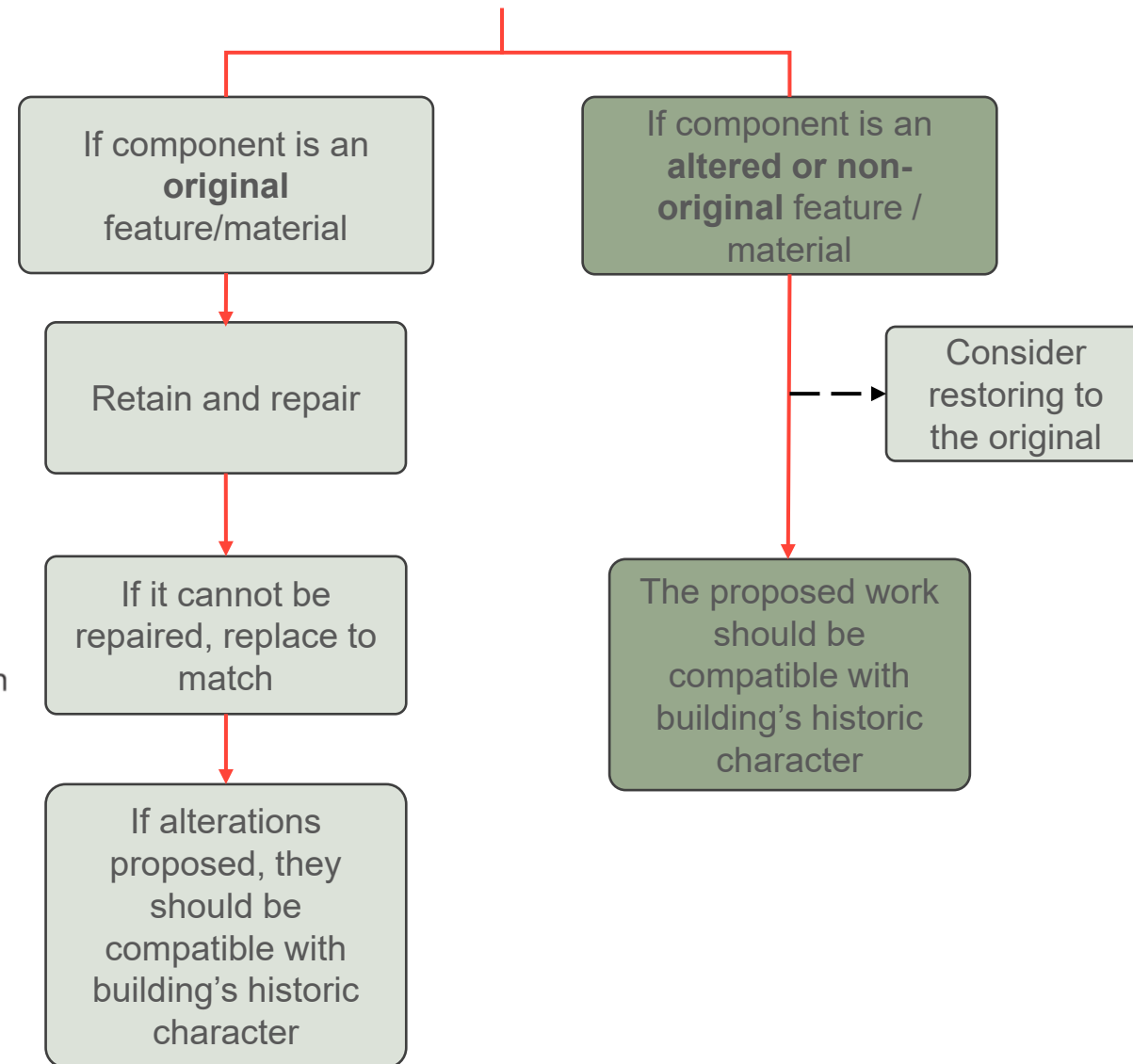
Understand the historic significance and integrity

- Does a feature contribute to the historic significance?
- Is it a character-defining features?



3. Side gable roofs
  - a. Rake crown
  - b. Rake frieze
  - c. Central gable
4. Boxed eave
  - a. Classical boxed eave return
  - b. Integral gutter
5. Entablature
  - a. Cornice
  - b. Frieze
  - c. Architrave
  - d. Soffit
  - e. Bedmold
  - f. Corona/fascia
  - g. Crown

## TREATMENT HIERARCHY



# Selecting an Appropriate Treatment

## CONDITIONS ASSESSMENT

- Is it **safe**?
  - Can it be stabilized?
- Has it **failed**?
  - Can it be replaced (in-kind)?
- Can it be **repaired**?
- Can it be **maintained**?



## EXTERIOR – ALL ELEVATIONS

Feature	Condition	Project Type	Notes / Photo #
<b>ROOF</b>			
Asphalt Shingles	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	
Wood Vents	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	
Wood Dormers	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	Photo # 1
<b>FAÇADES</b>			
Painted Wood Cornices	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	Photo # 2
Painted Wood Siding & Trim	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	
Metal (Copper) Gutter & Downspouts	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	Photo # 3
<b>WINDOWS AND OPENINGS</b>			
Wood Double-Hung Windows	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	
Wood Shutters	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	
Metal Shutter Fasteners & Hinges	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	Photo # 4
Exterior Wood Doors	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor	<input type="checkbox"/> OM <input type="checkbox"/> RP	

OM = Ongoing Maintenance | RP = Repair Project

# Selecting an Appropriate Treatment

## PLANNING

- Maintenance/Repair/Replacement
- When / How often?
- Season / Use Factors
- Cost
- Combine with other items?





# Maintenance

- Proactive
  - Helps preserve the integrity of your home and extend the life cycle of its materials and systems.
  - Reduces the need for extensive repairs and replacement due to deferred maintenance.



# Repair

- Reactive
  - Can be necessary due to acute damage from events like storms or earthquakes.
  - Can also be necessary to correct deterioration due to deferred maintenance
- Should be done sensitively, with compatible materials, and preserve as much of the historic fabric as possible.



# Replacement

- Reactive
  - Components should only be replaced if they are damaged/deteriorated beyond repair.
  - When necessary, replacement should be in-kind to match the original component, or of a compatible substitute material if in-kind replacement is infeasible.



# Quiz: Maintenance vs. Repair vs. Replacement





- A.Maintenance
- B.Repair
- C.Replacement





A.Maintenance

B.Repair

C.Replacement





A.Maintenance  
B.Repair  
C.Replacement



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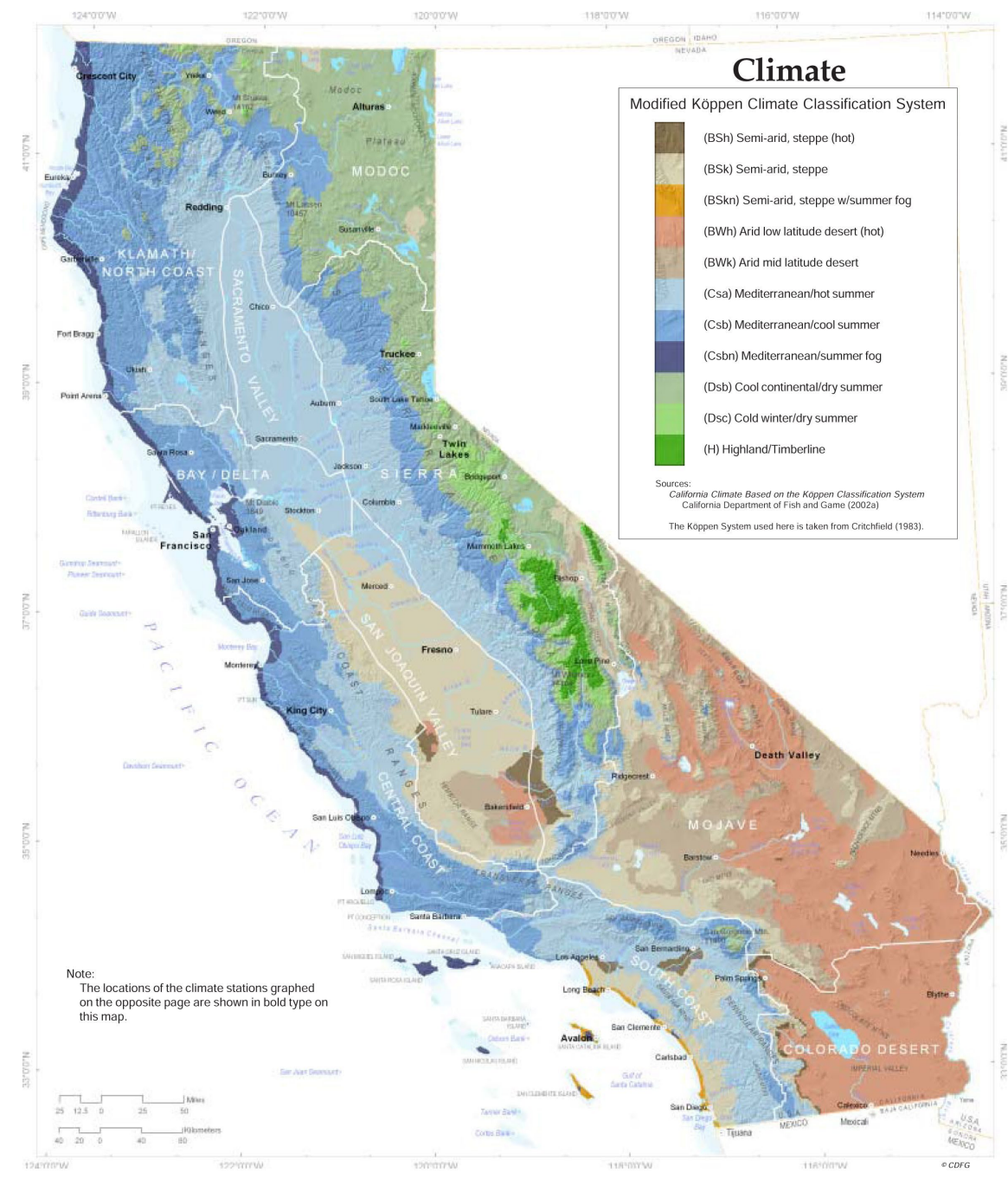


# Service Environment



# Climates of California

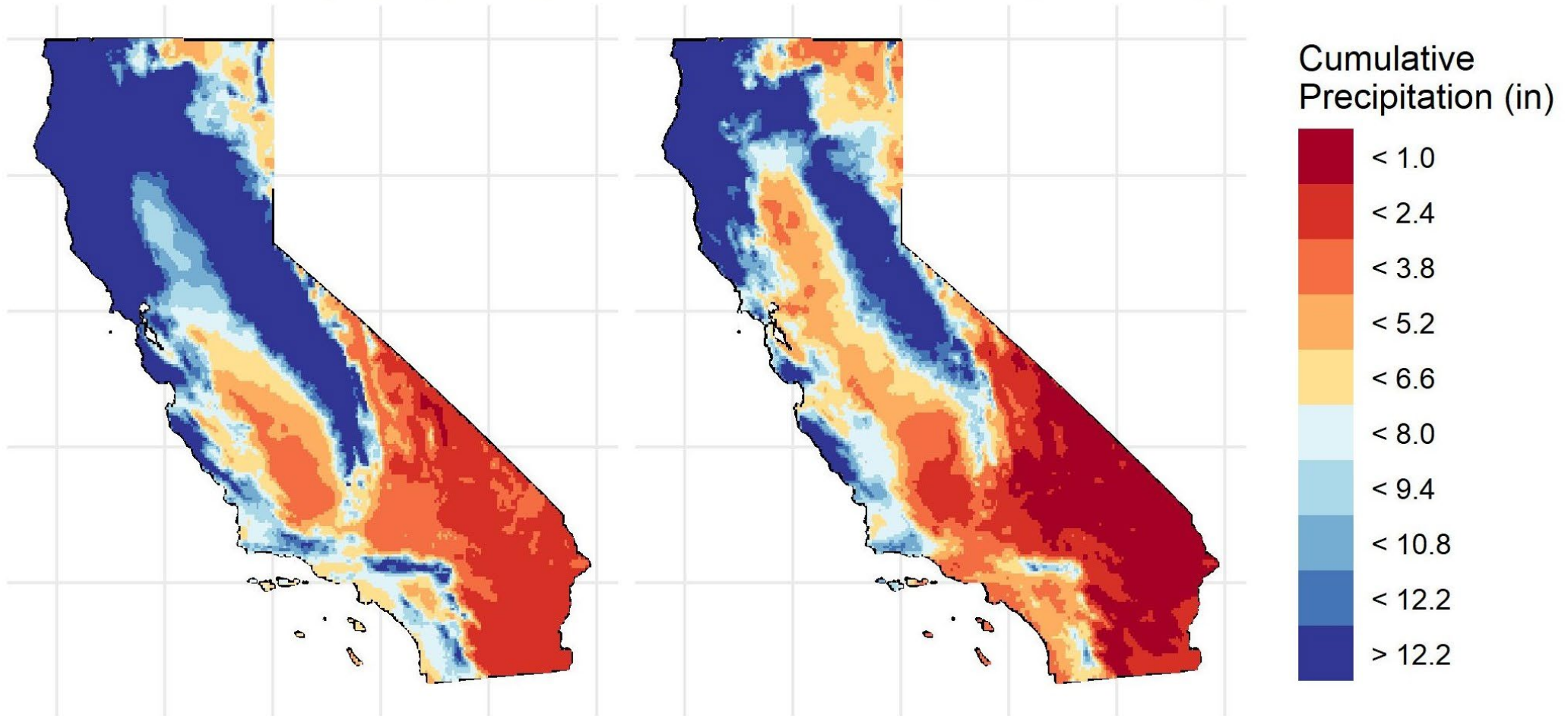
- Desert/Arid
  - Low latitude (Hot)
  - Mid latitude
- Cool Interior
  - Dry Summer
  - Cold Winter
- Highland/Timberline
- Steppe/Semi-Arid
  - Hot
  - Summer Fog
- Mediterranean
  - Cool Summer
  - Hot Summer
  - Summer Fog



# Average Rainfall

10-01 to 01-31 Precipitation (Historical)

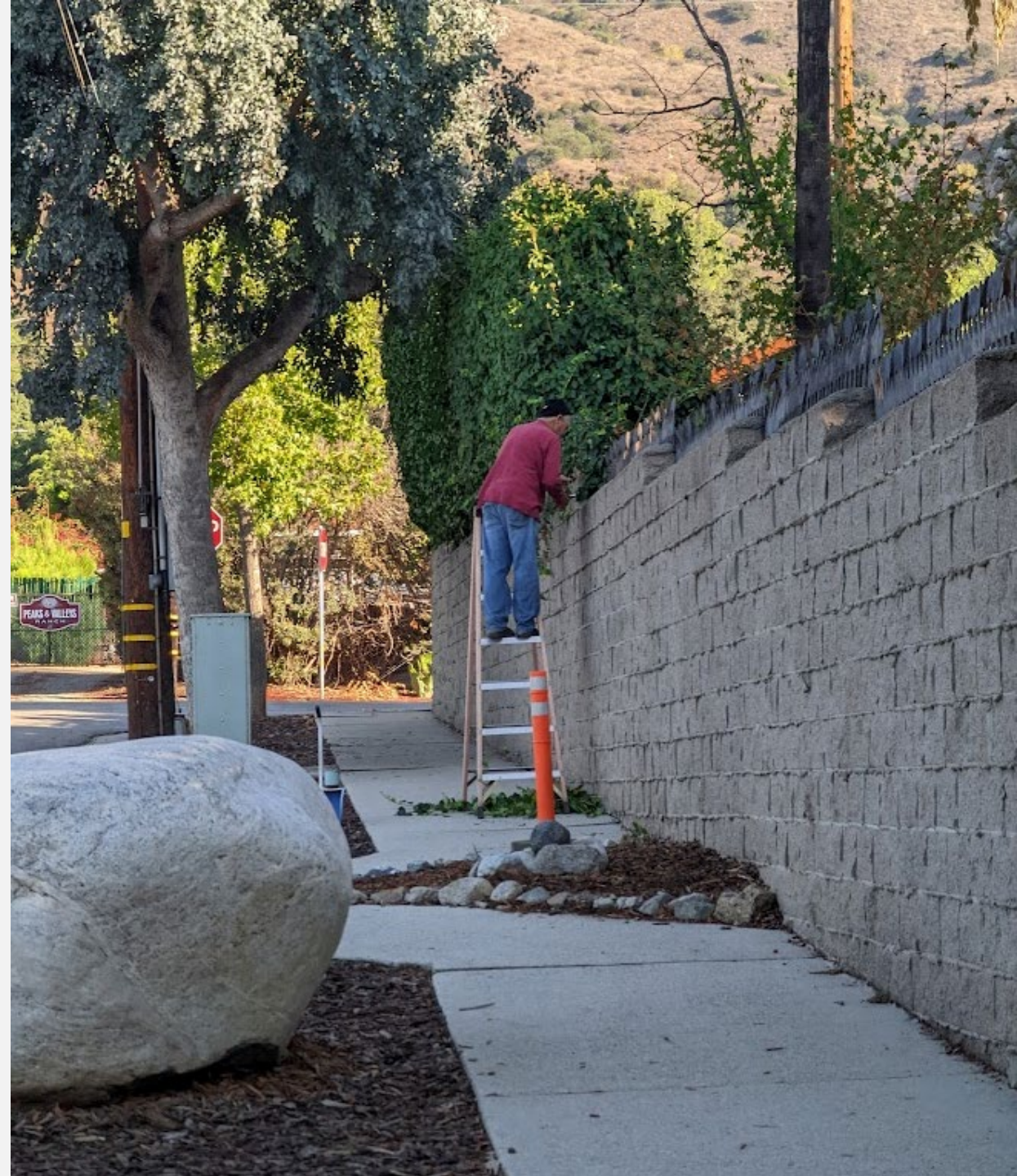
10-01 to 01-31 Precipitation (Current Year)



Source: ucanr.edu, 2021

# Cyclical Maintenance

- Keep a schedule of building features requiring inspection and maintenance.
- Plan and budget for longer-term maintenance items like re-painting and re-roofing.
- Plan and budget for repair projects, if necessary



# Cyclic Maintenance – Plan Example

Major Group	Element	Element General Condition	Component	Priority	Description	Quantity	Treatment Cycle	Maintenance Capital, Immediate	Cost - 2020
Site	Walls	Good	Concrete Masonry	Near-Term	Remove efflorescence from CMU wall using gentlest means possible. Spray with water and use cleaners specifically designed for cleaning masonry. Test a small area of the brick prior to the first cleaning.		Next 6-12 months, then annually	I, M	\$2,746
Site	Pool	Varies	Marble Tile	Near-Term	Apply sealer to marble deck tile		Next 6-12 months, then annually	I, M	\$31,008
Site	Walls	Fair	Wood Bulkhead	Near-Term	Paint wood gates. Remove all loose, flakey paint; patch wood. Apply two prime coats/two topcoats		Next 1-2 years, then every 5-7 years or per manufacturer's warranty	I, M	\$19,070
Exterior	Roof	Good	Gutters	Near-Term	Clean copper gutters	All gutters	Next 6-12 months, then annually	M	\$6,988
Exterior	Roof	Good	NA	Near-Term	Inspect annually for leaks	Entire Roof	Next 6-12 months, then annually	M	\$2,334
Exterior	Roof	Good	NA	Long-Term	Replace roof with new asphalt shingle roof	Entire Roof	Next 10-15 years, then every 25 years or per manufacturer's warranty	M	\$57,796
Exterior	Windows	Fair	All	Long-Term	Window restoration project: remove sashes and repair, replace hardware, repaint		Next 5-10 years, then every 25 years	M	\$184,596
Interior	Floor Finishes	Poor-to-Fair	Wood Floors	Long-Term	Refinish wood floors		Next 5-10 years, then every 50 years	M	\$44,242
Interior	Bathrooms	Good	Tile Finish	Near-Term	Crack monitoring - historic bathrooms		Annually	M	
Site	Pool	NA	Water	Near-Term	Chemical balance of pool		Monthly	M	\$50

# Plants

- Inspect and trim vegetation annually
- Clear plant debris from roof, grade, and foundation to maintain proper drainage
- Remove vegetation planted too close to the house
- Have large trees inspected for health regularly by an arborist
- Consider defensible space for wildfires



# Pests

- Inspect attics, crawl spaces, and foundations for signs of vermin
- Inspect wooden elements for insect damage, such as termites
- Inspect chimneys for birds and bats



# Sun

- Inspect coatings on organic building materials, including wood windows, doors, siding, trim, and porches.
- Inspect plastics, sealants, and gaskets





# Water

- Inspect gutters and downspouts twice per year
- Inspect foundation and grade drainage
- Inspect windows, doors, roofs, attics, basements, and crawl spaces for leaks
- Inspect chimneys for rising damp and condition of caps.
- Inspect porches, stairs, and railings for rot
  - Inspect for ice in cold climate zones
- Inspect masonry mortar



# Wind/Air

- Inspect weather stripping at windows and doors
- Inspect siding, flashing, and roofing for damage or displacement after high wind events, e.g. Diablo and Santa Anna winds
- Inspect mortar and flue parge coat at chimneys



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# Project Priorities

- Assess Conditions/Evaluate Needs
- Scope Priorities:
  - Life Safety
  - Condition accelerates decay
  - Cyclical Maintenance
  - Cosmetic and Capital Improvements
- Budget
- Scheduling



# Project Execution

- Maintenance
  - Self- Perform
  - Hire a Qualified Contractor
- Repair
  - Self- Perform
  - Hire a Qualified Contractor
  - Hire a Designer/Engineer
- Replace
  - Self- Perform
  - Hire a Qualified Contractor
  - Hire a Designer/Engineer



# Scheduling Considerations

- Contractor availability
- Project size/duration
- Time of year
- Material availability/lead times



# Maintenance Plan

ITEM	DESCRIPTION	UNIT COST	CYLCLE	ESTIMATED MAINTENANCE COST	NOTES
MAINTENANCE					
Wall Panels	Annual inspection and patching of wall panels	\$100.00	Yearly	\$1,420.00	5-percent annual increase over 10 years
Roof & Gutters	Annual inspection and patching of roofing and gutters	\$100.00	Yearly	\$1,420.00	5-percent annual increase over 10 years
Landscape	Prune vegetation away from aluminum panel stuctures. Maintain grades to drain away from house	\$50.00	Bi-monthly	\$4,260.00	5-percent annual increase over 10 years
				\$7,100.00	TOTAL MAINTENANCE

# Repair Plan

ITEM	DESCRIPTION	UNIT COST	UNITS		ESTIMATED REPAIR COST	COMPLETE BY	NOTES
<b>WALL PANELS</b>							
Repair holes	Fill holes with resin-based filler	\$100.00	20	ea.	\$2,000.00	Year 1	
Consolidate panels	Drill & inject adhesive, apply new metal where needed		1	ls.	\$6,750.00	Year 1	Most extreme at base of laundry. Includes repair of hole previously cut in panel for AC unit
Remove conduit	Remove exterior surface mounted conduit. Repair holes in panels		1	ls.	\$3,200.00		
Corner cover	Repair or replace detached corner cover		1	ls.	\$675.00		
					\$12,625.00		Subtotal Wall Panels
<b>PAINT</b>							
Prepare panel surface	Prepare aluminum surface for paint coatings.	\$1.25	1000	sf	\$1,250.00	Year 3	
Paint panel surface	Prime and paint per original colors	\$4.75	1000	sf	\$4,750.00	Year 3	Use high performance coatings.
Prepare windows	Sand & strip to sound surface	\$200.00	10	ea.	\$2,000.00	Year 1	
Paint windows	Paint window frame	\$200.00	10	ea.	\$2,000.00	Year 1	
					\$10,000.00		Subtotal Paint
<b>DOORS</b>							
Replace doors	Replace existing south and east elevation doors and screen doors	\$1,500.00	2	ea.	\$3,000.00	Year 6	New doors to match historic photographs
					\$3,000.00		Subtotal Doors
<b>ROOF</b>							
Repair damaged eve	Repair or replace damaged northeast eve in-kind with new aluminum sheet metal		1	ls.	\$6,750.00	Year 3	Test panel removal and reattachment methods
Replace roofing	Remove existing membrane roof. Prepare surface. Install new roofing	\$8.00	1200	sf.	\$9,600.00	Year 1	Use siliconized roof coating system
Clean and repair existing gutters	Remove, strip paint, replace damaged, and re-install gutters	\$1,250.00	2	ea.	\$2,500.00	Year 3	
					\$18,850.00		Subtotal Roof
<b>WINDOWS</b>							
Replace glass	Replace chipped and cracked glass panes with new.	\$500.00	7	ea.	\$3,500.00	Year 1	
					\$3,500.00		Subtotal Windows
					\$47,975.00		TOTAL EXTERIOR



# Budgeting

- Hard (construction)/soft costs
- Soft costs 20-30%
- Contingencies (unknowns)
- Minimum 15% contingency
- Escalation minimum 8-10% annually right now – depends on the market.

1.1 BID INFORMATION

- A. Bidder: \_\_\_\_\_.
- B. Project Name: \_\_\_\_\_.
- C. Project Location: \_\_\_\_\_.
- D. Owner: \_\_\_\_\_.
- E. Architect: Page & Turnbull.
- F. Architect Project Number: 17029.

1.2 CERTIFICATIONS AND BASE BID

- A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Page & Turnbull and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of.

1. \_\_\_\_\_ Dollars  
(\$\_\_\_\_\_).

2. The above amount may be modified by amounts indicated by the Bidder on the attached Document 004322 "Unit Prices Form" and Document 004323 "Alternates Form."

- B. Price breakdown by following project components and categories:

1. **House (Subtotal):** ..... \$ \_\_\_\_\_

<i>Trade</i>	<i>Subcontractor</i>	<i>Amount</i>
a. Abatement		\$
b. Concrete		\$
c. Rough Carpentry		\$

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# Brace and Bolt Grant Program

- Grants for qualifying homeowners for retrofitting cripple walls
- 2022 Applications are open now through November 29!
- More information available about this program in Workshop #4



# Mills Act

- Property Tax Abatement Program
- Owner occupied & income-producing properties
- Minimum ten-year contract w/ municipality
  - Varies greatly by city
- Owner agrees to Protect, Preserve, and Maintain property in accordance with *Standards*



# Historic Preservation Easements

- Voluntary legal agreement that protects a Historic Structure
- Federal Tax Deduction equal to value of rights given away to a Qualified charitable organization



# State Historic Preservation Tax Credit

- Claim a percentage of project expenses against state income taxes
- Available to homeowners
- Will be administered by the Office of Historic Preservation (OHP) and the California Tax Credit Allocation Committee (CTCAC)
- Expected roll-out early 2023



Office of Historic  
Preservation



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# Summary

1. Maintenance helps preserve the integrity of your home
2. Maintenance reduces the need for more costly repairs and replacement
3. The climate, aspect, and features of a property impact the cyclical maintenance concerns
4. Prioritize work for greatest impact, and plan long-term if possible
5. Financing & Funding Tools and Resources are available to assist





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# Questions?



# Additional Resources & Further Reading

- Secretary of the Interior's Standards for the Treatment of Historic Properties - <https://www.nps.gov/orgs/1739/secretary-standards-treatment-historic-properties.htm>
- NPS Preservation Brief #17 - Architectural Character – Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving their Character
- NPS Preservation Brief #18 – Rehabilitating Interiors in Historic Buildings: Identifying and Preserving Character-Defining Elements
- NPS Preservation Brief #47 – Maintaining the Exteriors of Small and Medium-Sized Historic Buildings -
- California Office of Historic Preservation - <https://ohp.parks.ca.gov/>
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