



ROBERT FROST AUDITORIUM FORENSICS REPORT

HODGETTS+FUNG
MARCH 19, 2013

ROBERT FROST AUDITORIUM - FOREWARD



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FOREWORD

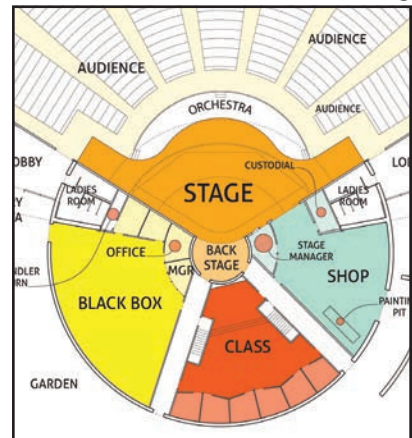
The Task

After serving the Culver City High School Campus for nearly fifty years, it is time to consider the renovation of the Robert Frost Auditorium. Although the building envelope has survived despite significant seismic events, the facility itself shows considerable wear from deferred maintenance and a tendency to appropriate existing spaces for unspecified uses. Major systems, such as air conditioning and lighting, have outlived their service life and are due for replacement with updated and more efficient equipment. Furthermore, the constricted spaces of the original design have proved to be both inefficient and inappropriate for their use.



03

This study brings together experts from a variety of fields in order to evaluate the present condition of the Frost, and to explore the many opportunities to re-align it with the high expectations of the parents, students, and teachers who use it.



1st Floor Plan - Drum

Consulting Team:

Hodgetts+Fung Design And Architecture
Englekirk Institutional - Structural Engineering
Theatre Projects Consultants
Sullivan Partnership - Mechanical Engineering
Mitze Productions - Theatre Operations
Mckay Conant Hoover, Inc. - Acoustics
Hughes Associates, Inc. - Life Safety
Cumming Corporation - Value Engineering

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ROBERT FROST AUDITORIUM - INTRODUCTION



INTRODUCTION

In 1964, Robert Lee Frost Auditorium opened to use at Culver City High School. The office of Flewelling & Moody designed the venue using two autonomous structures. The shell, composed of reinforced concrete in a folded-plate configuration, encloses the auditorium proper, and a simple two story masonry drum structure comprises the support space. The two structures are encased together by a glass façade that runs along the open face of the shell and over the roof of the drum.

The Auditorium works to facilitate a myriad of uses throughout each year. It serves the purposes of everyday assemblies as well as dance, music, film and theatrical performances from both CCUSD and public entities. Beyond being a venue for these things, it is also a teaching tool for the young performers, technicians and craftspeople attending Culver City Schools and involved in the Academy of Visual and Performing Arts.

Similar structures from the same period in Italy, Mexico and Australia were celebrated for their daring designs, but the Frost, which is no less daring, has received little fanfare for its almost five decades of existence. Architectural photographer Julius Shulman, notable for capturing images of the Case Study Houses, documented Frost Auditorium in a series of photographs between 1963 and 1965, which are now housed in the Getty Archives. In 1994, Flewelling & Moody received an Award of Merit from the AIA for the building, and it has even made a few Hollywood film appearances over the years.

Its most important role, however, has been and continues to be in the hearts, minds, and everyday lives of the students and faculty on the campus of Culver City High School.



Still from "The Power" (1968)

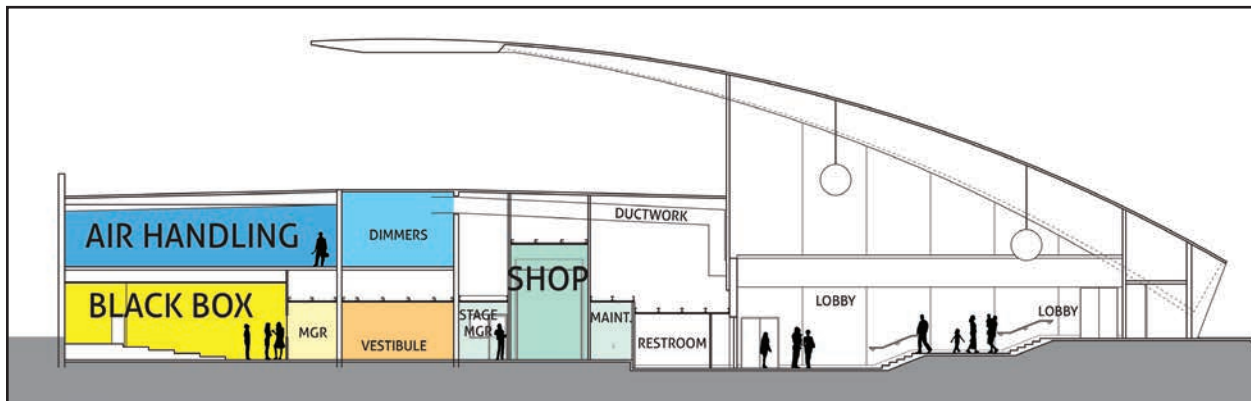
ARCHITECTURAL FORENSICS REPORT



ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

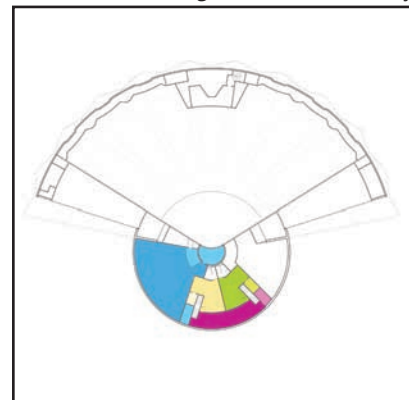
REPORT ON PHYSICAL AREAS

EXISTING INTERIOR SPACES

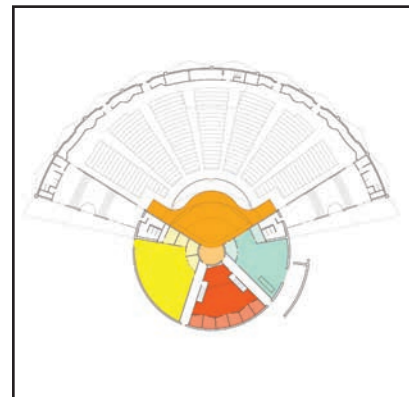


Section Through Centerline of Lobby

No.	Space/Room	Area (S.F.)	Location/ Adjacencies
101	Lobby	1,580	Campus side of building. House right.
102	Ticket Booth	47	In campus-side lobby
103	Women's Rest-room	227	Off campus-side lobby
104	NA (Powder Rm)		
105	Men's Restroom	161	Off campus-side lobby
106	Storage	53	Off campus-side Men's Room
107	Auditorium	15,300	Centered under shell fan
108	Electrical	112	Back of house
109	Janitor	153	Back of house
110	Stairwell to Control Room	102	Back of house
111	Storage	60	Back of house
112	Lobby	1,580	Public side of building. House left.
113	Ticket Booth	47	In public-side lobby
114	NA (Powder Rm)		
115	Women's Rest-room	227	Off public-side lobby
116	Men's Restroom	161	Off public-side lobby
117	Storage	53	Off public-side Men's Room
118	Stage	1,670	Centered under shell fan culmination
119	Vestibule	241	Most upstage point
120	Office/Sound Booth	83	Stage right between Vestibule and Shop



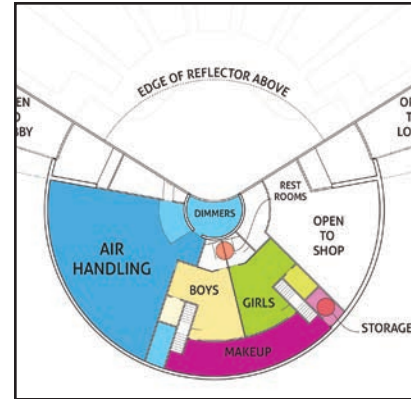
2nd Floor Plan



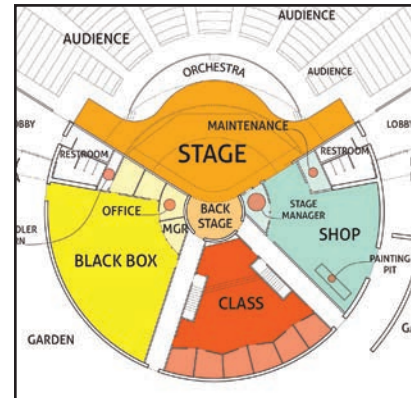
1st Floor Plan

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

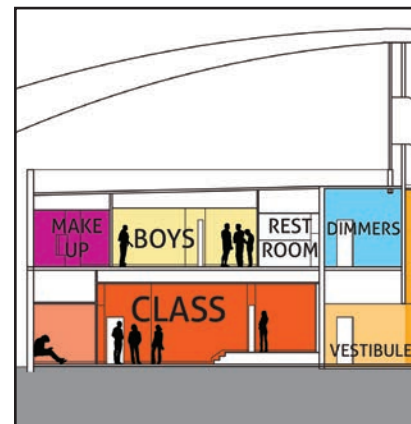
121	Scene Shop	1,019	Behind Stage right
122	Hallway	260	Vestibule to public side door in drum
123	Janitor Closet	73	In Shop
124	Classroom	1,274	Backstage in drum between 2 Hallways
125	Office	67	In Classroom
126	Practice Room-1	67	In Classroom
127	Practice Room-2	67	In Classroom
128	Practice Room-3	67	In Classroom
129	Practice Room-4	67	In Classroom
130	Practice Room-5	67	In Classroom
131	Stairs	53	Off Hall to campus side. Accesses 2nd floor Makeup Rm
132	Stairs	53	Off Hall to public side. Accesses 2nd floor Makeup Rm
133	Hallway	266	Vestibule to campus-side door in drum
134	Black Box Theatre	1,504	Behind Stage left
135	Office	60	In Black Box
136	Practice Room	73	In Black Box
137	Practice Room	57	In Black Box
138	Practice Room	79	In Black Box
201	Landing at Control Room	37	Elevated at back of house
202	Control Room	316	Elevated at back of house
203	Makeup Room	461	Top of stairs in drum
204	Mechanical Room	1,758	Off Male Dressing Rm
205	Electrical	172	In Vestibule space at 2nd floor
206	Wardrobe	49	Off Male Dressing Rm
207	Male Restroom	62	Off Male Dressing Rm
208	Female Restroom	62	Off Female Dressing Rm
209	Male Dressing Room	374	Off Makeup Rm, near campus-side stair
210	Female Dressing Room	376	Off Makeup Rm, near public-side stair
211	Wardrobe	59	Off Female Dressing Room
212	Storage Closet	69	Off Makeup Rm
302	Catwalk		On top of Reflector/Canopy



2nd Floor Plan - Drum



1st Floor Plan - Drum



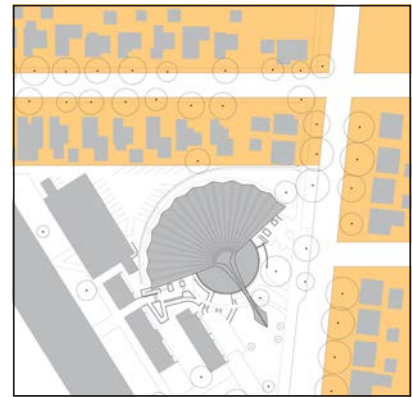
Section Through Center of Drum

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

1.0 NEIGHBORHOOD

1.1 Existing Conditions

Robert Frost Auditorium is open on one side to the secure campus of Culver City High School and is surrounded on its remaining sides by a quaint neighborhood of single family housing and 25 mph streets. The Auditorium has two lobbies accessible from either the public streetscape or the campus side. The back of the shell descends and lands close to the school property line along Elenda Street, leaving enough room for an entry courtyard. The back of the shell wraps around along the property line. It then arcs away leaving space for a small parking lot before pinching near to a campus building and reestablishing a secure line for the campus. A culvert runs around the perimeter of the back of the shell and is partially covered in low growing foliage. Many students live in the neighborhood and walk to and from school.



Site Plan - Context



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1.2 Observations

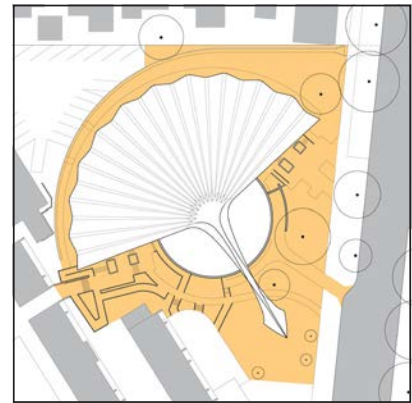
1. The security fencing and water runoff management are of concern in this environment due to the proximity as well as the nature of this type of neighborhood.
2. Many of the neighbors take pride in this building being in the neighborhood.
3. The activities taking place at Robert Frost would be of concern to the neighbors because it is a residential neighborhood, many of their children attend or did attend this school, there is a lack of dedicated parking, and there are open air courtyards.

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

2.0 GROUNDS

2.1 Existing Conditions

The location and design of the building designate it as a bisector between the public neighborhood and the secure Culver City High School campus. There is a lobby and courtyard for each of the two entries, one for performances open to the public and the other for campus access. Although the grounds are relatively flat, the courtyards have been terraced into three levels, running parallel along a slope which matches that of the interior aisles of the house. Each terrace consequently has a number of ramps and stairs with accompanying blue handrails. The middle terrace is level to the street and the ticket booth, and entry into the lobby is achieved by either going up or down to the next terrace by means of a short flight of stairs or ramp. There is a winding walkway that leads from a more eastern section of the street around to the campus side lobby. This walkway slopes down to the lowest terrace where the main entry to the Sony Black Box is also located. Procession along this path is impeded mid-way by a security fence. There is a loading area for the shop on the public side of the fence facing the street, which is screened by a 14 foot high wall. There are also two entry doors to the backstage areas and classroom, one on the public side and one on the campus side. There are large rectangular planters in the courtyards outside both lobbies, and the overall site is landscaped with various plants and medium to large trees. On the campus side there are classroom buildings immediately adjacent to the auditorium. A culvert runs along the exterior of the shell, diverting water runoff out to a catch basin on Elenda Street. The arm of the shell extends out near the sidewalk and along the main approach of the campus. Campus parking behind the structure is limited to about 25 spaces, and there is no dedicated parking for the venue.



Site Plan



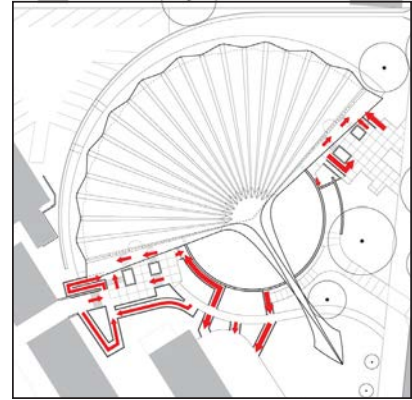
08

2.2 Observations

1. Re-engineering the courtyards for ADA compliance has caused a multitude of ramps to be cut into the site in such a way that makes this common space not optimal for any use or user.
2. The planters are degraded and seemingly not used for plantings.
3. The entry just on the campus side of the security fence is heavily used by students to access the Frost in general but also to enter the classroom in the backstage area.
4. Because the lowest terrace is below street level and worsened by the addition of a ramp, water has been an issue on the public entry side. Attempts to remedy have been made by an additional storm drain.

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

5. Entering the site along the arm, from the East the site steps down and then back up to the middle terrace, then back down again to go onto campus to the south.
6. Curiously, everything is symmetrically mirrored across an East/West running centerline of the building except for the exterior planters which were matched by copying them across the centerline of the building.
7. The shell arm is an attractive nuisance. It is a compelling vision from the street but its low slope brings unwanted student activities to bear upon it.
8. The vast acreage covered by the shell catches quite a bit of rainwater and demands competent management of runoff especially due to the proximity of neighboring residential properties.

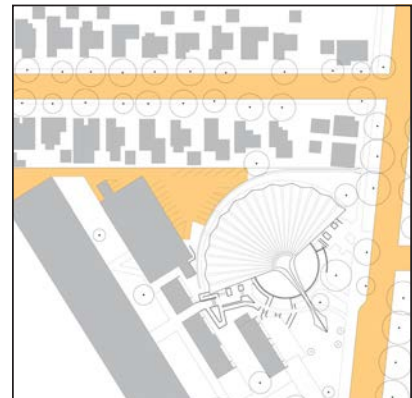


Site Plan - Elevation Changes

3.0 PARKING

3.1 Existing Conditions

Since the auditorium is located on the grounds of a high school campus, there is accessible parking for students and visitors. As the site is also within a residential neighborhood, there is 2 hour parking along the adjacent streets. Since the facility is predominately used by Culver City High School and Middle School there is little to no conflict in the lack of dedicated venue parking. Parking and access to the loading dock for the shop is from a small drive off Elenda behind a curved brick screen wall. Access to the High School campus parking lot is off Braddock Drive. The Middle School's neighboring campus at the end of Elenda also has a number of parking spaces available.



Site Plan - Parking Locations

3.2 Observations

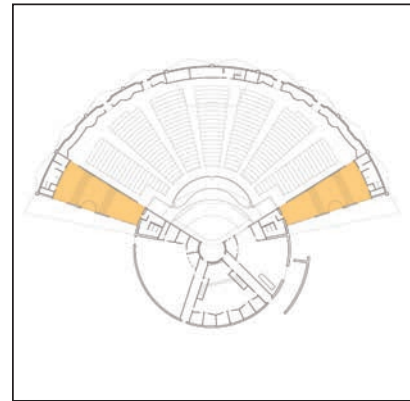
1. Any public rental of the venue may cause friction with the neighbors, as street parking would become more of an issue.
2. Access to the shop loading dock is accessed by driving across a busy sidewalk in front of the High School.
3. The wall screening the shop door makes it difficult for a truck of any size to back in to the loading area due to a tight radius turn.
4. Access to the plenitude of parking on campus is difficult as the entrance is around the corner, not easy to find, and mostly not adjacent to the facility.
5. Often, there is a car parked in the shop loading area blocking both the loading door and the dumpster.

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

4.0 LOBBIES

4.1 Existing Conditions

The symmetrical design of the building plan mandated two matching and mirrored lobbies, one on the street side and another on the campus side. The interior is open to a roof created by one bay of a vaulted shell rib. The lobbies are encased in a façade of east facing glass panels and separated from the house by a staggered stud partition wall packed with insulation that runs from the floor to the bottom of one of the shell ribs at the ceiling. The floor is terraced to 3 levels separated by stairs. The steps match both the courtyard steps and the interior slope of the house seating rake. The difference in height between each terrace is approximately 2'4". There is a ticket booth on the middle terrace with windows for selling tickets to patrons on the exterior of the glass façade wall. Entry and exit to both the exterior of the building and the house are from either the uppermost or lowermost terrace. The lowest terrace, closest to the center point of the building, provides access to a ladies restroom through the brick wall, on the internal side of the drum structure as it passes through the glass façade and under the shell. There is also a trophy case mounted on the interior wall at this level. The upper terrace, furthest from the centerpoint of the building is where a mens room and a drinking fountain are located.



1st Floor Plan - Lobbies

4.2 Observations

1. Lighting is poor and only provided by lights on the underside of a mechanical soffit built into the partition wall.
2. The ticket booths have no lid which makes it difficult for the sellers to hear patrons on the exterior if there is much activity in the lobby proper.
3. The trophy cases are pretty much defunct.
4. There is no real lobby-ness about the space and they act more as hallways.
5. There is no buffer between the lobbies and the house which surely causes many light and noise intrusions during performances.
6. The general appearance of what could be a grand space is humdrum and dated.



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ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

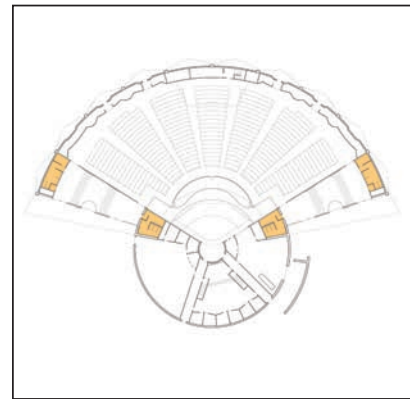
5.0 RESTROOMS

5.1 Existing Conditions

There is a mens room and a ladies room on each side of the house, off the lobby. The mens room is located near the back of house entrance/exit on the uppermost terrace of the lobby. The ladies room is on the lowermost terrace, immediately outside the entry/exit from the house near the most downstage portion of the stage wings.

5.2 Observations

1. All restrooms appear to be somewhat recently remodeled.
2. For the auditorium capacity both the ladies and mens restrooms have fewer fixtures than needed.
3. There are complaints about visual and aural disturbances with the proximity of the restrooms to the house entry doors.

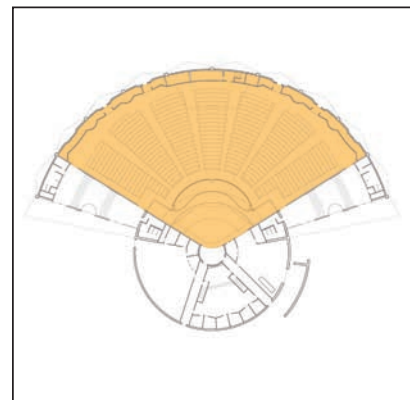


1st Floor Plan - Restrooms

6.0 HOUSE

6.1 Existing Conditions

The original drawings define the capacity of the house at 1324 seats. Main entry is from either side of the house through matching lobbies at either the back or front of house. There are also 4 exits across the back of the house directly to the outside. The auditorium is completely housed under the shell, which vaults up from the back of the house to a node 50' over the most upstage point. The shell spans from this center point to the back of house with a radius of 124'. There is an elevated control booth at the center of the back of the house. There is an interior acoustic partition wall offset from the back wall approximately 8' behind which there is a variety of storage and mechanical access. The theatre has somewhat of a proscenium stage with an arced apron. The orchestra pit is semi-sunken and radiates around the lip of the stage at a distance of 8'. There is a sound reflector over the stage which is hung from the shell. The reflector also houses some stage lighting, speakers, and a catwalk on top from where house lighting is shone and reflected off the shell in an effort to create an ambient glow. There is a point near center stage from which the lip of the stage, the overheard reflector, and aisles of the house and seating radiate.

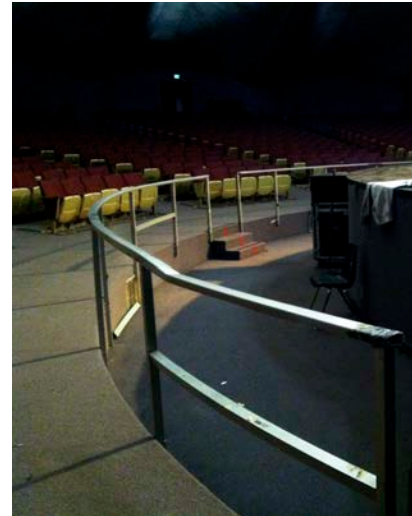


1st Floor Plan - House

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

6.2 Observations

1. The insulation on the inside of the acoustic wall is exposed, torn, dirty, and falling off the walls.
2. Many of the rooms behind the acoustic walls are used for storage but without any sense of organization, or shelving for that matter.
3. There are no light locks or buffer spaces at any of the entrances.
4. The only crossing aisles are at the very back and very front of the house.
5. The aisle across the front of the house is very wide and worsens the already slight chance of intimacy in the venue between performer and audience.
6. The low rake of the seating and a lack of staggering is cause for many terrible sightlines.
7. The K-13 flocking has collected a lot of dust and has a negative appearance.
8. The railing around the orchestra pit is badly bent, warped, and cobbled together.
9. The stage is wide enough that the step access to the stage on the wings is too far out and ad hoc steps have been built and added nearer to center stage. These new steps block access to the orchestra pit.
10. The existing speakers don't seem to work as assemblies bring in a portable speaker to use.
11. There are a multitude of lighting and/or lack of lighting issues throughout the house. Including front lighting being too flat, and access to 4 of the 6 positions having conflict with fire sensors so they cannot be accessed without first calling the fire department.
12. Fire sensors are an issue in show production as they are not zoned, so productions cannot use anything that may set them off such as hazers.
13. Load in and load out, since the back doors cannot be used without also opening security fences, is difficult for assemblies.
14. House lighting is unfavorable and inadequate.
15. Orchestra pit sometimes floods.
16. There are a number of things stored out in the open in the rear cross aisle at the back of the house.



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ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

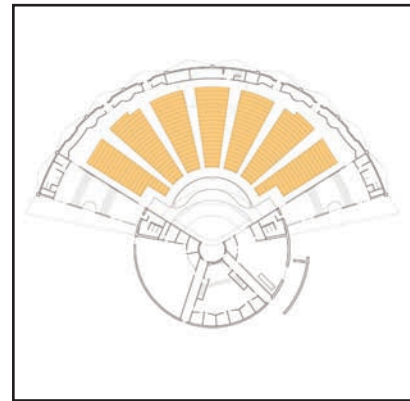
7.0 AUDIENCE SEATING

7.1 Existing Conditions

The floor of the auditorium is composed of exposed concrete with cast-in-place risers in the seating areas, which taper to merge with the downward sloping concrete of the aisles. Cast iron brackets affix the seating to the face of the risers except at the aisle, where a termination strut supports the seat directly from the floor. The seating and aisles radiate around a point near center stage.

7.2 Observations

1. While the integration of structure and seating is highly efficient, any attempt to reconfigure the existing seating must absorb a high initial cost.
2. The low angle of rise, probably due to wheelchair concerns, is less than ideal from a sight-line point of view.
3. Many of the seats in the back rows have been removed to salvage and replace other broken seats throughout the house.
4. The extremely wide arc around the stage incorporating audience seating, mixed with poor acoustics in the space creates difficulty for both audience to hear and performer to project.
5. Because the aisles radiate from center stage, becoming extremely wide at the back of the house, seating capacity is lost. This also leaves performers looking off stage with the sensation of a sparsely populated house.
6. The facility is also used, and desired to be used for smaller audiences of 350-500 but the seating layout is not conducive to this.



1st Floor Plan - Seating

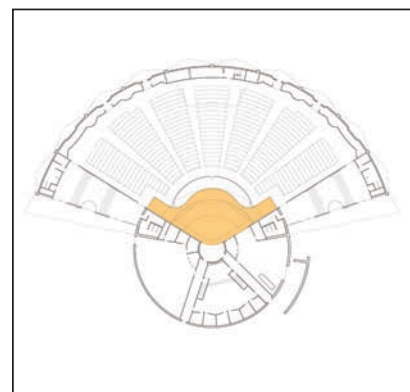


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8.0 STAGE

8.1 Existing Conditions

The stage is elevated 4'-6" above the orchestra pit and 3'-0" above the lowest seating level floor height. It is also 3'-4" below the highest floor height at the back of house. The stage is an overall triangular shape, coming to a point at the most upstage part. At this upstage point there is also a circular vestibule with a radius of 9'-6" which has 2 doors each of which open to hallways that radiate to the exterior of the drum structure. The long edge of the triangle is facing the audience and is not a straight line. The front edge of the stage is an arc radiating 20' 6" from center stage then flaring back out to side wings. These wings flare out to run parallel with the partition wall between the house and lobby at 9' wide before squaring off. The overall distance between these two most out jutting wings is 78 feet at the



1st Floor Plan - Stage

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

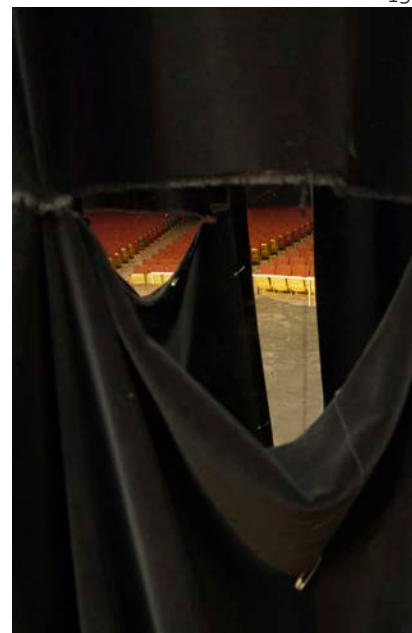
front edge. The stage is somewhere between being either a thrust or proscenium. There is a sound reflector over the stage from which curtains are hung that creates somewhat of a proscenium effect. The protrusion of the arced stage front into the audience with the wide expanse of audience seating creates somewhat of a thrust effect. At stage right there is a backstage managers booth with a door and window onto the stage. There is also a large 14' high by 10' metal rolling door to the shop. The floor of the stage is a wooden deck built over a concrete slab on grade.

8.2 Observations

1. Because the stage is multipurpose the dancers have concerns about cutting their feet on loose items and screws as well as the general floor being sub par for their needs.
2. Many audience members feel that the lip of the stage is too high.
3. The shape of the stage is awkward for productions of all kinds.
4. The wings have been deemed relatively useless and at best are used as a backstage in plain sight.
5. One of the wings has been modified to incorporate an accessibility ramp which leaves the wing too narrow to use in any fashion.
6. The flare out of the wings in plan was originally a radius corner. It is now a straight line leading to the conclusion that it was in-filled at some point for unknown reasons.
7. There are multiple pockets in the stage floor that originally held microphones and/or outlets which now don't seem to be functioning.
8. Ad hoc steps have been added to the stage front.
9. There is a grand piano on stage that has seemingly been there since the opening of the facility as it can only fit through the shop door, but the shop is apparently always too overcrowded to accept grand piano storage.
10. All existing curtains are torn and/or threadbare.
11. The soft goods behind the stage work to worsen the difficulties performers are having projecting into the space.



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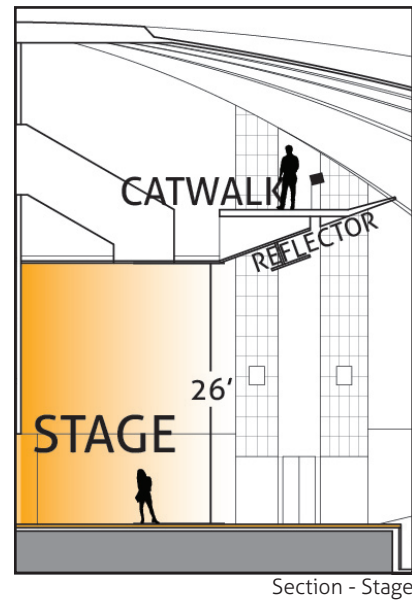
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ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

9.0 REFLECTOR & CATWALK

9.1 Existing Conditions

The reflector hangs over the stage from rods attached to the shell. It is also attached along the back edge to the partition wall that separates the house from the lobbies and drum spaces. Its shape in plan is a 40'-6" radius arc with a center coinciding with that of the shell. It is composed primarily of steel beams with a metal lathe and plaster finish. It houses a series of fluorescent lighting as well as some stage lighting. The grid that hangs these lights is radial to match that of the reflector itself. There are also speakers that hang from the front of the canopy to project to the audience. The curtains on stage also hang from this structure. There is also a large duct and fan that connects the bottom of the canopy to an exterior vent. This was the original design for a fire damper as required by code. On top of the canopy are perched a series of lights which illuminate the ribbed roof structure and create an ambient glow in the house. There are over 50 light fixtures in two rows stationed there. The catwalk to get to these lights is accessed from the second floor mechanical room up a fixed ladder to the roof level, then up another short fixed ladder to a door through the partition wall into the house above the canopy.



Section - Stage

9.2 Observations

1. The original design gave the reflector a chance of working but has since been modified and the new front curtain obscures sound instead.
2. Only approximately half the lights used to illuminate the shell are used and less than that work.
3. Limited access to the top of the canopy creates difficulties with upkeep of the lights.
4. The radial lighting grid makes it difficult for lighting designers to learn the trade and design even simple lighting schemes.



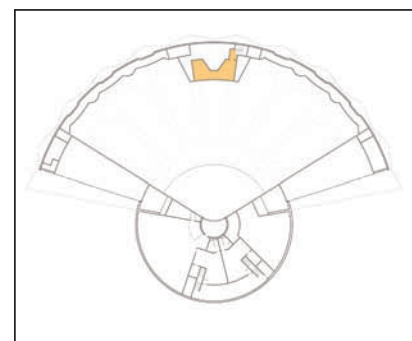
10.0 CONTROL / PROJECTION BOOTH

10.1 Existing Conditions

The control booth is elevated and enclosed at the center of the back of house. The room has a ceiling of 8'. It is accessed by a stair that is recessed behind the acoustical wall. There are a series of small windows that have views of the stage. A small rack contains what exists of the facilities production accoutrements.

10.2 Observations

1. Almost everything in this room seems cobbled together.
2. There is an overall sense of disrepair with holes in walls,



2nd Floor Plan - Control Room

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

- 3. paint peeling, bare wires, exposed circuitry, etc.
- 3. There is an absolute lack of any kind of storage or shelving. Lighting fixtures, and other technical theatre objects are on the floor or stashed and piled in corners.
- 4. Temporary folding tables are being used for mixing boards, table lamps, backpacks, books, lunch sacks, a computer monitor, etc.

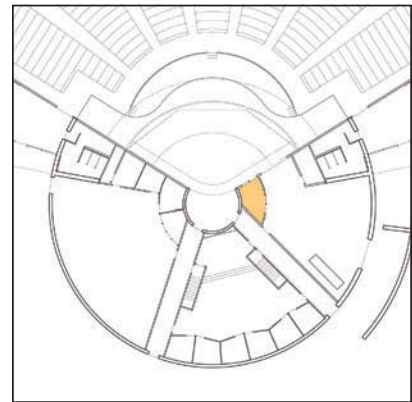


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11.0 STAGE MANAGERS STATION

11.1 Existing Conditions

The Stage managers station is located in the back of stage right and has a door and window onto the stage. It is sandwiched between the stage vestibule, the stage, the shop, and one of the radial hallways. It is a pass through space with another door and window into the shop. There seems to at one point have been an intercom system between the Control Booth and here.



1st Floor Plan - Stage Manager

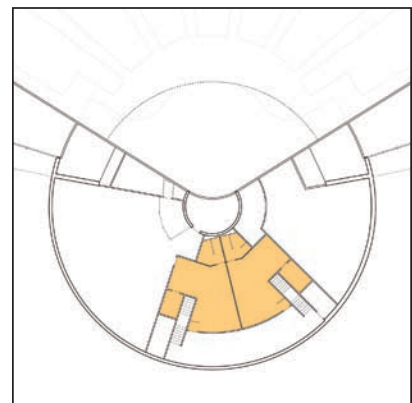
11.2 Observations

- 1. The electrical and intercom systems here look defunct.
- 2. This small office serves primarily as a pathway to the stage rather than a proper office, and is choked with displaced equipment.

12.0 DRESSING ROOMS & ADJACENT RESTROOMS

12.1 Existing Conditions

There is both a boys and a girls dressing room with matching restrooms on the second floor of the drum structure behind the stage. From the stage, they are reached by exiting through the upstage vestibule through either of the two doorways, then down the hall and through another door. The door opens to a flight of stairs to the second floor, turn 180 degrees at the top and pass briefly through the makeup room into one of the dressing rooms. The makeup room is shared and connects the two dressing rooms as an open expanse between the two sets of stairs. From the vestibule, if exiting to the hall stage left and up the stairs is the boys dressing room. The girls Dressing Room is a mirrored space nearer the opposite stairs accessed by exiting to the other hall at stage right. Both rooms have a small wardrobe closet and additional cabinets against the walls.



2nd Floor Plan - Dressing Rooms

12.2 Observations

- 1. The fans in both restrooms sound like lawn mowers.
- 2. Both restrooms are dated, dirty, and run down in general. There are cardboard boxes being used as trash receptacles

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

- and evidence of the drain line in the floor backing up.
3. The girls side dressing room is being used fully as wardrobe support and sewing space.
4. All storage spaces and cabinets are overburdened with things.
5. Many cabinets are broken, don't latch, stay closed, etc.
6. The stage route from this location is terrible with multiple doors, turns, and a narrow and steep staircase.

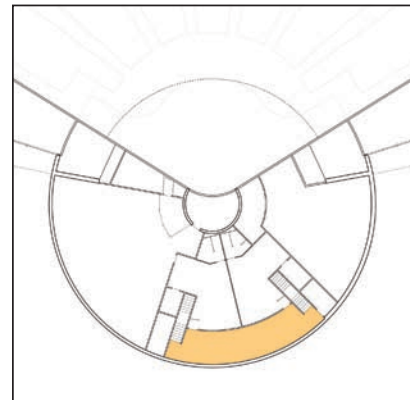


17

13.0 MAKEUP ROOM

13.1 Existing Conditions

The makeup room is behind the stage, from the vestibule down one of two hallways and up a flight of stairs on the second floor of the drum structure. The room itself arcs around the exterior wall of the drum and connects the two dressing rooms and stairwells at either side. There is a chair height counter running against either wall with 6 stations on the interior wall and 9 against the exterior wall each with its own mirror and fluorescent lighting. There is also a full length mirror and light at either end of the counter against the exterior wall.



2nd Floor Plan - Makeup Room

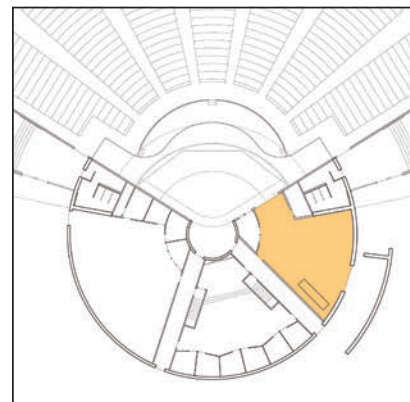
13.2 Observations

1. There are ad hoc clothes racks floating around the exits at the stairs.
2. An oscillating fan is perched near one end of the makeup counter hinting that the space may be too warm at times.
3. The plan of the space seems to be adequate.
4. Other than the fluorescent lighting there were few complaints about this space.

14.0 SHOP

14.1 Existing Conditions

The shop is on the main floor of the drum structure behind stage right and is the only double-height space in the drum where there is no second floor space above leaving ample head room. There is a large metal rolling door both to the exterior loading dock and onto the stage. There are also smaller regular doors into the hallway and the stage managers booth. The room is overall pie shaped in plan with the stage managers booth at the point and one back corner lopped off to allow space for the lady's room accessed from the lobby. The loading dock faces Elenda Street, on the public side of the building façade. A brick screen wall was designed and built with a 12' offset from the building to obscure this fact. One corner of the shop is a loft for storage with a work bench, and tool storage, as well



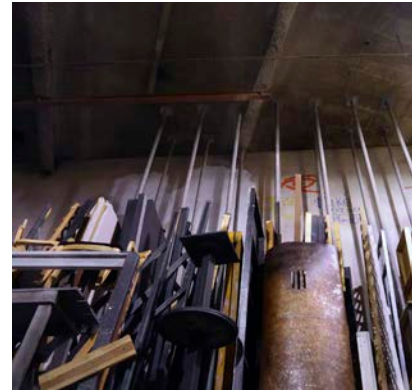
1st Floor Plan - Shop

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

as a shop sink underneath. Against the other side there is flat storage running from floor to ceiling. A loft space has been built here as well, eliminating space for tall flats but additional space for shorter pieces. On the floor under this loft, between the flat storage and the rolling door to the loading dock is a painting pit measuring 13' deep and 13' long. There is also existing rigging beam at the ceiling although no rigging gear seems to exist. There are a number of bins and rolling bins under the loft used for storage.

14.2 Observations

1. The painting pit is covered by storage and unused, signaling a failing to recognize and utilize it for the purpose for which it was built.
2. The painting pit is full of what appears to be old scrap cutoffs and other trash.
3. When last viewed the pit had a small amount of standing water on the bottom. There is quite a bit of rusted metal including the metal beam that holds the pit access door in place.
4. There is insufficient provision for the orderly monitoring of hand tools.
5. The roll-up door is seldom used, as evidenced by the clutter of sets and equipment clogging access to it.
6. Unloading large objects at the loading dock would prove difficult as entry is restricted by two tight radius turns between the screen wall and the building.
7. The only way to get large objects onto the stage is directly through the shop which would prove frustrating due to the condition of the shop, no dedicated route other than through work space, and the tight turns both into the shop and onto the stage.
8. Wooden storage lofts for scenic elements have been crowded into the corners, further confusing the utilization of the space. The spaces beneath them are dark and for the most part unusable since there is no secondary source of light.
9. The irregularity of the space has resulted in a chaotic utilization, with no clear zones for different types of activity, which has been exacerbated by the absence of staff supervision.
10. The mercury vapor lamps are the sole source of lighting, and as they take up to five minutes to become active, the absence of immediate lighting creates a situation in which maintenance and more spontaneous access is discouraged.
11. In windy conditions the roll-up doors on both sides of the shop can vibrate, creating noise which can be heard on stage.
12. There did not appear to be any provision for dust extraction or removal of vapors from the paints, solvents, and glue used in the construction of sets and props.



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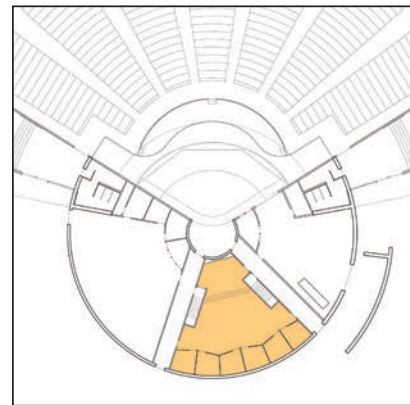
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ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

15.0 CLASSROOM

15.1 Existing Conditions

The classroom is directly behind the stage and occupies the middle pie shape on the main floor of the drum structure between the two hallways. It is also directly underneath both the makeup and dressing rooms. The space was originally designed as a rehearsal space with an elevated platform in the point of the pie shape and it is equipped with a motorized projection screen. In the back of the class, an array of 6 small practice rooms span across the outside wall. These small spaces have since become individuated into a handful of different uses. Two rooms are used as a recording studio with one room for the engineer and the other for a performer. A third is used for storage, a fourth as a lounge, another as an editing suite, and the last as the theatre instructors office. The room is used primarily as a classroom/lecture space, for which it seems well suited.



1st Floor Plan - Classroom

15.2 Observations

1. Noise and vibrations are very evident in this space, since much of the ductwork from the air handling units descends from the 2nd floor through the ceiling immediately outside the entry door.
2. The placement of the platform at the apex of the space creates a useful presentation space for lectures.
3. The location of the offices is convenient for instructors.
4. If rehearsal or a production is going on there is quite a bit of noise transference from the hallways and upstairs dressing rooms into this space.
5. There are no windows, and very little capacity to bring fresh air into the space since only one of the doors is on the campus side and can be left propped open.
6. Apparently this space can get unbearably hot.

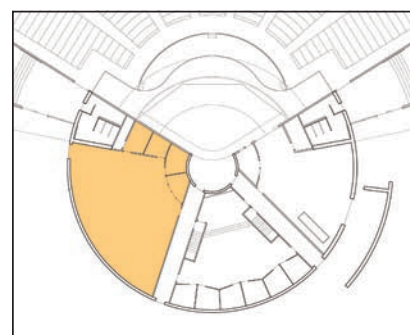


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16.0 BLACK BOX

16.1 Existing Conditions

The Black Box is a roughly triangular space which has been converted from a band-room practice space to a performance space by the addition of moveable risers, black curtains, and a rudimentary lighting grid. With a ceiling height of just over twelve feet, and minimum acoustical treatment it resembles Off-Broadway theaters in the 1960's. It is located on the main floor of the drum structure behind main stage left. A 5' wide double door leads to the courtyard adjacent to the drum and outside the campus-side lobby. Another single door leads to the SE radial hallway. There are also 2 small offices and a storage closet behind some of the curtains. Off the storage closet



1st Floor Plan - Black Box

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

there is a large air return that brings air from the auditorium up to the 2nd floor mechanical room. Students use the space for both musical and dramatic productions which do not require elaborate settings or lighting, and where the intimacy and lack of "formal" arrangement acts to reinforce the experience of experimental theater.

16.2 Observations

1. There is little or no backstage space, making it difficult to stage entrances from stage right to stage left.
2. The single door opening to the exterior has no light lock.
3. Entrance doors are conventional in size, limiting the size of sets and props that can be utilized.
4. Retrofit light pipe is close to ceiling which limits the positioning of stage lighting.
5. There is no access to the shop.
6. The immediacy and size of the air return shaft off the storage closet brings quite a bit of HVAC noise intrusion into the space when it is on.
7. There's no closed, sound proof booth from which to operate controls and manage the production.
8. The risers for the audience appear to be adequate, but probably do not conform to ADA requirements.



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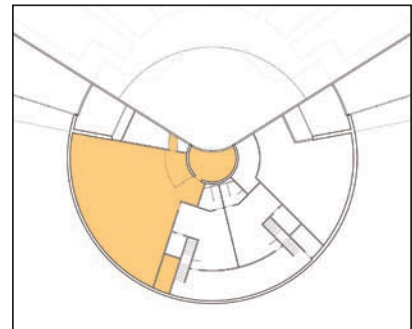


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17.0 MECHANICAL ROOM

17.1 Existing Conditions

The mechanical room is located on the 2nd floor of the drum structure directly over the Black Box space and adjacent to the boys dressing room. It is a raw space with concrete floor, 2 large air handlers, a lot of sheet metal ductwork, and some open air vents to the roof. There is a door from this room into the space above the stage vestibule which is a small 9'-6" radius circular room where many of the dimmers and electrical circuits are located. There is also a cage in the mechanical room through which there is another door. Through this door is a fixed ladder that goes through a hatch in the internal part of the drum roof behind the glass façade to access the canopy and the roof.



2nd Floor Plan - Mechanical Rm

17.2 Observations

1. Most of the ductwork looks original, although a few sections appear to have been replaced.
2. There is a gracious amount of open floor space.
3. What appears to be major electrical service is run through pipes along the floor of this space and into the circular interior room.



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ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

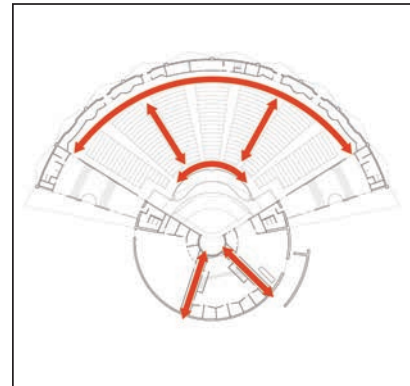
REPORT ON PHYSICAL SYSTEMS

18.0 ACCESS / LOBBY CIRCULATION

18.1 Existing Conditions

Circulation throughout the Frost Auditorium is largely dictated by the pure geometry of the facility, and generally conforms to radiating lines from the centerpoint of the building itself. Circulation is also constrained by the general symmetry of the building elements, in particular the intersection of the circular back of house structure with the enclosing walls of the shell structure above, which effectively divides the Lobby into North and South entrances.

Circulation within the bifurcated lobby consists of two symmetrically disposed multi-level terraces which provide access to the raked auditorium floor by means of entry doors positioned at regular intervals. Restroom facilities are positioned at the high and low ends of each lobby and are separated by ranks of wide stairs which occupy the full width of the lobby. There is no provision to cross from the East to the West lobby within the structure.



1st Floor Plan - Circulation

18.2 Observations

1. Lack of circulation between lobbies is a cause of confusion causing theater patrons to step outside and circle the back-of-house structure in order to access the adjacent lobby.
2. Stairway access to the restrooms and their position at extreme ends of the lobby creates a potential conflict with current ADA requirements.
3. There are no light or acoustic locks on the entry doors to the auditorium resulting in distracting pulses of light and sound during performances.
4. The lack of wayfinding graphics identifying the tiers or sections of the auditorium beyond causes confusion.

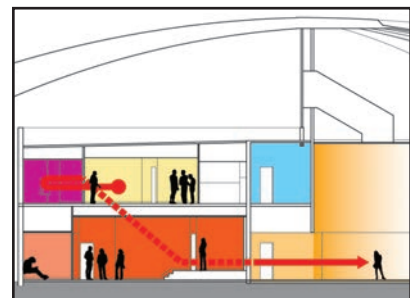


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19.0 ACCESS / BACK OF HOUSE CIRCULATION

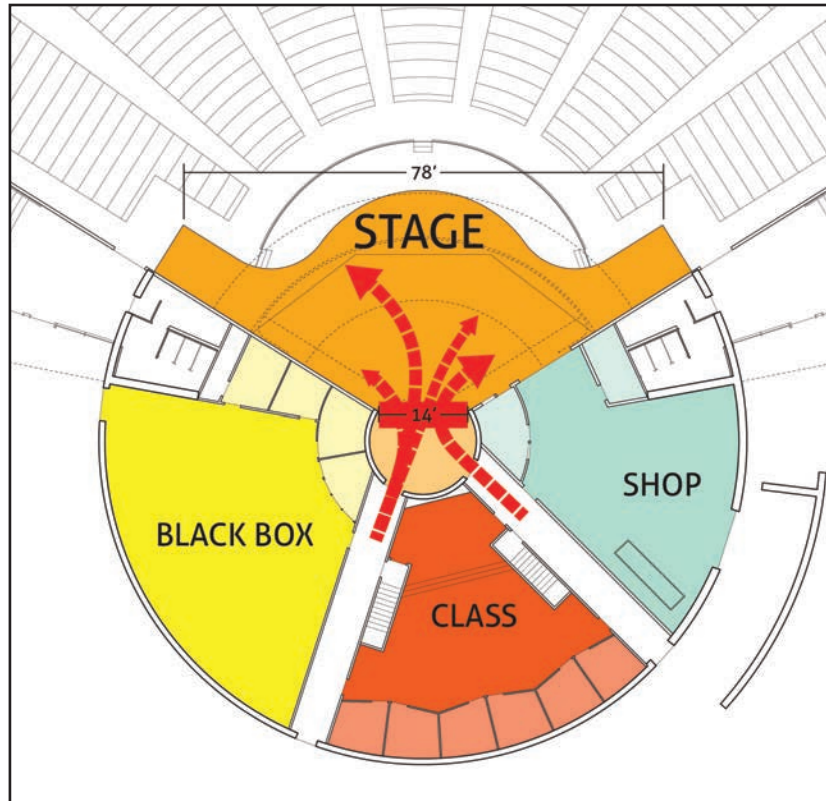
19.1 Existing Conditions

Two 6' wide hallways, one from the public and another from the campus side, extend from the periphery of the backstage drum-like structure to a node at the center of both the shell and drum structures. Doors from these hallways provide access to three pie-shaped rooms of similar dimensions which serve as a classroom, a "Black-Box" theater, and a scene shop. A stair from each hallway gives access to the second floor, which is once again divided into three similar rooms, assigned to mechanical systems, make-up and dressing rooms, with the third space forming a void over the scene shop.



Section - Stage Route

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS



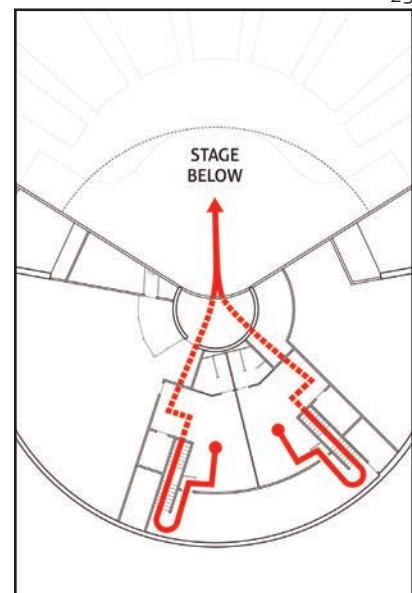
Plan - Stage Access



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19.2 Observations

1. The radial location of the hallways creates awkward interior rooms with compromised functionality.
2. As there is no provision for circumferential circulation on the ground floor, actors and technicians wishing to cross from Stage Left to Stage Right must first go up one of the stairs, then cross the intervening dressing room before descending to the other side.
3. The hallways do not provide immediate access to the stage area.
4. The hallways and terminal doorways are not wide enough to accommodate a grand piano which requires accessing the stage only through the shop area which in turn compromises the utility of the shop.
5. Security requirements are complicated by the layout of the doors and keying systems causing confusion and delays.
6. "V" configuration results in both hallways converging at the same inaccessible point.



Plan - Stage Route

ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

20.0 MULTIPURPOSE SPACE

20.1 Existing Conditions

Frost Auditorium is used in a variety of contexts. For the Culver City High School it is filled to capacity twice for every assembly at least four times a year. It hosts Back to School, Open House, and Financial Aid parent meetings, student/community presentations, and spelling bees. The Middle School uses it for theatrical and musical performances, and the Elementary school uses it for music performances twice a year. There is also a history of renting the venue to outside entities for gatherings, presentations, screenings, etc.

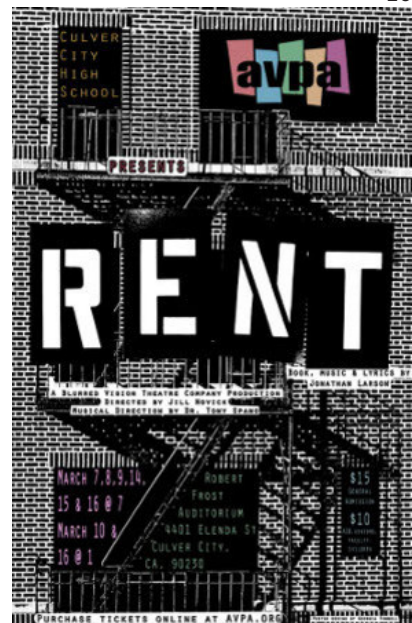
The most common user of the space is the Academy of Visual and Performing Arts (AVPA). The classroom in the drum structure is used by the theatre faculty and incorporates their main office. There are also multiple dance, theatre, and drama classes held in the facility every day. The group at large however uses both the Black Box and the main auditorium for a multitude of performances throughout the year including plays, musicals, cabaret, film screenings, dance concerts and showcases, student meetings, presentations, parent/student meetings, open houses, and orientation.

20.2 Observations

1. The AVPA retains leverage over access to the Frost by booking it most every day from after school until about 10 pm.
2. Most of the technical equipment in the building, including the lights are the property of the AVPA.
3. There is no consistent oversight for the venue from any invested party, that being the CCUSD, CC High School, or the AVPA.
4. There is a desire by many of the faculty to use the venue for more activities such as film and theatre festivals, although with the facility in its current state it is undesirable or not feasible.
5. The Middle School would like more support and accessibility in its use of the facility.
6. Other than some technical deficiencies and a seating layout that is not conducive to smaller audience sizes, the auditorium handles this variety of performances and activities well.



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AVPA Flier - RENT



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ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

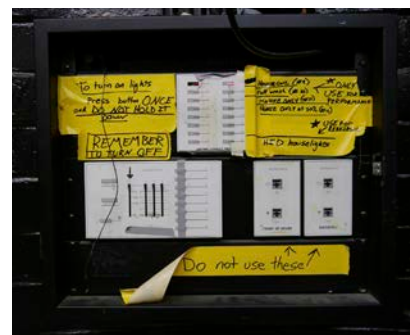
21.0 MANAGEMENT

21.1 Existing Conditions

No vested party has dedicated responsibility to maintain, organize, categorize, or upkeep the venue. This may have created a shortage of consistent and comprehensive oversight for the facility. Maintenance is happening at the most basic of levels and after many years of use, upkeep has become overwhelming to each of the part time users.

21.2 Observations

1. Many parties mention the need for a dedicated entity to be responsible for the Frost.
2. Because the AVPA has ownership of all of the technical equipment it is difficult for any other party to host an event there without bringing in all of their equipment from elsewhere. And even if they do, it is still primarily up to them to figure out how to work things.
3. There is a general lack of knowledge about how to use the facility, or even turn on the lights.
4. The AVPA does quite a bit of the organizing by default because they use the space on a regular basis.
5. Because there is no responsibility to manage the space, oversight for what is already a lack of storage is a disaster.
6. One space that does seem well maintained is the classroom.



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22.0 STORAGE

22.1 Existing Conditions

There is some space dedicated throughout the Frost for storage, but not nearly enough for the breadth of activity occurring in the facility. Behind the acoustic wall at the back of house there is quite a bit of space. There are lofts in the shop which are already overburdened, and the Stage Managers room has been overrun by a cascade of objects. The dedicated storage and wardrobe spaces in the dressing rooms and a couple random closets fill out the roster of storage for the entire facility.

22.2 Observations

1. Even the dedicated storage spaces are underutilized, many lacking any kind of shelving or appropriate cabinetry.
2. The shop has no enclosed cabinetry or drawers for storage of tools or any other kind of necessary equipment and hardware for building sets.
3. The flat storage lofts in the shop are ad hoc and under built.
4. It is difficult to make out what is being stored in the stage



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ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

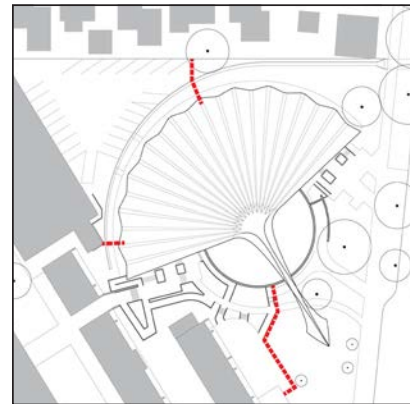
managers booth and seems to be more a pile of castoffs than storage.

5. There are a number of risers, light, etc stored out in the open at the back of house along the acoustic wall.
6. There is no storage in the Control Booth.
7. Rolling clothes racks have been added to the dressing room and still does not appear to be enough.

23.0 SECURITY

23.1 Existing Conditions

The building currently spans the security line between public streetscape and secure campus. There is a security fence that runs along the grounds from the east and abuts the drum structure of the facility. Outside the back of house exits, of which there are 4, there are a series of chain link security fences that finalize the secure campus. Unless there is an assembly or performance happening the main entry doors to both lobbies and the doors accessing the auditorium at the end of the radial hallways are locked. Students accessing the facility for class enter through the radial SE entry at the back of the drum structure just on the inside of the security fence. There are 4 doors down this hall, one at the other end that enters the Auditorium, one on the left that enters the Black Box, one down on the right that enters the stair to the 2nd floor, and one immediately on the right that enters the classroom. On the other side of the classroom is a mirrored scenario except the hall exits to the public streetscape and instead of accessing the Black Box the door on this side enters the shop.



Site Plan - Security Fencing

23.2 Observations

1. Faculty and administration express concerns about maintaining a watchful eye over so many doors that need to be kept secure.
2. There are concerns about the inability to curtail unwarranted student activity in the facility.
3. Having one door immediately outside the classroom that opens to the public side keeps the class from accessing fresh air from that door.
4. The location of the security fencing is not optimal and detracts from the building appearance and performance.
5. Entry to the Black Box is on the campus side of the security line.
6. For assemblies, the exits at the back of the auditorium cannot be used without unlocking the security fences as well. Meaning that students leaving out the back are effectively leaving the secure campus and then returning through a security fence.



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ROBERT FROST AUDITORIUM - ARCHITECTURAL FORENSICS

24.0 LEASING / RENTAL PROGRAM

24.1 Existing Conditions

The Culver City School District has protocol in place for the leasing of Frost Auditorium to outside entities. This seems to be something that at one time happened frequently but has since dropped off and is now only occasional.

24.2 Observations

1. The current administration has not expressed an interest in this being a primary use for the facility.
2. The facility would have difficulty managing much rental use from the point of view of maintenance.
3. If the facility is rented, leasers primarily use the 400 amp Company Switch and bring in all of their own equipment.



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ROBERT FROST AUDITORIUM - STRUCTURAL FORENSICS

STRUCTURAL SYSTEMS FORENSICS REPORT

ROBERT FROST AUDITORIUM - STRUCTURAL FORENSICS

REPORT ON STRUCTURAL SYSTEMS

Introduction

The Robert Frost Auditorium located on the campus of Culver City High School is a 124 foot radius, dome shaped structure functioning as an auditorium, theatre, and classroom for the school. The “shell” component of the building consists of precast concrete rib elements on one half of the structure supported and braced by a single concrete “arm” on the opposite side. A structurally separate circular two story brick masonry structure which creates the space for the back of the stage as well as housing classrooms is under the shelter of the dome.

The building will be undergoing a renovation to upgrade and modernize its functions to service the school and the surrounding neighborhood. Englekirk Institutional will be addressing structural issues pertaining to this future work.

This report is the preliminary phase for the project. It outlines the structural systems for the existing buildings as well as identifying the preliminary steps in preparation for the future renovation work. For the development of this report existing drawings were reviewed and a site visit was performed for an initial visual assessment. No destructive exploratory work or calculations was executed. Only a visual observation was performed. No destructive testing or material investigation was executed.

A full set of construction documents encompassing all disciplines was available for review. The structural drawings were prepared by Flewelling and Moody. The existing structural drawings (sheets S-1 to S-13) were dated 1962.

1.0 SHELL STRUCTURE

1.1 Existing Conditions

The auditorium/theatre structure on the campus of Culver City High School consists of a structure within a structure. The most visible component is the large span shell structure which shelters a smaller circular building. The circular classroom is structurally independent from the shell.

The “shell” is a unique structure in that it is a partial dome supported by a large concrete arm. It consists of curved, folded plate precast elements which converges to a node point at the top of the roof. At this node point, the loads of the shell are transferred to a large curved concrete arm. The arm acts as a strut that transfers the roof



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Site Plan - Structural Shell

ROBERT FROST AUDITORIUM - STRUCTURAL FORENSICS

loads to the ground. The roof structure for the auditorium has an outside radius of 124 feet and is approximately 50 feet high at its tallest point.

Gravity System

The shell supports gravity loads through the interaction of the shell and the arm. The shell portion acts as a series of concrete arches, therefore any vertical loads travel within the plane of the shell down to the foundation. For support at the top, the shell transfers its load to the arm. In essence, the arm acts in the same manner as the shell, and can be equated to taking the shell portion of the building and compressing it into one structural element.

The shell consists of a series of conventionally reinforced pre-cast lightweight concrete ribs stitched together via reinforced concrete pour strips. The ribs are typically 4 inches in thickness. At the bottom of the shell, the ends of the ribs are supported by an intricate reinforced concrete "shoe" structure which is, in turn, supported by a conventionally reinforced concrete spread footing. The tops of the ribs converge and are cast into a concrete node point which transitions loads from the shell elements to the concrete arm. The concrete arm is conventionally reinforced. It acts as a strut to balance the loads from the shell and provide stability to the structure as a whole. The load supported by the arm is transferred to a reinforced concrete footing. The cross section of the arm is triangular in shape and varies in size, with the largest cross section at the base and the smallest cross section at the top.

Because of the structural nature of the shell, there are thrust loads imposed on the foundations which want to push the footings out and away from each other. To resist these loads at the base, the footings of the shell are tied to the footing of the arm via concrete grade beams. These grade beams converge to a node point that intersects the grade beam emanating from the arm. Due to the magnitude of these thrust loads, post-tensioning cables are utilized to tie the foundations together. The floor of the auditorium is sloped to accommodate the seating. It is a 4 inch thick conventionally reinforced concrete slab-on-grade.

Lateral System

It appears the lateral load resisting system for wind/seismic loads acting in the north-south direction are the masonry shear walls along the west elevation of the auditorium. The concrete arm does not provide any significant contribution for resisting north-south lateral loads. For loads that act in the east-west direction, the shell is the primary lateral load resisting system, acting as a large arch to transfer the forces directly into the foundation system.



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ROBERT FROST AUDITORIUM - STRUCTURAL FORENSICS

1.2 Observations

1. The integrity of the structural system is very good. There were no visible signs of deterioration of the concrete due to age or weather. There were no observed signs of spalled concrete or reinforcement deterioration. No significant cracks were seen.
2. The mortar joints of the masonry walls are intact. No signs of decomposing mortar was observed.
3. The shell is aging well and is in very good structural condition. No visible signs of excessive settlement were observed at the interior or the exterior.
4. One potential deficiency may be the behavior of the shell structure during a seismic event. Over the years, the design level seismic loads prescribed by the building codes has incrementally increased.
5. Although the current lateral load resisting system appears to have performed well over the years, due to the vintage of the building its performance when subjected to current building code seismic force levels may need to be investigated.

2.0 DRUM STRUCTURE

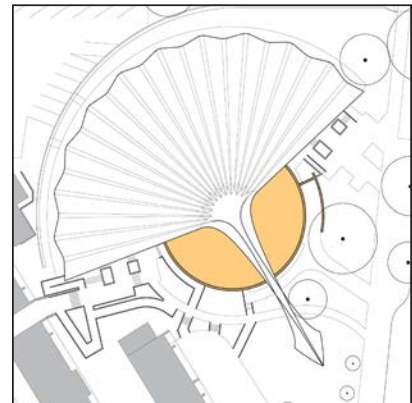
2.1 Existing Conditions

Gravity System

The classrooms have a structural system that is independent of the shell. It is a two story circular structure consisting of a steel frame with masonry bearing walls. It is located below the center of the shell. The outer radius of the structure is approximately 53 feet.

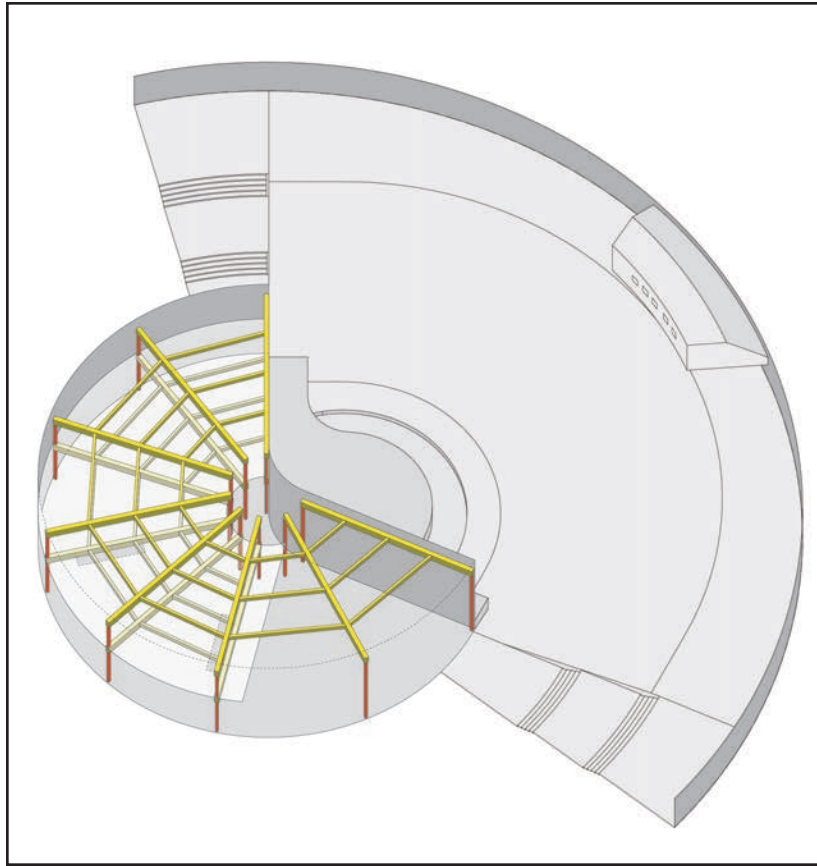
The roof consists of a 4 inch thick conventionally reinforced concrete slab supported by steel beams and girders. The beams and slabs are supported by a multi-wythe reinforced bearing brick wall. The steel girders are supported by steel wide flange columns which are embedded in the masonry walls. The girders emanate radially from an inner circular masonry wall to the outer masonry wall.

The floor for the classroom has the same structural system as the roof, only with a slab thickness of 5 inches versus the 4 inches at the roof. All of the gravity loads are supported by conventionally reinforced spread footings under the columns and continuous footings under the bearing masonry walls. There is a 4 inch thick slab-on-grade reinforced with welded wire fabric at the grade level.

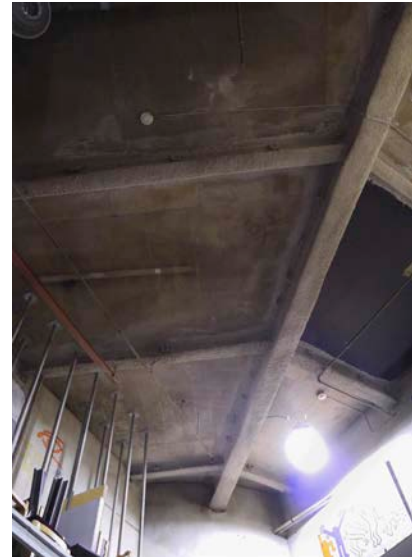


Site Plan - Drum Structure

ROBERT FROST AUDITORIUM - STRUCTURAL FORENSICS



Axon - Drum Structural System



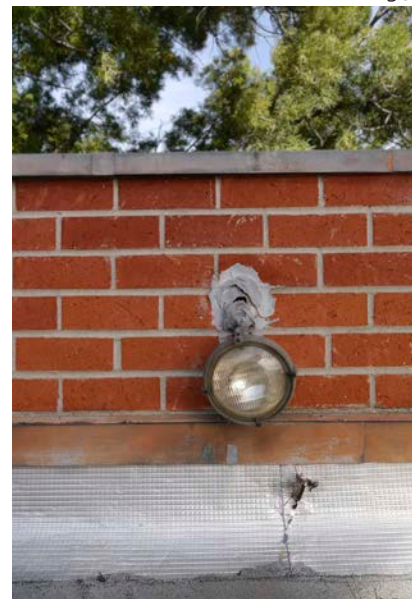
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Lateral System

The classroom building has the shape of three quarters of a circle, with the opening on the west side of the structure. The only identifiable lateral load resisting system is the circular brick walls around the perimeter and at the interior of the classrooms. They resist any wind/seismic loads that are imparted to the structure. These loads are dissipated into the earth via the continuous and spread concrete footings under the structure.

2.2 Observations

1. The integrity of the structural system is very good. There are no visible signs of deterioration of the concrete due to age or weather.
2. There were no observed signs of spalled concrete or reinforcement deterioration. No significant cracks were seen.
3. The mortar joints of the masonry walls are intact. No signs of decomposing mortar was observed.
4. The structural steel of the classroom building appeared to be in good condition.
5. No visible signs of excessive settlement was observed at the interior or the exterior of the building.



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ROBERT FROST AUDITORIUM - STRUCTURAL FORENSICS

3.0 ALUMINUM CURTAINWALL

3.1 Existing Conditions

The aluminum curtainwall system encloses the shell and drum structures together on the east elevation. The glass wall spans from the ground to the underside of the shell roof. It consists of a series of main vertical mullions spaced approximately 10 feet on center spanning from the floor to the roof. These main aluminium elements are reinforced internally with a structural steel wide flange. The space in between these major elements is infilled with smaller horizontal and vertical mullions.

3.2 Observations

1. This system is architecturally in a state of disrepair.
2. Many of the inset glass panels have been broken and replaced over the lifespan of the building.
3. Several of the remaining panels are bowed and/or warped and show signs of failing in the future.
4. The bowed and warped glass panels may be an indication that the shell structure has deflected vertically over time and is now loading the curtainwall system. Based on the original construction documents, a joint was initially provided to prevent this from occurring. This joint may no longer exist.
5. Further investigation of the curtainwall system should be performed to determine the cause of the distress in this system.



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4.0 STRUCTURAL INVESTIGATION PROGRAM

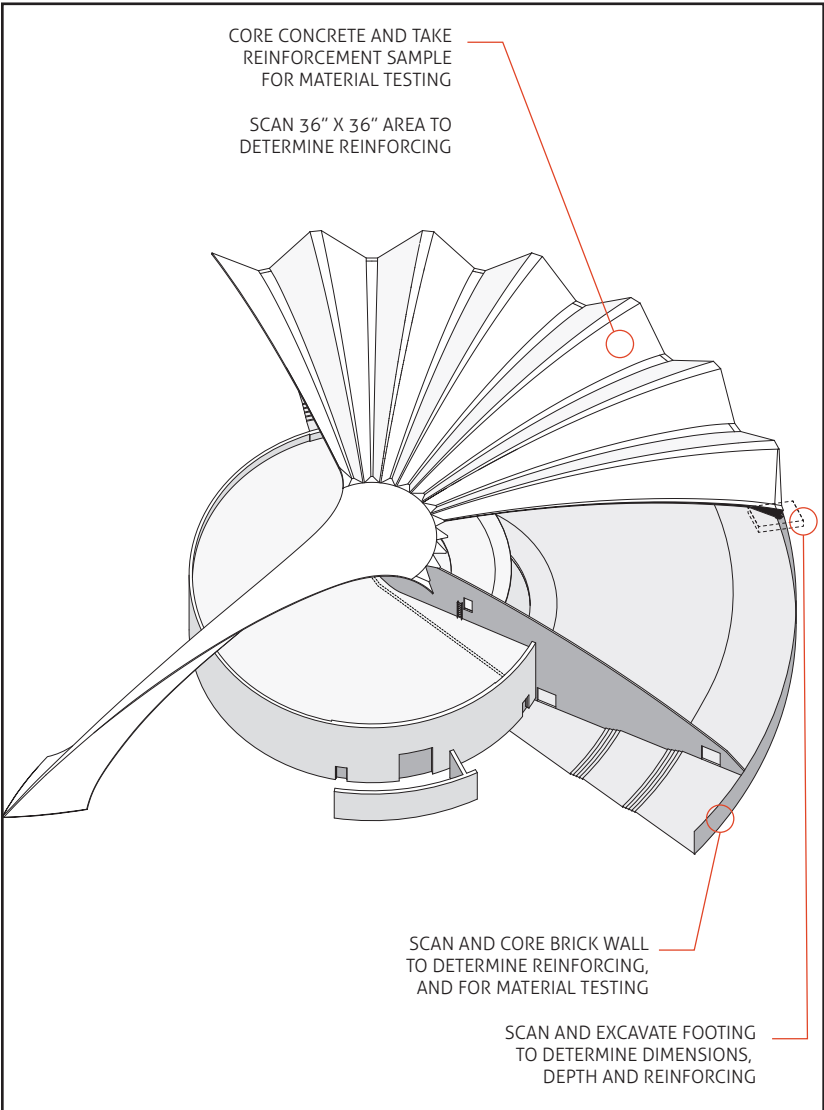
This project will fall under the jurisdiction of the Division of the State Architect (DSA). Based on our experiences with DSA, if there are any new elements imposing loads (gravity or seismic) to an existing structure, then a structural evaluation will need to be performed to determine whether or not structural strengthening of the existing building is warranted.

Our initial approach is to leave the existing shell structure and classroom unaltered and provide an independent structural system for any new components. But as the project scope and programming develops, there may be a need to impose new loads to the existing building. In preparation for this, a materials testing and investigation program has been developed as part of this report. According to the requirements of the building code, and in particular with our experiences with DSA, a material testing and investigation program is required. Even with the availability of existing structural drawings, Chapter 34 of the 2010 California Building Code still requires a level

ROBERT FROST AUDITORIUM - STRUCTURAL FORENSICS

of exploratory investigation to be performed to validate the information shown on the existing structural drawings. The benefit of having structural drawings is that it minimizes the quantity of the testing/ investigation that needs to be performed.

The material investigation program requires the removal of existing materials from the structure. This is a destructive program aimed at verifying the information furnished in the existing structural drawings. The attached plans identify the location and extent of the material testing identified for this structure. Final coordination of where samples are to be taken will be developed with the selected testing agency.



Axon - Structural Investigation Program



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THEATRE SYSTEMS FORENSICS REPORT



ROBERT FROST AUDITORIUM - THEATRICAL FORENSICS

REPORT ON PROVISIONS FOR THE PERFORMING ARTS

The proposed renovation of the Robert Frost Auditorium is a rare opportunity to rectify / make adjustments to the original architecture in order to enhance its desirability as a place for student learning and performance. Thus, such issues as the utilization of space, sight lines, and seating layout, as well as lighting and stage mechanics were to be considered with reference to its future use as well as its suitability for more "professional" learning. The following observations are based upon exploratory visits to the facility in the company of H+F and a QandA with students and faculty of AVPA.

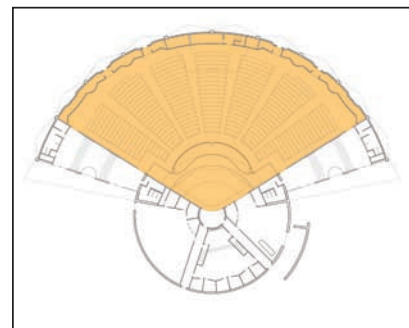
1.0 AUDITORIUM

1.1 Existing Conditions

Audiences load into the auditorium from disconnected lobbies on either side – house left from the street for public performance, house right from the campus for school assemblies. Audience entrances mirror each other on opposite walls and occur at two points: one at the rear cross aisle, Elevation 103.33, and one at the downstage edge of the side stage, Elevation 98.67, sloping down to a front cross aisle at Elevation 97.0.

The front and rear cross aisles are connected by sloped aisles that are raked at approximately 11.5%, with risers at seating sections providing flat floor rows with fairly tight row to row depths of 2'-10". The stage elevation is set at a 3'-0" height above the first row, matching the auditorium floor at approximately the halfway mark, or 10th row. A shallow orchestra/ Mozart pit is set 1'-6" below the first row and 4'-6" below the stage, with an open 2'-10" high pit rail along the leading edge of the front cross aisle.

The room has two overlapping geometries, both of them fan shapes, but emanating from different center points. The bends in the roof plate radiate from a center point immediately behind the upstage wall, extending 116 degrees between side walls. The rows of seating are concentric to the stage edge, and they radiate from a center point onstage that is located 20'-6" forward of the center point of the room fan shape. This in turn is 20'-6" back from the stage edge, creating a 41'-0" diameter play area. Because of this shift in center point, the far side seats are 130 degrees at the far rear corner and 146 degrees at the far front corner, when measured from the center point of the stage. An orchestra pit of 8'-0", and a front cross aisle of 7'-0", results in a distance between the stage and the first row of 15'-0". House lighting is indirect, from lamp sources aimed at the ceiling.



1st Floor Plan - House



ROBERT FROST AUDITORIUM - THEATRICAL FORENSICS

1.2 Observations

1. Lobbies do not connect to share support space, and all circulation from the entrance to the other side of the house must happen within the room.
2. Seating is divided into 7 pie-shaped sections. The combination of a tight front radius and shallow 2'-10" row-to-row spacing appears to have influenced a maximum of 14 seats per row at the rear of the auditorium. This leaves 5 and in some cases only 3 seats in the first row(s), creating an inefficient layout when combined with the number and width of aisles.
3. Seat widths are a mixture of 19", 20", and 21", common for the time period of the installation but at least 1" narrower than what is common today. In some cases, it does not appear that the seats have been sized to stagger in consideration of the pie-shaped aisle configuration; this results in seats directly behind others, when the rake of the floor is based on second-row sightlines, or looking between the heads of those seated in the row in front.
4. Because they radiate from a center point onstage, the six centermost aisles double in width from a code minimum of 4'-0" at the front of the auditorium to an extremely generous 8'-0" at the rear. This has the negative effect of diffusing audience interconnection and contributing to a sense of emptiness, as well as dominating the room from onstage, further emphasized by the rope lights that line the floor edge and create an airport runway effect.
5. The far side aisles are 4'-6" wide, 18" larger than what is required for an aisle with seating on one side.
6. Wheelchairs currently can be accommodated only in the rear of the auditorium. At 11.5%, the aisles are too steeply raked to allow un-assisted wheelchair access to the front. In the absence of a facility renovation, barrier removal would still be required; the width of the front cross aisle would allow seats to be removed for wheelchair placement, with staff assistance becoming an operational consideration without an accessible route. Facility renovation likely would trigger full compliance with 2010 ADA, which would require horizontal and vertical distribution of wheelchairs and ADA designated aisle seats, with the number dictated by the final seat count and number of rows, respectively.
7. There is no lift/ pit access for wheelchairs or large/ heavy instruments.
8. The flat floor risers at the seating sections, combined with sloped aisles, create a tripping hazard into the rows.
9. The 15'-0" gulf created by the orchestra pit and front cross



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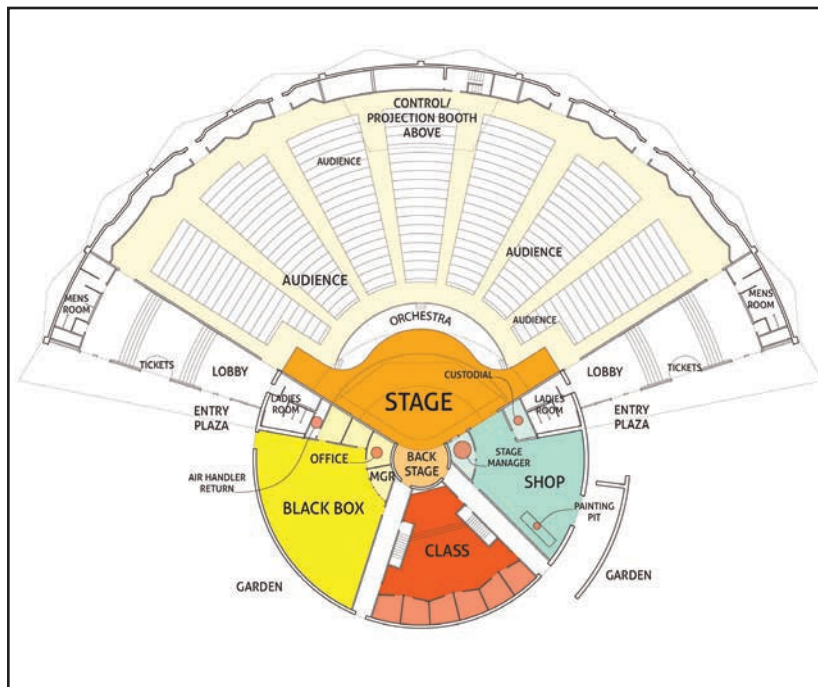


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ROBERT FROST AUDITORIUM - THEATRICAL FORENSICS

aisle disassociates the stage from the audience. Also, while it is sort of a hybrid endstage/ thrust stage, the benchmarks of thrust stage venues from that vintage – the Olivier, Vivian Beaumont, Mark Taper, Guthrie, Stratford Festival - had significantly fewer seats and/ or a balcony level, a lower stage height, a significantly steeper seating rake, and no orchestra pit. The pie-shaped configuration also places the majority of seats further from the stage.

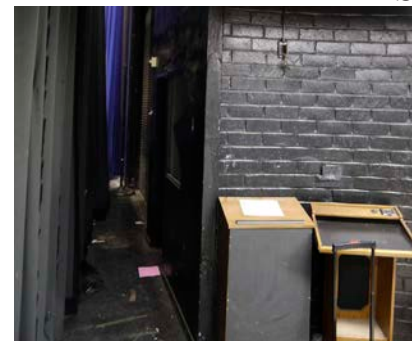
10. There is a perception that the stage floor is too high – see above.
11. There is a perception that the far side sections feel particularly remote from the stage. In addition to the angle and distance, another contributor is the geometry. These two far sections are the only ones not radiating from the center point of the stage, instead bridging the geometries of the room and



1st Floor Plan



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the seating, and thus blurring the focal point from these seating sections.

12. The wide angle of the auditorium seating and partial encirclement fundamentally dictate staging and set placement/ configuration.
13. It was expressed that a new seating configuration, perhaps combined with an architectural lighting strategy, might make the auditorium feel less empty when only 350 of the seats are filled for film and dance. We understand that the seat count is 1400; however, the architectural drawings show 1324. We understand that the seat count can be reduced to

ROBERT FROST AUDITORIUM - THEATRICAL FORENSICS

1200, which will likely result when measures are taken to accommodate ADA seating, sound and light locks, and other considerations. The far side sections account for 352 total seats.

14. Sound mix is currently enclosed inside the elevated control booth. This should reasonably be accommodated inside the auditorium, and the front face of the booth replaced with glass windows for better visual connection for lighting operators and stage management.
15. There is no projection from the control booth.
16. The control booth is only 7'-6" clear underneath, projecting much further than this dimension and creating an acoustic shadow at the last rows.
17. The indirect house lighting and rope lighting along the aisle edges do not appear to meet the minimum footcandle code requirement at aisles. There are no aisle lights in the seat end standards.
18. The front of house lighting positions offer too flat of an angle. Catwalks providing 45- and 60- degree lighting angles as well as box booms for side angle lighting are desirable for better modeling definition and reducing shadows.
19. A lack of sound and light locks is a distraction during performance, especially the doors flanking the side stages, which lead directly into the all-glass lobbies.
20. The public toilets flank the auditorium and can be heard through the 6" stud walls that separate them from stage left and right.
21. Public toilet fixture count is 1 per 110 women and 1 per 83 men, both significantly undersized.



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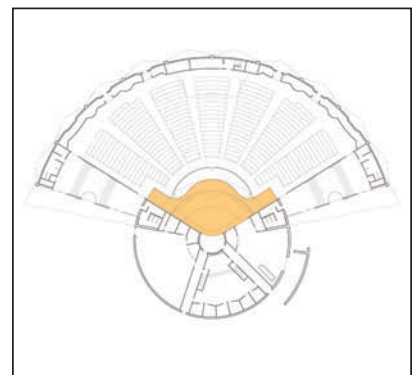
2.0 STAGE

2.1 Existing Conditions

The stage is an open-end platform with a circular front edge that comes to a point upstage. The size of the play area is a reasonable 41'-0" diameter circle, with a small and oddly shaped 19'-0" round upstage zone and flanking side stages that visually and physically extend the stage another 20'-0" in each direction. The ceiling height above the stage is 26'-0", with a mere 9'-0" head clearance at the upstage zone.

2.2 Observations

1. The stage area cannot shrink in size. There is the potential for infill platforms over the pit to extend the stage closer to the seating.
2. The visual extension of the stage created by the flanking side



1st Floor Plan - Stage

ROBERT FROST AUDITORIUM - THEATRICAL FORENSICS

- stages – doubling its width to 80'-0" across – serves to diffuse the focus on stage and lose the performer.
3. There is a lack of wing space or a sizable upstage zone to move sets on and off stage, and for that matter a lack of reasonable stage level support area.
 4. Audience access is provided to the stage for able-bodied audience members via movable stairs at the front edge of the stage, as well as built-in stairs at the back edge of the stage right side stage. Wheelchair access is provided via ramp at stage left, although this leaves a side stage too narrow to be usable.
 5. Stage sound and light locks do not exist at the two personnel doors or the over head door connecting directly to the shop.
 6. Stage access is limited to the upstage corner. Front stage access would require exiting the building, as there are no front-of-house/ back-of-house connections on either side of the stage.
 7. We understand that the stage floor is causing dancer injuries due to its surface condition. It will need to be inspected and either repaired or replaced as required. The existing architectural drawings show 25/32" hardwood strip flooring on 1" subflooring over 2x sleepers at 16" o.c. The lack of resilient pads to create a semi-sprung floor is less than ideal for dance.
 8. A dance surface that can be rolled out for rehearsal and performance, such as Harlequin Cascade, would alleviate some of the concerns with the condition of the top surface on a high school multi-purpose stage. Storage of the dance surface is a consideration.
 9. The orchestra pit section in front of the stage results in a large gap at the front of the stage.



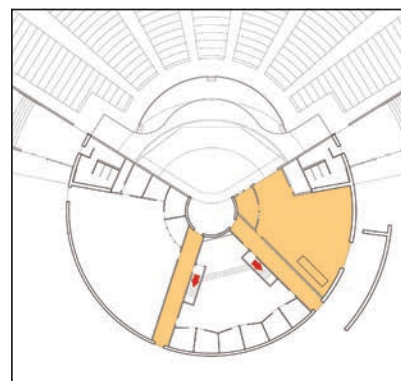
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3.0 BACKSTAGE SUPPORT

3.1 Existing Conditions

Load-in is behind a curved screen wall located 12'-0" in front of the building. The stage is immediately backed up by a classroom, flanked by 6'-0" wide corridors that adjoin a two-story scene shop upstage right and a black box theatre upstage left.

Dressing rooms are upstairs, reached on either side by 3'-6" wide stairs off each backstage corridor. There is a co-ed makeup room at the top of the stairs with 15 stations, leading to small men's and women's changing rooms with restrooms (2 fixtures each).

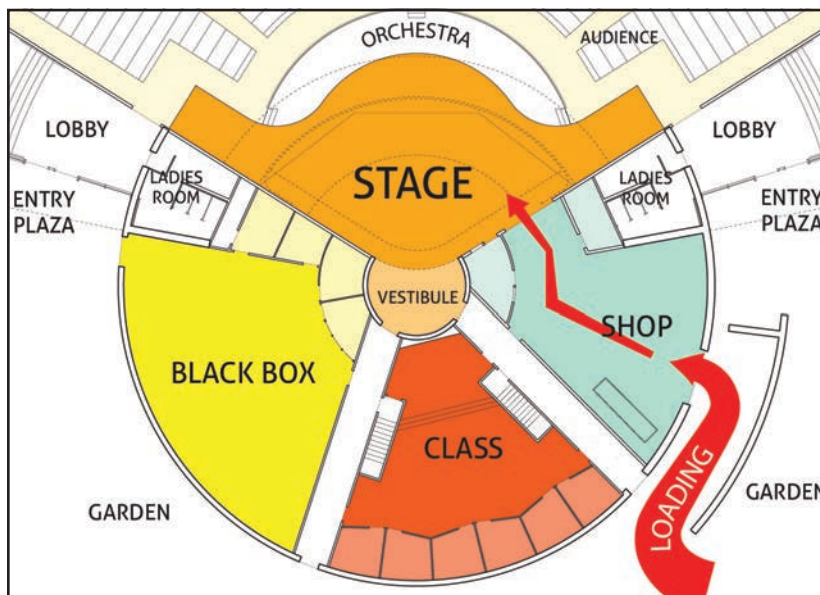


1st Floor Plan - Shop & Hallways

ROBERT FROST AUDITORIUM - THEATRICAL FORENSICS

3.2 Observations

1. Load-in requires a 90-degree turn into the building. An overhead door at the far end of the load-in court leads into the shop, but the clear path of travel required through the shop would greatly affect the use of that room. Subsequently, most load-ins occur through the 3'-2" door that leads into the 6'-0" wide corridor, ending in the 19'-0" round upstage zone. There is no sound and light lock leading to the stage from this corridor.
2. The stairs are really too narrow to efficiently accommodate passage of two people in costume in opposite directions.



1st Floor Plan - Loading Dock to Stage Route



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3. There is no elevator access to the dressing rooms or restrooms, and none are provided at stage level.
4. Stage level quick changes are not currently accommodated, other than ad hoc.
5. The makeup room amenities are dated, and fluorescent makeup lighting is undesirable.
6. The doors to the restrooms do not close.
7. We understand that for large shows the dressing area is undersized, which we believe is due to a perfect storm of room shape, circulation, lack of sufficient toilet facilities, lack of a green room for holding, and the lack of wardrobe support, which has caused the takeover of one of the dressing rooms.
8. There is insufficient and/or lack of front of house and back-stage storage for loose seats, concessions, lighting instruments, sound equipment, sets, wardrobe, props, dance floor, choral risers, piano and instruments.
9. Set storage is currently on a loft inside the shop, with a broken floor, and accessed via ship's ladder, making it difficult to



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ROBERT FROST AUDITORIUM - THEATRICAL FORENSICS

- store things safely.
- 10. A painting pit exists in the shop but is not currently used.
- 11. Relocation of the classroom outside the backstage footprint would accommodate much-needed stage level support space.
- 12. The 3'-2" doors to the stage are too narrow for a grand piano, and risers and other equipment are difficult to load-in.

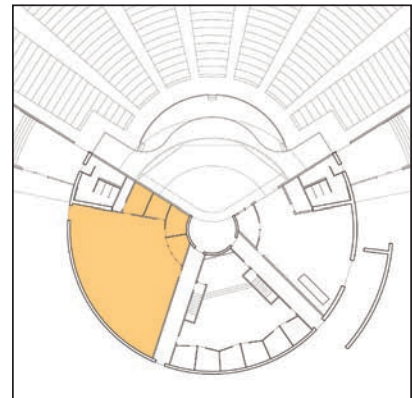
4.0 BLACK BOX

4.1 Existing Conditions

The Black Box was converted from the old music rehearsal room and is a curved 30'x60' shape with a 12'-0" high pipe grid tight to the floor structure above.

4.2 Observations

- 1. There is no connection to the shop or backstage load-in other than through the classroom. Direct load-in can occur through an outside door, but that doubles as the public entrance.
- 2. There are no sound and light locks from either the outside or backstage corridor doors.
- 3. The width, curved shape, and available ceiling height are less than ideal.
- 4. Other than a few small rooms serving as an office and control room, all production support spaces including dressing rooms are shared with the auditorium.



1st Floor Plan - Black Box

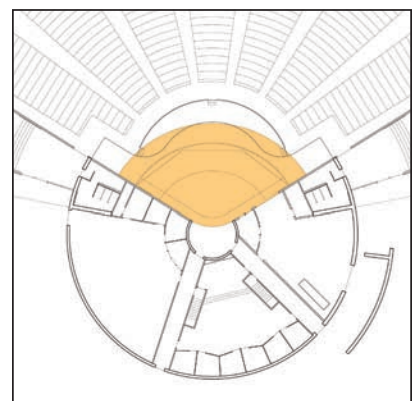
5.0 STAGE RIGGING / OVERHEAD STRUCTURE

5.1 Existing Conditions

The overhead rigging consists of dead-hung tracks and pipes used for masking drapery and lighting fixtures. They are contained by the large header above, and are only reached from below by use of lifts or ladders.

5.2 Observations

- 1. The overhead rigging is dangerous to use as currently configured, as it requires a lift or ladder.
- 2. The pipes are not always in the correct position, as the stage curves.
- 3. New curtains and tracks are being currently explored for the upstage area, which would solve the upstage area masking.
- 4. Flexibility is minimized due to the configuration



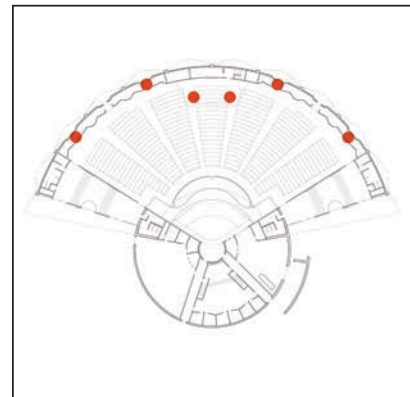
1st Floor Plan - Overhead Canopy

ROBERT FROST AUDITORIUM - THEATRICAL FORENSICS

6.0 THEATRICAL LIGHTING SYSTEM

6.1 Existing Conditions

The lighting system is comprised of dimmers, distributed circuits, and a control console. Positions for use by theatrical lighting are from frames located atop the entry doors, and overhead above the stage, from pipes. There is also a lighting position on top of the booth. Followspots are operated from the projection/control booth.



Plan - Overhead Front Lighting Positions

6.2 Observations

1. The dimmers are outdated, and require replacement. It is possible to replace part of the dimmer electronics, but this would void any warranty for the new parts, as they can't be warrantied with existing components.
2. The circuit distribution is dated, and requires replacement, and different locations.
3. The console is not as old as the rest of the system.
4. The lighting positions offered do not allow for even basic theatrical lighting to be done properly.
5. The front of house positions are far too low, and flat, for flattering lighting. These would be best described as balcony front lighting.
6. The overhead/overstage positions are not optimally located and configured correctly for the stage width and depth.
7. A basic front lighting position from a high angle does not exist in the room.
8. Data distribution is virtually non-existent, and not located at appropriate locations.

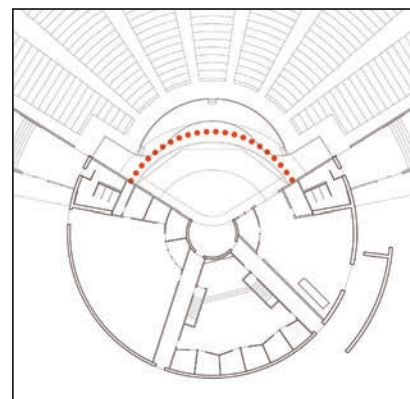


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7.0 HOUSE/WORK LIGHTING SYSTEMS

7.1 Existing Conditions

The auditorium is primarily lighted from indirect lighting located above the stage canopy. Work lighting is provided by fluorescent lighting located above the stage and backstage. Running lights are not currently provided.



Plan - Overhead House Lighting

7.2 Observations

1. The audience lighting is very dim, and does not light evenly or attractively. We imagine it is difficult to use for classroom use.
2. The work lighting is very dim, and not the typical 50fc required for a work area
3. The entry station and master controls are not well located.
4. The master stations have been broken, and programming changed, rendering them very difficult to use.

ACOUSTICAL FORENSICS REPORT

ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

REPORT ON ACOUSTICAL QUALITIES

Introduction

This initial report of findings regarding existing conditions and our observations of the mid-1960s facility is intended only to provide basic information on findings regarding broad acoustical aspects of the building as it is today. It is expressed from a viewpoint of current-day expectations and a very preliminary sense of where to “take the project” acoustically to help it meet current-day needs. We understand that the current stakeholder vision is to eventually transform the venue into one that is more focused on teaching students theater craft with corresponding less focus, where necessary, on presentation to and for, the Culver City community at large. While recognizing the absence of budget to support a deep investigation of the building’s acoustics, we attempt to address issues of room reverberance, echoes, M.E.P noise control, sound isolation and other room-acoustical aspects.

For clarity we have divided each area studied into three narratives to help pinpoint the type of acoustic assessment being described. These three areas are ‘Room Acoustics,’ ‘sound isolation’ and ‘HVAC Noise.’ In each narrative these distinct acoustical qualities will be assessed in the following manner:

Room Acoustics

This topic regards attributes of room volume, shaping and finishes as they support (or not) clarity of the spoken word, clarity of “inner movement” of musical lines, reverberance, sense of richness and envelopment, freedom from echoes, etc. As perceived by patrons, however, these individually-important design issues are necessarily influenced by the design and operation of audio systems and ambient noise (notably, and usually principally HVAC-generated noise). We address the latter aspects separately, below.

Sound Isolation

This topic regards noise intrusion through walls, roof, doors, etc. from unwanted sources.

HVAC Noise

Noise contributions from ventilation (there is only ventilation or heated air, no chilled air in this facility).



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ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

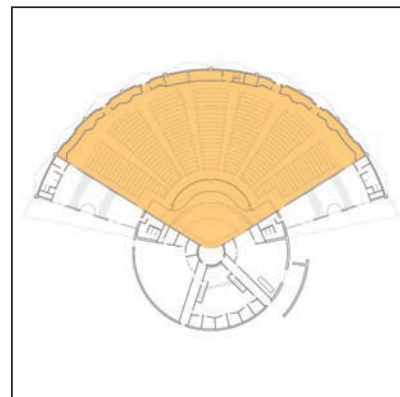
1.0 AUDITORIUM AUDIENCE CHAMBER

1.1 Existing Conditions

Room Acoustics

The room's reverberation time (hall empty) was measured in the mid-1980s both before and after the current "K-13" spray-on flocking was applied. We subsequently informally measured it again recently and show below, both the August 1987 and the February 2013 results.

Measured Reverberation Time (seconds)						
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz
Aug'87	2.9	2.4	1.7	1.4	1.2	1.0
Feb'13	3.2	1.8	1.2	1.2	1.0	0.9



1st Floor Plan - House

The reductions in reverberation time above 125Hz over 25 years is not insignificant as every 0.1sec change is readily noticeable by most people. The 3.2sec figure at 125Hz is problematic and suggests that the reverberation time at lower frequencies today are excessive for future uses. The reason(s) for the changes might be attributed to long-term curing and apparent soot/dust collection of the flocking, as well as changes in the seats. We should learn if and when the seating was changed out or reupholstered as future changes in these will surely materially influence room acoustics.

Clarity of the spoken word in a room seating over 800 normally requires amplification, but just informally listening to unamplified speech on stage from a variety of locations within the audience yielded last week a sense of nearly-sufficient loudness but excessive reverberation to the point of perhaps 50-60% speech intelligibility. A conventionally and well-designed venue of recent design would have yielded far greater clarity in this much reverberance. For example, the recent 1,700-seat Valley Performing Arts Center provides good clarity throughout for unamplified voice, just a drop in desired overall loudness of voice. The reason for the deficiency in clarity at the Frost lies in the absence of good, clear, early sound reflections from anywhere in the room. Nearly all the sound reflections are simply random and diffuse, whereas proper design carefully directs a preponderance of early-reflections from the stage direct to the audience while leaving sufficient later reflections to develop a reverberant "bloom" appropriate to the presentation.



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Present room shaping and finishes directly conspire to yield the above-described conditions. The plan configuration, in a severe fan-shape, provides no ability to engage early lateral reflections to

ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

audience and the rear wall to approximately 10ft is generally sound-absorptive. The broad radius, structurally crenellated quarter-dome ceiling, like the side walls provide no useful sound reflections to audience that could aid clarity of sound from the stage. Rather, the shell form tends toward focusing of low frequency sound, and were it not for a modicum of absorption at mid- and high-frequencies by the flocking, would generate highly severe focusing of mid-high frequency sound to the audience from the stage, and possibly from loudspeakers above the stage. To the degree that focusing occurs in some areas, sound is made correspondingly absent in others. Ceiling and upper rear "wall" finishes are a combination of hard concrete, 5/8" (avg.) heavily-soiled "K-13" spray by International Cellulose that apparently was applied in 1984 after prior-existing asbestos-laden absorptive material was removed. According to a 1984 test report, this alteration did not materially change the reverberation time of the room. The lower rear walls are of perforated, corrugated metal with absorptive fill behind (estimated at no more than 2" thickness, but possibly less). Side walls are hard/reflective and non-shaped. The upholstered seats are of metal framing with steel seat bottoms and plastic back sides. They rest on a concrete floor with thin carpet at aisles.

In summary, neither the audience chamber design, nor the stage that serves it lends the room to any optimal function, acoustically, at this time. The audio system, while it includes some components of relatively recent manufacture, is a combination of non-function and/or defunct functionality within a building whose infrastructure does not support current technical approaches to acoustical and audiovisual theater craft.

Sound Isolation

The room is sufficiently large that its inherent volume and sound absorption minimize what are surely noise control issues near public doorways. Principal "public" access doorways to the audience chamber are not gasketed and lead in most instances directly into highly reverberant public lobbies. Noise intrusion is surely a problem on occasion in the (seating) vicinity of these doorways.

Mechanical and Electrical noise intrusion from mechanical and electrical systems seems to not be an issue and plumbing noise similarly is likely not an issue. Drawings indicate all toilets are well-removed from the audience chamber walls.

HVAC Noise

Noise contributions from ventilation (there is only ventilation or heated air, no chilled air) seems not to be a problem at least in the



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ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

audience chamber. We would estimate Noise Criterion (NC) 20-25. Our two visits to the site have been under "active" conditions so no low level ambient noise measurements were taken. The key to the current low noise levels when air is running seems to be in large, slow RPM fans and low velocity air distribution from multiple points throughout the room. The overhead supply air over the stage might be an issue, but this is unknown at present.

1.2 Observations

1. The reductions in reverberation time above 125Hz over 25 years is not insignificant as every 0.1sec change is readily noticeable by most people.
2. There is currently too much reverberation in the house for the venue to be used effectively for any type of performance.
3. Intelligibility of speech is greatly reduced due to high levels of reverberation and is a greater problem than that of projecting enough sound into the space.
4. There is a considerable lack of early sound reflections to the audience, as well as sound absorption.
5. The plan configuration, in a severe fan-shape allows sound to simply dissipate into the back of the house and the rear wall is generally sound-absorptive.
6. The broad radius of the house and ribs of the ceiling, like the side walls provide no useful sound reflections to audience that could aid clarity of sound from the stage.
7. Due to the nature of the surfaces composing the space, sound is strangely focused in some areas and totally diffuse in others.
8. A long-delayed echo is detectable on stage and frontal audience right, coming (via excitation on stage) from rear audience right but it is unclear what generates this as its mirror-image condition is not so apparent at audience left.
9. Neither the house or stage brings the space any functional acoustic quality.
10. The room is sufficiently large that its inherent volume and sound absorption minimize what are surely noise control issues near public doorways.
11. All access doorways to the house are not gasketed and lead in most instances directly into highly reverberant lobbies.
12. The key to the current low noise levels when air is running seems to be in large, slow RPM fans and low velocity air distribution from multiple points throughout the room.



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ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

2.0 CONTROL / PROJECTION

2.1 Existing Conditions

Room Acoustics

For this space to adequately serve as a “sound mix” location, the operator must be in a very “open” area, where he/she can properly assess by direct listening, what a representative large portion of the audience hears. The location, window opening size and room finishes provide none of this. The finishes are largely sound reflective, the control windows poorly configured and sized.

Sound Isolation

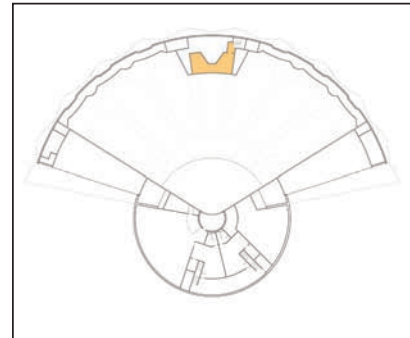
Not a problem here.

HVAC Noise

Not deemed to be a problem presently.

2.2 Observations

1. The location, window opening size and room finishes provide no ability for a technician to properly assess by direct listening, what a representative large portion of the audience hears.
2. Overall, this is a highly problematic location and outfitting of an audio control room.



2nd Floor Plan - Control Room



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3.0 STAGE AND ORCHESTRA PIT

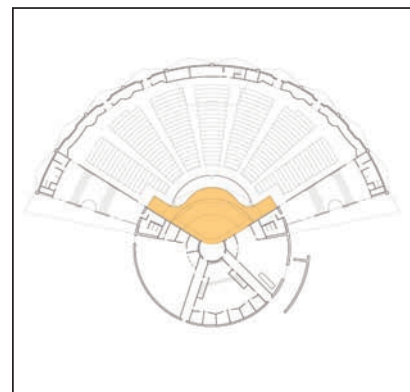
3.1 Existing Conditions

Room Acoustics

This acoustically-critical “sending end” in plan and ceiling form provides no acoustical assistance to either performers or audience. There are no “cheek” walls flanking the stage and its upstage vestibule is circular (270deg) in plan form. The stage proper continues the same wide plan form, to no acoustical benefit. Overhead, there is only sound propagation and/or scattering to above absorption – i.e. no returning of sound for benefit except for the upstage circular vestibule ceiling with now-dirty K-13 flocking. In front of the stage there is a partially sunken orchestra pit. Stanchion pit rails that guard against audience stumbling into the sunken orchestra pit do not appear to be able to support acoustically-meaningful infill panels that could help loudness control for nearby patrons although we understand infill panels of some sort are engaged from time-to-time.

Sound Isolation

An acoustically-hard corridor from the circular upstage vestibule



1st Floor Plan - Stage

ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

feeds circulation directly to noise generating and noise-sensitive spaces, such as black box, classrooms and sound control. The wall-mounted electrical Company Switch at the upstage circular vestibule seemed not to be generating any AC hum at the time of our February walk-through. We imagine concurrent use of the stage and these back stage spaces yields noise challenges from time-to-time. We were unable to test the sound-isolating capacity of existing constructions but suspect they are suspect.

HVAC Noise

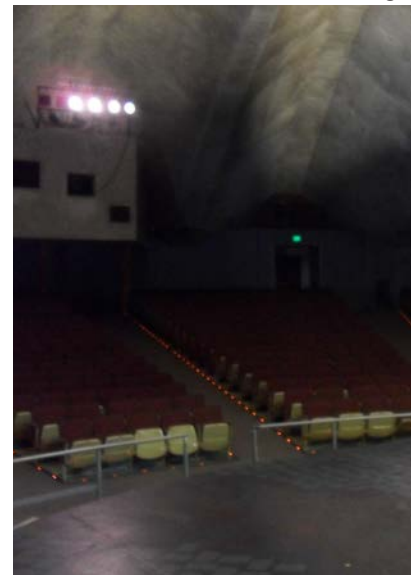
The stage area apparently gets air somewhat separate from the audience chamber – which is good although the pit apparently would get somewhat more air provided by the audience system than the stage and that’s common. Were this to be a more conventional “full” pit, it would likely get its own return air to help pull reasonably fresh air into that area, were it partially covered.

3.2 Observations

1. Neither the stage shape or the overhead reflector provide acoustical assistance to either performers or audience.
2. The stage continues the same wide plan form as the house, to no acoustical benefit. Overhead, there is only sound focusing and/or scattering and no returning of sound for benefit.
3. The sunken, partial pit is largely sound-absorptive at high frequencies (carpeted floor and upstage wall [convex face to audience]) providing no means of good balance of pit loudness with on-stage sources for uniform distribution of sound to audience.
4. The design shape, location and configuration of the pit belies good distribution and level control of sound among musicians and to audience.
5. The backstage hallway which is incredibly reverberative, feeds circulation directly to noise generating and noise-sensitive spaces.



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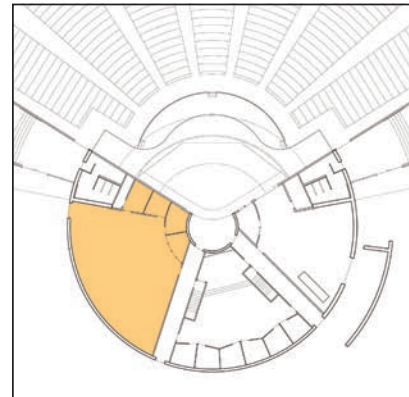
ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

4.0 BLACK BOX

4.1 Existing Conditions

Room Acoustics

This space was initially intended as a band rehearsal room, flanked by practice rooms. It is unclear exactly what the ceiling finish is, but it seems likely that it includes black, sound-absorptive material akin to duct liner board. The walls are generally hard plaster or brick with black drapery on tracks that appears to be at least 26 oz/yd velour – and this is functional as sufficiently sound absorptive and acoustically appropriate for black box, rehearsal and classroom use. Although reverberation time was not measured in the space, it is likely to range from 0.4 seconds to 0.8 seconds depending on how much drapery is deployed and this range is satisfactory, normally, for the uses we envision here.



1st Floor Plan - Black Box

Sound Isolation

It appears the room has been remodeled significantly beyond what the original drawings depict and because we could not measure sound-isolation performance of partitions, it only appears that some isolation assistance to this space is indicated. Doors remain largely ungasketed – or at least without adjustment for full-perimeter, uniform compression of any gaskets. As indicated above, while the room is subject to noise transference to/from the main auditorium's upstage vestibule it is unclear if the adjacent restroom (NW corner) presents an issue.



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HVAC Noise

This is the most immediately-obvious acoustical deficiency of the room in its present condition. Airflow velocities, probably in several areas of the room, exceed good design practice. Of note is the noise and associated air pressure imbalance between a return air shaft to below, that serves the auditorium, and accessible via a door off a side (original) music practice room along the northwest wall. Although HVAC noise here was not measured, we estimate it to be approximately in the range of Noise Criterion (NC) 38-44 – possibly higher in some areas of the room. If this were even made half as loud as this estimate, it would still be nearly twice as loud as good design practice for a Black Box theater.



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4.2 Observations

1. The reverberation times in this space are satisfactory for the uses we envision here.
2. All doors are completely ungasketed.
3. The near proximity to the upstage vestibule of the auditori-

ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

um, the classroom, and the stair to the upstairs dressing room makes this space subject to a great deal of noise transference.

4. It is unclear if the adjacent restroom (NW corner) presents an issue.
5. Airflow velocities, probably in several areas of the room, exceed good design practice.
6. Noise within the space from HVAC is a problem.

5.0 CLASSROOM

5.1 Existing Conditions

Room Acoustics

Apart from the Black Box occasionally used for classes, the comparatively-recent remodeling of the original Drama Classroom could be considered acoustically successful for conventional classroom use – again largely because it is quiet. We understand that it attempts to be used for instruction in cinema work and other theater tech work and for this, it is apparently adequate, although its plan configuration is not necessarily ideal for that function.

Sound Isolation

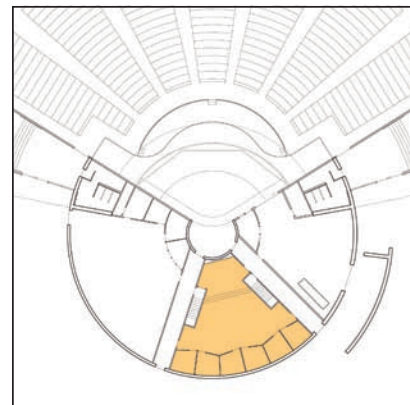
Existing drawings suggest that the room is sufficiently isolated from adjacent spaces due to some heavy construction and buffer corridors. If these rooms would be pressed into reasonably heavy AV use, their construction assemblies should be tested for inherent sound isolation.

HVAC Noise

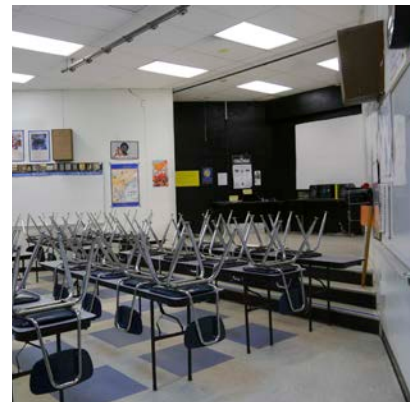
This was not measured but we understand it to be, at this time, satisfactory.

5.2 Observations

1. The location of the classroom underneath the dressing room makes it susceptible to noise transference both from above as well as from the hallway.



1st Floor Plan - Classroom



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ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

6.0 LOBBIES

6.1 Existing Conditions

Room Acoustics

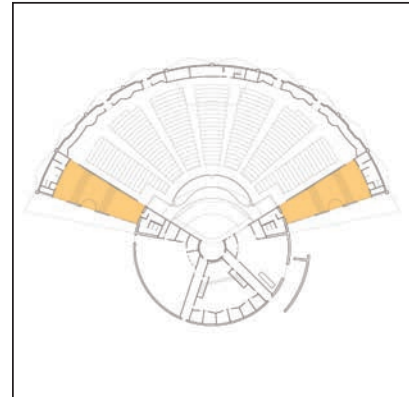
Both the Main (north) south lobbies are finished entirely in sound-reflecting elements to the detriment of both speech intelligibility within them (when desired) and noise control to the auditorium which feeds directly off these without benefit of sound-lock vestibules, or even well-gasketed doors.

Sound Isolation

See remarks above regarding sound-isolation to the main auditorium.

HVAC Noise

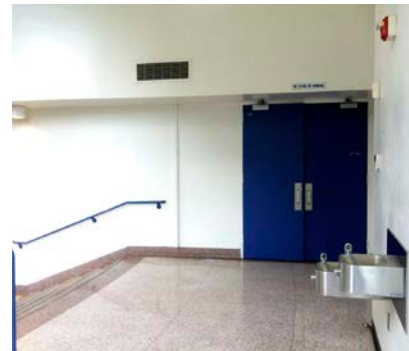
This was not measured but we understand it to be satisfactory at this time.



1st Floor Plan - Lobbies

6.2 Observations

1. The lobbies are incredibly reverberative due to the total lack of sound absorption. This creates a problem with speech intelligibility for people in the lobby and also for ticket sellers as the ticket booths have no ceilings.
2. Reverberating sound in the lobby would get channeled directly into the house even without the doors open due to the lack of gasketing, or vestibules.



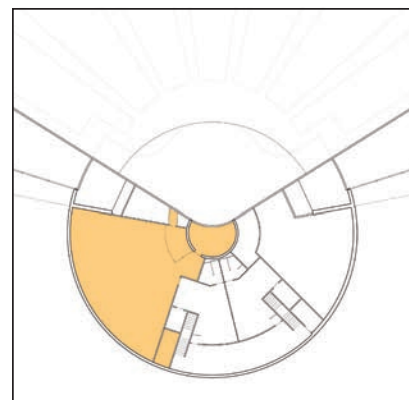
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7.0 MECHANICAL

7.1 Existing Conditions

Building-wide, only ventilated and heated/ventilated air has been available in the building since its construction. With one notable exception (Black Box airflow noise), it seems most air delivery and return noise is sufficiently quiet now, due principally (we expect) to low velocities in ductwork. This is especially interesting because ductwork without internal lining, which appears to be the case at Frost, must be additionally oversized beyond normal design practice. We suspect the fans are likely considerably larger in diameter and/or running at lower RPM than conventional selections today and this is likely contributing to their low noise emissions.

Within the auditorium, return air is provided on the upstage face of the orchestra pit and rear wall, while supply air is provided over the stage, upper side walls and selected portions of the rear wall, including exposed wall faces of the control room.



2nd Floor Plan - Mechanical Rm

ROBERT FROST AUDITORIUM - ACOUSTICAL FORENSICS

7.2 Observations

1. Other than the Black Box it seems most air delivery and return noise is sufficiently quiet now, we expect this is due to low velocities in ductwork.
2. Exterior insulation of ducts was observed in the catwalk realm, but that exhibits substantial deterioration since construction c. 1964.
3. The principal fans are on hard neoprene vibration isolators (we saw no seismic restraint) instead of the usual springs and neoprene.
4. We have seen no evidence of either duct silencers or sections of internally lined duct anywhere in the project.



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MECHANICAL SYSTEMS FORENSICS REPORT



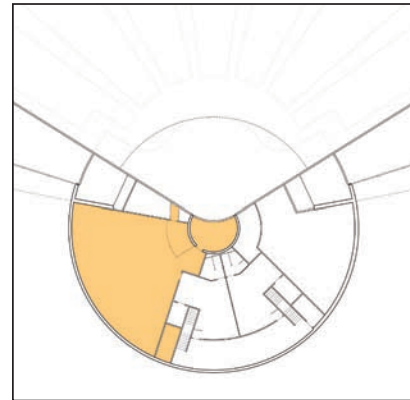
ROBERT FROST AUDITORIUM - MECHANICAL SYSTEM FORENSICS

REPORT ON MECHANICAL SYSTEMS

1.0 AIR HANDLING

1.1 Existing Conditions

The building is heated and ventilated and there is no cooling provided. The system is comprised of two built-up multizone air handling units with relief air fans located in the mechanical room on the 2nd level of the drum structure. The larger of the two air handlers is a three-zone system, serving the Auditorium and the two Lobbies. The smaller air handler is an eight-zone system serving all back-of-house areas and in addition serves the stage. Heating is provided by natural gas-fired duct furnaces in each air handler and mixing dampers blend warm air with return air for comfort control.



2nd Floor Plan - Mechanical Rm

1.2 Observations

1. The equipment appears original from the time of construction and is well beyond its service life, therefore should be replaced with higher efficient systems. Table 1 (3.0) describes the zones and the main ducts serving these.
2. This equipment appears to be original and is well beyond its expected service life of 25 years.
3. Outside air ventilation rates need to be increased to meet present day indoor air quality with demand controlled (carbon dioxide sensing) systems installed to conserve energy during low occupancy periods.
4. Presently there is no air conditioning and increasing outside air rates and heat from new electronics will necessitate adding cooling for comfort.
5. The existing systems are constant volume whereas new systems can use variable speed fan motors which save energy costs.



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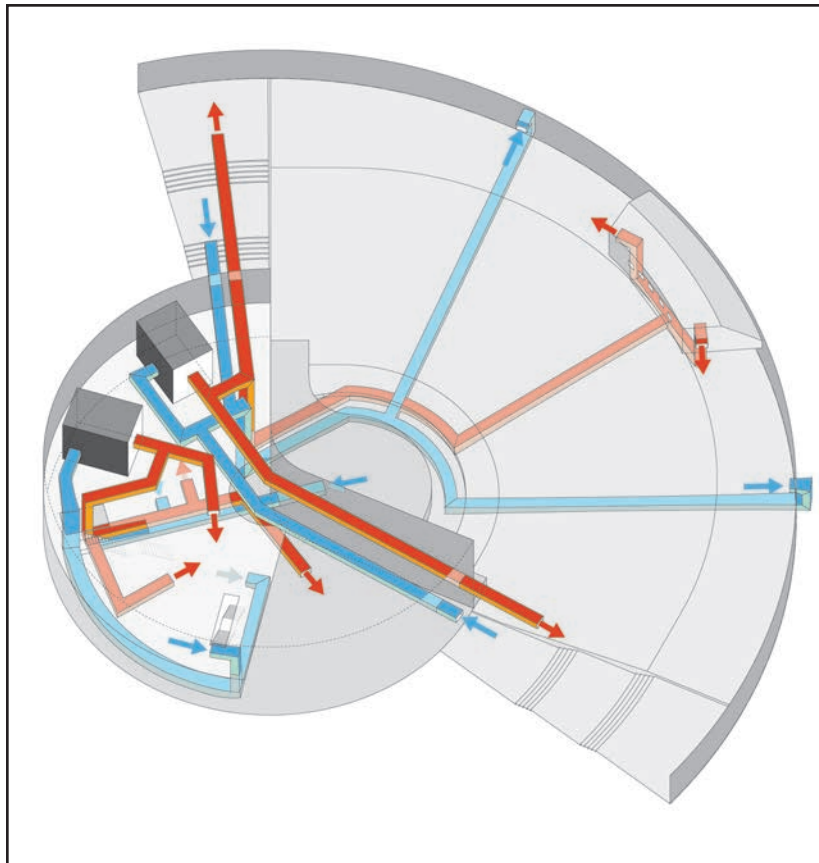
2.0 AIR DISTRIBUTION

2.1 Existing Conditions

Air is delivered by sheet metal ductwork, with a portion of the return air conducted through concrete tunnels below the Auditorium and connecting to a concrete shaft near the mechanical room. Supply air is introduced to the Auditorium from sidewall grilles located on the two sides and also on the side of the Control Booth enclosure. Return air for the Auditorium is taken at two areas, from low grilles at the back of the seating area, and at low grilles in the Orchestra Pit. In addition, there is a gravity relief grille high over the Stage to help relieve stratified air. However, there is still significant volume above

ROBERT FROST AUDITORIUM - MECHANICAL SYSTEM FORENSICS

this grille so stratification still occurs. Supply air to the Stage is by overhead diffusers and back-of-house rooms are generally fed from sidewall air outlets.



Axon - Air Conditioning System



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2.2 Observations

1. The ductwork we noticed appeared to be in fair condition with duct wrap insulation noted in some areas as deteriorating.
2. The controls are very basic electric, which are considered antiquated and inefficient by today's standards.
3. Filters are standard 30% efficient (MERV 8). Filters with an efficiency of MERV 13 are recommended instead of the standard MERV 8 filters presently used. MERV 13 filters are very good at capturing fine dust and pollens.
4. Outside air indicated on the plans is approximately 25% of the air flows prescribed by present day codes. It is quite common to find systems designed with low outside air flows in older buildings.
5. Some of the ductwork may be re-usable, however further investigation would be required to establish this as a reasonable option.
6. Internal duct cleaning would be recommended, and it is not

ROBERT FROST AUDITORIUM - MECHANICAL SYSTEM FORENSICS

known if the ductwork has internal duct liner or not, which, if so, would make cleaning the ducts impractical. Some ducts run below the floor of the Auditorium so access to clean the ducts may not be possible.

- We were told that indoor air quality is a high priority, therefore air filtration should be revised to use higher efficient filters.

3.0 TABLE 1 - EXISTING ZONING

Thermostat is Provided in Each

Air Handler System	Zones	Zones	Main Supply Duct Size	Air Quantity
AH-1	A.	Auditorium	26"x30" 26"x30" 30"x24"	8,000 8,000 7,000
	B.	North Lobby	16"x24"	3,000
	C.	South Lobby	16"x24"	3,000
AH-2	1	Band Room	24" x 19"	2,000
	2	Practice Rooms	7" x 18"	660
	3	Make-up Room	30" x 8"	800
	4	Platform Room	24" x 24"	5,200
	5	Drama	14" x 16"	1,500
	6	Dressing Rooms	10" x 16"	1,000
	7	Shop	11" x 16"	1,300
	8	Offices (Practice)	6" x 17"	440



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FIRE & LIFE SAFETY FORENSICS REPORT



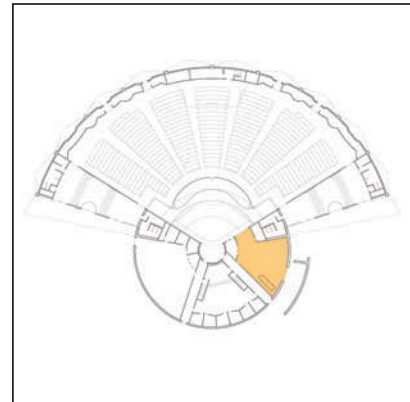
ROBERT FROST AUDITORIUM - FIRE & LIFE SAFETY FORENSICS

REPORT ON LIFE SAFETY AND ACCESSIBILITY

1.0 FIRE PROTECTION AND LIFE SAFETY

1.1 Existing Conditions

The existing building is equipped with a partial automatic fire sprinkler system and automatic fire alarm system. Sprinklers are provided in all areas except the main theater area, stage, "Black Box" rehearsal room, Classroom #7, ticket booths, public restrooms, main lobbies and projection booth. The fire alarm system does not appear to provide complete notification throughout the public spaces and the coverage of strobes does not meet the ADA requirements. In areas that are not provided with sprinklers it appears that spot-type and beam-type smoke detection is provided. HAI was not provided with information regarding the interconnection of the fire alarm system with the house lighting and sound.



Plan - Areas with Fire Sprinklers

There appear to be adequate number of exits from all areas of the building with the exception of the 2nd floor dressing and make-up areas where a single exit stair is provided.

Illuminated exit signage is provided throughout the building however some fixtures appear to be damaged. The emergency lighting in the building could not be verified during the survey but low-level performance lighting appeared to be provided in accordance with the minimum code requirements.

HAI did not conduct testing on any of the existing fire protection and life safety systems to verify if they are functional or in compliance with the minimum applicable code requirements.



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1.2 Observations

1. The fire alarm system in the Assembly area does not provide emergency voice communication. All Assembly occupancies with an occupant load over 1,000 people are required to have an emergency voice communication system.
2. The fire alarm system appears to not be in compliance with the minimum with coverage for notification of building occupants. Replacement of the existing fire alarm system to comply with the current CBC, ADA and NFPA 72 requirements should be considered.
3. Partial sprinkler protection in the building. Sprinklers required throughout with occupant loads over 300 people in accordance with CBC Chapter 9.
4. Standpipes are not provided on the stage. Recommend installation of standpipe system on the stage in accordance

ROBERT FROST AUDITORIUM - FIRE & LIFE SAFETY FORENSICS

- with CBC Chapter 9.
5. Obstructions to existing sprinklers and the age of some existing sprinklers are a concern.
 6. Sprinkler system annual and 5-year testing is not up to date. Recommend conducting required testing and maintenance to the sprinkler system.
 7. The separation between the scene/wood shop and the assembly space does not appear to be adequate. The over head door and personnel doors do not appear to be properly rated or maintained. May need replacing overhead and personnel doors with properly rated doors and sealing all penetrations.
 8. The existing seats may not satisfy the flame spread and smoke production requirements of the CBC.
 9. Ventilation is required for all stages over 1,000 sq. ft. in area. At least two vents with a cumulative area equal to 5% of the floor area of the stage are required. Currently a 5 ft. x 6 ft. (30 sq. ft.) duct is provided above the stage and based on the approximate stage area of 1,700 sq. ft. an open vent area of 85 sq. ft. is required.
 10. Several rated fire doors are propped open and also appear to be in disrepair. Recommend replace/repairing fire rated doors and installing magnetic door hold open devices when the fire alarm system is replaced to mitigate doors being propped open.
 11. There is a single non-compliant exit from the second level. Two exits are required from all areas of the building and at least one is required to directly to the exterior of the building.
 12. Fuel load and housekeeping in the scene shop and storage near exits appears to be potential for obstructions of exits by storage and also the storage in the scene shop is excessive. Recommend removing some combustibles and relocating storage to appropriate areas.
 13. Damaged and non-functional exit signs and emergency lighting in the building did not appear to be installed.



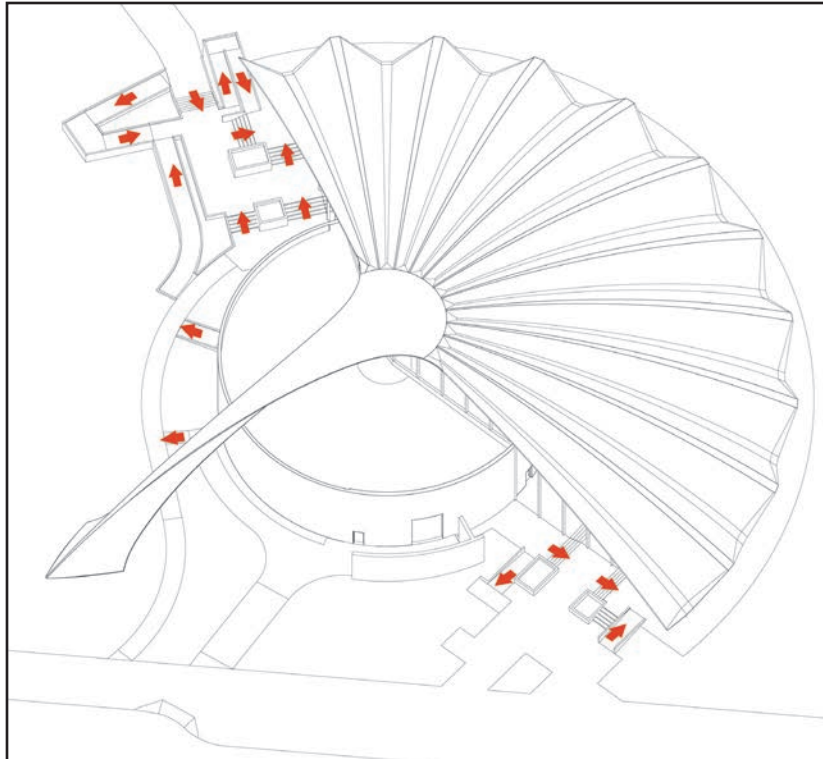
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ROBERT FROST AUDITORIUM - FIRE & LIFE SAFETY FORENSICS

2.0 ACCESSIBILITY

2.1 Existing Conditions

The building appears to be primarily original construction pertaining to accessibility and ADA compliance with the exception of the wheelchair ramping at the exterior of the building and some restroom upgrades that appear to have been done in the lobby restrooms. In general the building interior is not compliant with Chapter 11 of the CBC or the ADA guidelines.



Axon - Ramps and Stairs



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2.2 Observations

1. The seating in the theater does not provide adequate wheelchair seating. Recommend revising the seating arrangement to provide adequate wheelchair seating including companion seating and designated aisle seating in select locations.
2. It did not appear that assistive listening devices were provided in the theater seating area. Recommend providing permanently installed assistive listening devices in the theater seating area.
3. The access to the men's public restrooms is only provided from the rear of the lobbies and the women's public restrooms are only provided at the lower level of the lobbies. Recommend reconfiguring the restrooms to allow for access to both men and women at both elevations.



ROBERT FROST AUDITORIUM - FIRE & LIFE SAFETY FORENSICS

4. There is no wheelchair access to the orchestra area. Recommend providing ramping to accommodate wheelchair access to the orchestra area.
5. There is no wheelchair access to the second floor dressing rooms. Recommend either providing access to the second floor dressing rooms or provide equivalent accommodations on the accessible level of the building.
6. The exterior door hardware is not compliant with the grasping criteria. Recommend replacing the exterior door hardware with compliant graspable hardware.
7. The platform in Room# 7 is not wheelchair accessible.
8. The slope of the aisles in the Theater is very steep and appears to not satisfy the maximum slope allowed. Recommend reconfiguring the slope of the aisle or provide alternate access at the center elevation for wheelchair access.
9. There is no wheelchair access to the employee side of the ticket booths. Recommend providing ramping to accommodate wheelchair access to the employee side of the ticket booths.
10. There is no wheelchair access to the projection room.
11. The painting on the nosing of the stairs appears to be faded. Recommend repainting all stair nosing.
12. The returns on the handrails from the second floor area do not provide adequate length of the return.
13. The exterior handrails all have vertical projections that do not comply with the continuous handrail requirements.
14. Some of the public restrooms are not provided with geometric signage on the doors. Recommend upgrade of the restroom signage to comply with the geometric signage requirements.
15. The trophy cases in the lobbies do not provide cane detection and protrude from the wall.



HAZARDOUS MATERIAL FORENSICS REPORT

ROBERT FROST AUDITORIUM - HAZARDOUS MATERIAL FORENSICS

HAZARDOUS MATERIALS

Introduction

Frost Auditorium opened for use in 1964. Some of the acoustical remedies clearly stipulated in the 1962 'Acoustical Treatments' section of the Flewelling and Moody architectural documents are asbestos based materials. Most notably, because of the location and nature of the application, was the sprayed asbestos treatment of the interior surfaces of the roof shell.

Asbestos is a silicate material used most predominately between World War II and the early 1970's. When it is disturbed or crumbles, the fibers which are extremely light hover in the air for long periods of time making them easy for people to inhale. Asbestos is now known to cause lung cancer and other respiratory diseases. The connection between asbestos and respiratory disease was established in the 1930's but it was not until 1973 that the EPA banned the use of sprayed on fireproofing and insulation containing more than 1-percent asbestos. It was 1978 before they banned the use of sprayed-on materials containing asbestos for any reason.

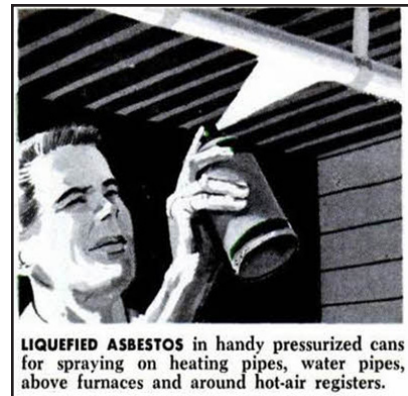
In January 1977, after a number of New Jersey schools were closed under threat by thousands of parents to boycott if asbestos was not removed, concern rippled through school boards across the country. The State Superintendent of the California Department of Education shortly thereafter urged all districts to assess whether asbestos was present within their facilities. Culver City realized quickly that it had a large problem in Robert Frost Auditorium.

1.0 ACOUSTIC TREATMENTS

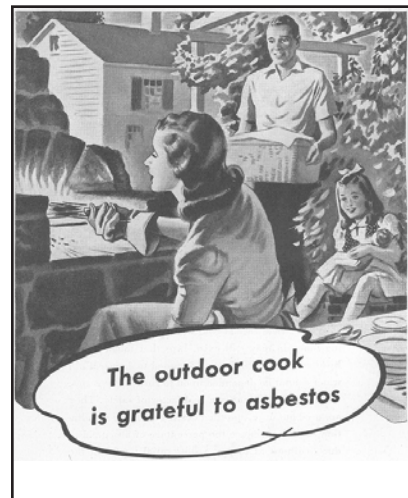
1.1 Existing Conditions

In March 1977, the Department of Health Services of Los Angeles County conducted an industrial hygiene study in the auditorium and recommended that the acoustical material be removed. Where it was within reach of tall students, given the potential for it to be disturbed, was of particular concern although an air quality test showed the samples to be below the threshold limit value and relatively safe. At the time bids were taken for its removal but there was little funding in the district and there was no state or federal assistance for such situations.

The EPA instituted a voluntary asbestos inspection program for schools in 1979. In 1980 the CCUSD once again had the air quality in the auditorium tested by the LA County Department of Health Services this time with the air conditioning unit providing "...a greater



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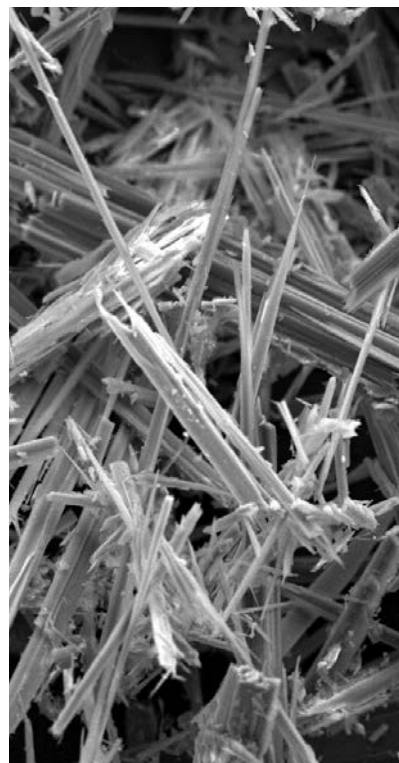


ROBERT FROST AUDITORIUM - HAZARDOUS MATERIAL FORENSICS

airflow in the auditorium.” At this time the samples were still within a safe range and below the threshold limit value of 2 fibers per cubic centimeter of chrysotile asbestos dust. Because of the nature of the material however, and expectations of its deterioration, it was again recommended to be removed.

On May 27, 1982 the EPA adopted a regulation that mandated the inspection of all public and private schools for asbestos. Although there was no stipulation for its removal, the knowledge of its presence was required to be made public to all employees, students, and parents. CCUSD had the inspections completed during June 1983 with the only notable project being Robert Frost Auditorium.

Early 1984 saw a bidding process that was won by Hendrickson-Cooper and Associates of Walnut, California. Another division of the company under the name of Quality Home Insulation, Inc. completed the job. The work was scheduled to be completed over the summer and done before the beginning of the following school year. Health Science Associates of Los Alamitos, CA who also did the inspections and analysis the previous summer was employed to act as the on site Cal-OSHA approved inspector for the job.



77. Micrograph Image of Asbestos Fibers

The EPA requires all handlers of hazardous materials be issued an identification number for generators. A Hazardous Waste Manifest is also required for each load of material and in this way each load can be tracked per individual generator and/or transporter. There are seven Waste Manifests in the Culver City District offices files dated between June 27th and July 5th 1984. Quality home insulation is issued the EPA ID CAX000051607 and CCUSD is issued EPA ID number CAX000081307.

On August 8th 1984 Health Science Associates issued their findings during and after the removal and replacement of the acoustic material in Robert Frost Auditorium. All procedures and precautions were deemed satisfactory by both the contractor and the District with asbestos exposure limits never exceeding allowable limits. On page 2 of this letter the certified Industrial Hygienist notes that air sampling after the completion of the asbestos removal shows the building to be safe for occupancy.

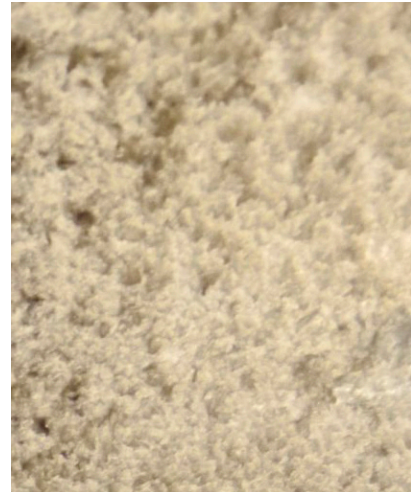
The asbestos material was replaced with a very similar looking cellulose fiber K-13 spray on system made by International Cellulose Corporation. The acoustics were tested in August 1984 and proved to be equivalent to that of the asbestos properties. The latest MSDS report on K-13 states that although there are some hazardous and/or regulated components to the spray-on system, it does not contain

ROBERT FROST AUDITORIUM - HAZARDOUS MATERIAL FORENSICS

ingredients above the safe harbor limit known to the state of California to cause cancer, birth defects, and other reproductive harm. The hazards identified in the worst case are an irritation whether through touch, inhalation, or ingestion.

1.2 Observations

1. The International Cellulose Corporation advertises the K-13 system with the ability to garner LEED points for Recycled Content and Low-Emitting Materials.
2. The contractor in 1984 had concerns that the top of the canopy should be encapsulated. It was to be vacuumed during the asbestos removal but there was concern that it would not be completely removed due to the rough surface and could become airborne at a later date.



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THEATRE OPERATIONS FORENSICS REPORT

ROBERT FROST AUDITORIUM - THEATRE OPERATIONS FORENSICS

REPORT ON THEATRE OPERATIONS

Introduction

The proposed renovation of the Frost Auditorium has the potential to add a unique performing arts space to the expanding inventory of theatrical spaces in the Los Angeles Region. With its large audience capacity, location in the increasingly popular Culver City area, and iconic architecture a restored Frost Auditorium can help to reinforce the identity of Culver City High School and provide an exciting venue for student performances, assemblies, and lectures.

In order to establish meaningful attributes to guide the renovation, this study will address the District's desire as expressed in the RFP to "provide professional production support of sound, lighting and scenic equipment and to have the renovated Auditorium used more by the community and professional companies. The optimum would be that Culver City Performing Arts and Civic Organizations see the Auditorium as an ideal venue for their use once it has been renovated."

Subsequent meetings with the Superintendent and Principal have somewhat modified that charge to place more emphasis on Culver City High School's programs, including the quasi extracurricular programs offered by the AVPA, and to place the primary focus on pedagogy rather than leasing to outside entities. Therefore this section will first provide an overview of the size, capabilities, and location of comparable regional venues, and secondly discuss management and operations protocols distilled from that overview.



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ROBERT FROST AUDITORIUM - THEATRE OPERATIONS FORENSICS



Comparable Facilities Map

1.0 COMPARABLE FACILITIES IN THE LA REGION

Southern California is host to hundreds of live performing arts venues with a variety of seating capacities, technical facilities, management, programming and operations. There are several comparably sized performance venues within a 10 mile radius of the Frost Auditorium.

1.1 Barnum Hall

600 Olympic Blvd., Santa Monica, CA 90405.
 Barnum Hall is a 1,248 seat proscenium theatre located on the campus of Santa Monica High School. Barnum Hall was built in 1938 by the Federal Works Project Administration as a Streamline-Art Deco performing arts venue that would serve not only Santa Monica High School but also as a cultural center for the Santa Monica community. From 1996-2004 Barnum Hall underwent an extensive renovation with funding from local and state bond measures and nearly \$1,000,000 in donations from alumni of Santa Monica High School and local community groups and businesses. Barnum Hall currently hosts over 100 days of school performances, meetings, assemblies and rehearsals and 40-50 days of outside rentals including book signings, lectures, film screenings, and performances of professional and community presentations of dance, popular music, opera and symphonies.



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ROBERT FROST AUDITORIUM - THEATRE OPERATIONS FORENSICS

Barnum Hall performances for the last four months include:

- Friday, Oct. 5, 2012 The Beatles at Barnum. Santa Monica High Orchestra students perform Beatles songs accompanied by a dad's band "Father Knows Best." Students performed as soloists, in small ensembles and the full Symphony Orchestra. Patrons were encouraged to sing along.
- Monday, Oct. 13, 2012 Los Angeles Podcast Festival
- Tuesday, Oct. 17, 2012 United States Air Force Singing Sergeants
- Tuesday, Oct. 23, 2012 Santa Monica High Athletic Night
- Tuesday, Oct. 30, 2012 Santa Monica High Band Fall Concert
- Sunday, Nov. 4, 2012 New West Symphony
- Tuesday, Nov. 6, 2012 Choral Fall Festival
- Sunday, Nov. 10, 2012 Santa Monica College Jazz Vocal Ensemble
- Monday, Nov. 11, 2012 Santa Monica Symphony
- Sunday, Nov. 16, 2012 Southern California Vocals Association: High School Honors Choir
- Tuesday, Nov. 20, 2012 Santa Monica High Financing a College Education
- Sunday, Dec. 2, 2012 Los Angeles Theater Organ Society
- Friday, Dec. 7, 2012 Winter Dance Showcase
- Sunday, Dec. 16, 2012 Crossroads Holiday Concert
- Saturday, Jan. 12, 2013 Advisor 4-Year Plan Parent Meeting
- Tuesday, Jan. 15, 2013 Santa Monica High Band Winter Concert
- Friday, Jan. 18, 2013 Santa Monica High Jazz Band Concert
- Sunday, Jan. 27, 2013 New West Symphony Gala Concert & Multi-Media Presentation



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Barnum Hall Ticketing and Box Office

Ticket sales for live performances in theatres, concert halls and performing arts centers have migrated to the internet through various ticketing agencies and software programs. Patrons are able to view seating charts on line, select specific seating locations, purchase on line and print out ticket vouchers that can be scanned by front of house staff.

Tickets to all Barnum Hall events are purchased through the event sponsor. Tickets for school events can be purchased at the door. The New West Symphony exemplifies the kind of outside programming currently presented at Barnum Hall and could potentially be presented in a renovated Frost Auditorium. The New West Symphony is a resident professional symphony in three Southern California venues, i.e. the Oxnard Performing Arts Center, the Thousand Oaks Civic Arts Plaza and Barnum Hall where it presents a series of Sunday matinee concerts. New West Symphony sells its tickets primarily through

ROBERT FROST AUDITORIUM - THEATRE OPERATIONS FORENSICS

subscription at its home office in Thousand Oaks and sets up a table in the lobby for door sale at Barnum Hall.

1.2 Wilshire Ebell

4401 West 8th St., Los Angeles, CA 90005.

The Ebell complex includes the 1,280 seat proscenium theatre, Ebell clubhouse, a large lounge, art salon, dining room and tile-roofed colonnade. The Ebell is a women's club founded in the 1880's. In 1927 the Wilshire Ebell Theatre was opened to host concerts, lectures, vaudeville, community events, variety shows and other events. Judy Garland was discovered and Amelia Earhart made her final public speech in the Wilshire Ebell in the 1930's. The Ebell Theatre is a rental facility and does not present or produce programming. Virginia O'Connor, Assistant Theatre Manager, describes the Ebell as maintained throughout the decades as funding became available. She offered to host representatives of Culver City High School on a tour of the Ebell and also stated that it could be available for Culver City School and community groups for performances if the Frost were temporarily unavailable due to renovations. Located eight miles from the Frost Auditorium, the Ebell may be considered as a temporary backup performance space during the renovation of the Frost Auditorium. Although it is not on a high school campus, the Ebell's seating capacity is similar to the Frost Auditorium and its' proscenium theatre design make it another model for the operation and programming of a performing arts venue in the Frost Auditorium market area. Over the years, the Ebell has been maintained with improvements made on a piece meal basis as funds became available. Recently new carpeting was installed and some post seats with obstructed views were removed. In the past Ebell theater seats have been recovered, new sound and lighting systems installed, stage technical facilities retrofitted and in 2012 concrete restoration was begun throughout the building.



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1.3 Wadsworth Theatre and Brentwood Theatre

11301 Wilshire Blvd., Los Angeles, CA, 90073 on the VA Campus

The Wadsworth Theatre is a 1,378 Spanish Colonial/Mission Revival proscenium theatre opened in 1939 and renovated in 2002. The adjacent Brentwood Theatre opened in 1942 and was renovated in 2003. Both the Wadsworth and Brentwood Theatres are operated by Richmark Entertainment, a full service theatrical entertainment organization based in Los Angeles and New York. The Wadsworth Theatre presents the annual Streamy Awards which recognize original programming on the internet, Broadway Shows, musical concerts, film premieres and other theatrical productions. Both the Wadsworth and Brentwood Theatres are available for rent. The reopened Brentwood Theatre presented the 2004/2005 Geffen Playhouse season and



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currently presents plays and small musicals some of which are pre-Broadway engagements. Past representative performances at the Wadsworth Theatre include:

- Westside Ballet The Nutcracker
- Chazz Palminteri in The Bronx Tale
- Reprise Theatre's staged readings of The Producers and The Odd Couple starring Martin Short and Jason Alexander
- Los Angeles Jewish Symphony
- New West Symphony
- Jackie Mason No Hold Barred
- Paula Poundstone
- The 25th Annual Putnam County Spelling Bee with the original Broadway Cast



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1.4 Saban Theatre

8440 Wilshire Blvd., Beverly Hills, CA 90211

The Saban Theatre is a 1,877 proscenium theatre open for theatrical rentals, concerts, television shoots, parties, and special events. Originally named the Fox Wilshire, the Saban Theatre opened in 1930 as a movie theatre. In 1981, the Saban Theatre was renovated and converted into a stage venue. The Saban Theatre has hosted comedy, pop and rock concerts and dance including:

- Billy Idol
- Laurie Anderson
- Spandau Ballet
- Billy Crystals 700 Sundays
- Chris Botti Live in Concert featuring Sting and Paula Cole
- The National Ballet of Spain
- HBO's Def Comedy-Jam



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1.5 Veterans Memorial Auditorium

4117 Overland Ave Culver City, CA 90230

The Veterans Memorial Auditorium is a multi-use facility that can be altered to be a 1,600 seat proscenium style theatre. There are 776 fixed, upholstered seats (including 329 in a balcony) and an additional 824 padded folding chairs can be installed in a theater configuration on the main floor. Additionally, the venue has a hardwood floor space of approximately 10,000 sq.ft. There is a 10-by-16 roll-up door at the stage with additional, ground-level access on the north side of the building. There are three dressing rooms for theatrical performers. Spectator amenities include a two-window box office and on-site parking for 300 cars plus ample street parking nearby. There are concession facilities on-site and a full catering capability. Lighting is sufficient for live audiences, but must be augmented for broadcast use.



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2.0 OTHER PERFORMANCE FACILITIES IN THE LA REGION

Barnum Hall, Wilshire Ebell, Wadsworth and Brentwood Theatres and Saban Theatre are comparable size performance facilities to the Frost Auditorium located in the same market area. There are other performing arts venues located within a few miles of the Frost Auditorium which although different in size and programming to the Frost, illustrate the diversity of performing arts facilities in the Frost Auditorium market area.

The L.A. Stage Alliance

A 501 © 3 non-profit membership organization of producing theatres and theatrical production companies has over 500 members in Southern California including two in Culver City and a third within a few miles of the Frost Auditorium market area:

2.1 Kirk Douglas Theatre

9820 Washington Blvd., Culver City, CA 90232

The Kirk Douglas Theatre is a 317 seat venue located in a renovated historic theatre that opened in 2004. The Kirk Douglas Theatre is owned and operated by the Center Theatre Group, a non-profit theatre company located at the Los Angeles Music Center that also manages and programs the Ahmanson Theatre and Mark Taper Forum. Kirk Douglas Theatre programming consists of professional productions more appropriately housed in a 317 theatre than one of the larger Center Theatre Group venues in downtown Los Angeles.

2.2 The Actors Gang

9070 Venice Blvd., Culver City, CA 90232

The Actors Gang founded by Artistic Director Tim Robbins is a diverse ensemble of performing artists dedicated to the development of new and ground breaking work. The Actors Gang is the resident theatre company of the Ivy Substation. The Culver City Redevelopment Agency renovated the Ivy Substation in 1990 into a 99 seat theatre covered by the Los Angeles 99-Seat Plan (formerly Equity Waiver) adopted by the Council of Actor's Equity Association. The Plan permits professional Equity Actors to perform in 99 seat theatres in Los Angeles for minor stipends of \$7 - \$15 per performance plus free parking. The actors are in essence subsidizing the productions they appear in because it affords them an opportunity perform in new or classic plays and be seen by agents and casting directors. The Ivy Substation is also available for rent for daily events or productions.



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2.3 Geffen Playhouse

10886 Le Conte Ave., Los Angeles, CA 90024

Originally constructed in 1929 as the Masonic Affiliates Club for students and alumni of UCLA, the Geffen Playhouse consists of two theatres the 500 seat Gil Cates theater and the 125 seat Audrey Kennis Theater located six miles from the Frost Auditorium. Renamed as the Westwood Playhouse it was donated to UCLA in 1994. From 2003-2005 the Westwood Playhouse was renovated by a \$17,000,000 capital campaign and renamed the Geffen Playhouse in recognition of a \$5,000,000 donation from the David Geffen Foundation with additional funding from Mrs. Audrey Skirball Kennis and donors from the UCLA and Westwood communities. During the renovation, the Geffen Playhouse presented productions at the Brentwood and Wadsworth theaters. The Geffen Playhouse produces world premieres, award winning commissioned works and reinterpretations of timeless classics. The Geffen Playhouse is known for featuring well known television and movie actors in its' productions.



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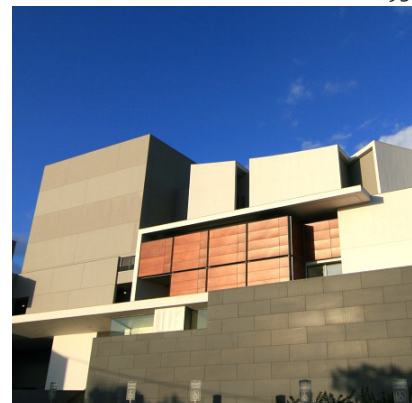
The Western Arts Alliance

A 501 © 3 non-profit membership organization of presenting performing arts venues lists over 50 members in Southern California. Two of its members are located within the immediate market area of the Frost Auditorium:

2.5 The Broad Stage

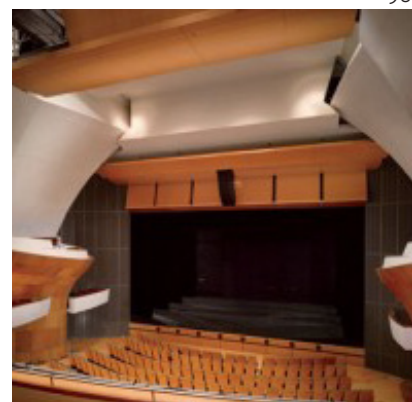
1310 11th St., Santa Monica, CA 90401

The Broad Stage is a 501 © 3 non-profit presenting organization housed in the Santa Monica College Performing Arts Center which opened in 2008 as a world class midsize performing arts venue located 7 miles from the Frost Auditorium. The Broad Stage is a 499 seat court theatre or horse shoe design which fosters intimacy between performing artists on stage and patrons. The Broad Stage presents Classical, Dance, Family Entertainment, Jazz and Blues, Multi-Media, National Geographic Live, Songbook and Opera, Theater, World, Contemporary and Ethnic Music. The Broad Stage is available for rent by outside groups through Santa Monica College. Recent Broad Stage presentations include:



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- Academy of St. Martin in the Fields
- The Section Quartet Residency
- Hawaiian Roots and Sonic Frontiers
- Harlem Gospel Choir
- Blues at the Crossroads
- Celtic Sout
- Tiempo Libr
- Marilyn Horne Song Competition Winners



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ROBERT FROST AUDITORIUM - THEATRE OPERATIONS FORENSICS

2.6 Wallis Annenberg Center for Performing Arts

470 North Canon Dr., Beverly Hills, CA 90210

Currently under construction and scheduled to open in the fall of 2013, the Wallis Annenberg Center for Performing Arts consists of the 500 seat Goldsmith Theatre and adjacent renovated Beverly Hills Post Office containing a 150 seat studio theatre, three classrooms for a theatre school for young people, café and gift shop located 7.5 miles from the Frost Auditorium. The Annenberg Performing Arts Center will produce and present Theater, Music, Dance and Professional Children's Theater.



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2.7 The Las Virgenes Unified School District (LVUSD)

Located in northern Los Angeles County and serving the cities of Calabasas, Agoura Hills, Hidden Hills and Westlake Village. In January, 2013 LVUSD opened two new Performing Arts Education Centers one on the campus of Agoura High School and the other on the campus of Calabasas High School. The construction and grand opening of both theatres was supervised by one school district Theatre Manager. The simultaneous opening weekend for both theatres, January 26 & 26, 2013 was billed LVUSD FESTIVAL OF THE ARTS AND EDUCATION: A Grand Opening Celebration. The simultaneous opening of both Performing Arts Education Centers consisted of 17 performance and educational events including theatre, music, dance, comedy, art and educational events.



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Funding for construction was approved by the passing of Measure G construction bond in 2006 to provide two professionally equipped theaters for district students and to bring high quality programming to the communities of Agoura and Calabasas. Each Performing Arts Education Center includes:

- 650 seat Main Stage Theatre
- A Black Box Theatre with flexible seating configuration up to 100.
- Advanced technology for classroom instruction and lectures
- Full orchestra pit with hydraulic lift
- Professional acoustics, lighting and sound systems
- High quality dressing rooms
- Scene Shop
- Costume Shop
- Green Room
- Full fly gallery and rear projection capability
- Concessions and box office in the lobbies

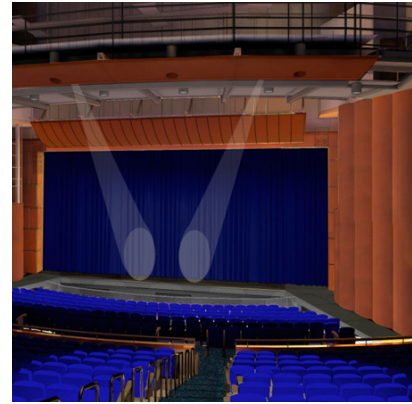


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Gilles Chiasson, the Performing Arts Education Centers' Theatre Manager was recruited and hired one year before the opening of the two Performing Arts Centers. He worked with contractors to oversee

ROBERT FROST AUDITORIUM - THEATRE OPERATIONS FORENSICS

construction of both theatres and worked with school administration, faculty, students and community representatives to plan the grand opening and inaugural season of both venues. Although the two LVUSD Performing Arts Education Centers are new performance facilities rather than a renovated existing facility like the Frost Auditorium, they illustrate the scope of possible enhanced education and community performing arts programming potential available for the Frost Auditorium.



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3.0 CASE STUDY

3.1 Barnum Hall

There are hundreds of performance venues in Southern California. The renovation and current programming of Barnum Hall stands out as a useful case study for the proposed renovation of the Frost Auditorium for the following reasons:

- Frost Auditorium and Barnum Hall are located on high school campuses.
- Frost Auditorium and Barnum Hall give first priority to students and school district events.
- Frost Auditorium and Barnum Hall give secondary priority to community and civic events on a space available basis.
- Frost Auditorium and Barnum Hall are both located on the west side of Los Angeles County with similar demographics and market characteristics.
- Frost Auditorium and Barnum Hall are similar size facilities.
- Frost Auditorium and Barnum Hall are staffed by high school students under supervision of district staff.
- Frost Auditorium and Barnum Hall provide students with an opportunity to learn technical and business skills to prepare them for future employment.
- Frost Auditorium is a performance venue that will be renovated with a similar scope of work as Barnum Hall to update an aging high school auditorium into a performance and educational learning center equipped with modern back and front of house improvements to serve the technical demands and audience expectations of the 21st century.

Barnum Hall provides a model for the renovation and enhanced programming of a high school auditorium that should provide the Culver City Unified School District with an opportunity to explore the facility upgrade and operation issues of a renovated Frost Auditorium. Some of the primary features of Barnum Hall that were upgraded and added during the renovation include:

- 1,250 seats
- Hydraulic Orchestra lift

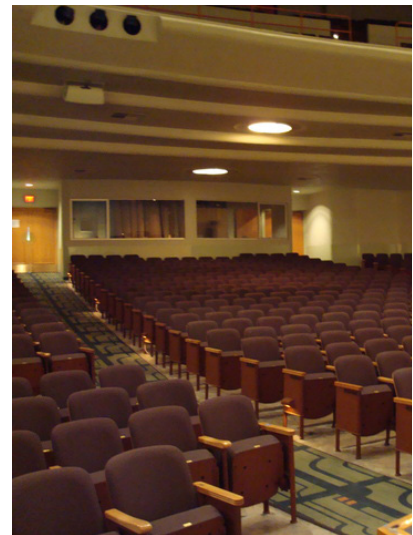
ROBERT FROST AUDITORIUM - THEATRE OPERATIONS FORENSICS

- Renovated fly system with full drapes and scrim
- New Adjustable Wenger Orchestra Shell
- Stage Level Loading Dock
- New lighting and sound equipment located in back of house booth
- Front and rear projection screen
- 6' Steinway B Concert Grand and 9' Fazioli Concert Grand
- Restored 1922 Wurlitzer Pipe Organ
- Upgraded green room, dressing rooms and back stage rest-rooms.

3.2 Barnum Hall Staffing



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Management of Barnum Hall

Carey Upton, Director of Theater Operations and Facilities Permits cupton@smmusd.org has provided information useful for the Culver City Unified School District as it studies various options to improve Frost Auditorium for enhanced programming by the District, AVPA and outside community and civic groups. Originally hired as Director of Theater Operations for Barnum Hall, Carey Upton's responsibilities have expanded to include other Santa Monica-Malibu Unified District facilities. Mr. Upton has offered to host a delegation from Culver City High School to tour Barnum Hall and discuss the impact the renovations had on the facility, faculty, staff, students, school and community programming. Barnum Hall's staff includes a technical theatre coordinator, technical theatre technician and students training in a Regional Occupational Program focused on technical theater, film and business classes. A student run business, 3 Tier Event Services, provides parking, concessions and ushers for Barnum Hall events.

ROBERT FROST AUDITORIUM - THEATRE OPERATIONS FORENSICS

4.0 THEATRE MANAGER/TECHNICAL DIRECTOR

The Barnum Hall Director of Theatre Operations and Facilities Permits has recommended that the Culver City Unified School District recruit a Theatre Manager or Technical Director at the early stages of the renovation of the Frost Auditorium. A school district employee with technical theatre knowledge would be invaluable in the design and renovation phase of the Frost Auditorium because he or she would bring practical experience in the operation of a high school auditorium to ensure that optimum results will be attained.

A high school auditorium differs from other performance spaces in that it serves as a teaching laboratory for students in theatre operations as well as support student productions and concerts. A Theatre Manager or Technical Director with experience as a teacher or technical director from an educational institution brings a special set of insights, experience and skills unique to the operation, management and programming of a secondary or collegiate performing arts venue. A Frost Auditorium Technical Director could also develop an enhanced ROP program in technical theatre. Technical Theatre skills translate easily to the film and television industry.

ROBERT FROST AUDITORIUM - INTERVIEWS

STAKEHOLDER INTERVIEWS AND DISCUSSION GROUPS

ROBERT FROST AUDITORIUM - INTERVIEWS

REPORT ON STAKEHOLDER INTERVIEWS

Introduction

Hodgetts+Fung initiated a series of interviews and open discussions with various stakeholders having vested interest in the Robert Frost Auditorium facility. During these discussions a presentation was utilized to describe the building and create a dialogue about how it was or was not functioning. The goal of these meetings was to gain insight as to the various individual users and groups opinions, use, and priorities for the site.

1.0 CCUSD ADMINISTRATION – January 22, 2013

1.1 The Interview

The studio of Hodgetts+Fung met with the Culver City Unified School District Superintendent and Assistant Superintendent. The meeting was held at the District offices of CCUSD.

1.2 Issues Raised

1. **CCUSD stance on Frost Auditorium future use**
 - Regardless of what you want, here is what you need.
 - Finding essentials
 - Build enthusiasm with this study = additional funding
 - Market research/ feasibility is secondary or even tertiary
 - This renovation is about students and parents
 - This is for CCUSD

2. **CCUSD Major Concerns**
 - Management of site
 - Access: Primary learning tool for CCUSD students
 - Maximizing everyday use (function, light, sound, performance).
 - Sense of pride
 - Curb appeal – It's embarrassing.



ROBERT FROST AUDITORIUM - INTERVIEWS

2.0 AVPA STUDENTS & FACULTY - January 24, 2013

2.1 The Interview

The studio of Hodgetts+Fung together with representatives from Theatre Projects Consultants met with students and faculty currently active in the Academy of Visual and Performing Arts. The meeting was held in the classroom within Robert Frost Auditorium.



2.2 Issues Raised

1. Site Use

- Need for concessions space
- Need for displays and/or gallery
- Variable uses and audience size

2. Technical Director

- Oversight
- Student designer support
- Stagecraft classes

3. Circulation

- Everything disconnected
- Hallways as backstage
- Too many doors and locks

4. Shop

- Loose and broken boards at platform
- Painting pit

5. Class Room

- Too hot in classroom
- "You sweat really bad in here."
- No windows
- Can't leave doors open (security)
- Sound noise between upstairs dressing room and hallways and teaching space

6. Black Box

- Current small room use (Dance teacher, Company Manager, Storage, Sound/Light Engineer for Black Box [not really used]).
- When air is on it's really noisy and blows cold air.
- Not a great shape.

7. Dressing rooms

- Access is a problem



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ROBERT FROST AUDITORIUM - INTERVIEWS

Noise in classroom below
Running

8. HVAC

Too hot in classroom
Too noisy in the Black Box and blows cold air
Mainly need heat in auditorium, then backstage areas get too hot
Need heating in zones
Have to turn on heat really early to get auditorium warm

9. Control Booth

View to stage is not great, window height is a problem
All broken or outdated

10. Stage

Floor is uneven with tape and screws everywhere
Grand piano is a permanent fixture
No wing space
No place for scenery
Audience is too far away
Lip is too high
Odd Shape

11. Technical Deficiencies

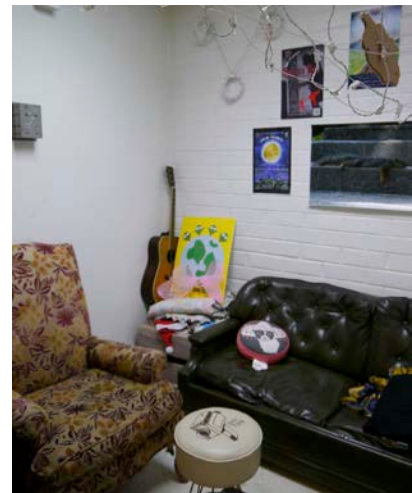
Lighting access
Lack of effective projection system
Front lighting is terrible
Fire sensors are an issue with lighting positions
Preset panel is half broken
Better speaker system needed
Many lights broken/outdated
Radial lighting grid is a problem

12. House

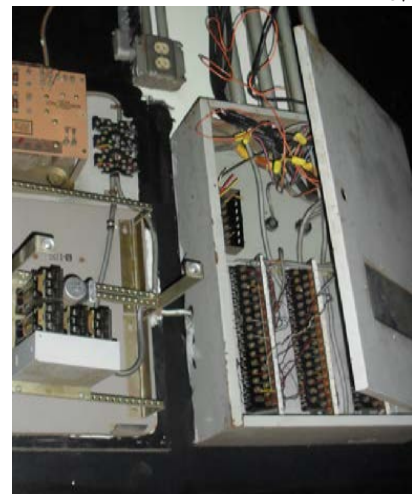
No light locks
Doors open to show restroom access
Bathroom noise in house
Terrible acoustics
Entry and exit with full house really doesn't work
Impossible to project into space without a microphone
Seating layout doesn't work.



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ROBERT FROST AUDITORIUM - INTERVIEWS

2.3 Survey Comments

1. "One major problem is that the grid is so high up. It would be very nice to have a grid that comes down to the floor."
2. "The backstage support spaces are terrible and lack continuity. Nothing is connected or convenient."
3. "From stage, the aisles are really visible and make it seem like it's not full (and not appealing)."
4. "Ill maintained and outdated equipment, bad storage. I would really love to switch to a Source Four inventory."
5. "Preset panel is a nightmare!"
6. "The intelligibility is pretty backwards, best acoustics is like, the pit."
7. "The location of the dressing rooms is sort of far and oddly placed but we deal with it."
8. "There is simply not enough room to move sets."
9. "The chairs, the angles, and the sightlines are all big problems."
10. "The stage floor is incredibly damaged. Holes, dips, grooves, things patched up with tape, nails sticking out. It's not safe, especially to dance on."
11. "Projector should be hung permanently and controlled from the booth."
12. "The scene shop should be usable by art, film, & theatre."
13. "The stage is a very awkward shape and the side stages are very small and useless right now."
14. "It is very difficult to project and still have good tone using any kind of non-electric instrument."

3.0 CCHS & MS ADMINISTRATION - February 1, 2013

3.1 The Interview

The studio of Hodgetts+Fung together with Mitze Productions met with the administration of Culver High and Middle School as well as the District Superintendent and the CCHS Director of Student Activities. The meeting was held on the Robert Frost Auditorium stage.

3.2 Issues Raised

1. AVPA
Monopoly over booking, use, and equipment
Integration / autonomy within Culver City High School
Difficulty in coordination with High School and Middle School
They are a foundation, 501(c)(3) Charity



ROBERT FROST AUDITORIUM - INTERVIEWS

2. Site

Air handling
Venue use by outside entities
Circulation
Security
Multi-purpose space
Use and lack of support to Middle School
Maintenance and oversight (lack of)
Classroom / dance room / programming
Technical Director

3. Use

Civic Center Act (warrants use by outside parties)
Parking
Similar venues
Oversight: responsible person / entity

4. Funding

R.O.P. Program: Regional Occupational Program
Elevator funding from separate source (outside Frost renovation budget)
Bond
Sony

3.3 General Comments

1. "That classroom is a major complaint because of the air handling. We also have problems monitoring student activity."
2. "If outside leasing of this space happens, parking is a big issue, and circulation in general."
3. "The coordination with AVPA is difficult."
4. "There is not one person here who knows this building. Information is not passed on. We need someone who knows this building and can take on this responsibility."
5. "Things would be dramatically improved if we could just get the lighting and sound under control."

4.0 FRIENDS OF THE FROST - February 4, 2013

4.1 The Interview

The studio of Hodgetts+Fung met with the Friends of the Frost. Friends of the Frost is composed of parents of current and former students of Culver City Schools and the AVPA as well as local neighbors of the facility. The meeting was held at the office of H+F.



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ROBERT FROST AUDITORIUM - INTERVIEWS

4.2 Issues Raised

1. Venue Rental

All use 400 AMP switch
Not enough dimmers
Sony is a common renter

2. Health and Safety

Dirt & dust
Flocking
Structure
Production crew physical safety

3. Program

Multi purpose space
Efficiency in cross programming
Black box too small
Frost too big

4. Deficiencies

Light storage and access
Acoustics
Circulation
Air handling
Lighting / grid
Technical director
Energy use

5. Key Issues

Health safety
Physical safety
Performance criteria
More efficient & better use

4.3 General Comments

1. "There aren't enough dimmers, so if the venue is rented they pretty much just rent that switch. Sony rents it out quite a bit."
2. "Light storage access is a really big issue."
3. "If it's done in phases, I'd like to see the Black Box be a bigger better theatre until the larger Frost becomes a better theatre. Initially invest in the Black Box."
4. "There also needs to be cross-program efficiency. Dancers are a huge hiccup in that. They don't have a floor. The one that's there is too hard to set up."



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