



SFMTA

Cable Car Barn Rehabilitation and Upgrades

SFMTA Citizens' Advisory Council (CAC)

Engineering, Maintenance, and Safety Committee (EMSC)

February 22, 2023

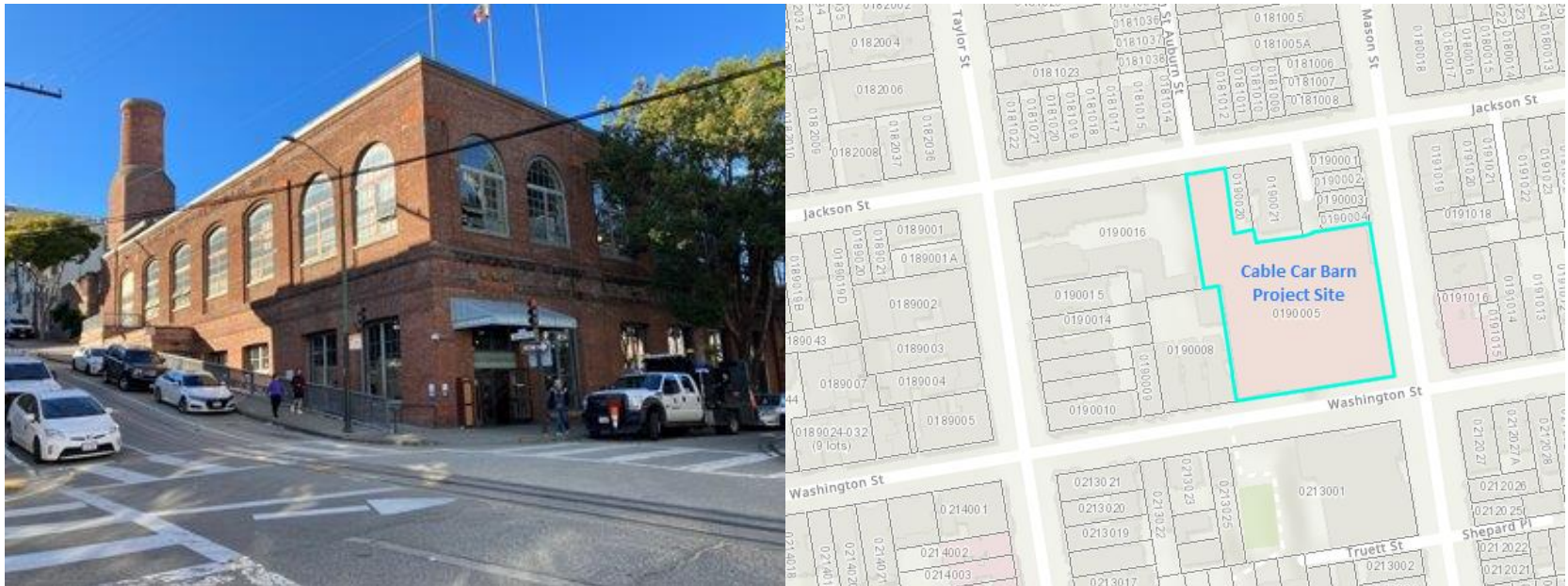
Project Description

Location: 1201 Mason Street in the Nob Hill neighborhood.

Purpose: Critical improvements to improve working conditions and modernize electrical operations.

General Scope: Rehabilitate the Cable Car Barn, including substantial investments to upgrade the HVAC, Fire/Life Safety Systems, office spaces, roof, 10- and 40-ton cranes, cable rewinder and holdback machinery, restrooms, and other associated upgrades.

Project Status: Master Plan completed. Pre-Development (PLN) Phase *in-progress*.



Cable Car Barn & Museum | Exterior View
SFMTA Photograph, November 2022

Cable Car Barn Project Site: 1201 Mason Street
Master Plan | June 30, 2022

Standards for Rehabilitation

The Secretary of the Interior's Standards for Rehabilitation (36 CFR Part 67, 1990) *which are included in the Treatment Standards*

The Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68, 1995) consists of four treatment standards—Preservation, Rehabilitation, Restoration, and Reconstruction—and are regulatory for NPS Grants-in-Aid programs.

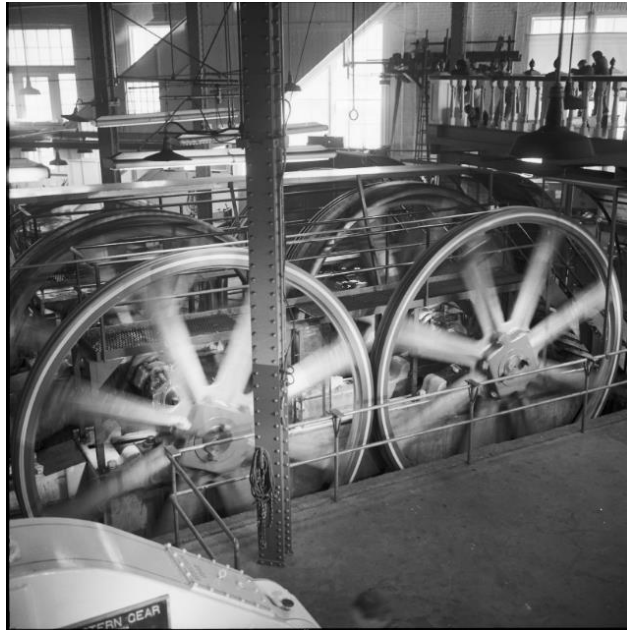
Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values. The Rehabilitation Standards acknowledge the need to alter or add to a historic building to meet continuing or new uses while retaining the building's historic character.

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SFMTA Photo Archives: Destroyed Washington and Mason Car House & Powerhouse After 1906 Earthquake and Fire, May 7, 1906

Project Objectives

- **Electrical Modernization** – *replace main switchgear and electrical equipment*
- **Accessibility Improvements** – *for SFMTA workplace and Public Visitors*
- **Seismic Retrofitting** – *make structurally safe & code compliant*
- **Exterior Rehabilitation** – *preserving Muni's crown jewel*
- **Improve Safety & Working Conditions** *for SFMTA Workforce*



Cable Machinery Winding Wheels, 1970
SFMTA Photo Archives M0817_1



Cable Car Barn Group Photo of Shop Staff, 2021
SFMTA Photo Archives 210819_CC_Barn_09_Comp

Electrical Modernization

Main driver of the rehabilitation and upgrade work

- Objective is to replace out of date and original equipment (1984)
- Existing equipment at lifecycle end – subject to increased fire hazard from panels and switchboards

Major Equipment Upgrades:

- Main Medium Voltage Service Entrance Switchgear
- Medium Voltage Transformer
- Low Voltage Switchboard
- AC and DC Electrical Panel
- Remote Terminal Units (RTU) and Supervised Control and Data Acquisition (SCADA)
- Transfer Switch and Emergency Generator Hookups



*Medium Voltage Service Entrance Switchgear, 2.5 MW
Medium Voltage Transformer and 480 V Switchboard*



Motor Control Center (MCC)

Accessibility Improvements

Accessibility compliance and improvements required for Cable Car Barn work staff and Museum patrons:

- Path of Travel Widening
- Doorway Widening
- Restroom Accessory Replacement
- Wayfinding Signage
- Locker and Office Space Renovations
- Entrance Ramp and Landing Slope Softening
- Handrail Refurbishment



Non-compliant lavatory and shower (Men 203).



Non-compliant lavatory (Women 106).

Seismic Retrofitting

Initial Seismic Evaluation - Structural and Non-Structural Life Hazard Issues

Conceptual Seismic Improvements:

- South and east concrete wall strengthening
- Shear wall addition at the east side of the passenger elevator
- Shear wall addition for 2nd Fl wall reinforcement
- Stair bracing continuation next to the north wall
- Roof strengthening including existing diagonal brace upgrades and new braces
- Chimney separation through introduction of an expansion joint

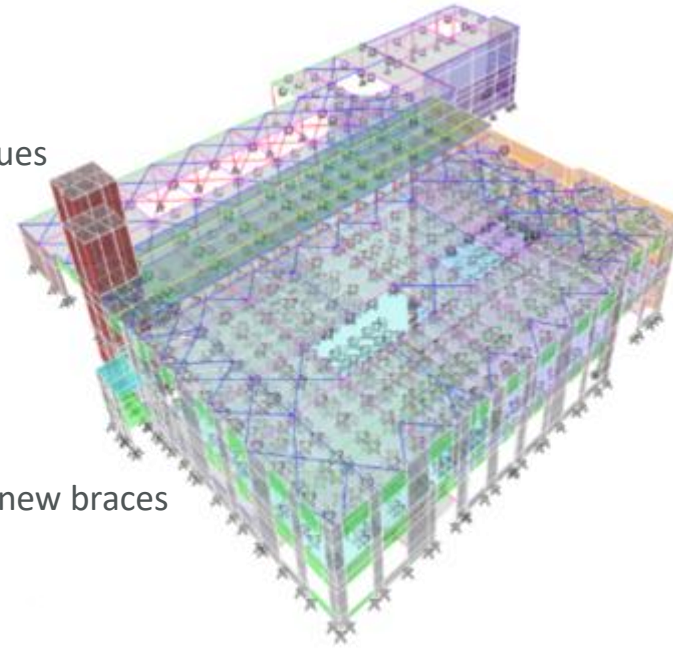
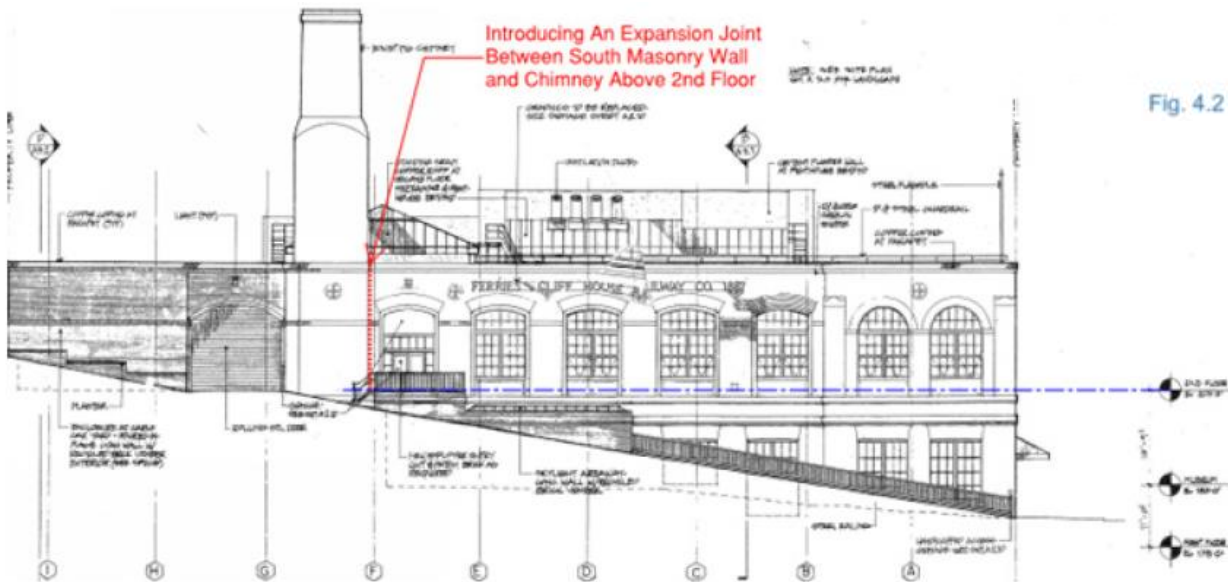


Fig. 4.2 Isometric 3D View of the ETABS Model



Chimney Separation

Exterior Rehabilitation

Brick Masonry

- Removal of general soiling, efflorescence, and stains
- Crack and spall repair
- Joints replacement
- Replace poorly matching masonry repairs and mortar joints for uniformity;
- Repair leaking pipes
- Repaint the brick masonry at the north lot line elevations
- Install sealant joints at the base of the building
- Repair metal parapet coping

Roof

- Replace roof membrane, insulation, drains, flashing
- Installation of equipment roof curbs
- Refinish skylight frames
- Replace sealant joints



Reconstruction Work at the Cable Car Barn, August 7, 1983
SFMTA Photo Archives 830807B_04.jpg

Improve Safety & Working Conditions for SFMTA Workforce and General Public

- 10-ton bridge crane to a 20-ton bridge crane with an extension
- Addition of a 3-ton free standing jib crane
- Addition of a 2-ton bridge crane
- Replacement of the passenger and freight elevators
- Replacement of the fire suppression system
- Upgrades to the heating, ventilation, and air conditioning (HVAC) system
- Upgrades to the weld room, inspection room, machine shop, carpentry area, paint booth, and assembly areas
- Installation of glass partitions for museum space
- Installation of EV chargers and shop compact storage units
- Addition of lactation room and bike storage room
- Additional facility electrical, plumbing, and structural work



Workshop Area of Cable Car Barn
SFMTA Photo November, 2022

Phasing Plan (Phases 1 thru 2)

Phasing Plans

Phase 1A

Level 2: 12kV electrical upgrade. PG&E permit process for 12kV electrical and all power upgrade. Clean agent installation and plumbing upgrade (eye wash)

Phase 1B

Level 1: Existing 10-ton bridge crane upgrade to 20-ton and extension, including structural work

Level 1M: Office area addition and proposed walkway, including structural, MEP, fire alarm, fire sprinkler work.

Phase 2

Level 1: Restroom, locker and office upgrades, including MEP work. Upgrade fire suppression system (remove halon system)

Level 1M: Glass partition upgrade, HVAC upgrade museum (installing HVAC system), restroom upgrades, including MEP work.

Level 2: Restroom upgrades, including MEP work. Bike storage room addition

Level 2M: Office renovations including MEP work

All levels: Passenger and freight elevator upgrades, including structural work for guide rails (all levels)

Phase 3A

Level 1: Reallocation of weld room and new inspection room. Existing machine shop, pulley assembly area and steam cleaning/weld area upgrade. 2-ton bridge crane addition. MEP work.

Level 1M: Compact storage including structural work

Level 2: Reallocation of grip building area from level 1, including MEP work.

Phase 3B

Level 2: Carpentry and office area upgrades including paint booth and spray booth Demolition of existing break room on upper level. MEP work. replace heating units in inspection pits

Phase 4

Remaining MEP upgrade, new skylights and entire roof replacement

Phase 5

Seismic retrofit work

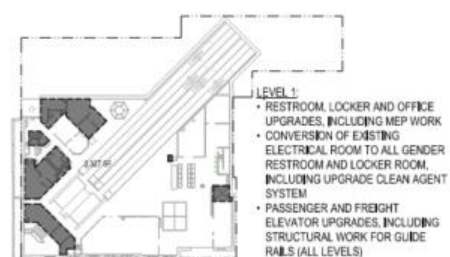
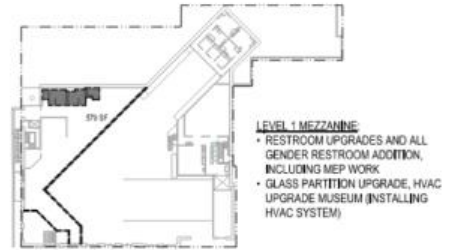
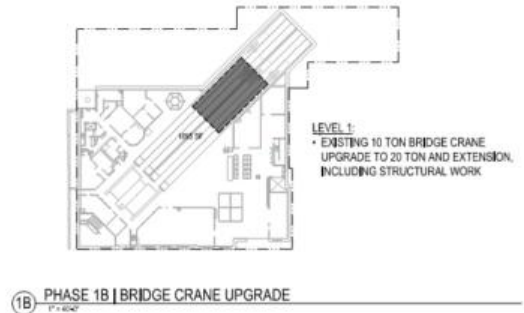
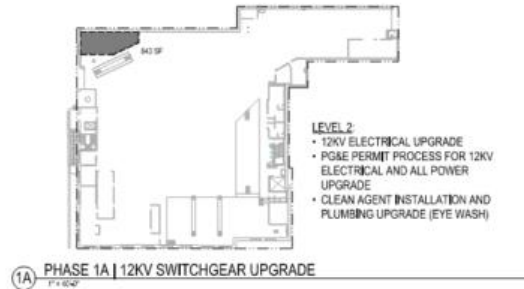
Other scope

Exterior improvements:

See Appendix A7- Exterior Conditions Memo & A13 - Cost Estimate for details

Winding motors upgrade (optional):

See Appendix A13 - Cost Estimate for details



Phasing Plan (Phases 3 thru 4)

Phasing Plans

Phase 1A

Level 2: 12kV electrical upgrade. PG&E permit process for 12kV electrical and all power upgrade. Clean agent installation and plumbing upgrade (eye wash)

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Phase 5

Seismic retrofit work

Other scope

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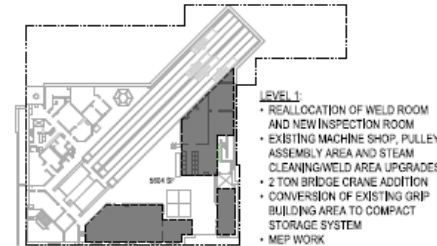
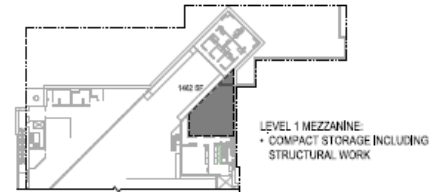
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*Cost estimator to provide cost breakdown both by concurrent work and by individual phase.

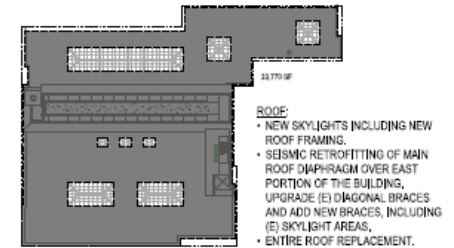
*A full modernization/upgrade to the aging electrical infrastructure such as switchgear, transformers, switchboards, motor control center, panels, disconnect switches. New lighting installation, existing lighting replacement and control upgrade per latest code requirement. Provide power to newly added equipment such as paint booth, HVAC, lighting fixtures and power receptacles.



3A PHASE 3A | PROGRAM RESTRUCTURING
1" = 40'



3B PHASE 3B | CARPENTRY UPGRADES
1" = 40'



4 PHASE 4 | ROOF REPLACEMENT
1" = 40'

Planning Schedule

Task	Begin Date	End Date	Duration (Months)
Planning Phase			
Master Plan and Pre-Development Reports	July 22, 2020	March 24, 2023	32
Preliminary Engineering Phase			
Environmental Clearance	March 25, 2023	March 27, 2024	12
Preliminary Engineering Report (30% design)	March 25, 2023	March 27, 2024	12
Detailed Design Phase			
Detailed Design (65% design)	March 28, 2024	November 29, 2024	8
Detailed Design (100% design)	November 30, 2024	September 30, 2025	9
Permitting	October 1, 2025	November 30, 2025	2
Contracting Phase			
Advertise Construction	December 1, 2025	March 6, 2026	3
Award Construction Contract	March 7, 2026	May 10, 2026	2
Construction Management Phase			
Construction Notice to Proceed	May 11, 2026		
Substantial Completion		May 20, 2031	61
Administrative Closure Phase			
Contract Closeout	May 21, 2031	August 19, 2031	3
Project Closeout	August 20, 2031	November 18, 2031	3

Thank you!

Questions?

Project Team

- Quon Chin (Project Manager)
- Christian Kalinowski (Deputy Project Manager)
- Eun Joo Cho (Project Architect)