

California Polytechnic State University, San Luis Obispo

From the SelectedWorks of Thomas Fowler IV, NOMA, DPACSA, FAIA

Spring June, 2017

Romberg Tiburon Center (RTC) Theater Repurpose 2017

Thomas Fowler, IV Kevin Dong



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Available at: https://works.bepress.com/tfowler/32/

— PINK BOUNDARY- LIVE AREA FOR WORK



Romberg Tiburon Center

Theater Repurpose

CAL POLY

The Architecture and Architectural Engineering Departments are two of the five departments that comprise the College of Architecture & Environmental Design.

The other departments are:

City & Regional Planning Construction Management Landscape Architecture



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architecture ARCHITECTURAL ENGINEERING

Thomas Fowler Kevin Dong

2017 Design Collaboratory

College of Architecture and Environmental Design
Cal Poly, San Luis Obispo, CA

The team that worked on San Francisco State University's Romberg Tiburon Center (RTC) for Environmental Studies was composed of a talented group of undergraduate and graduate students. We thank the RTC and John Kern for providing the opportunity to research and redesign this Building 54 Theater Project. The Project will restore the historical theater, provide RTC with an inspiring presentation space, and commemorate the history of the site.

The Design Collaboratory is an award winning (NCARB Prize, Auto Desk Grant and national student design competition recognition), multi-disciplinary group of undergraduate and graduate students, and faculty (from architecture and architectural engineering, joined occasionally by planning, construction management and civil engineering), that work directly with industry partners in developing building design projects. Professors Dong and Fowler have collaborated on these types of projects, which use interdisciplinary student groups, for more than 10 years. They bring more than 30 years of professional expereince which provides avenues for insightful research and innovative design proposals, and leverage approximately 40 years of teaching experience to mentor and enable students to create holistic design solutions.

We have enjoyed seeing how much students learn in their interactions with one another, with the RTC, and with us. They have grown as designers, problem solvers, and innovators by solving "real world" building design challenges since they worked directly with the building user, John Kern.

Sincerely,

Professor Kevin Dong Professor Thomas Fowler



Professor Thomas Fowler, DPACSA, NCARB, AIA

The Director of the Graduate Program of Architecture and a Professor of Architecture.

Thomas' teaching responsibilities include third and fourth year design and building technology courses, working with a range of four and fifth year independent study students and has been coteaching as part of the Collaboratory Building Design Studio since 2007. Prior to beginning his teaching career at Cal Poly, Thomas worked with a range of architecture firms in New York City and Washington, DC for over a 13 year period. His work was highly collaborative with a range of disciplines on small to large scaled building types.



Professor Kevin Dong, PhD, SE

The Associate Dean of Administration of the College of Architecture and Environmental Design and Professor of Architectural Engineering.

Kevin's teaching responsibilities range from 2nd year technology classes through graduate structural systems and seismic engineering courses, and has been co-teaching the Collaboratory Building Design Studio with Tom since 2007. Prior to beginning his teaching career at Cal Poly, Kevin practiced holistic design with Ove Arup & Partners (ARUP) for 13 years, starting as an Arup Fellow in London and then moving to the San Francisco office. During his tenure with ARUP he worked on numerous projects nationally and internationally that required collaboration and integration of all disciplines from design inception through construction and occupancy.



Brandon Carson, Alamo. CA

I am a fourth year Architectural Engineering student at Cal Poly, and I am very grateful to have been part of the RTC Theater project. Working alongside Architects, my fellow ARCE's, and a history major has been an eye opening experience for me, and has given me so much knowledge about group collaboration and interdisciplinary efforts that I will be able to bring with me into industry next year. Learning more about the architectural design process was a highlight of the project for me, and something that I found very valuable.



Katie Eberle South San Francisco, CA

As an Architectural Engineering student with an Art History minor I greatly enjoyed working on an interdisciplinary project that combined my interests in structures and history. The RTC Theater project presented a unique set of design criteria and constraints that required creative thinking and teamwork to solve. Overall, this experience has been rewarding and fulfilling and I look forward to working on more historic retrofit projects in the Bay Area next year.



Melvin Fuentes Los Angeles, CA

I am a fourth year Architecture student and I was presented the opportunity to take part in this integrated studio which is usually reserved for graduate students. It was my first time designing for an existing building and I have enjoyed and disliked the challenges the existing structure has presented. Not only has this project exposed me to schematic design but also the administration side of the design process, I enjoyed speaking to the researchers at the RTC and being able to design to their requests.



Justine Neves Santa Cruz, CA

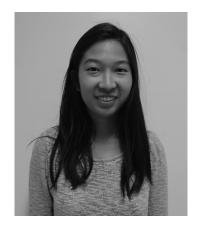
I am a graduate student in Architecture at Cal Poly, San Luis Obispo. Working on with the Romberg Tiburon Center has presented unique challenges and creative opportunities in architecture. Integrated structural engineering, history and architecture has brought new perspective and insight to the work I have done. This collaborative studio has been interesting and dynamic learning experience I will continue to carry with me in my professional career.

Meet the Team



Kevin Lee Westchester. PA

I'm one of four Architectural Engineering students on this project. I was seeking opportunities that would expose me to work I can't find at school, and fortunately I found RTC Tiburon. I was entranced by RTC's deep history and I felt very optimistic with its prospects for the future. I explored how to analyze the existing structural systems in conjunction with structural and ADA codes to assist the Architectural design. Overall, I am very thankful for the opportunity, and excited for how this theater can potentially change.



Kristen Pang Honolulu. HI

I'm a fourth year Architectural Engineering student at Cal Poly. I collaborated on this project because of my fascination with historical preservation and retrofitting. I was challenged with analyzing the existing structure for structural problems, and developing cost-effective solutions. It was a great experience to collaborate with multiple disciplines and formulate creative ideas.



Sridhevi Vaidyanathan India

I am a first-year graduate student in Architecture at Cal Poly with an undergraduate degree in Architecture from India. As an international student, working in a collaborative design studio with students from different disciplines like ARCE and History has widened my knowledge base and provided me with a different perspective of approaching a design challenge. I thoroughly enjoyed working on this project and look forward to more such challenges in future.



Rebecca Willis Concord. CA

I'm graduating June 2017 with a B.A. in History and minors in English and Music. I will be attending the University of Chicago in the fall to complete my Masters in Social Science. As the project historian, I dug deep into the rich history of the RTC and enjoyed the rare treasure of the DeFries Theater. This is the History department's first project with Architecture and Architectural Engineering students. It has been a uniquely wonderful experience to begin new interdisciplinary opportunities between two colleges at Cal Poly.

project research | site analysis

design process | options









project research | site analysis

Romberg Tiburon Center, Tiburon, CA





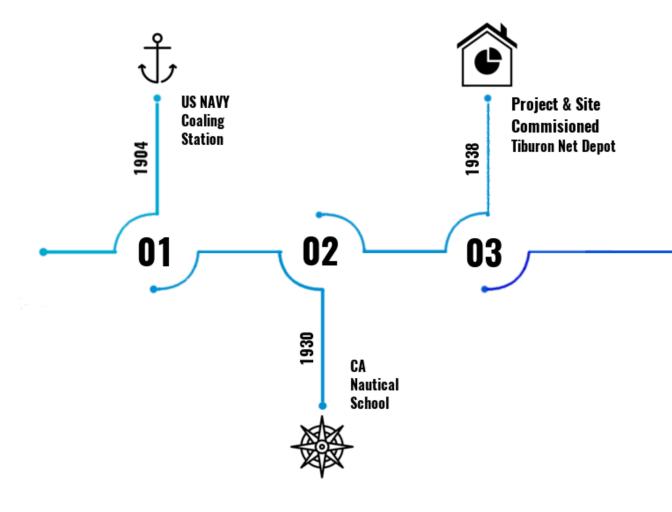
The Romberg Tiburon Center for Environmental Studies (RTC) is located in Marin County, California at the eastern tip of the Tiburon Peninsula. The RTC is home to San Francisco State University's marine and estuarine research facilities where professors, researchers, and students focus on understanding climate change and how it affects marine and costal ecosystems, including the San Francisco Bay and the open ocean.

Building 54 originally opened as a movie theater for soldier during WWII in the early 1940's and is currently used for research as a wet lab with controlled 24/7 sea water pumping.









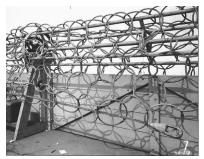




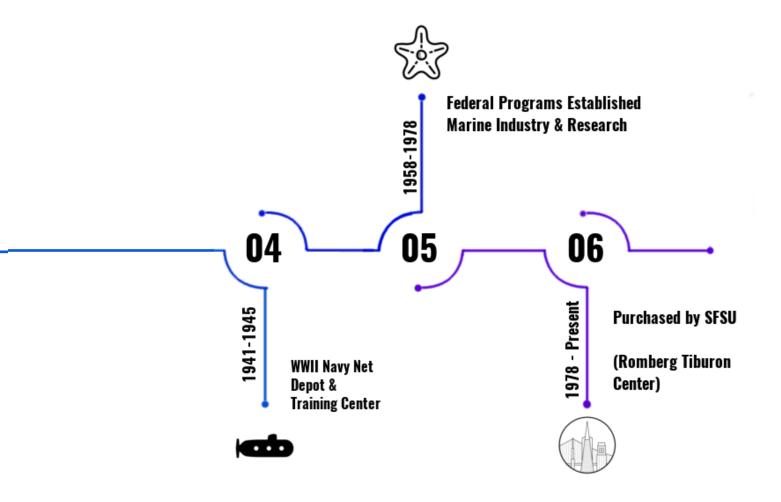
The main yard at Tiburon Net Depot during World War II.



The original entrance to the DeFries Theater.



The intertwined metal anti-submarine nets that protected the Bay from 1940-1945.





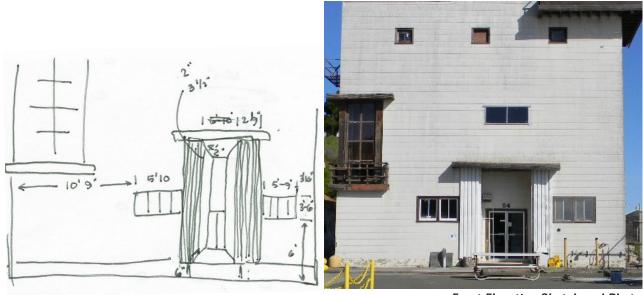
The nets anchored by heavy concrete buoys were monitored by sailors.



"Keep your shoes shined and your shirt clean", ca. 1942

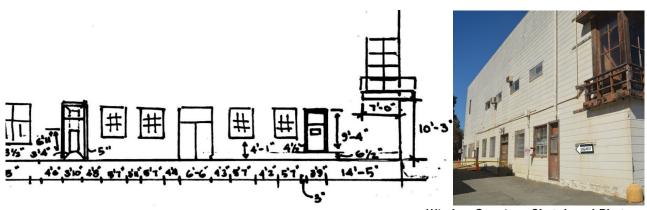


The Tiburon Theater today Building 54.



Front Elevation Sketch and Photo

Our team has taken two field trips to the site. Our first visit was on March 10, 2017, where we toured the building and took preliminary measurements of the building. Our second visit was on April 14, 2017 where we investigated the building further with site documentation. In our site documentation, we took pictures, measurements and sketeches to take back with us to Cal Poly to develop project.



Window Openings Sketch and Photo

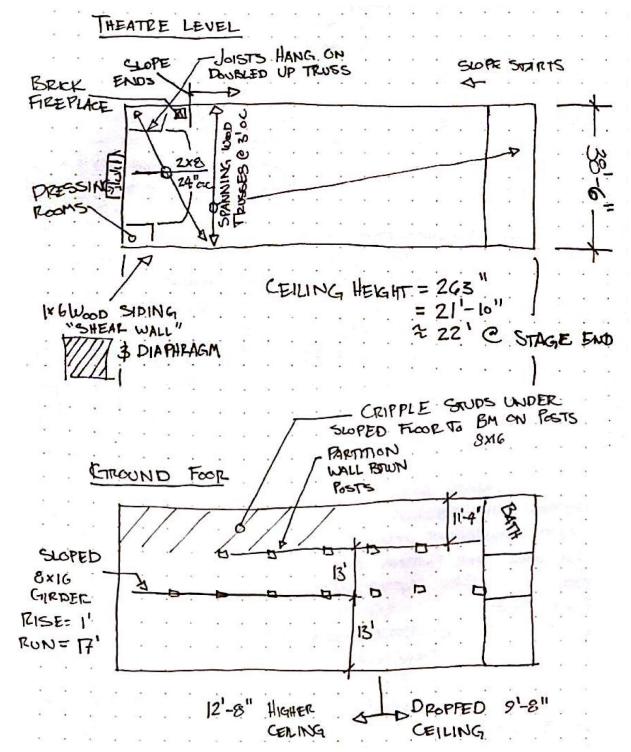


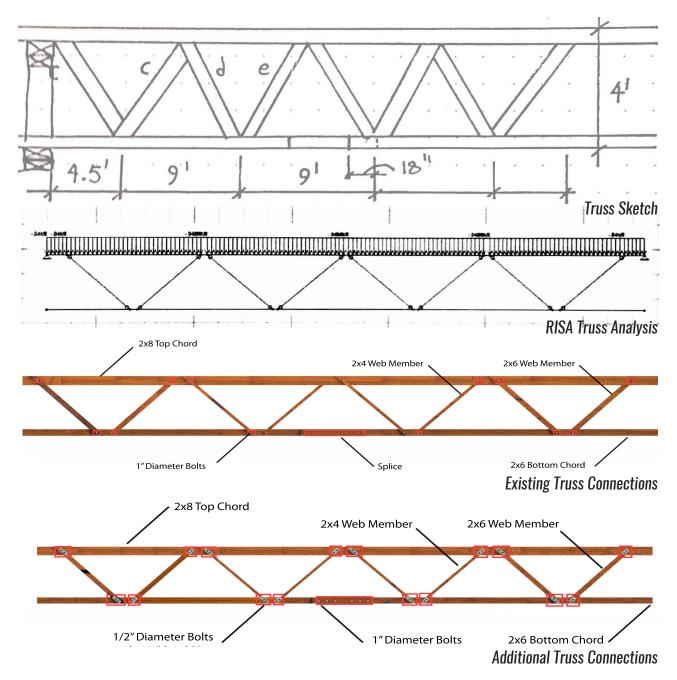
Team on site



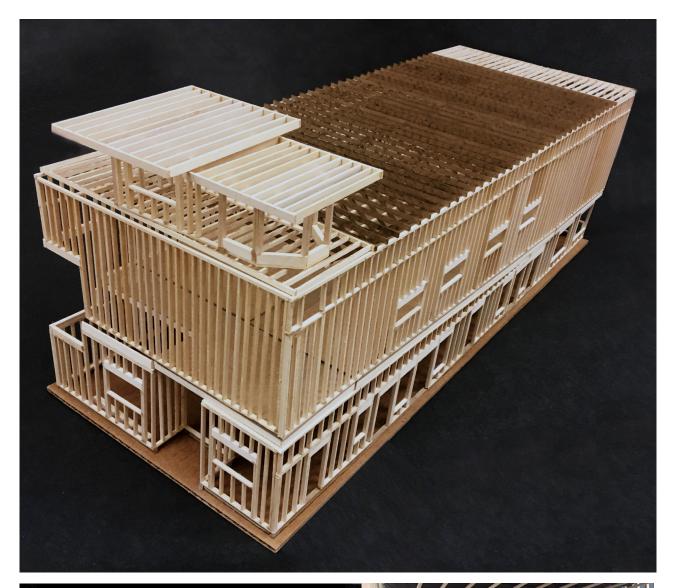


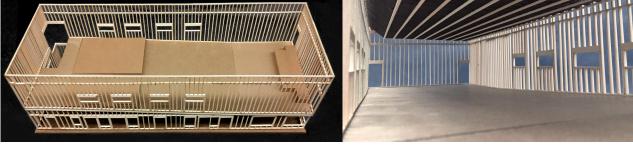






Structural capacity calculations were performed on all existing members to determine if replacement of structural framing would be required. Because of the opportunity to turn the roof into an occupiable space, the roof truss was of great importance to us. If a roof option is added, the roof trusses would need slight reinforcement at it's connections.









"Many of our own scientists and students work with interdisciplinary teams to study nature-based adaptation strategies for adapting to sea level rise, a topic of great interest to residents and planners in the Bay Area and especially in Marin County."

Karina Neilsen, RTC Director



"Bring the theater into the modern world..."

"Based on the number of thesis defenses we have here and the number of crowds they bring... I would be inclined to go with the larger seating plan"

John Kern, Special Assistant to the RTC Director



"I want visitors to get a glimpse of the science that goes on in the building as part of the building experience."

Dr. Tomoko Komada, Marine Biogeochemistry



"That building is unique in that it is right on the water; we would never be allowed to build such a building again...Re-establishing it as a theater is one such use and going that route should leverage the unique waterfront vantage that the building has."

Dr. Jonathon Stillman, Ecological Physiology & Functional Genomics of Marine Invertebrates



"Another thing that could be very nice for that room are additional large round tanks for display that could hold herring since they are local to our site and could spawn in the tanks in winter as well. This might be a terrific exhibit and allow some research on spawning behavior and preferences as well."

Dr. Sarah Cohen, Population Biology and Conservation of Marine Organisms: Ecological and Evolutionary Genetics

REPURPOSE

Create a Presentation Space and Work Space for Researcher

RESTORE

Bring the Theater from the Past to the Present

INVIGORATE

Revitalize the Building and Invite the Community

COMMEMORATE

Celebrate the History and Nature of the Site

Objectives





Lobby





Laboratory



Theater





Social



Rooftop

	<u>Existing</u>		<u>Proposed</u>			
	Stairs Entryway Restrooms	153 SF 139 SF 73 SF	Stairs/Elevator Lab Viewing Area Gallery	319 SF 138 SF 159 SF		
	Laboratory	2878 SF	Laboratory Restroom w/ Shower Storage	2059 SF 273 SF 295 SF		
	Stage Lab Offices	1570 SF 1428 SF	Stage Fixed Seating Flexible Seating Storage	430 SF 1539 SF 315 SF 40 SF		
	Stairs Lobby	153 SF 363 SF	Stairs/Elevator Social Space Restrooms	319 SF 719 SF 153 SF		
	Observation Room	210 SF	Observation Room Deck	210 SF 988 SF		
•	Total	6968 SF	Total	7956 SF		



design process | options

CalPoly, San Luis Obispo, CA

Materials

Existing Material Palatte

Asbestos Siding

Asbestos siding is incredibly weather resistant and was very a very popular building material in the 1900's. However, since then it has been found to be a hazardous material with serious health risks when inhaled. In order to bring Building 54 up to code, the aspestos shingles will have to be concealed or removed. Due to the high cost of an asbestos speacialist, removal is actually cheaper than concealing.

Redwood

Old growth redwood is used in the framing of Building 54 and was a very common building material for the norther California.

Sheet Metal

Sheet metal is a material unique to theater projection rooms for its fire resistance. Movie films could be easily burned by bright projector lights, making fire a regular threat to theaters.

Partical Sheet Board

Partical sheet board was used for its acoustical properties. However, since it's installation in the early 1940's, the particle board has deteriorated in some areas and has even sustained some water damage.

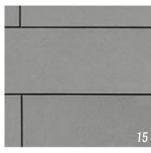


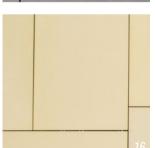






Proposed Material Palette









Fiber Cement Board

Fiber Cement Board is an inexpensive, lightweight material that performs well under various climate conditions. This material is provided by many manufacturers and can be made into various form factors (colors, textures, finishes). All of these form factors are installed using the same method.

Fiberglass Panels

Fiberglass is an alternate solution to the Fiber Cement Board and is also lightweight and weather resistant. It is more durable, but it is more expensive compared to the fiber cement hoard.

Glass Wall

Glass Wall Panels are used in both the Lab and the Theater to separate the spaces by program and also allow the spaces to appear open. In the Lab, the Glass Wall would serve as a barrier between the lobby and the laboratory creating a divide between the theater occupants and the researchers. The Glass would allow the Theater occupants to observe the researchers at work. In the Theater, the Glass Wall would separate the Social Space from the main theater, but also not close off the space.

Acoustic Panels

Acoustic Panels help increase the sound feedback from the speakers on stage and also dampen outside noises and echos, the ideal material for a theater. These panels come in various colors and can be arranged to create an interesting wall patern.

19

Sode Research

Capacity of Seating in Assembly Areas	Number of Required Wheelchair Locations
4 to 25	1
26 to 50	2
51 to 300	4

20

TABLE 2902.1 MINIMUM NUMBER OF REQUIRED PLUMBING FIXTURES^a

				WATER C	LOSETS	LAVATORIES		BATHUBS		
No.	CLASSIFICATION	USE GROUP	DESCRIPTION	MALE	FEMALE	MALE	FEMALE	OR SHOWERS	DRINKING FOUNTAINS ^{g,h}	OTHER
		A-1	Theaters usually with fixed seats and other buildings for the performing arts and motion pictures	1 per 125	1 per 65	1 pe	er 200	_	1 per 500	1 service sink
			Nightclubs, bars, taverns, dance halls and buildings for similar purposes	1 per 40	1 per 40	1 per 75		_	1 per 500	1 service sink
	A-2	Restaurants, banquet halls and food courts	1 per 75	1 per 75	1 per 200		_	1 per 500	1 service sink	
	Assembly	A-3	Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums	1 per 125	1 per 65	1 pe	er 200	_	1 per 500	1 service sink
1	(see Sections 2902.2, 2902.5 and 2902.6)		Passenger terminals and transportation facilities	1 per 500	1 per 500	1 pe	er 750	_	1 per 1,000	1 service sink
		A-3	Places of worship and other religious services. Churches without assembly halls	1 per 150	1 per 75	1 pe	er 200	_	1 per 1,000	1 service sink

Ш

[BE] TABLE 1020.1 CORRIDOR FIRE-RESISTANCE RATING

0.0000000000000000000000000000000000000	OCCUPANT	REQUIRED FIRE-RESISTANCE RATING (hours)		
OCCUPANCY	BY CORRIDOR	Without sprinkler system	With sprinkler system ^c	
H-1, H-2, H-3	All	Not Permitted	1	
H-4, H-5, I	Greater than 30	Not Permitted	1	
A ^d , B, F, M, S, U	Greater than 30	1	0	
R-1, R-2, R-3, R- 3.1, R-4	Greater than 10	Not Permitted	1	
I-2a, I-2.1, I-4	Greater than 6	Not Permitted	1	
I-3, R-2.1	Greater than 6	Not Permitted	1 ^b	
E	Greater than 10	1	1	

a. For requirements for occupancies in Groups I-2 and I-2.1, see Sections 407.2 and 407.3 of the California Building Code.

[BE] TABLE 1017.2 EXIT ACCESS TRAVEL DISTANCE*

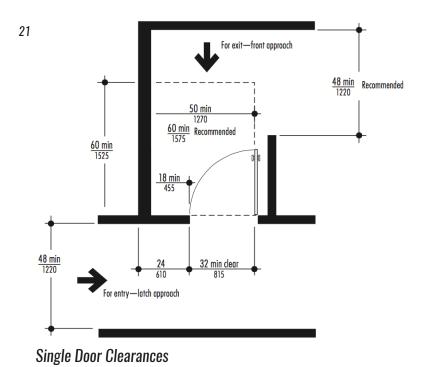
OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
A, E, F-1, M, R, S-1	200	250 ^b
R-2.1	Not Permitted	250°
В	200	300°
F-2, S-2, U	300	400°
H-1	Not Permitted	75 ^d
H-2	Not Permitted	100 ^d
H-3	Not Permitted	150 ^d
H-4	Not Permitted	175 ^d
H-5	Not Permitted	200°
I-2, I-2.1, I-3e, I-4	Not Permitted	200°
L	Not Permitted	2005

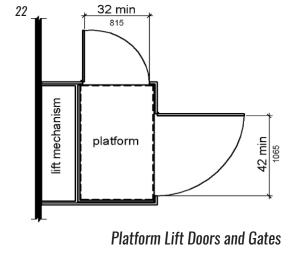
For SI: 1 foot = 304.8 mm.

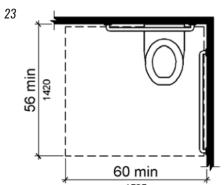
b. For a reduction in the fire-resistance rating for occupancies in Group I-3, see Sections 408.8.1.2 and 408.8 of the California Building Code.

c. Buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

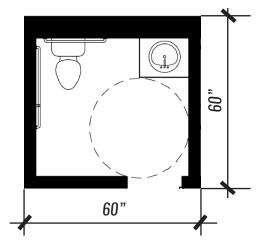
d. [SFM] See Section 1029.





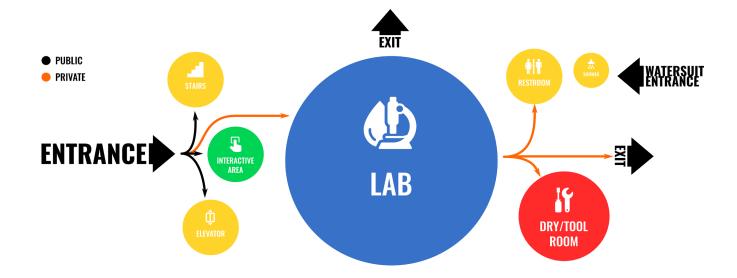


60 min 1525 Size of Clearance at Water Closets

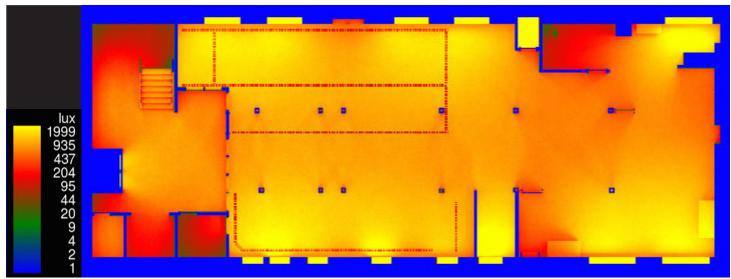


Proposed Bathroom Dimensions

First Floor







Light Study of First Floor

"For the mud room, I suggest making a transitional in-out area...(where) researchers' gear can be washed off." -Dr. Jonathan Stillman





Existing Photo vs. Precedent Photo of Mud Room

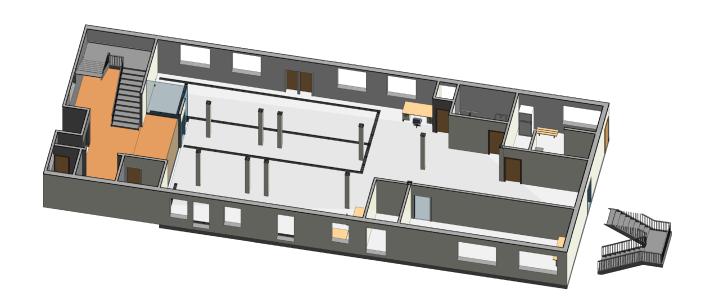


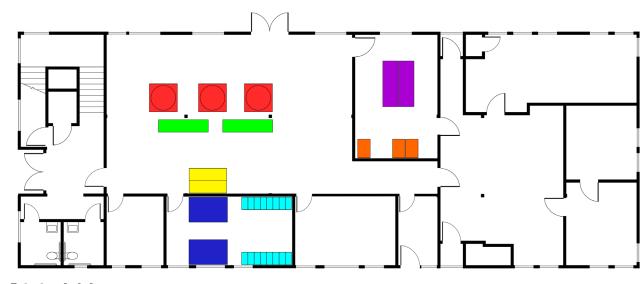


Existing Photo vs. Precedent Photo of Laboratory

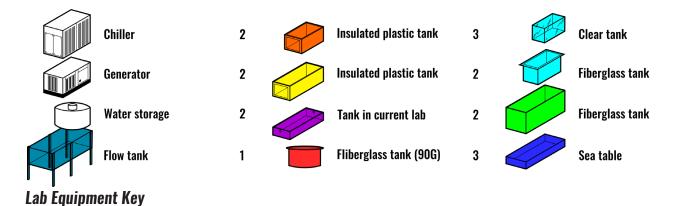
First Floor

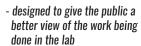






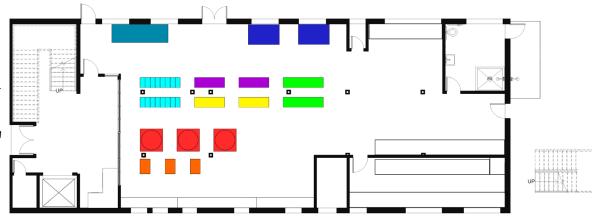
Existing Lab Layout





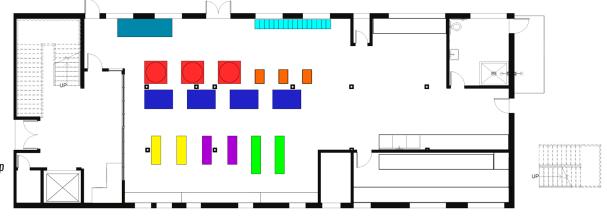
- the clear tanks and 90 gallon tanks are close to the lab viewing area for the public to see.

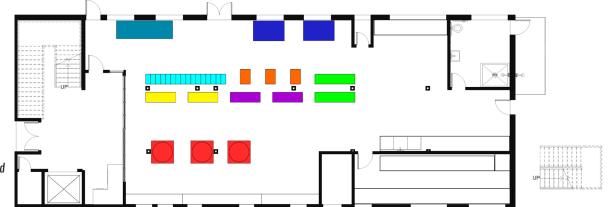
Layout Option 1



designed to have all the sea tables visible and together without stacking them on top of each other

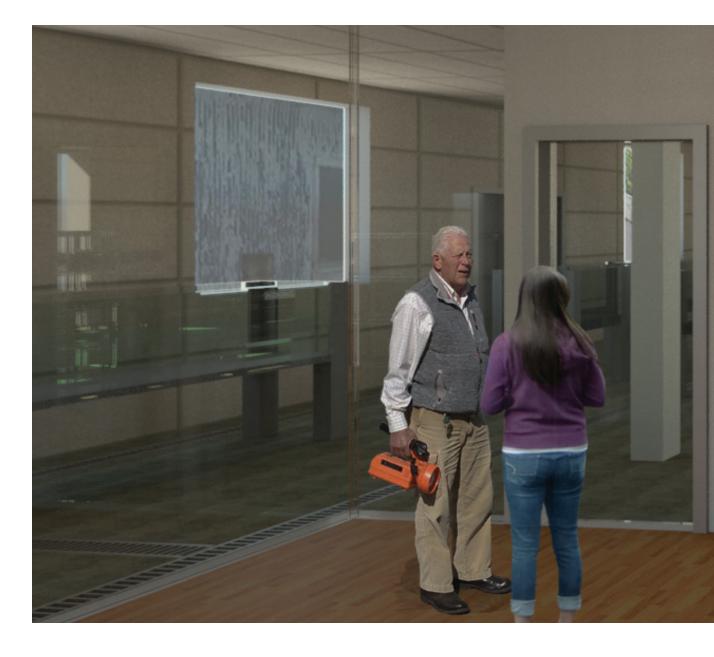
Layout Option 2





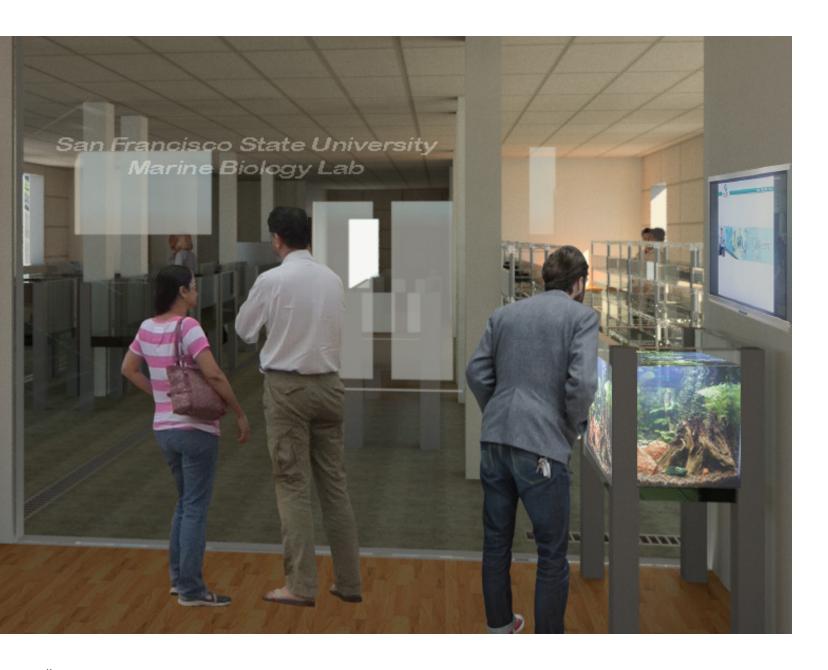
- designed to isolate the 90 gallon tanks so that there is more space to walk around them

Layout Option 3



"I want visitors to get a glimpse of the science that goes on in the building as part of the building experience."

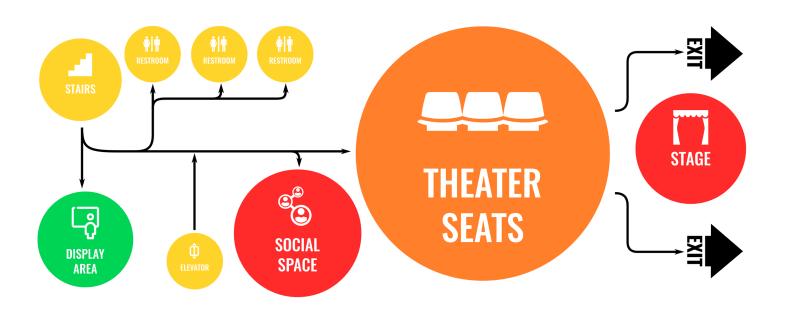
-Dr. Tomoko Komada



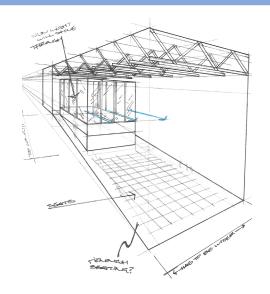
"Tanks for display that could hold herring since they are local to our site and could spawn in the tanks in winter as well. This might be a terrific exhibit and allow some research on spawning behavior and preferences as well."

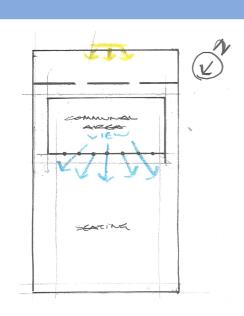
-Dr. Sarah Cohen

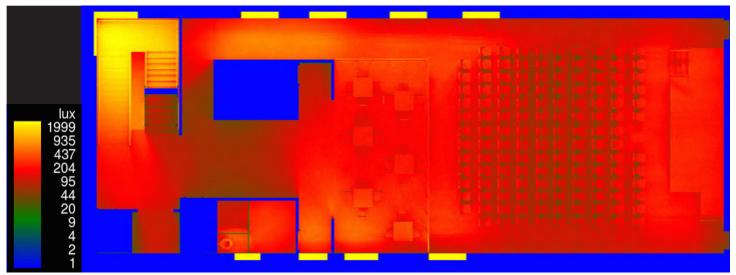
Second Floor



BAY







Light Study of Second Floor

"With regards to the seating and the stage, I would like to see flexibility in terms of seating arrangements... If we could have a flexible seating arrangement, the usage of space could be more multi-faceted."

-Dr. Jonathan Stillman



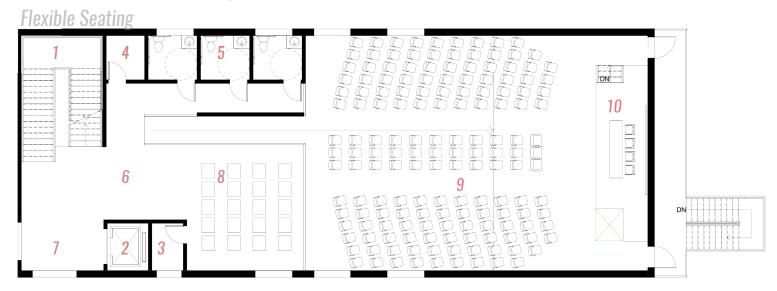


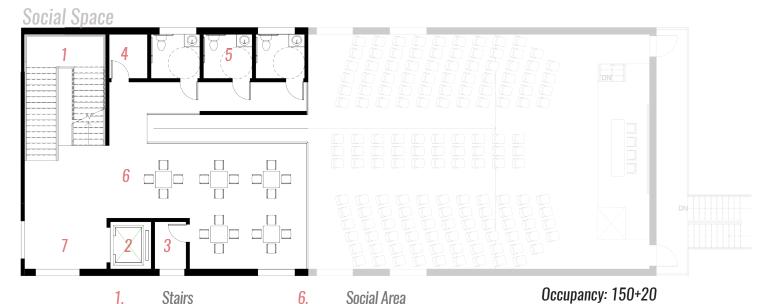
Existing Photo vs. Precedent Photo of Theater



Precedent Photo of Social Space

Second Floor Option 1





Historical Gallery

Flexible Seating

Fixed Seating

Stage

SCALE 1/8" = 1'-0"

7.

8.

9.

10.

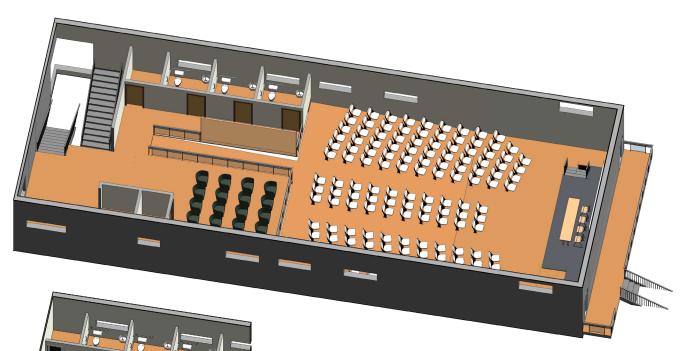
Elevator

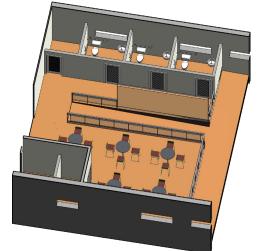
Storage

Restrooms

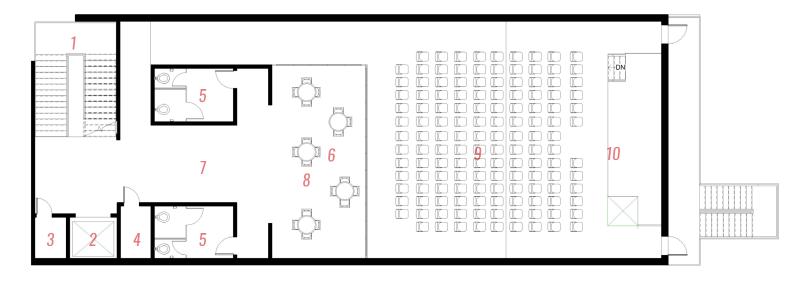
Mechanical Room

3.





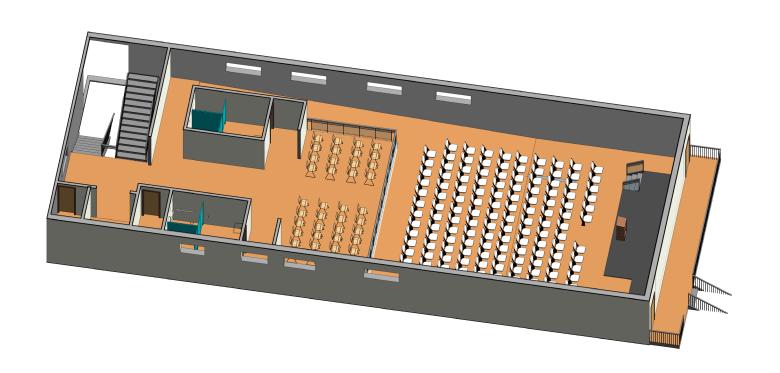
Second Floor Option 2



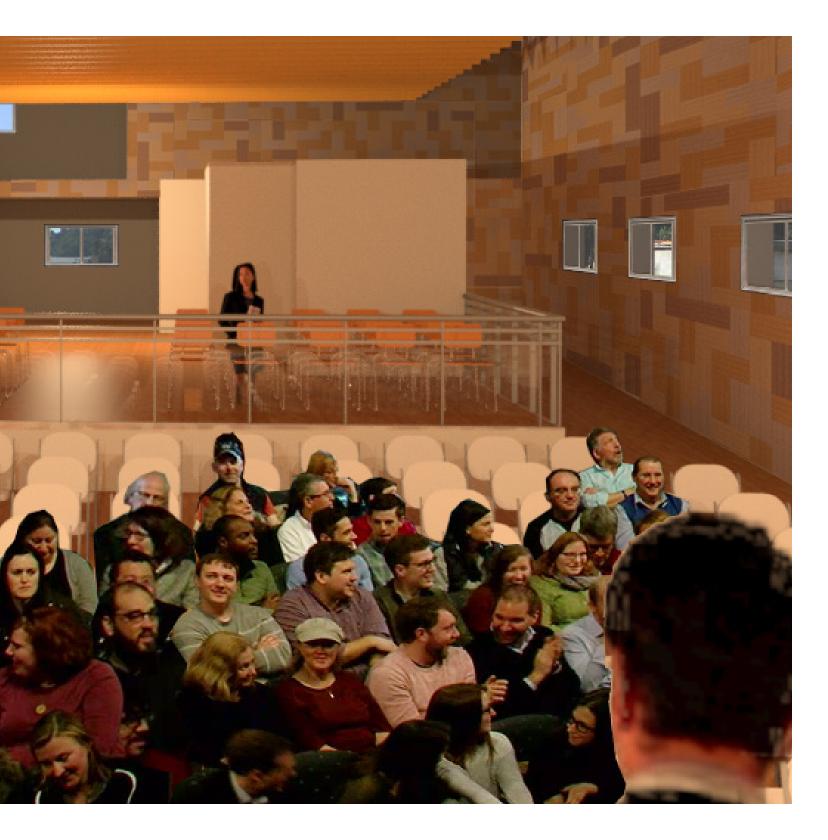
Occupancy: 140+44

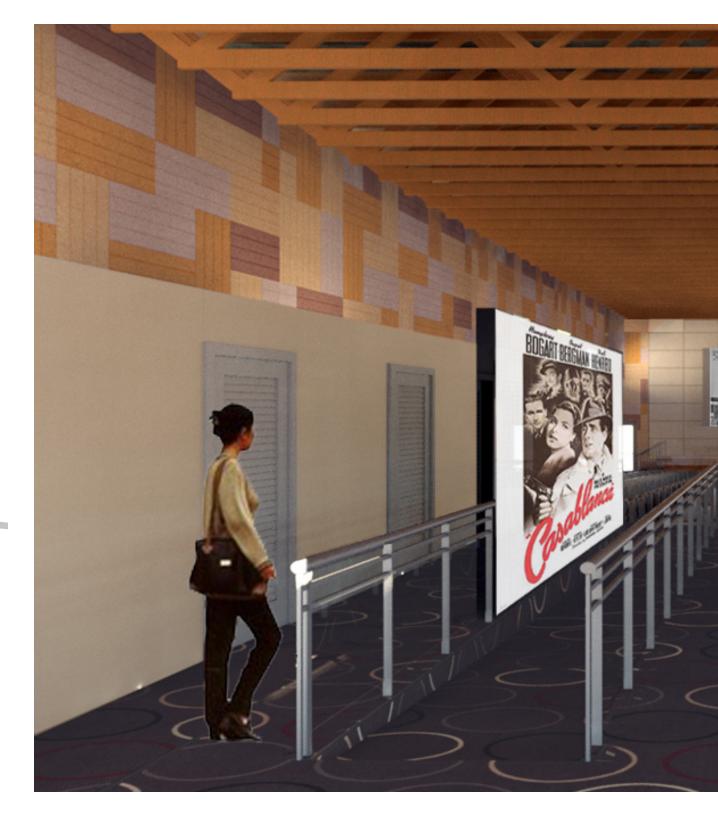
1. **Stairs** 6. Social Area 2. 7. Elevator Historical Gallery 3. Mechanical Room Flexible Seating **Fixed Seating** Storage Restrooms 10. Stage

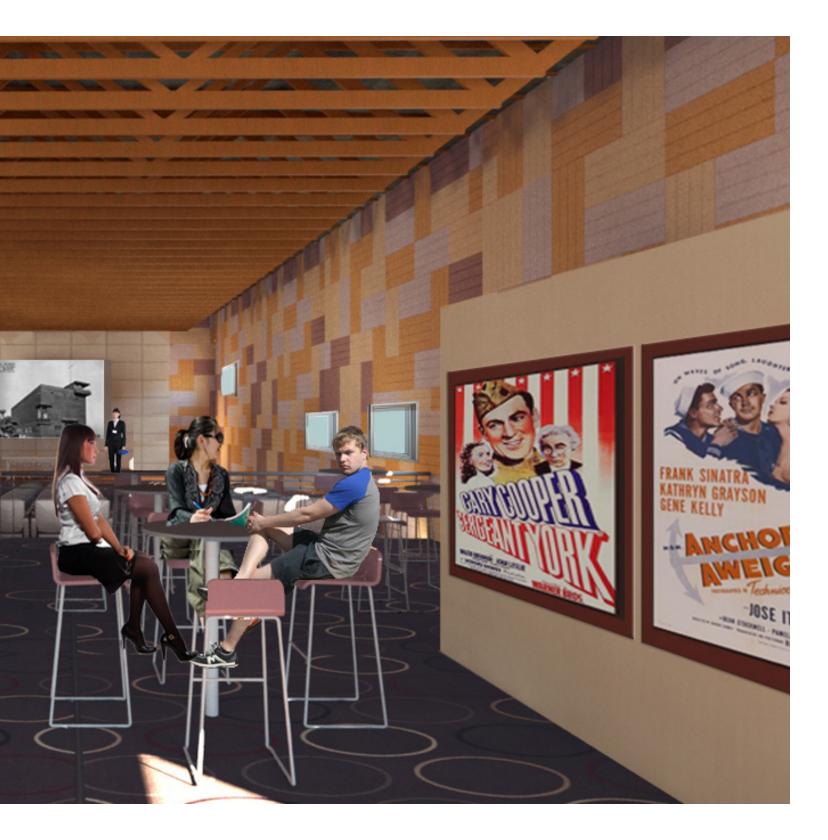


















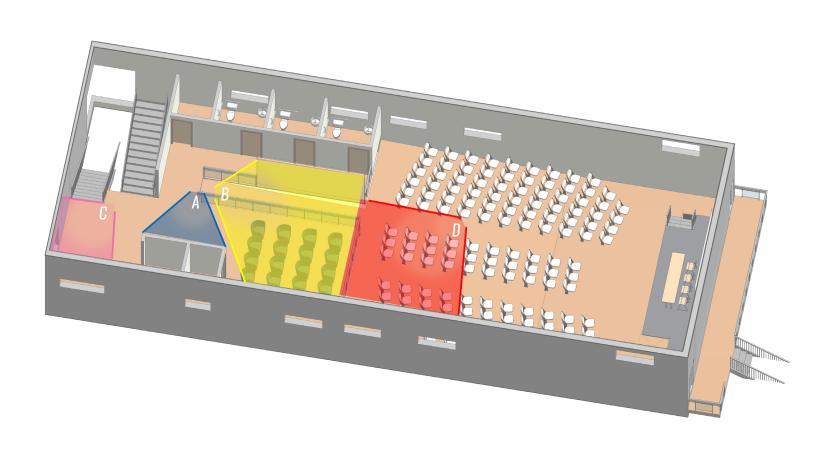
(C) Rendering of Social Space



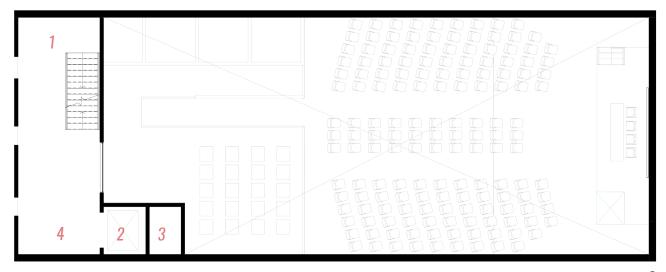
(B) Rendering of Bay View Window



(D) Rendering of Theater

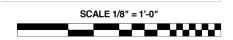


Projection Room



Occupancy: ~30

- 1. Stairs
- 2. Elevator
- 3. Storage
- 4. Historical Gallery





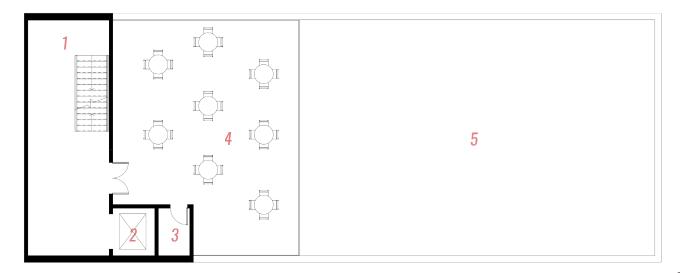


Existing Photo of Roof



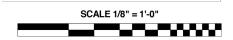
Precedent Photo of Historical Gallery

Roof Option



Occupancy: 30

- 1. **Stairs**
- 2. Elevator
- 3.
- Storage Occupiable Space
- Restricted Roof



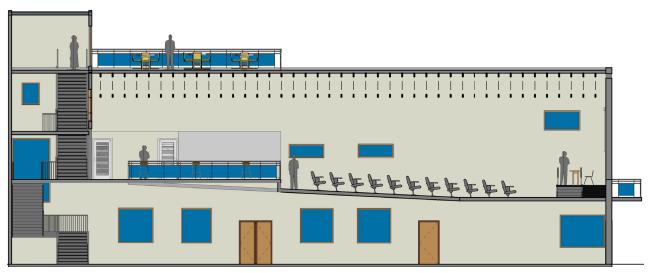




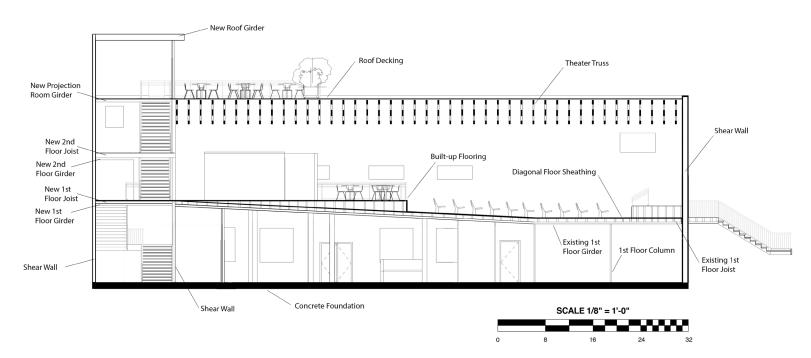
Existing Photo of Roof



Precedent Photo of Roof



Architectural Section



Structural Section

Project Cost Estimation

Project : RTC: TIBURON THEATER REDESIGN

Location : 3150 Paradise Dr., Belvedere Tiburon, CA 94920

06-06-2017

Division	Description	Amount	Remark
01000	General Requirement Works	_	Will Vary
02000	Existing Conditions	360,000	
	Demolition	incl.	Asbestos, Wall, and Frame demo
06000	Timber Framing	144,000	New Frame Members
07000	Thermal and Moisture	34,000	Insulation & Vapor Barrier
08000	Doors and Windows	48,000	
09000	Finishes	151,000	
	Exterior Façade	incl.	
	Carpeting	incl.	Theater Level
	Composite Deck	incl.	Roof Level
10000	Specialties	2,000	Restroom Equipment & Signage
12000	Furnishings	,	Theater seating, chairs, tables.
21000	Fire Suppression	15,000	Fire Sprinklers
22000	Plumbing	25,000	Subcontract
23000	Heating Ventilating and Air Conditioning	_	Subcontract
26000	Electrical	_	Subcontract
Sub Total		856,000	
	Overhead & Profit	208,000	
	Contingency	20,000	
	Total	1,084,000	
	TOTAL S	F \$/SF <i>BUDGET</i>	
	EXPECTED BUDGET 8,700	\$125.00 1,087,500	

* Notes:

* Construction Period: 16 months

* Additional \$200,000 for Elevator Installation

* Excluded HVAC/ELECTRICAL (Subcontracting Req'd)

General Requirements (CM, Engineers, Architects & Other Professional Fees Will Vary)

Standard Exclusions:

Site Work (Division 02)
Plumbing (Included) But Not Full Scope (Division 22)
Mechanical/HVAC (Division 23)
Electrical (Division 26)

Lab Equipment

Art Work & Gallery Display

Light Fixtures

Environmental Impact Report

REPURPOSE

Create a Presentation Space and Work Space for Researcher

RESTORE

Bring the Theater from the Past to the Present

INVIGORATE

Revitalize the Building and Invite the Community

COMMEMORATE

Celebrate the History and Nature of the Site

RTC Theater Design





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