



State of Utah

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## Addendum No. 1

Date: December 17, 2014

To: Architects and Engineers

From: Darrell Hunting – DFCM Project Manager

Reference: Addition/Renovation Fine Arts Complex  
Utah State University - Logan, Utah  
DFCM Project No. 14385770

Subject: **Addendum No. 1**

Pages	Addendum Cover Sheet	1 page
	Conceptual Rendering	2 pages
	Fine Arts Complex Facilities Plan	142 pages
	Total	145 pages

**Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to Disqualification.**

**1.1 SCHEDULE CHANGES:** There are no project schedule changes.

**2.2 GENERAL ITEMS:** See attached documents.



C A I N E  
**COLLEGE**  
*of the* **ARTS**  
UtahStateUniversity

RENOVATION & ADDITION | LOGAN, UTAH  
**FINE ARTS COMPLEX**





- 1 MAIN ENTRY
- 2 PROMENADE, FIRE LANE ACCESS
- 3 PERFORMANCE HALL
- 4 BRIDGE, ACCESS TO CONCERT HALL
- 5 ROOFTOP PATIO
- 6 ATRIUM, COURTYARD
- 7 SOUTH VIEW LOOKING NORTH
- 8 ENGINEERING BUILDING
- 9 ACCESS TO CONCERT HALL
- 10 FINE ARTS COURTYARD
- 11 CONCERT HALL
- 12 BRIDGE'S LOUNGE VIEWS

activated spaces where the unified community of the arts can thrive, illuminate, and transform

FROM BRIDGE OVERLOOKING ATRIUM & PATIO



LOUNGE OVERLOOKING PROMENADE & PERFORMANCE HALL



AERIAL OF ROOFTOP PATIO & ATRIUM



PROMENADE (SOUTH)





UTAH STATE UNIVERSITY

# FINE ARTS COMPLEX FACILITIES PLAN

5.10.2010

Prepared by:

METHODSTUDIO<sup>INC.</sup>



## PARTICIPANTS

The following is a list of individuals involved in the Fine Arts Complex Facilities Plan process:

Jarrold Larsen, Director of Production Services, Caine School of the Arts	Utah State University
Jordy Guth, Facilities, Architect/Planner	Utah State University
Stanley Kane, Facilities, Director of Operations	Utah State University
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Mark Holt, Facilities, Electrical Engineer	Utah State University
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### FACILITIES PLANNERS AND CONSULTANTS

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Neil Spencer, Mechanical Engineer	VanBoerum + Frank
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Dave Weseman, Electrical Engineer	Spectrum Engineers
Jody Good, Lighting & Theater	Spectrum Engineers
Stephen Cohen, Structural Engineer	Calder Richards

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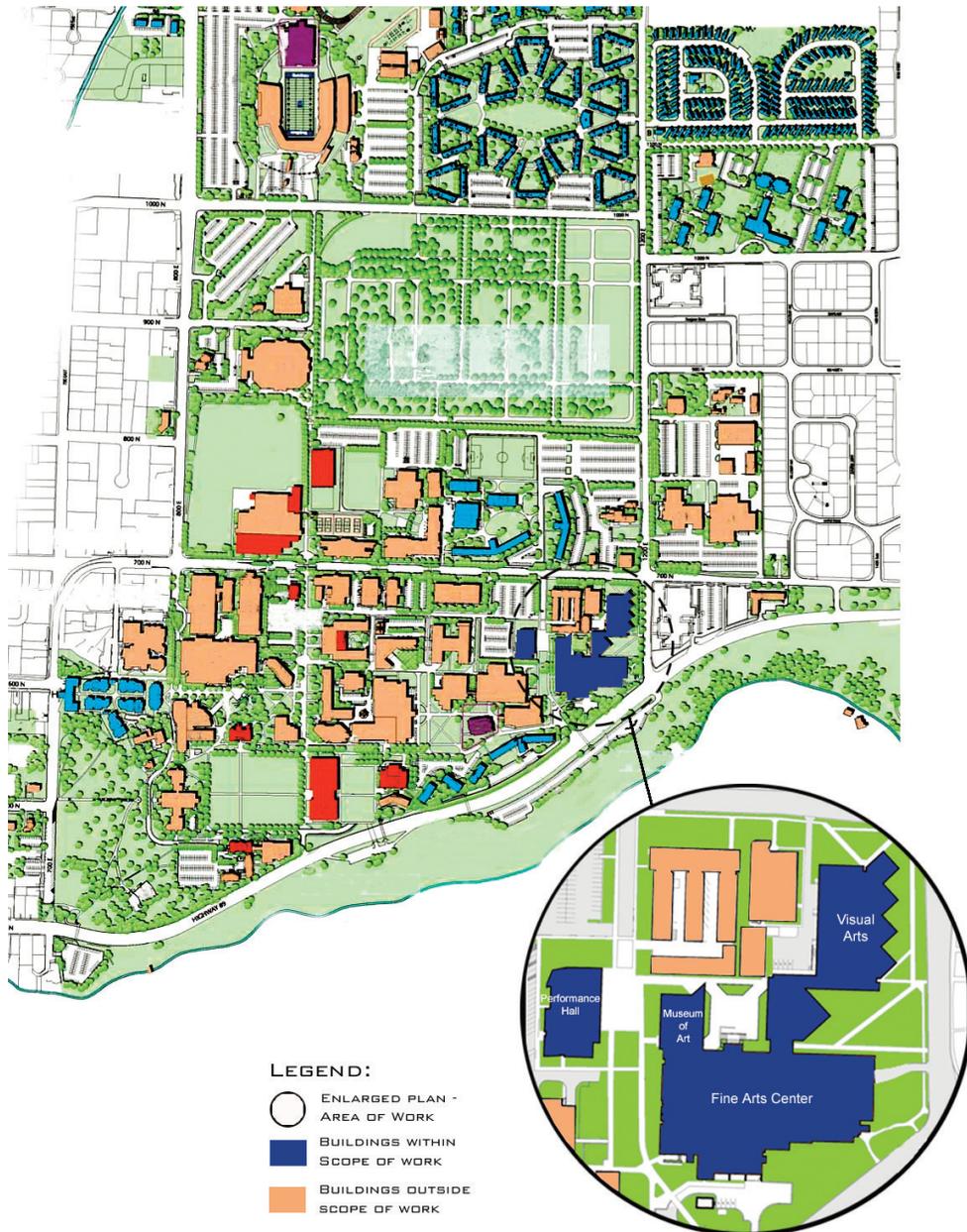
# SECTION A

## BACKGROUND/HISTORY

# SECTION A

## BACKGROUND/HISTORY

The existing Fine Arts building is comprised of three sections; the Fine Arts Center built in 1967, the Fine Arts Visual, built in 1980, and the Fine Arts Museum built in 1982.



The buildings are in need of upgrades to major fire and life deficiencies, deficient theatrical systems, and worn out building systems. These systems are summarized as:

1. Fire Sprinkler System
2. Ceiling Replacement
3. Fire Doors
4. Exit signage
5. Exit lighting
6. Seismic upgrades
7. ADA compliant entry doors
8. ADA upgrades to restrooms
9. New public elevator for ADA access
10. Fly System
11. House Lighting
12. HVAC

Several reports documenting building condition have been done over the years including ISES reports completed in the fall of 2001. *This material is noted in the bibliography section on the table of contents.*

In addition to addressing crucial life-safety issues, the function and aesthetic deficiencies should be addressed. The Fine Arts programs will be greatly enhanced by these improvements, and the entire campus and community will be served by increasing the safety and quality of the performance and teaching venues.

The Kent Concert Hall is the second largest indoor assembly space on campus, seating 2168 people and accommodating 400 on its stage. The Morgan Theatre seats 669 people, and accommodates 400 on stage. Code upgrades will minimize the risk of a catastrophic event involving large assemblies of people. There is also a functional need for a new scenery shop, to remove the scene production from the stage area and to allow better and more efficient use of the theatre.

The building lacks adequate fire protection; upgrades to the fire alarm system, safety lighting, fire sprinklers, fire doors, and seismic connections are needed.

The theatrical systems are both unsafe and dysfunctional. The fly system is of particular concern. The fly systems are 40 years old and have never had comprehensive maintenance. There have been several close calls in the last few years where the counterweights have fallen to the stage, endangering occupants. After the last inspection on the fly systems, it was recommended that it would be more cost effective to replace each line set completely rather than to try and perform maintenance on what is there.

An option to the manual counterweight system would be an automated rigging system. These systems use variable speed winches to raise and lower the battens, removing the need for a manually operated counterweight system.

They tend to be safer and more reliable because they do not need counterweights or loading rails.

The catwalk systems are in dire need of replacement; users must be very careful. The Morgan stage is a hazard to performers, due to multiple repairs, creating an uneven surface.

One of the reasons for this, and the biggest safety concern/current code violation of the fly systems, has to do with the rigid guide system for the arbors. Currently there are no rigid guides for any of the arbors on either fly system. The fly system was not originally designed to easily accommodate a rigid guide system.

Another safety concern involves the loading rail and the suspended platform at the top of the arbor where the brick weights are stored, loaded and unloaded. The load rails are around 36' above the stage floor and need to meet OSHA standards for working at that height. Additionally, the load rails are inadequately designed to support the entire possible weight of all the counterweight bricks used in the fly system at the appropriate safety factor.

Fly systems tend to be one of the most dangerous systems on any stage because of the weight they suspend over people and the potential damage if the system is incorrectly operated.

The catwalk systems do not meet current OSHA standards and are not adequately lit. They are wooden planks suspended with steel rods, which sway when used. Handrails are only supplied on one side in some areas.

The house lights are at the end of their life span, and the wiring and fixtures are beginning to fail. Replacement parts for some of the components are now obsolete. The aisle lights in both Kent and Morgan theaters are failing and are not being replaced due to lack of attic stock, and because they generate heat in the end seats that is uncomfortable for the user.

The ceilings in the Kent Concert Hall and Morgan Theatre do not meet current seismic code. When the venues were designed, the acoustical needs of the room were different than they are now. In 1967 most of the productions held in these venues used little or no sound reinforcement while now, almost all productions in these venues use some form of sound reinforcement. The placement of the sound source has moved from being on the stage to a position generally above and in front of the stage, and the overall average volume of a production has increased. This has dramatically changed the nature of the sound reflection, causing an overall degradation in intelligibility and sound quality.

The Kent Concert Hall is complicated as it is a mixed usage venue, hosting events ranging from class lectures to orchestra concerts to ballet performances. The required acoustical room design for each of these productions is different.

For best quality sound for a lecture, sound reflections hitting the listener need to be reduced so only the primary source is being heard. For best quality sound for an orchestra performance, many more possible reflections are acceptable and even desirable to increase the “fullness” of the sound in the room. The solution is to design the ceiling as a natural, adjustable extension of the acoustical shells used on the stage. Ceiling pieces may be adjustable on a pivoting frame work so sound reflections can be directed to or away from the audience members as is appropriate for a given performance.

Building security is both desired and a significant issue currently. Because the building is in use 24/7, this improvement is needed to secure the costly instruments, equipment, and furniture required for fine arts programs.

The HVAC system has exceeded its life cycle and needs to be addressed.

The light level and quality in the hall and lobbies is extremely poor. The house lights are cheap fixtures without safety features and have failed during events.

Recently, the building power failed during an event, leaving a large number of patrons in complete darkness when the safety lighting did not perform. The event had to be evacuated with flashlights.

Seismic connections need to be added to connect the roof structure to the walls. This will allow load transfer from the roof to the foundation, minimizing the likelihood of a roof collapse on the assembly space below.

The main emphasis of this report is identifying, prioritizing and coordinating projects to address the critical issues noted above.

# SECTION B

## EXECUTIVE SUMMARY

## SECTION B

### EXECUTIVE SUMMARY

The key goal for this effort was to create a strategy to prioritize upgrades for the Fine Arts Complex in a systematic, efficient manner with a key goal of making the spaces safe. This would allow the university to address a series of small projects over a span of 10 or more years if capital improvement money is not made available.

Over the last ten years, a number of reports were prepared and information calculated pertaining to the condition of the buildings and goals for the future (*this information is noted in the Bibliography of this document*). Much of this documentation breaks out projects by individual disciplines without considering the overlap of the work and how it impacts other systems. The intent of this exercise was not to revisit or redo past efforts, rather consider that information to inform the current focus of creating a strategic report documenting prioritized master issues and projects, and update it as necessary. This analysis considers and documents how upgrades can be synergistic and make financial and operational sense.

A number of essential projects have been prioritized and broken down into smaller budget sizes to give the University the greatest amount of flexibility for implementation. These projects include:

Wayfinding/Exiting	Fire Sprinkling
Public Restrooms	Exterior bracing and Shear Transfer, Walls
Controls/Security	Steel Roof Deck
Master Lobby/Courtyard	Catwalks
Clock System	Entry Ramp/Steps
Emergency Lighting	Domestic Potable Water Piping
Asbestos Abatement	Hot Water Storage Tank
Precast Concrete Panels	Dimmers/Scene Shop Relocation
Generator	HVAC Seismic Bracing (ducts)
Electrical Distribution	Audio Systems Upgrade
Overflow Roof Drains	Rehearsal Space
Ceilings	Stage Floor replacement
Acoustic Shell, Stage	Black Box
Duct/Diffuser sound Mitigation/ Seismic Bracing	Intercom/Stage Monitoring
Lighting, House, Lobby, Classrooms	Lighting, Control/Network
Upgrade Air Handler/DDC Controls	HVAC
Loading Dock Air Intake	Elevator
Sound Control Location	Oil Switch
Dressing Rooms	Air Conditioning
Rigging	Fly System

In addition to the Project Summary Sheets, a list of proposed project groupings of \$2-million or less is included in Section D of this report.

The Project Summary Sheets include project description, cost and basis of cost, code implications (as applicable) priority ranking, assigned category (life safety, function, aesthetic, maintenance) and whether the project is “contingent” on other projects. Each project requires attention for a variety of reasons. We have categorized those as follows:

LIFE SAFETY  
FUNCTION  
MAINTENANCE  
AESTHETICS

Projects have been prioritized on a scale of 1 - 4, with 1 being the highest priority for the university. Many of the projects interconnect and impact one another. This plan was developed in large part to help define those contingencies in a more clear, efficient way. If a project impacts another, those contingencies are identified on the summary sheet. It is the university’s intent to consider those contingencies as projects are reviewed for implementation.

The Prioritized Master Issues Spreadsheet located in Section E is the tool used to develop and organize the issues that emerged during the analysis of the Fine Arts Complex. This tool is particularly helpful as it can be sorted in many different ways i.e. by priority, by contingent projects, by code, etc. In this report, we have sorted by Building, then by Contingency and Priority.

A very useful tool also included in this report is the “floorplan overlays” found in Section G. These overlays provide two key functions:

- 1) show graphically all projects in each building
- 2) show graphically how projects overlap

The overlapping or ‘contingent’ projects are printed on transparent paper to allow the University the ability to understand implications of doing projects in various sequence potentials. Each building also has one drawing with all overlays shown.

Estimated costs have been included for each project. These costs are estimated *construction* costs only. Cost tables are included showing an overall cost for all of the master issues as well as broken down costs by building. Additionally, a final cost table showing the potential cost for remodel/upgrade of the entire complex is included.

Key considerations as the university moves forward are sequencing of the work to minimize redundant projects and financial implications as well as continued operations during project upgrades. This plan is also intended to aid in fundraising efforts with potential donors so they have a detailed understanding of key issues and potentials.

This tool will help to strategize financial and operational impacts of projects and their order of implementation. This brings greater logic to decision-making and greater long-term value.

## SECTION C

### PROJECT SUMMARY SHEETS

The Project Summary Sheets describe each project identified in the Fine Arts Complex facilities plan process. Each project requires attention for a variety of reasons. We have categorized those as follows:

LIFE SAFETY  
FUNCTION  
MAINTENANCE  
AESTHETICS

Projects have been prioritized on a scale of 1 - 4, with 1 being the highest priority for the university. Many of the projects interconnect and impact one another. This plan was developed in large part to help define those contingencies in a more clear, efficient way. If a project impacts another, those contingencies are identified on the summary sheet. It is the university's intent to consider those contingencies as projects are reviewed for implementation.

Projects have been grouped by location as follows:

GENERAL  
KENT CONCERT HALL  
LYRIC THEATER  
MORGAN THEATER  
TIPPETS GALLERY  
VISUAL ARTS

Estimated costs have been included for each project. These costs are estimated *construction* costs only.

Each project summary sheet has a floorplan thumbnail highlighting the project on the plan. In locations where the project covers a general area, the floorplan for that area is included.

The proceeding pages provide details for each project and are listed in chronological order by location/area.

This tool will help to strategize financial and operational impacts of projects and their order of implementation. This brings greater logic to decision-making and greater long-term value.

## GENERAL

There are a number of projects that relate to the building as a whole verses one specific location. These projects have been categorized in the "General" category and include:

- G1 Wayfinding/exiting
- G2 Public Restrooms
- G3 Controls/Security
- G4 Master Lobby/Courtyard
- G5 Clock System
- G6 Emergency Lighting
- G7 Asbestos Abatement
- G8 Precast Concrete Panels
- G9 Generator
- G10 Electrical Distribution
- G11 Overflow Roof Drains

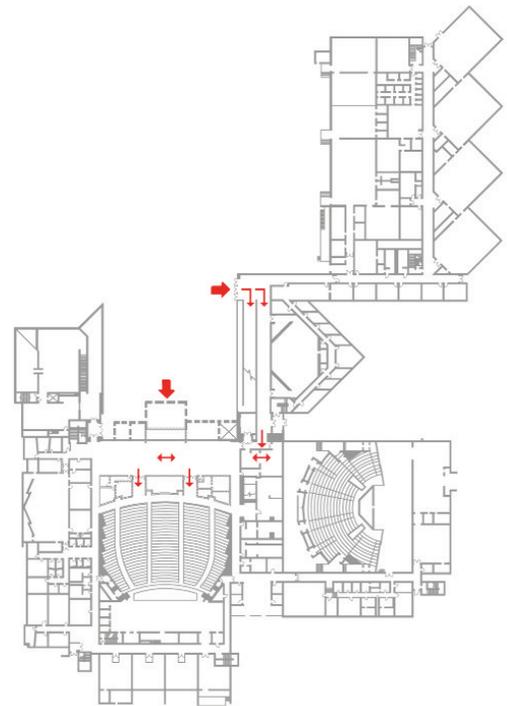
### G1 Wayfinding/exiting

It is proposed that the overall wayfinding and signage of the complex needs to be redone and a new system put in place. The existing system is confusing and inconsistent. This wayfinding signage is also directly related to exiting and ADA signage. The ADA signage may be affected by the future design and upgrading of the ADA access to the different venues, specifically Kent Concert Hall.

The addition of an elevator would address ADA to each level of the venue. It is anticipated that an elevator would be included in item G4, Master Lobby/Courtyard addition/remodel. However, the addition of an elevator may not be contingent upon the G4 project, and could be added as a stand-alone project. (A second elevator should also be considered for the Visual Arts wing of the complex, serving totally different levels of the complex than the ones described above for the Kent/Morgan venues, and would provide a much improved ADA access to the second level of that area. See item V3.)

#### Code Issues

The current signage for the FAC complex does not appropriately direct individuals with disabilities to an appropriate entrance/exit. Some of the entrance ramps, like the Kent entrance ramps from the lobby, are too steep for current ADA standards and patrons are not aware of this. Appropriate signage should be provided to direct individuals to the proper entrances for physically challenged persons.



**PRIORITY:** 2  
**CATEGORY:** F - Function  
**CONTINGENT:** G4 Master Lobby/Courtyard

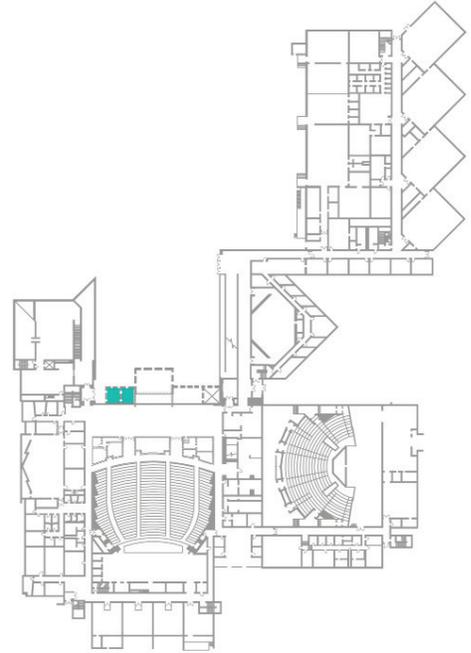
**Estimated Cost:** \$3,000.00 - \$7,000.00

#### Basis of cost:

The scope of work for this item is difficult to estimate at this time. This estimated range would cover the material and labor costs for anything from ADA route signage to new cast aluminum lettering in the lobbies of the Morgan, Kent and the Visual Arts ramp area.

## G2 Public Restrooms

The University desires additional restroom accommodations, specifically for patrons, and they need to be located off of the second floor, or lobby floor, of the complex. This would most likely be incorporated into the proposed G4 Master Lobby/Courtyard Addition as there is no space within the existing building to accommodate additional restrooms.



**PRIORITY:** 4  
**CATEGORY:** F - Function  
**CONTINGENT:** G4 Master Lobby/Courtyard



**Estimated Cost:** \$70,000.00

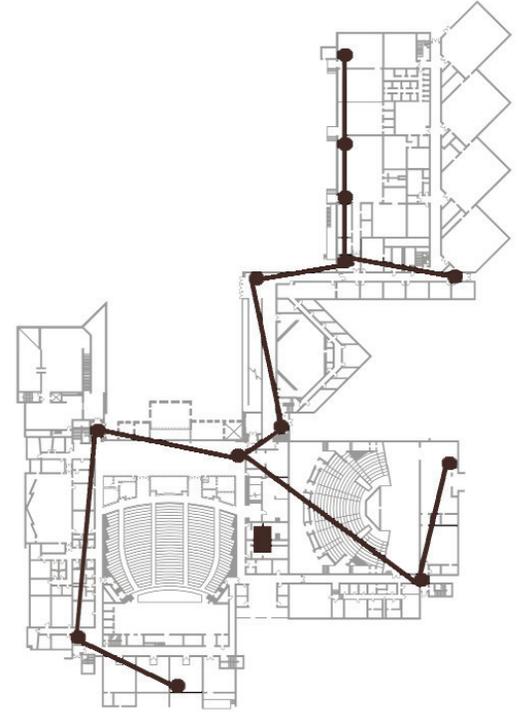
### Basis of Cost

With this assumptions noted above, the cost of \$175/sf could be used for a 400 sf restroom.



### G3 Controls/Security

It is proposed that CCTV security cameras be added throughout the facility (i.e. main entrances, lobbies, corridors and other key critical areas). This is due to a number of complaints and/or assaults that have taken place over the years. Card readers can also be added at perimeter entrances and interior critical rooms. The cost associated with this item includes allowance for 30 CCTV cameras and 20 card readers.



**PRIORITY:** 4  
**CATEGORY:** F - Function  
**CONTINGENT:** No

**Estimated Cost:** \$125,000.00

#### Basis of Cost

This is a lump sum given by Spectrum Engineers which includes 30 CCTV cameras and 20 card readers.

Note: key exterior doors have been completed and camera's are being added soon.

**G4 Master Lobby/Courtyard**

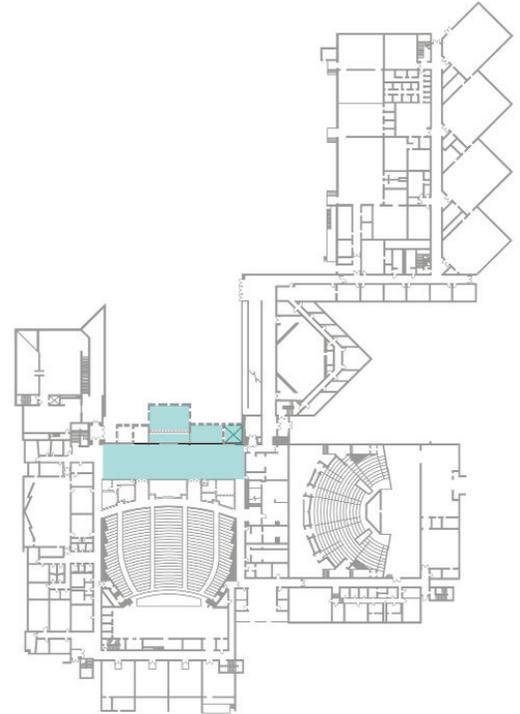
The University desires that certain common shortcomings within the complex be addressed, possibly by one new addition/remodel at the main stair entrance area to the Kent Concert Hall.



This would most likely include: re-orienting the main exterior stairs outside the Kent into a more readable “grand” staircase, adding an elevator (serving only the levels of the Kent and Morgan and not the Visual Arts wing), adding a social/café area and probably accommodating the desired new Public Restrooms G2. This would solve the problematic ADA access to these two venues and provide an opportunity to update the wayfinding and lighting problems related to the Kent Concert Hall lobby.

Code Issues

The ADA implications addressed with this project mainly focus around the addition of an elevator providing ADA access to the lobby level of the two performance venues from the exterior courtyard level. By providing the elevator, physically challenged persons can bypass the use of the long ramps in the Visual Arts lobby which are steeper than current ADA guidelines.



**PRIORITY:** 2  
**CATEGORY:** F - Function  
 A - Aesthetics  
**CONTINGENT:** G2 Public Restrooms, G1 Wayfinding/Exiting

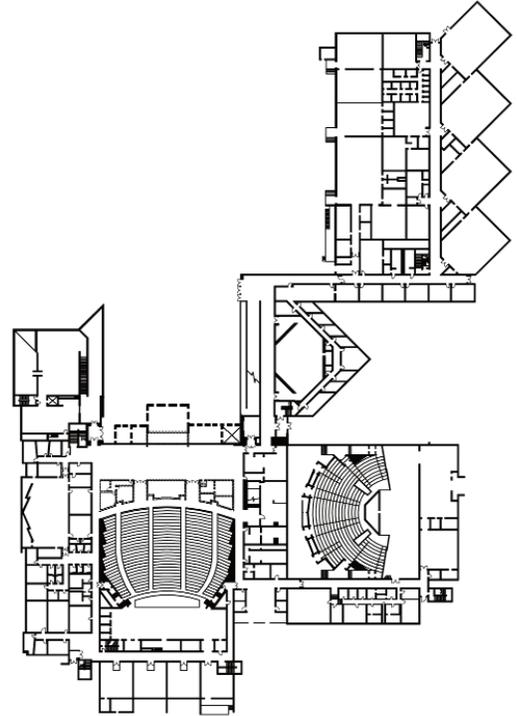
**Estimated Cost:** \$1,000,000.00

Basis of Cost

It is estimated that the Master Lobby addition/remodel could be done for \$250/sf at an estimated size of 4,000 sf which equals \$1,000,000. It is anticipated that a two-stop elevator would be part of the design which would be approximately \$40,000/stop = \$80,000. The estimated electrical /mechanical portion of the project is included in our \$250/sf cost.

### G5 Clock System

It is recommended that the University upgrade to a new GPS wireless/battery clock system to reduce maintenance and provide better flexibility. The cost associated with this item includes a GPS based system and 75 new clocks.



**PRIORITY:** 4  
**CATEGORY:** F - Function  
M - Maintenance  
**CONTINGENT:** No  
**Estimated Cost:** \$20,000.00

#### Basis of Cost

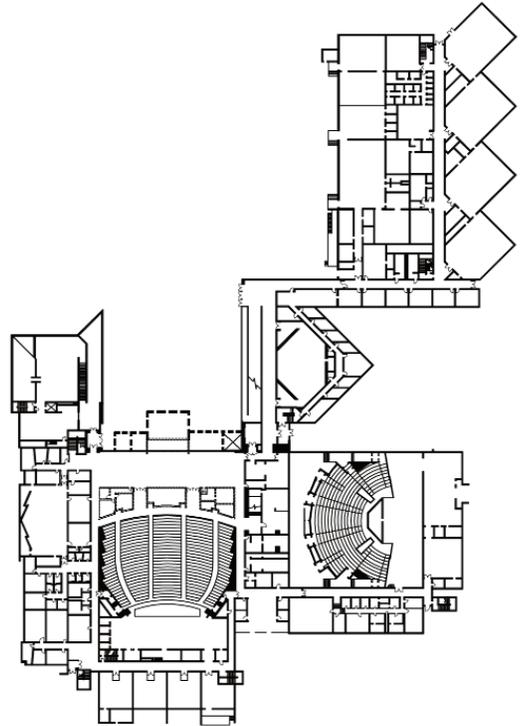
This is a lump sum given by Spectrum Engineers which includes 75 new clocks running on a new GPS based system.

## G6 Emergency Lighting

Emergency lighting for the complex is inadequate. This project will connect additional, existing light fixtures to the existing generator(s) of the facility. Prior to doing this project, a generator replacement is necessary (see G9).

### Code Issues

The current emergency lighting in the FAC is greatly below current electrical code standards. The proposed additional emergency lighting fixtures and related generator replacement (G9) would bring the entire facility up to current electrical codes providing the appropriate emergency footcandles in all areas of the complex.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** G9 Generator Upgrade

*Note: potential for energy funding*

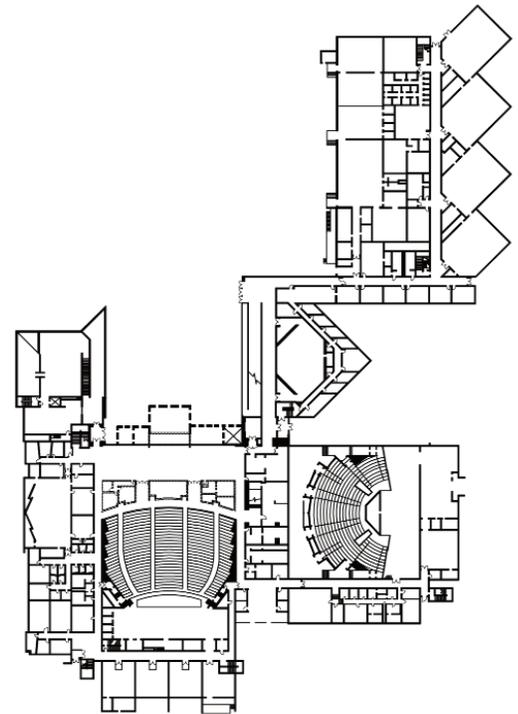
**Estimated Cost:** \$55,000.00

### Basis of Cost

This is a lump sum given by Spectrum Engineers for additional emergency lights needed within the building. This is contingent on replacing the current generator (G9), however, this does not include that generator cost.

## G7 Asbestos Abatement

An Asbestos survey has been completed by the University. The complex in general will need to be abated as each project is done. There will be an estimated dollar per square foot applied to the square footage of each project for estimating purposes. This cost/sf will include any abatement necessary, including floor tile, glue, insulation, fireproofing, etc. Mechanical spaces did have asbestos as well.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** Most projects

**Estimated Cost:** \$14 - \$16/sf

### Basis of Cost

It is impossible to determine a lump sum for this item at this time. There is no scope of work to apply the cost/sf to. So this is an estimated worst case range that may be applied on a project by project basis.

## G8 Precast Concrete Panels

Around the high roofs of the Kent Concert Hall and the Morgan Theater there is an existing precast concrete cladding system. The anchorage of the precast concrete panels is insufficient for current code requirements. In past earthquakes, inadequate anchorage of heavy cladding systems has led to the death of pedestrians below these types of panels.

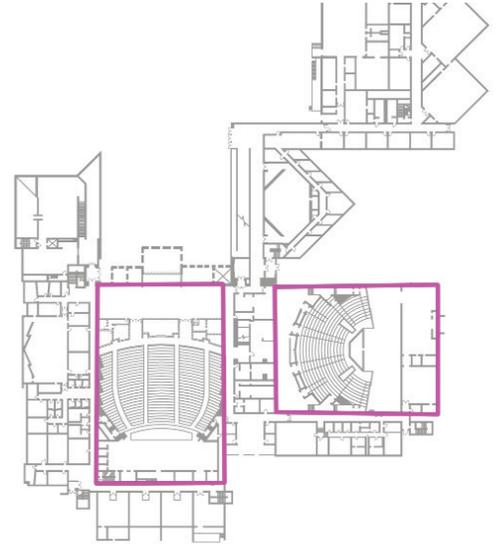
The precast concrete panels of the cladding system are in poor condition from a weathering perspective. There is major alligator cracking in the surface of these panels. While cracking has not led to major spalling yet, it is our opinion that in time water will continue to penetrate these cracks and through freeze/thaw action these panels will begin to spall leading to concrete chunks falling to the ground.



Two options have been looked at for dealing with this cladding. The first option involves simply adding new seismic connections to the existing panels to tie them back to the roof structure. While this option solves the seismic issues it does not deal with the long term spalling of the panels.

A second option involves replacing the precast panels with new Glass Fiber Reinforced Concrete panels. This has several advantages in that not only does this solve the seismic issue for the panels, it also lessens the earthquake mass that the building has to resist. It will also provide a long term, durable finish that will eliminate the spalling and appearance problems of the existing panels.

This project could be phased by elevation but should respect the original architectural intent.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** No

**Estimated Cost:** strengthen current panels only **\$162,000**

replace panels with Glass Fiber Reinforced Concrete panels  
**\$571,000 to \$1,080,000**

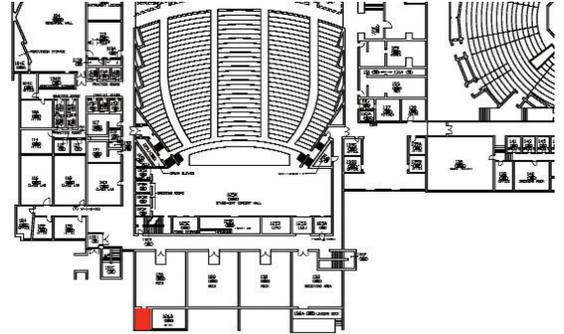
### Basis of Cost

This is a lump sum given by Calder Richards and provides a range of options.



## G9 Generator

It is proposed to replace the existing generators in Kent Concert Hall and Morgan Theater with a larger unit and associated distribution to accommodate the additional emergency lighting that is needed to meet code in the theaters and egress paths of the building. The cost provided assumes a new 80 kW generator with feeders and panels.



**PRIORITY:** 4  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** G6 Emergency Lighting

**Estimated Cost:** \$65,000.00



### Basis of Cost

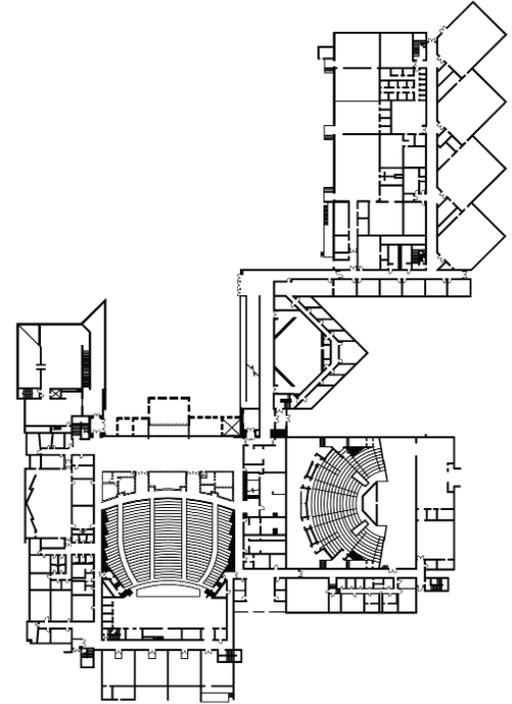
This is a lump sum given by Spectrum Engineers for replacing the existing generator for the the Kent Concert Hall and the Morgan Theater with a larger one (80 kW) and its associated distribution to the additional emergency lighting added in item G6.



### **G10 Electrical Distribution**

The existing electrical distribution throughout the FAC complex is outdated. There are not enough outlets to accommodate the modern prevalence of laptops and computers that have become standard in University environments. This cost includes updating all electrical distribution throughout every building.

NOTE: This project has a potential to be broken up into smaller sized areas and costs for implementation.



**PRIORITY:** 4  
**CATEGORY:** M - Maintenance  
**CONTINGENT:** No

**Estimated Cost:** \$575,000.00

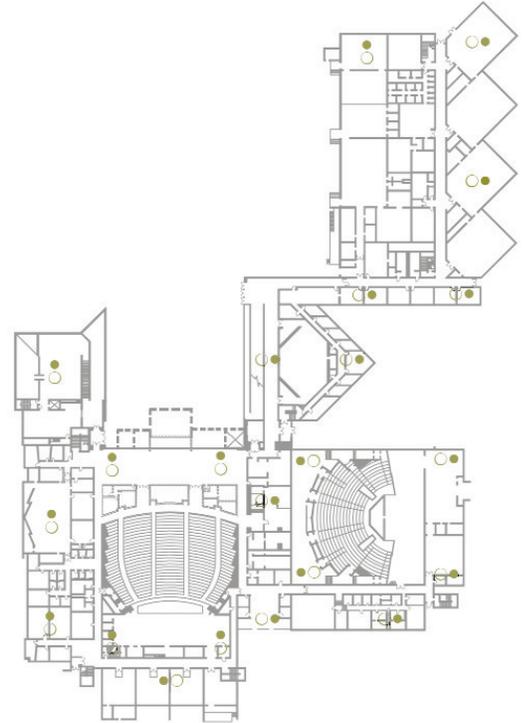
#### Basis of Cost

This is a lump sum given by Spectrum Engineers which includes complete replacement of the 277/480V and 120/208V distribution systems.

### G11 Overflow Roof Drains

There are currently no secondary drains on any of the buildings in the FAC complex. This is a concerning issue because there is no way to tell if any of the primary drains are clogged without the secondaries in place. If a primary were to clog, the weight of the pool of water that would form would overburden the structure of the building, possibly causing structural failure. The cost covers the adding of one secondary drain to every primary drain location.

This project can be broken up into separate projects as needed.



**PRIORITY:** 2  
**CATEGORY:** M - Maintenance  
**CONTINGENT:** No

**Estimated Cost:** \$386,000.00

#### Basis of Cost

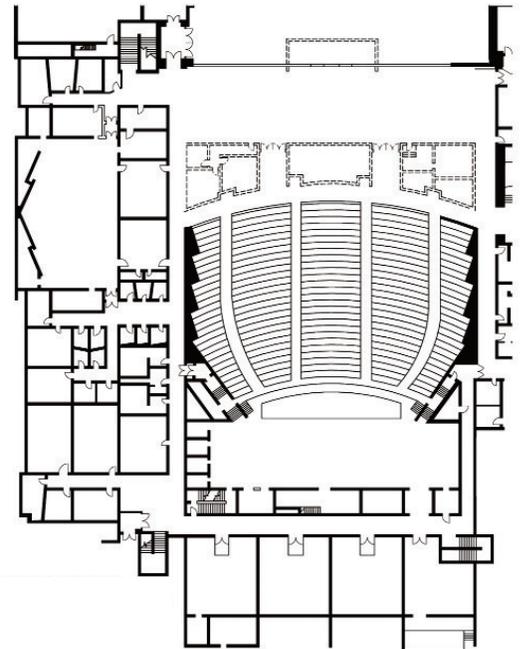
This is a lump sum given by VBFA for adding secondary overflow drains to the existing roofs. This project can be broken up into smaller projects as feasible.



## KENT CONCERT HALL

The Kent Concert Hall encompasses the main lobby, a classroom wing and the hall itself. Identified projects within Kent Concert Hall include:

- K1 Ceilings, classrooms
- K2 Acoustic Shell (stage)
- K3 Ducts Diffusers/Sound Mitigate/Seismic Bracing (Hall)
- K4 Lights, house
- K5 Upgrade Air Handler/DDC controls – Hall/Stage
- K6 Upgrade Air Handler/DDC controls – Classroom Wing
- K7 Lights, Lobby
- K8 Loading Dock Air Intake
- K9 Ducts Diffusers/Sound Mitigate/Seismic Bracing (Classrooms)
- K10 Sound Control Location
- K11 Dressing rooms
- K12 Rigging
- K13 Fire Sprinkling, Classrooms
- K14 Fire Sprinkling, Hall & Stage
- K15 Hall Ceiling
- K16 Walls- Exterior, bracing
- K17 Walls – Exterior, Shear Transfer
- K18 Steel Roof Deck
- K19 Catwalks
- K20 Entrance, Ramp/Steps
- K21 Lights, Worklights
- K22 Domestic Potable Water Piping
- K23 Hot Water Storage Tank
- K24 Dimmers
- K25 Lights, Aisles
- K26 General lighting - classroom wing

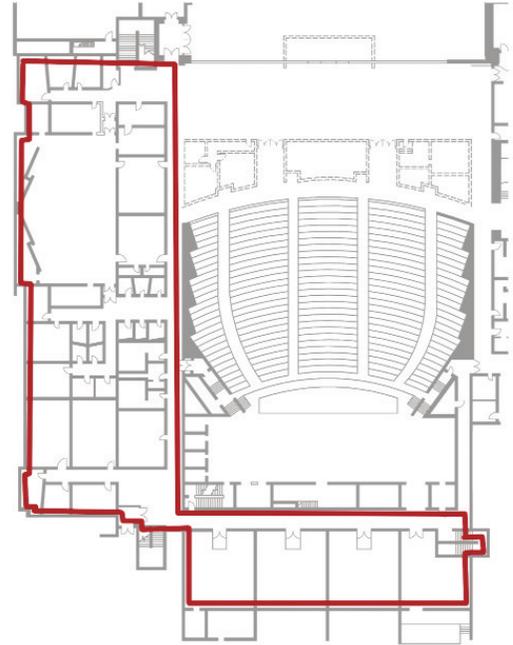


**K1 Ceilings, classrooms**

Replace lay-in ceiling tile throughout with new seismically braced ceiling system.

Code Issues

The current ceilings are not seismically braced and are recommended for replacement. During the replacement, the project will be designed to current seismic codes negating the life safety issue.



**PRIORITY:** 2  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** K9 Ducts, Diffusers/  
Sound Mitigate/  
Seismic Bracing  
(classrooms)  
K26 General Lighting  
Classroom Wing  
K13 Fire Sprinkling,  
Classrooms

**Estimated Cost:** \$137,600.00

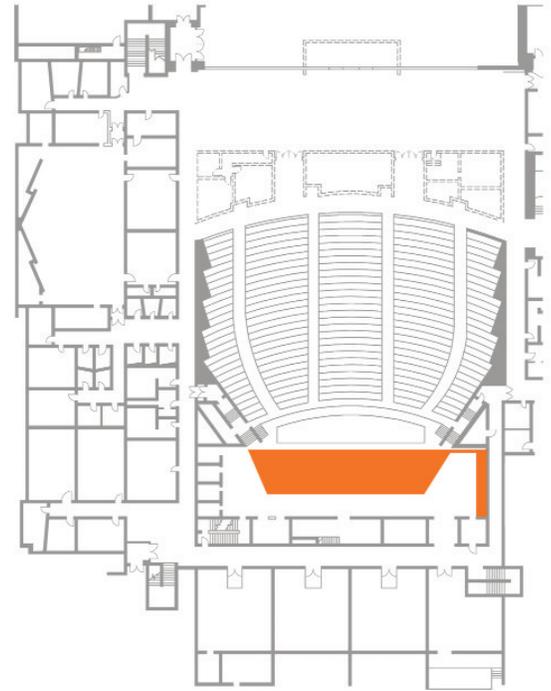
Basis of Cost

\$4.00/sf includes new ceiling tiles, grid and seismic bracing, etc. Total square footage 34,400 x \$4.00/sf = \$137,600.00.

**K2 Acoustic Shell (Stage)**

The existing shell should be replaced with a lighter, more effective shell. It should be timed to fit the new rigging. This presents an opportunity for separate fundraising. Cost range is due mainly on finish, design and materials selected.

This item is also related to the redesign and replacement of the house ceiling in that the design of the stage shell and the house ceiling will need to complement each other acoustically as a whole.



**PRIORITY:** 1  
**CATEGORY:** A - Aesthetic  
F - Function  
**CONTINGENT:** No  
**Estimated Cost:** \$150,000-\$300,000.00

Basis of Cost

This is a range given by Spectrum Engineers which includes replacing the existing shell with a lighter, more acoustically effective shell that will work with the newly proposed stage rigging.

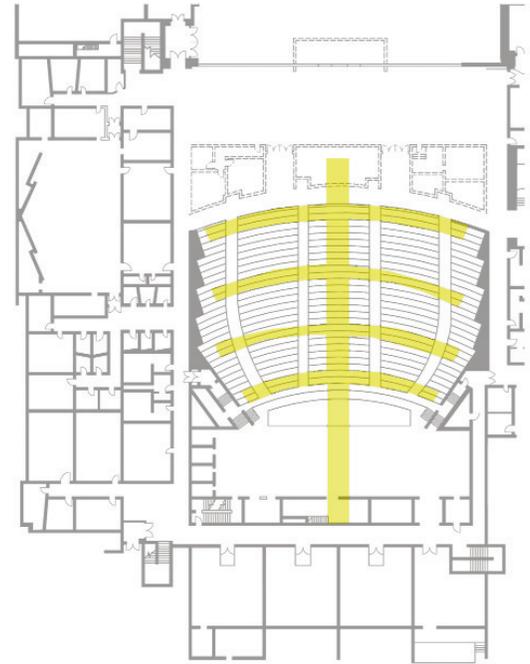
### K3 Ducts Diffusers/Sound Mitigate/Seismic Bracing (Hall)

The Kent Concert hall lobby is very noisy. The abundance of sound appears to be the result of excessive airflow through the ductwork and diffusers. Additionally, the existing pneumatic dual duct boxes (DD-boxes) are typically inaccessibly located above gyp ceilings. The remote DD-box locations appear to have exacerbated HVAC noise over time due to limitations in the ability of maintenance personnel to perform routine balancing, lubricate and maintain the existing boxes serving that area. There also appears to be sufficient transient air noise above the ceilings to warrant repair of the existing ductwork infrastructure. Based on experience from the Tippets Art Gallery renovation completed in 2009, excessive supply diffuser velocities, failed dual-duct boxes, and fan noise are the predominant factors contributing to HVAC noise.

Suggested upgrades are as follows:

1. Replace all constant volume air terminals and rebalance the systems. Most of the noise problems are from air flow imbalance and poor control of the systems.
2. Replace existing supply and return grilles with modern low NC outlets.
3. Add sound boots to the return air opening to the mechanical room. This will help reduce fan noise into the concert hall.

The ductwork in both the Kent Concert Hall proper will need to be seismically braced as this is both a life safety issue as well as an acoustic issue with the ducts, in some areas, resting directly on the ceiling transmitting vibration noise throughout the building.



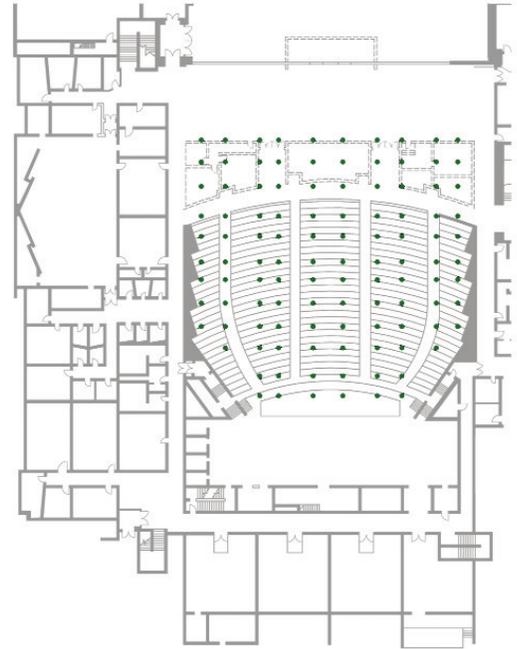
<b>PRIORITY:</b>	<b>1/2</b>
<b>CATEGORY:</b>	<b>F - Function LS - Life Safety</b>
<b>CONTINGENT:</b>	<b>K4 Lights, house K14 Fire Sprinklers, Hall &amp; Stage K15 Hall Ceiling K19 Catwalks K21 Lights, Worklights</b>
<b>Estimated Cost:</b>	<b>\$119,300.00</b>

#### Basis of Cost

This is a lump sum given by VBFA which includes the separating of the ducts over the Kent Concert Hall house from the ceiling, replacement of diffusers, and seismic bracing. It is intended that this will mitigate vibrational sound transmission.

#### K4 Lights, House

It is recommended that the University renovate all 99 houselights. Today's cost using tungsten halogen lamps is estimated to be \$120,000. This venue is a good candidate for a solid state lighting solution available in the future. Cost is somewhat undeterminable, but likely to be \$350,000. This solution provides reduced energy and low maintenance. It is also recommended to replace Lighting Controls as well.



**PRIORITY:** 1  
**CATEGORY:** F - Function  
**CONTINGENT:** K14 Fire Sprinklers, hall & stage  
K15 Hall Ceiling  
K19 Catwalks  
K21 Lights, work lights

*Note: potential for energy funding*

**Estimated Cost:: \$120,000.00**

#### Basis of Cost

This is a lump sum given by Spectrum Engineers which includes the replacement of all 99 house lights and replacing the lighting controls as well.

### **K5 Air-Handler/DDC controls – Hall/Stage**

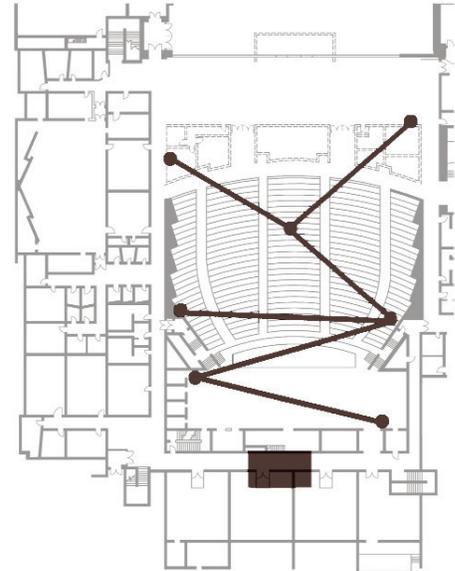
The Kent Concert Hall area of the Fine Arts Center is divided into two types of systems. The type serving the hall itself and the stage area is a large 47,200 cfm single-zone constant volume air-handler located in the basement space to the south of the hall. It has outside air/return air mixing dampers, filters, supply and return fans, and hot/cold water coils. Return/relief air collects in the tunnels below the concert hall and stage. Air is relieved out of the ground level louvers or returned to the air-handlers.

The heating and cooling hydronic systems are located in the southwest mechanical room and consist of the following:

- i. Chilled Water Pump; 950 gpm
- ii. Primary & Standby Hot Water Pumps; 360 gpm (ea.)
- iii. Steam-to-Hot water shell & tube heat exchanger; 360 gpm, 8.35-million Btuh.
- iv. Steam condensate return pump; 60 gpm.

It can be assumed that items such as fan motors, tube bundles in heat exchangers and some air handler coils have been replaced over the years. In general, the air handlers are in good condition; the heat exchangers are in fair condition; the dual duct boxes are in poor condition; the ductwork is in fair condition, the hot and chilled water piping systems are in good condition; the hot water and chilled water pumps are in fair condition.

The automatic temperature control system has pneumatic controllers and pneumatic valve and damper actuators. It can be assumed that many of the controllers and actuators have been replaced over the years. The average useful life for pneumatic control systems is 20 years. In general, the controls are well beyond their average useful life.



The air handler ventilation rates are based on 5-cfm/person. Current code requires 20-cfm/person. The pre-heat coils must be replaced in order to provide adequate ventilation. The basement air-handlers serving the Kent Concert area are built-in-place-type air-handlers commonly found in 1960's buildings. These air-handlers may not be replaced outright with new air-handlers due to their location and due to the size limitations of the existing rooms. The air-handler walls & construction however may be left in place, while the internal components should be replaced with new. Furthermore the Kent Concert air-handlers should be lined with perforated interior liners for sound deadening, the coils should be removed and replaced with new, the control dampers and actuators should be replaced, and the dual duct air-handler single supply fan should be removed and replaced with independent variable volume fan wall systems in both the hot and cold deck.



**PRIORITY:** 2/3  
**CATEGORY:** F - Function  
M - Maintenance  
**CONTINGENT:** No

**Upgrade Air Handler \$113,000.00**  
**Upgrade Controls \$55,000.00**  
**Total: \$168,000.00**

Basis of Cost: This is a lump sum given by VBFA which includes the replacement of internal components, coils, dampers and actuators for the air handler, serving the concert hall and stage area, due to its non-removable location in the basement. It also includes the replacement of the current pneumatic controls with DDC controls in the hall and stage areas. Note: there is crossover into other areas.

### **K6 Air Handler/DDC controls – Classroom Wing**

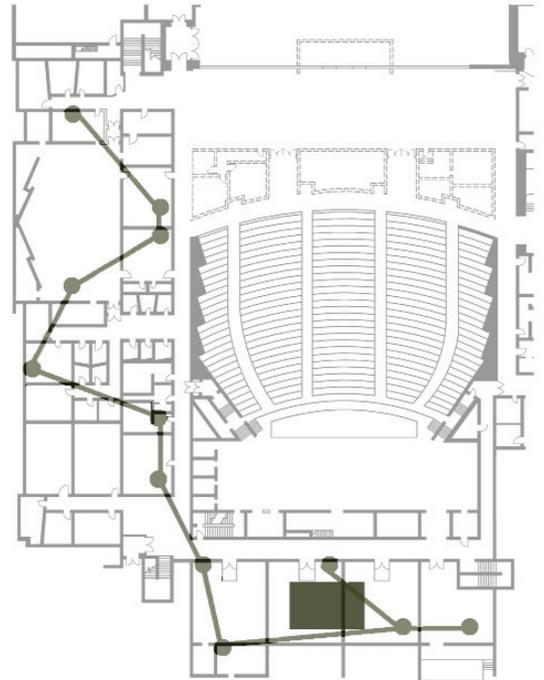
The Kent Concert Hall area of the Fine Arts Center is divided into two types of systems. The type serving the classroom wing is a multi-zone system with a large 44,250 cfm dual-duct air-handler located in the basement space to the south of the hall. It has outside air/return air mixing dampers, filters, supply and return fans, and hot/cold water coils. Each zone on the multi-zone system is served by a dual-duct constant volume mixing box. Air is relieved out of the ground level louvers or returned to the air-handlers.

The heating and cooling hydronic systems are located in the southwest mechanical room and consist of the following:

- i. Chilled Water Pump; 950 gpm
- ii. Primary & Standby Hot Water Pumps; 360 gpm (ea.)
- iii. Steam-to-Hot water shell & tube heat exchanger; 360 gpm, 8.35-million Btuh.
- iv. Steam condensate return pump; 60 gpm.

It can be assumed that items such as fan motors, tube bundles in heat exchangers and some air handler coils have been replaced over the years. In general, the air handlers are in good condition; the heat exchangers are in fair condition; the dual duct boxes are in poor condition; the ductwork is in fair condition, the hot and chilled water piping systems are in good condition; the hot water and chilled water pumps are in fair condition.

The automatic temperature control system has pneumatic controllers and pneumatic valve and damper actuators. It can be assumed that many of the controllers and actuators have been replaced over the years. The average useful life for pneumatic control systems is 20 years. In general, the controls are well beyond their average useful life.



The air handler ventilation rates are based on 5-cfm/person. Current code requires 20-cfm/person. The pre-heat coils must be replaced in order to provide adequate ventilation. The basement air-handlers serving the Kent Concert area are built-in-place-type air-handlers commonly found in 1960's buildings. These air-handlers may not be replaced outright with new air-handlers due to their location and due to the size limitations of the existing rooms. The air-handler walls & construction however may be left in place, while the internal components should be replaced with new. Furthermore the Kent Concert air-handlers should be lined with perforated interior liners for sound deadening, the coils should be removed and replaced with new, the control dampers and actuators should be replaced, and the dual duct air-handler single supply fan should be removed and replaced with independent variable volume fan wall systems in both the hot and cold deck.

**PRIORITY:** 3/4  
**CATEGORY:** F - Function  
M - Maintenance  
**CONTINGENT:** No

**Upgrade Air Handler**  
**Estimated Cost:** \$127,000

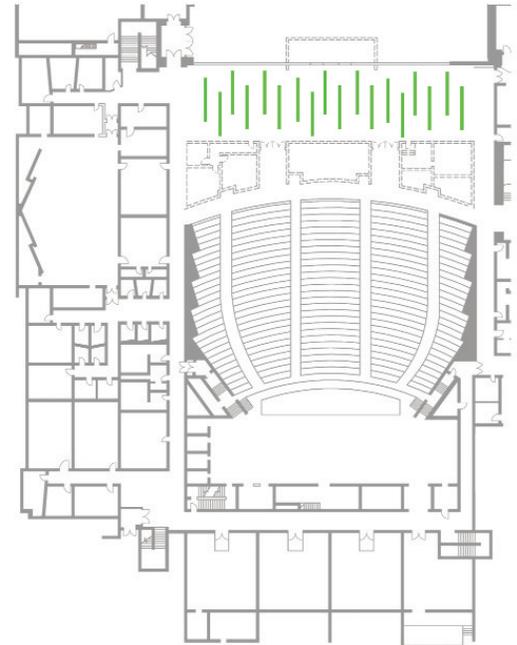
**Upgrade Controls**  
**Estimated Cost:** \$76,000

**TOTAL:** \$203,000.00

Basis of Cost: This is a lump sum given by VBFA which includes the replacement of internal components, coils, dampers and actuators only for air handler serving the classroom wing due to its non-removable location in the basement. It also includes the replacement of the current pneumatic controls in the classroom wing with DDC controls.

### K7 Lights, Lobby

A lighting upgrade is recommended as part of an overall lobby and ceiling remodel for upgraded appearance and energy efficiency. The fixtures are dim and old and now that the Morgan lobby fixtures have been upgraded, there is a noticeable difference.



**PRIORITY:** 2  
**CATEGORY:** F - Function  
**CONTINGENT:** G<sub>1</sub> Wayfinding/  
exiting  
G<sub>4</sub> Master  
lobby/ courtyard

*Note: potential for energy funding*

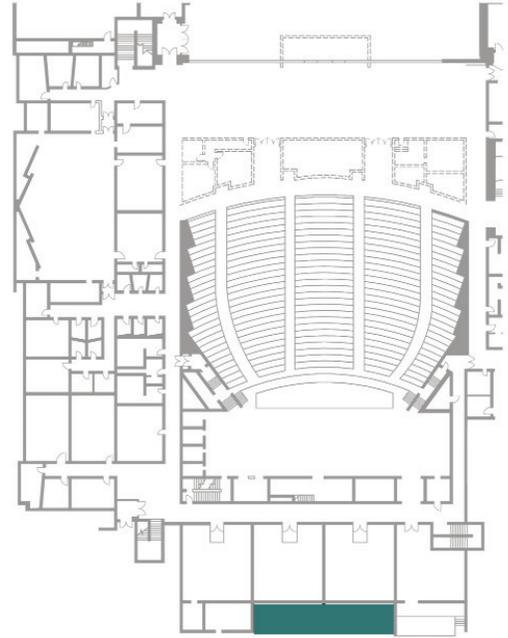
**Estimated Cost:** \$25,000.00

#### Basis of Cost

This is a lump sum given by Spectrum Engineers which includes the replacement (one for one) of the lobby fixtures for aesthetics and efficiency.

**K8 Loading Dock Air Intake**

The loading dock located on the south side of the Kent Concert Hall Theater and Music wing has fresh air intakes for air-handlers AH-5 & AH-6 which must be extended up the side of the building and onto the roof for improved air quality for the building occupants. The reason for this is that while trucks and other vehicles sit with engines idling at the dock, their exhaust is sucked directly into the building fresh air intakes.



**PRIORITY:** 2  
**CATEGORY:** F - Function  
**CONTINGENT:** No

**Estimated Cost:** \$75,000.00

Basis of Cost

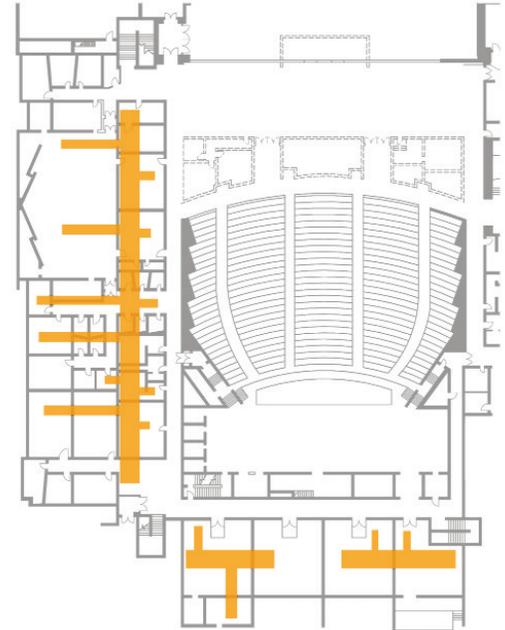
This is a lump sum given by VBFA which includes the relocation or screening of the air intake vents for the building due to exhaust from vehicles idling while unloading in the dock area.

### **K9 Ducts Diffusers/Sound Mitigate/Seismic Bracing (Classrooms)**

The classroom wing of the Kent Concert Hall is noisy due to many things, ducts and diffusers being one of them. Excessive airflow through the ductwork and diffusers creates unwanted noise. Also, similar to item K3, the existing pneumatic dual duct boxes (DD-boxes) are typically inaccessibly located above gyp ceilings. The remote DD-box locations appear to have exacerbated HVAC noise over time due to limitations in the ability of maintenance personnel to perform routine balancing, lubricate and maintain the existing boxes serving that area. Furthermore, there appears to be sufficient transient air noise above the ceilings to warrant repair of the existing ductwork infrastructure. Based on experience from the Tippets Art Gallery renovation completed in 2009, excessive supply diffuser velocities, failed dual-duct boxes and fan noise are the predominant factors contributing to HVAC noise. Suggested upgrades are as follows:

1. Replace all constant volume air terminals and rebalance the systems. Most of the noise problems are from air flow imbalance and poor control of the systems.
2. Replace existing supply and return grilles with modern low NC outlets.
3. Add sound boots to the return air opening to the mechanical room. This will help reduce fan noise into the Kent Classroom wing.

The ductwork in both the Kent Concert Hall and the Kent Classroom/Music Wing will need to be seismically braced as this is both a life safety issue as well as an acoustic issue with the ducts in some areas resting directly on the ceiling itself transmitting vibration noise throughout the building.



**PRIORITY:** 1/2  
**CATEGORY:** F - Function  
LS - Life Safety  
**CONTINGENT:** K1 Ceilings, Classrooms  
K13 Fire Sprinklers, Classrooms  
K26 General Lighting, classroom wing

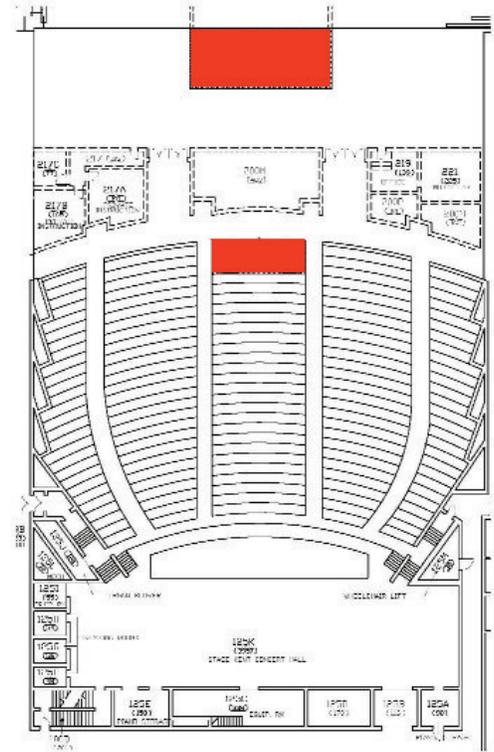
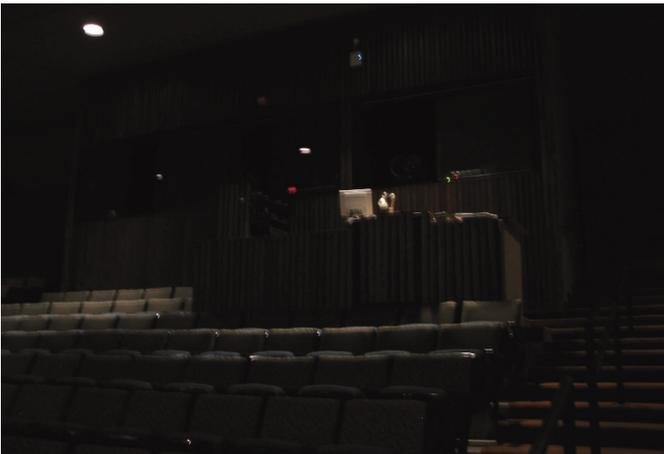
**Estimated Cost:** \$134,000

#### Basis of Cost

This is a lump sum given by VBFA which includes the separating of the ducts over the Kent Classroom Wing area from the ceiling. It includes replacement of diffusers and adding seismic bracing, thereby mitigating vibrational sound transmission.

**K10 Sound Control location**

The existing location of the sound control booth is not optimum and is recommended to be relocated per the University’s request. The new location would be directly adjacent to, or on the stage side of, the main cross aisle, aligned with the center of the stage. This could be done as a part of a sound equipment renovation and would mostly be the extension and/or pulling of the existing wires under the cross aisle to this new location.



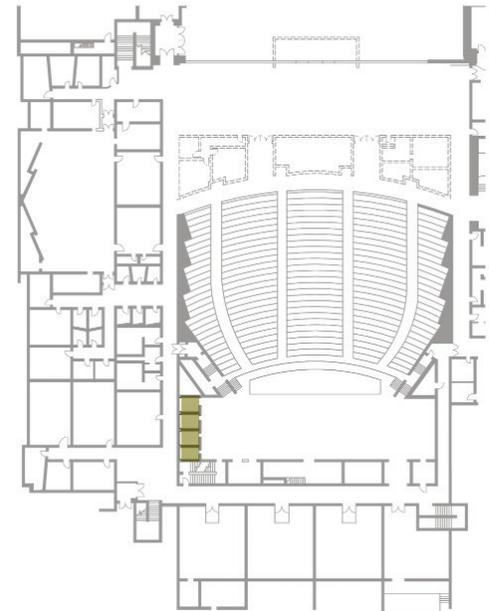
**PRIORITY:** 3  
**CATEGORY:** F - Function  
**CONTINGENT:** No  
**Estimated Cost:** \$10,000.00

Basis of Cost

This is a lump sum given by Spectrum Engineers which includes the relocation of the current sound control booth to the stage side of the main cross aisle in the house.

### K11 Dressing Rooms

It is desired by the University that the dressing rooms be upgraded to “star quality” dressing rooms. This would include, but not be limited to, the addition of a new intercom system, speakers, CCTV systems, and a general upgrade of surfaces and furniture.



**PRIORITY:** 4  
**CATEGORY:** F - Function  
**CONTINGENT:** No

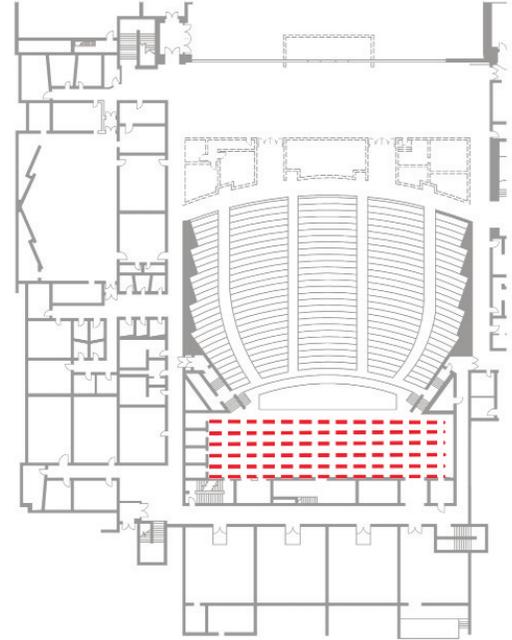
**Estimated Cost:** \$135,000.00

#### Basis of Cost

This is a lump sum given by Spectrum Engineers and Method Studio which includes a \$25/sf allowance for electrical updates and \$25/sf allowance for materials and furniture upgrades. An estimated area of 2,700 sf is being used.

## K12 Rigging

The existing rigging is not safe and is very labor intensive to operate. Replacement with a manual system could be \$190,000. Fully motorized system starts at \$350,000. Either option requires the addition of a loading bridge with a budget of \$25,000 (or more) plus steel to anchor it. Mixed lines (some manual, others motorized) are possible to save money and facilitate operations.



**PRIORITY:** 1  
**CATEGORY:** F - Function  
LS - Life Safety  
**CONTINGENT:** No  
**Estimated Cost:** \$215,000 (manual)  
\$375,000 (motorized)

### Basis of Cost

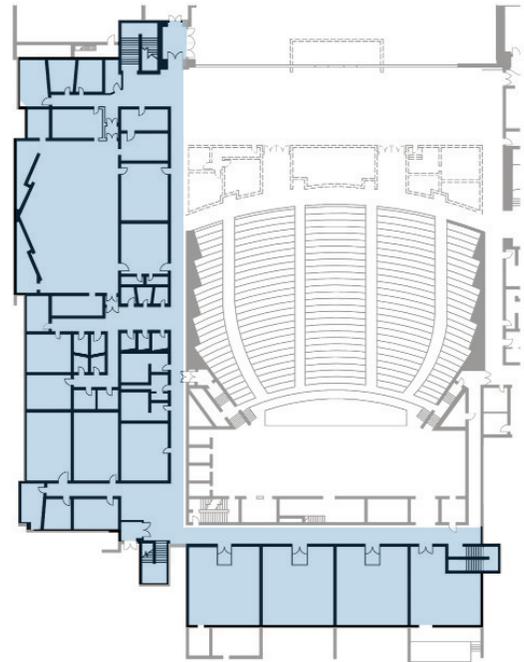
This is a range given by Spectrum Engineers which includes replacing the current rigging with either manual or fully motorized. It also includes the addition of a loading bridge to anchor to.

### **K13 Fire Sprinkling, Classrooms**

It is recommended that the classroom areas adjacent to the Kent Concert Hall receive new automatic sprinklers as recommended throughout the whole complex. These areas include the two stories of space just south and west of the Kent house area. It is recommended that the sprinklers be completed concurrently when the ceilings, lighting and HVAC seismic upgrades are done, because access above ceiling will be optimal, and fire sprinkling costs are lower when the longest possible runs of piping can be installed at one time.

#### Code Issues

There are no sprinklers currently in the Kent Music Classroom areas. The current IBC Code would classify these classroom spaces as part of the Kent Hall's A-1 occupancy and require sprinklers. Also, the current DFCM design guidelines say "it is desirable that all buildings constructed by the State of Utah be equipped with an automatic sprinkler system to provide added life safety for the occupants and to protect the building from fire loss." Therefore, it is recommended that sprinklers be provided in all spaces within the entire FAC.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** K1 Ceilings, classrooms  
K9 Ducts/Diffusers/  
Sound Mitigate/  
Seismic Bracing  
K26 General Lighting,  
classrooms

**Estimated Cost:** \$228,195.00

#### Basis of Cost

\$5/sf which includes new sprinkler lines and a new riser for this area of the system. Total square footage is 21,800 for the main level and 23,839 for the upper level. This totals \$45,639 x \$5/sf = \$228,195.

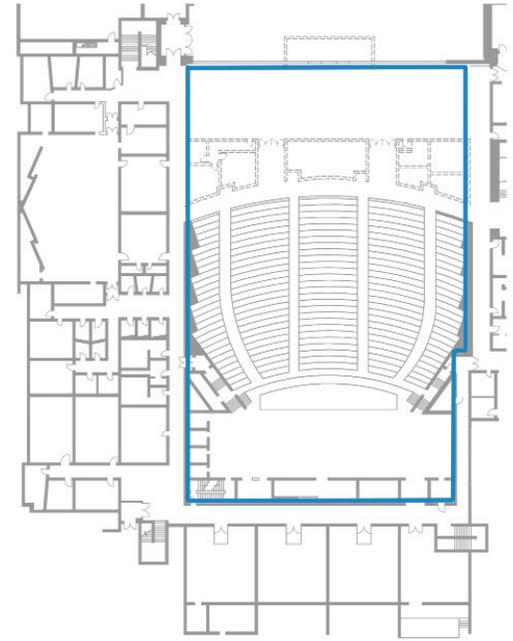
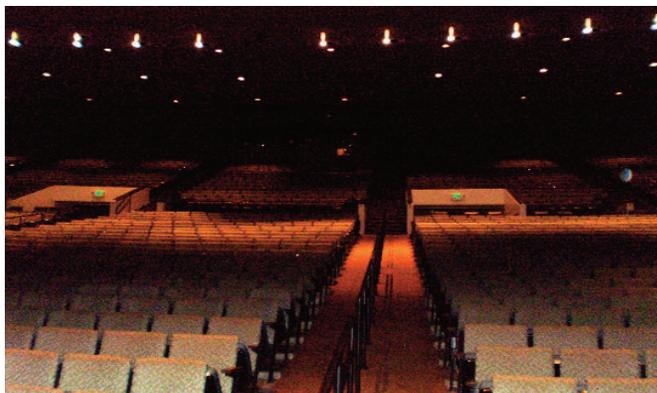
### K14 Fire Sprinkling, Hall & Stage

Add new sprinklers to hall/replace existing sprinkler heads on stage (outlived useful life of 20-yrs.)

This project should be considered when addressing ceiling, lighting and even mechanical/electrical upgrades (contingent to some extent).

#### Code Issues

There are no automatic sprinklers currently in the Kent Concert Hall proper. The current IBC code would classify this venue as an A-1 occupancy and would, therefore, require automatic sprinklers. The current IBC code also requires all stages to be sprinkled. In addition, the current DFCM design guidelines say "it is desirable that all buildings constructed by the State of Utah be equipped with an automatic sprinkler system to provide added life safety for the occupants and to protect the building from fire loss." Therefore, it is recommended that sprinklers be added to the hall and existing sprinkler heads on stage be upgraded.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** K3 Ducts/  
Diffusers/Sound  
Mitigate/Seismic  
Bracing (Hall)  
K4 Lights, house  
K15 Ceiling, hall  
K19 Catwalks  
K21 Lights,  
worklights

**Estimated Cost:** \$115,300

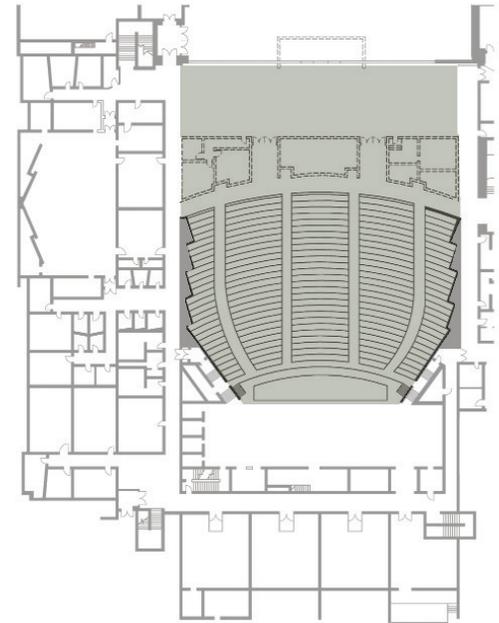
Note: this includes the cost of replacing all diffusers in the hall.

#### Basis of Cost

This estimate is based on \$5.00/s.f. for new sprinkler locations (includes the addition of a riser) applied to 21,500 s.f. in the hall and stage areas, which totals \$107,500; and \$1.50/s.f. for existing sprinkler head replacement applied to 5,200 s.f. of basement area (under the stage) which equals \$7,800.00.

### K15 Hall Ceiling

The suspended ceiling system in the Kent Concert Hall lacks any kind of bracing for seismic loads. Based on experience from past earthquakes, this ceiling would most likely fail during a major earthquake and could receive significant damage in a moderate earthquake. As a result, this ceiling poses a major life safety hazard to the building's occupants. It may be possible to seismically brace this ceiling in place but it makes more sense to replace this ceiling since it does not meet the acoustic properties desired for the space. In the redesign and replacement of this ceiling, it will be important to design it jointly with the recommended redesign of the stage acoustic shell (item K2) so that they act together as one continuous acoustic system.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** K3 Ducts/  
Diffusers/Sound  
Mitigate/Seismic  
Bracing (Hall)  
K4 Lights, house  
K14 Fire Sprinklers,  
Hall & Stage  
K19 Catwalks  
K21 Lights,  
worklights

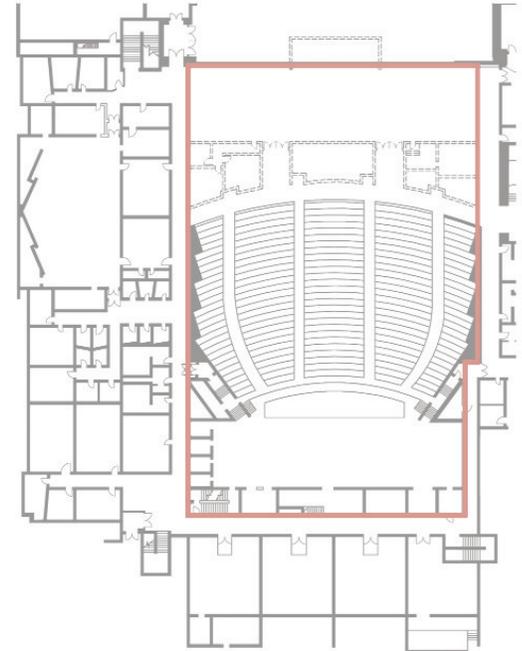
**Estimated Cost:** \$627,000.00

#### Basis of Cost

This estimated cost is for replacing the hall ceiling with new "cloud" option and includes the seismic bracing of it. It does include a motorized dynamic acoustic system. It also includes the placement of scaffolding, removal of some seats and demolition of the existing ceiling.

### **K16 Walls – Exterior, Bracing**

In the Kent Concert Hall the longitudinal walls are braced by the connection of the main girder to the tops of the concrete walls. This connection appears to be inadequate for out of plane seismic forces per current code requirements and needs to be strengthened.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** K17 Walls - Exterior, Shear Transfer

**Estimated Cost:** \$8,000.00

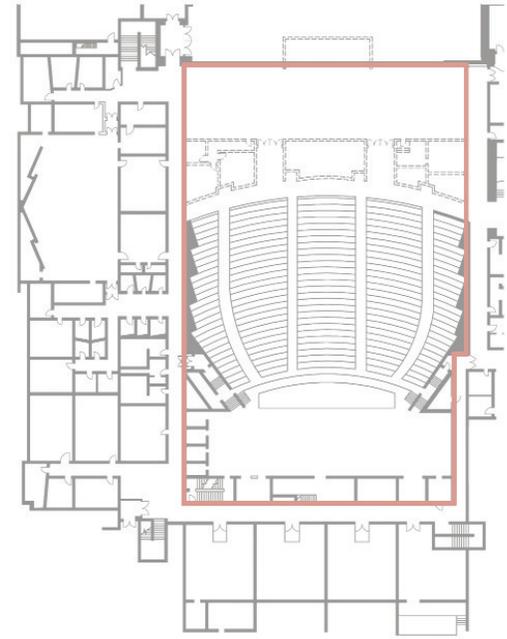
#### Basis of Cost

This is a lump sum given by Calder Richards for bracing the high wall at the concert hall.

**K17 Walls – Exterior, Shear transfer**

The steel roof deck diaphragm connection to the walls appears to be inadequate for current code requirements in the area of the Kent Concert Hall.

The system now consists of blocking trusses between the cantilevered ends of the main girder trusses and rod x-bracing along the wall parallel to the girder trusses at the stage wall of the Kent Concert Hall. It appears that the connection of the blocking trusses to the concrete walls needs to be strengthened and the rod x-bracing needs to be replaced with angle or tube x-bracing.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** K16 Walls - Exterior Bracing

**Estimated Cost:** \$15,000.00

Basis of Cost

This is a lump sum given by Calder Richards for adding appropriate shear transfer to the high wall at the concert hall.

### K18 Steel Roof Deck

The existing roof diaphragm over the Kent Concert Hall consists of a steel roof deck which is welded to the supporting roof

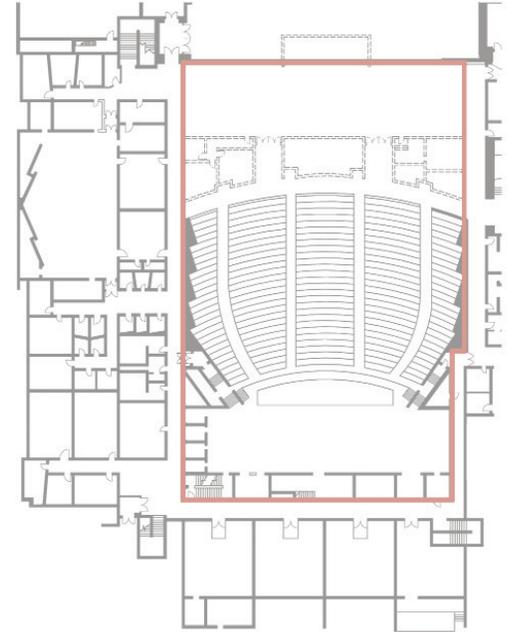


framing. Based on our observations it appears that the deck would match the properties of what would be currently a Type "B" steel roof deck with interlocking side laps (the drawings did not include specifications for the deck). The deck gage appears to be a 20 gage deck and it appears to be welded with puddle welds at each deck flute and top seam welds at 12" o.c. at the side laps. No welding shall occur at side seams. The deck according to the architectural drawings is topped with a vermiculite topping, most likely used to help with sound.

A calculation was made of the code required demand on the deck. It was found that the calculated demand for the steel deck over the Kent Concert Hall exceeded the allowable capacity of this roof diaphragm. This is based on using modern values that would be used for new construction for the strength of the existing roof deck.

Based on the above assumptions it is recommended that the roof decks be strengthened by adding a strip of custom bent and cut 16 gauge sheet metal at the ends of the diaphragm (similar to a product called Sheartranz by Verco). This will give the deck the added capacity it needs to meet the calculated demands.

Note that before construction begins, this information must be verified with a detailed investigation to determine if our as-built assumptions are correct and to determine if the assumed deck capacities are valid for the in-place welds.



<b>PRIORITY:</b>	<b>2</b>
<b>CATEGORY:</b>	<b>LS - Life Safety</b>
<b>CONTINGENT:</b>	<b>No</b>
<b>Estimated Cost:</b>	<b>\$12,500.00</b>

#### Basis of Cost

This is a lump sum given by Calder Richards for updating the roof diaphragm when the next re-roof opportunity should arise.

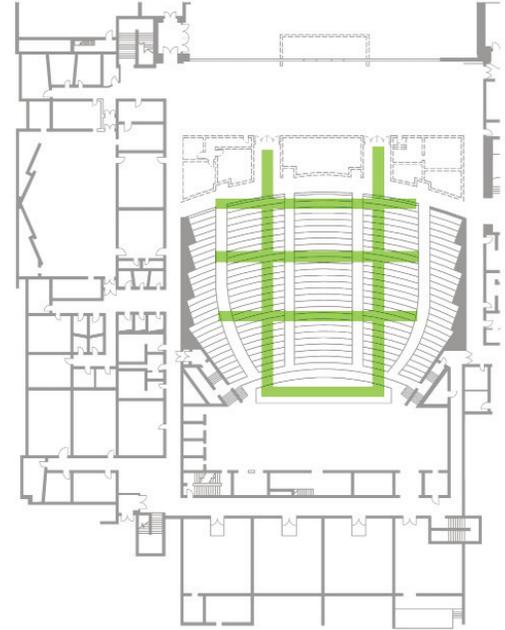


### K19 Catwalks

The current catwalks above the house in the Kent Concert Hall are made of wood and are not secured in a safe or adequate fashion for safe navigation. The wood material would not meet current fire codes in an A-occupancy of this size if it were constructed today. They also do not have any type of railings and are, therefore, a fall hazard. Similar to item K15 Hall Ceilings, these catwalks are recommended to be replaced with steel catwalks with continuous guardrails and secured seismically according to current codes.

#### Code Issues

The current IBC code does not require catwalks to be fire-rated. They only need to be built in accordance with the materials allowed by the code, depending on the type of construction for the building. However, due to the minimal nature of the construction of the current catwalks and that there are currently no railings in place anywhere, it is highly recommended that the catwalks be replaced with steel catwalks and handrails constructed as per the current IBC code and to comply with OSHA.



**PRIORITY:** 3  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** K3 Ducts/  
Diffusers/Sound  
Mitigate/Seismic  
Bracing (Hall)  
K4 Lights, house  
K14 Fire Sprinklers,  
Hall & Stage  
K15 Hall ceiling  
K21 Lights,  
worklights



**Estimated Cost:** \$168,750.00

#### Basis of Cost

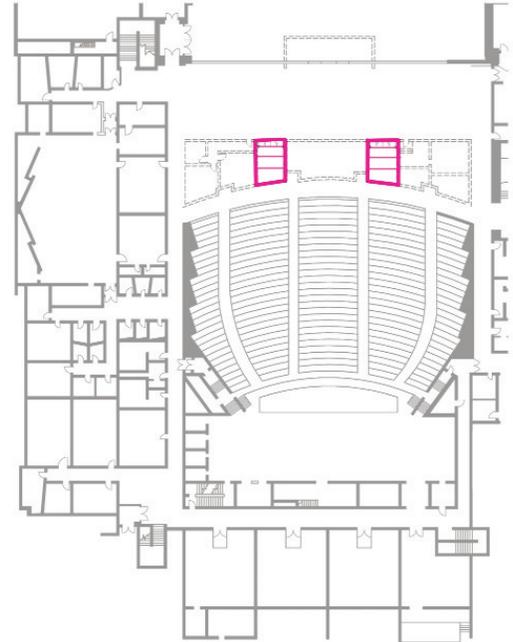
This is a lump sum given by Calder Richards for new catwalks and railings to be installed and seismically secured in roughly the same location and layout as the existing catwalks. New catwalks must provide access to mixing boxes and lighting.

### K20 Entrance, Ramp/Steps

Existing ramps are steep and pose a serious ADA and safety issue. Modify existing ramp to stairs including a landing at the door and floor level lighting.

#### Code Issues

The current lobby entrance ramps are steeper than current code allows for general public use and especially for ADA use. It is, therefore, recommended that these ramps receive elongated treads and risers matching the current slope of the ramps. This will provide a code compliant access into the hall for the general public and will discourage the use of these ramps for individuals with ADA access needs.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** No

**Estimated Cost:** \$16,600.00

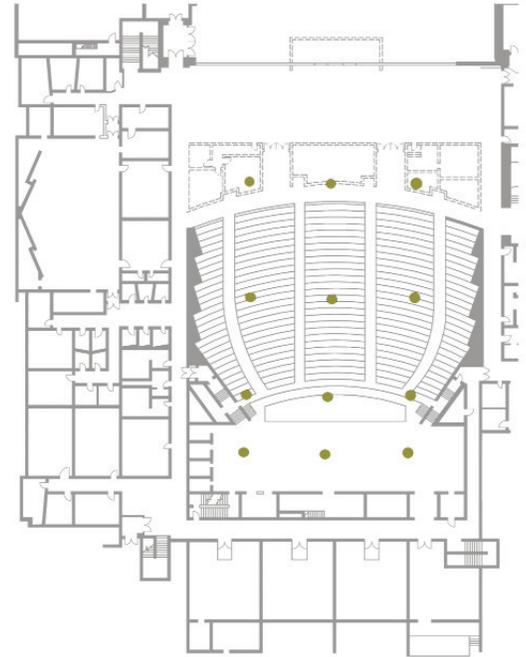
#### Basis of Cost

The estimated cost for modifying the existing ramps was derived as follows: stair overlay built from bent steel plates = \$5,300.00; new carpet over the stairs estimated at \$30/yd x apx. 27 yds. = \$810. Add \$5,300 to \$810 = \$6,110 x two ramp locations = \$12,200.00. A 4% contingency is then added for a total of \$12,600.00. A lump sum of \$4,000 shall be added for additional lighting in these areas.



**K21 Lights, Worklights**

Existing work lights are inefficient and maintenance intensive; none exist in the auditorium currently. It is proposed that the University add worklights in the house and stage areas. As a standalone project this could be \$25,000, for lighting and controls, house and stage.



**PRIORITY:** 2  
**CATEGORY:** LS - Life Safety  
 F - Function  
**CONTINGENT:** K 3 Ducts/  
 Diffusers/Sound  
 Mitigate/Seismic  
 Bracing (Hall)  
 K4 Lights, House  
 K14 Fire Sprinklers,  
 Hall & Stage  
 K15 Hall Ceiling  
 K19 Catwalks  
 K21 Lights,  
 worklights

*Note: potential for energy funding*

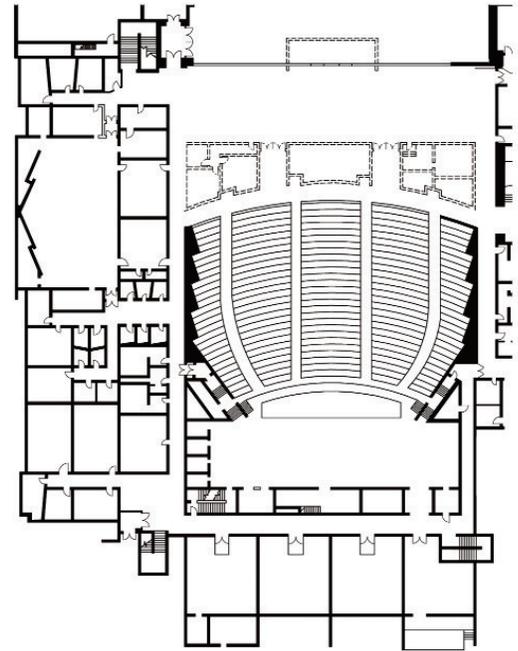
**Estimated Cost: \$25,000.00**

Basis of Cost

This is a lump sum given by Spectrum Engineers for adding work lights and controls to the house and back stage areas.

**K22 Domestic Potable Water Piping**

The conventional waste and wet systems appear to be in good condition. These systems could last another 20 to 30 years. As galvanized domestic hot and cold pipes age they are susceptible to rusting and pitting. This is not uncommon in galvanized domestic water lines. The rust can plug faucet aerators, pipe strainers and discolor fixtures. Pitting is a major cause of leaks. Furthermore the galvanized piping is not sufficiently seismically restrained.



**PRIORITY:** 4  
**CATEGORY:** M - Maintenance  
**CONTINGENT:** K1 Ceilings  
 Kg Ducts Diffusers/  
 Sound Mitigate/  
 Seismic Bracing  
 (classrooms)  
 Fire Sprinkling,  
 (classrooms)  
 K26 General Lighting  
 (classroom wing)

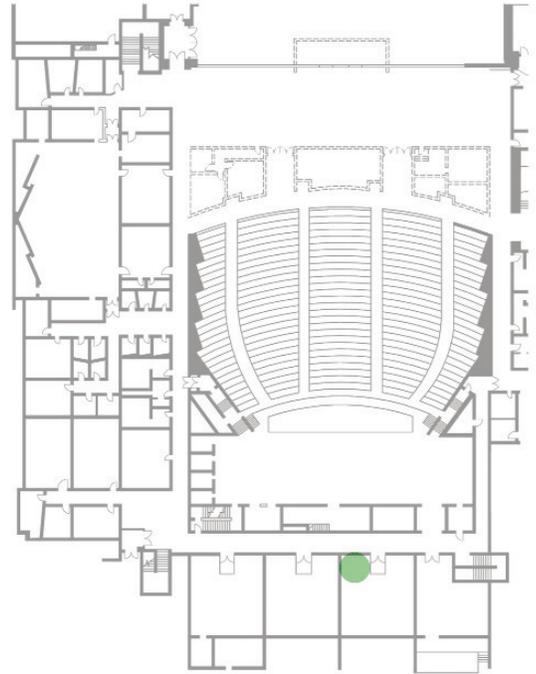
**Estimated Cost:** \$228,000.00

Basis of Cost

This is a lump sum given by VBFA for the replacement of the current galvanized domestic hot and cold piping. Cost is for piping and patching as needed.

### K23 Hot Water Storage Tank

It is recommended to replace the domestic hot water storage tank with a new tank and to also add a new steam-to-water Aerco type water heater. It is also recommended to replace the existing domestic water circulate pumps with new.



**PRIORITY:** 4  
**CATEGORY:** M - Maintenance  
**CONTINGENT:** No

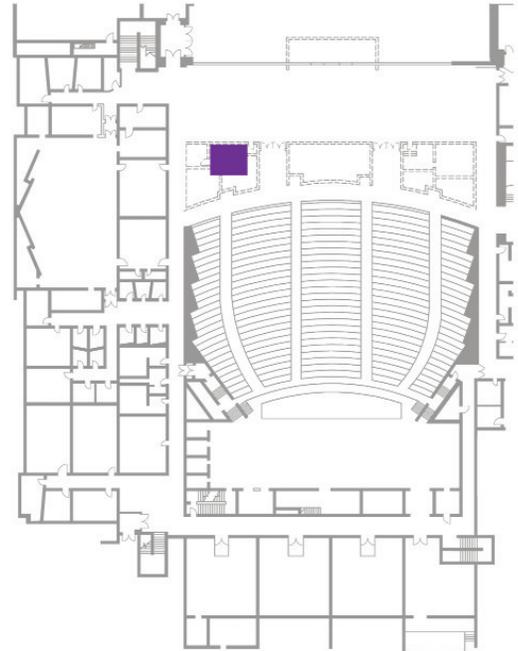
**Estimated Cost:** \$15,000.00

#### Basis of Cost

This is a lump sum given by VBFA for replacing the existing hot water storage tank with a new steam-to-water Aerco-type water heater and pumps.

## **K24 Dimmers**

It is recommended that the existing dimmers in the Kent Concert Hall be replaced although this is not a critical item at this time.



**PRIORITY:** 2/3  
**CATEGORY:** F - Function  
**CONTINGENT:** No

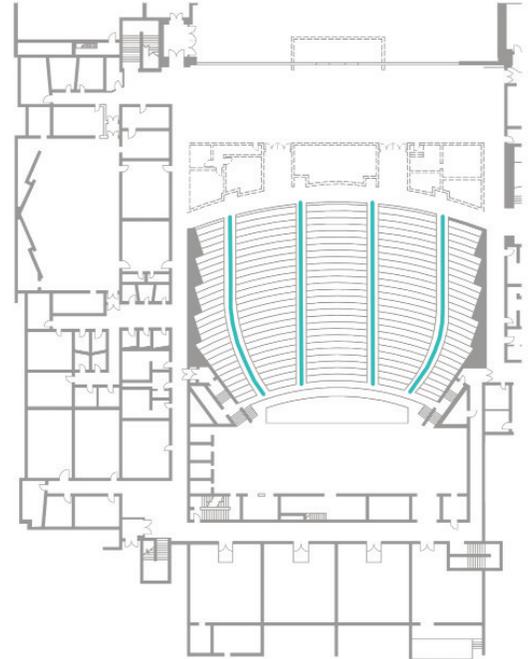
**Estimated Cost:** \$190 - 290,000.00

### Basis of Cost

This is a range given by Spectrum Engineers for the replacement of the existing dimmers.

## K25 Lights, Aisles

Most seats have malfunctioning lights which has become a liability issue for the university. Therefore, it is recommended to replace the older incandescent lights with more efficient LED aisle lights. The total replacement would be for 34 devices and the addition of 6 steplights with controls and power supplies.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
F - Function  
**CONTINGENT:** No

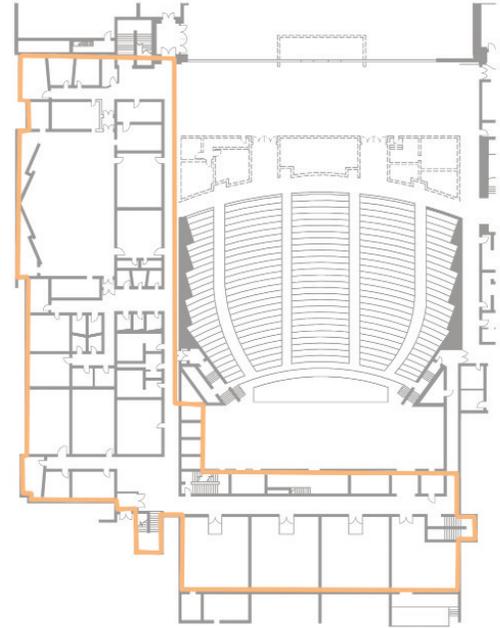
**Estimated Cost:** \$20,000.00

### Basis of Cost

This is a lump sum given by Spectrum Engineers to replace 34 devices and add 6 step lights with controls and power supplies.

**K26 General lighting – classroom wing**

The general lighting throughout the Kent classroom wing will need to be replaced with more efficient fixtures which will be seismically braced as well. This would include all areas on both floors of the classroom wing, which exist mostly in lay-in ceilings that are recommended for replacement as well.



**PRIORITY:** 2  
**CATEGORY:** LS - Life Safety  
F - Function  
**CONTINGENT:** K1 Ceilings,  
classrooms  
K9 Ducts/diffusers/  
sound mitigate/  
seismic bracing -  
classrooms  
K13 Fire Sprinkling,  
Classrooms  
**Estimated Cost:** \$456,390

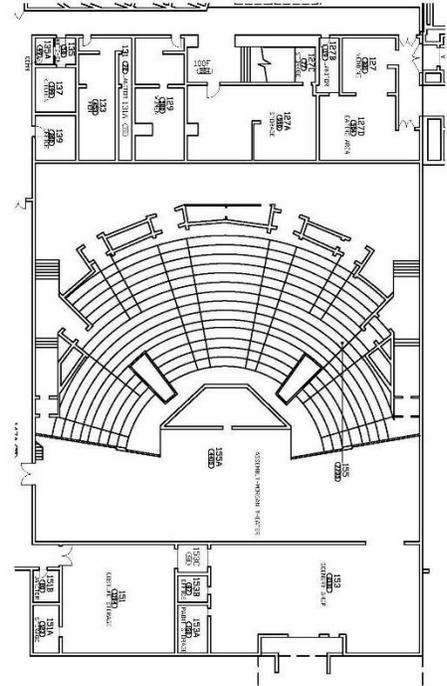
Basis of Cost:

\$10.00/sf includes new lighting fixtures, associated wiring, etc. Total square footage is 45,640 (both floors) x \$10.00/sf = \$456,390.

## MORGAN THEATER

The Morgan Theater includes the hall, stage, scene shop and classrooms. Identified projects within Morgan Theater include:

- M1 Upgrade Air Handlers, Controls
- M2 Scene Shop Relocation
- M3 HVAC Seismic Bracing (ducts)
- M4 Audio Systems Upgrade
- M5 Rehearsal Space
- M6 Stage Rigging
- M7 Stage Floor replacement
- M8 Black Box
- M9 Intercom/Stage Monitoring
- M10 Dimmers
- M11 Lighting, Control/Network
- M12 HVAC – Dye Shop Exhaust
- M13 HVAC – Scene Shop
- M14 Walls, Exterior, Shear Transfer
- M15 Steel Roof Deck
- M16 Catwalks
- M17 Walls, Exterior, Seismic Bracing
- M18 Lights, Worklights
- M19 Fire Sprinkling Upgrade, Basement Area Beneath Stage & Scene Shop
- M20 Fire Sprinkling, Hall & Stage
- M21 Hall Ceiling
- M22 Fire Sprinklers, Dressing and Support
- M23 Lights, Aisles
- M24 Lighting, General
- M25 Lights, House
- M26 Domestic Potable Water Piping
- M27 Ceiling, classrooms and Support
- M28 Seismic Bracing (ducts)



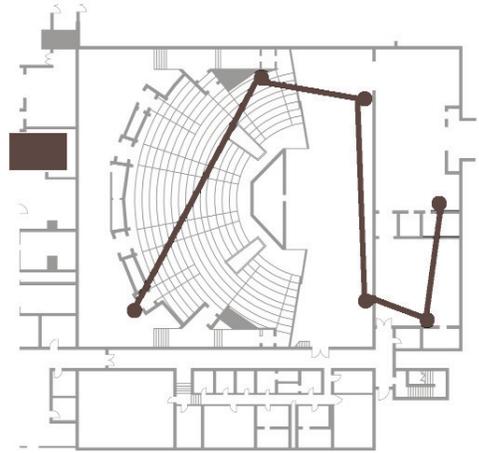
### M1 Upgrade Air Handlers, Controls

The HVAC system in the Morgan Theater wing of the building is divided into two types of systems. The theater itself is served by a constant volume 24,600 cfm single-zone (no re-heat) air-handler. The remainder of the Morgan Theater wing is served by a 47,100 cfm multi-zone dual duct constant volume air-handler which is not included in the scope of this report because it was replaced in 2009. The multi zone and single zone systems are served by a large dual duct air handler and a large single zone air handler located in the theater mechanical room which is above the west side of the theater wing. The units have outside air/return air mixing dampers, filters, supply and return fans and hot and cold water coils. Each zone on the multi zone system is served by a dual duct constant volume mixing box. The theater is served by the single zone air handler. Return/relief air collects in the ceiling above the theater. Air is relieved out of the roof louvered penthouse or returned to the air handlers.

The air handlers & dual-duct boxes serving the Morgan Theater Wing were converted to Johnson Controls Metasys DDC in 2009. All other automatic temperature control system consists of pneumatic controllers with pneumatic valve and damper actuators. The multi zone air handler also serves the lobby for the Kent Concert Hall.

It can be assumed that items such as fan motors, tube bundles in heat exchangers and some air handler coils have been replaced over the years. In general, the air handlers are in good condition; the heat exchangers are in fair condition; the dual duct boxes are in poor condition; the ductwork is in fair condition, the hot and chilled water piping systems are in good condition; the hot water and chilled water pumps are in fair condition.

The single zone air handler has passed its average useful life. The mezzanine air handlers serving the Morgan Theater portion may be removed via crane and replaced with new custom built air handlers.



**PRIORITY:** 2  
**CATEGORY:** F - Function  
**CONTINGENT:** No

*Note: potential for energy funding*

#### Estimated Cost:

Controls upgrade	\$55,000.00
Upgrade Air Handler	\$92,000.00
<b>TOTAL:</b>	<b>\$147,000</b>

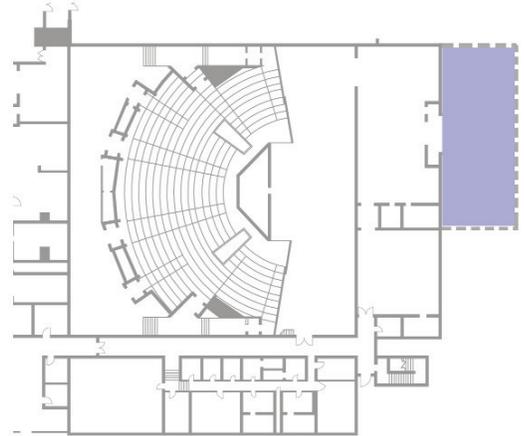
#### Basis of Cost

This is a lump sum given by VBFA to upgrade the pneumatic controls to DDC and replace the mezzanine air-handler.



## M2 Scene Shop Relocation

Related to the future addition of a Black Box Theater (M8) and the desire to provide rehearsal space (M5) immediately adjacent to the Morgan Theater, the University would like the scene shop to be relocated into a 4,500 sf addition which would be built on the east side of the existing scene shop and shared by both the Morgan and the future Black Box Theater. The desired rehearsal space would then be provided in the current Scene Shop location.



**PRIORITY:** 2  
**CATEGORY:** F - Function  
**CONTINGENT:** M5 Rehearsal Space Addition  
M8 Black Box

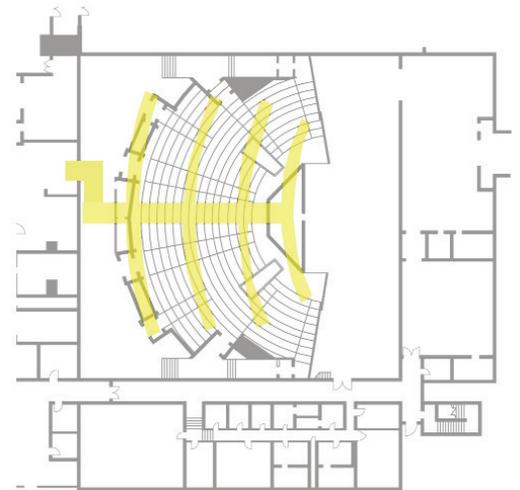
**Estimated Cost:** \$238,000.00

### Basis of Cost

This estimated cost is for the recommended future addition that would relocate the Scene Shop to the east side of the Morgan Theater, making space for the desired Rehearsal Space (M5). The cost was reached using an estimated \$85/sf applied to approximately 4,500 sf.

### M3 HVAC Seismic Bracing (ducts)

The ductwork in the Morgan Theater will need to be seismically braced as this is both a life safety issue as well as an acoustic issue with the ducts in some areas resting directly on the ceiling itself transmitting vibration noise throughout the space.



**PRIORITY:** 2/3  
**CATEGORY:** F - Function  
**CONTINGENT:** M16 Catwalks  
M18 Lights, worklights  
M20 Fire sprinklers, Hall & Stage  
M21 Hall Ceiling  
M25 Lighting, house

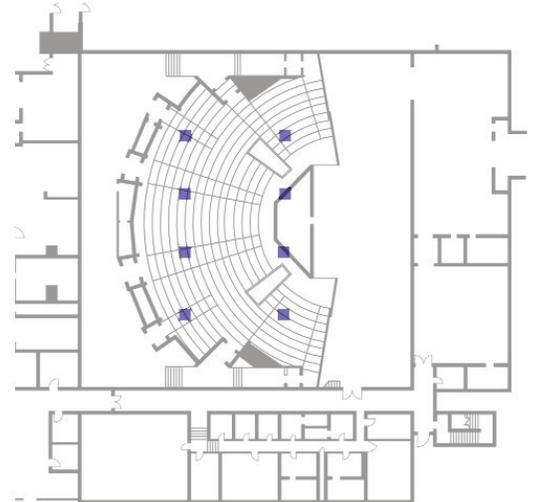
**Estimated Cost:** \$5,000.00

#### Basis of Cost

This is a lump sum given by VBFA to seismically brace the ducts over the house in the Morgan Theater.

**M4 Audio systems upgrade**

Provide new sound/audio system for the Morgan Theater. Architectural improvement of the Theater acoustics was discussed in the past but not included in this estimate.



**PRIORITY:** 4  
**CATEGORY:** F - Function  
**CONTINGENT:** No

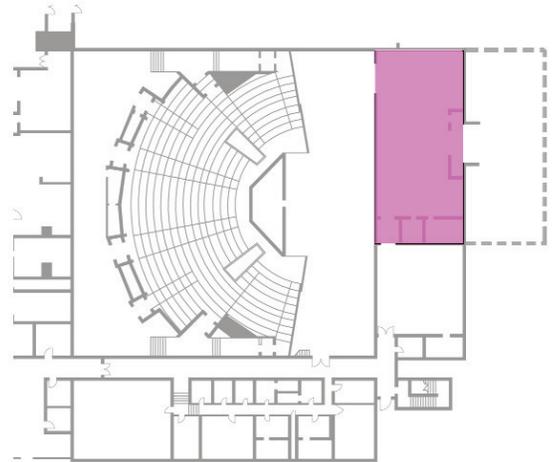
**Estimated Cost:** \$55 - \$100,000.00

Basis of Cost

This is a cost range given by Spectrum Engineers to provide an upgraded audio system for the Morgan Theater, which was originally designed for un-amplified voice projection. The range in cost is from \$55,000, providing only performance support audio/amplification to \$100,000 which augments the performance support audio with recording/editing equipment.

### M5 Rehearsal Space

It is desired by the University that rehearsal space be provided immediately adjacent to the stage of the Morgan Theater. The availability of this adjacent space is dependent on the addition of a new Scene Shop (M2) where the existing loading dock sits (relocating the current Scene Shop immediately behind the rear stage wall). The creation of this rehearsal space and relocation of the current Scene Shop would also facilitate the addition of a new Black Box Theater between the Morgan and the Visual Arts wing.



Existing Scene Shop space

**PRIORITY:** 4  
**CATEGORY:** F - Function  
**CONTINGENT:** M2 Scene Shop Relocation  
M8 Black Box

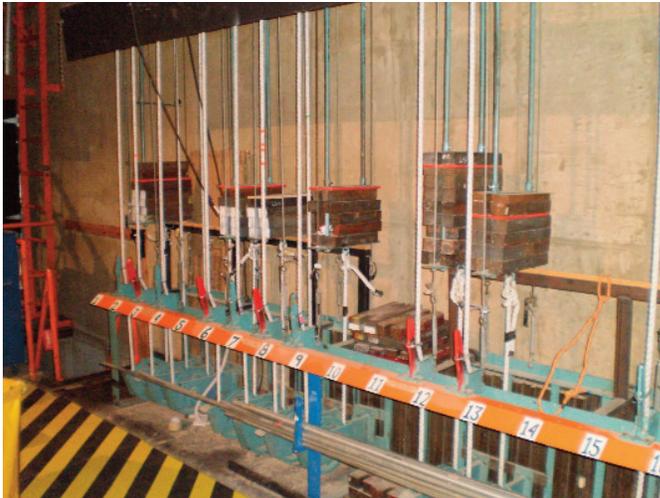
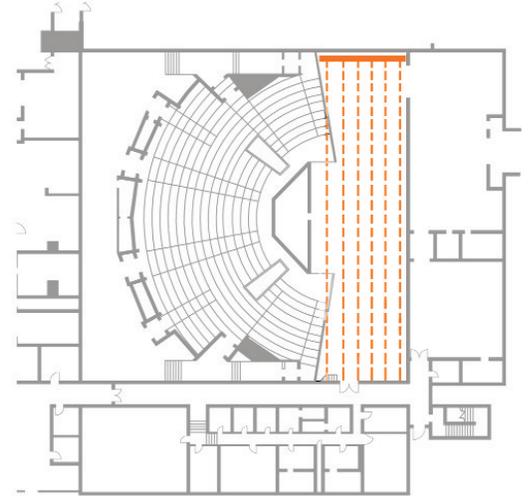
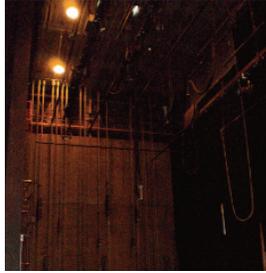
**Estimated Cost:** \$70,000.00

#### Basis of Cost

This cost is based on the following unit costs for finishing out the current 2,800 sf Scene Shop once it is vacated to make room for the rehearsal space: sprung wood floor - \$10/sf, acoustic grid ceiling - \$2.50/sf, painting - \$2.00/sf, lighting and misc. power - \$3.50/sf, misc. mechanical changes - \$1/sf, adding misc. walls - \$3/sf, contingency - \$3/sf.

## M6 Stage Rigging

Existing rigging is not safe and is labor intensive to operate as well as insufficient for present theatrical needs. Manual rigging replacement of existing lines would be approx. \$170,000 with the augmentation to all lines possibly adding \$50,000. Either of these requires the addition of a loading bridge (approx. \$25,000 minimum) plus steel to anchor it.

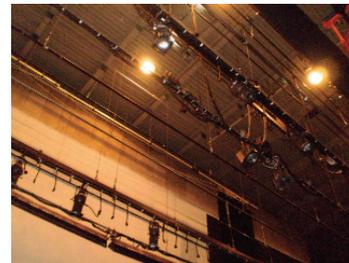


**PRIORITY:** 1  
**CATEGORY:** F - Function  
**CONTINGENT:** No

**Estimated Cost:** \$245,000.00

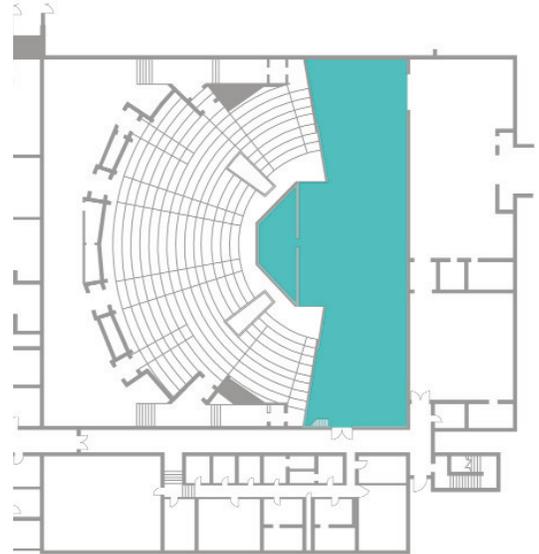
### Basis of Cost

This is a cost range given by Spectrum Engineers to replace the existing stage rigging with updated manual rigging. It also includes the addition of a new loading bridge.



### M7 Stage Floor replacement

The existing Morgan Theater stage floor is adequate for the time being but not desirable. It is not compliant with current fire codes, although the addition of fire sprinklers (M20) will improve this. Also, the orchestra pit underneath the thrust stage is currently unusable due to the difficulty of removing the floor system. It is the University's desire to be able to utilize the orchestra pit more efficiently. It would also be recommended that the new stage floor be sprung and of a material that could be replaced regularly as stage sets are commonly screwed to the floor. By making the stage a sprung floor, theater and particularly dance productions will have improved performance while reducing potential injuries to performers.



**PRIORITY:** 3  
**CATEGORY:** F - Function  
**CONTINGENT:** No

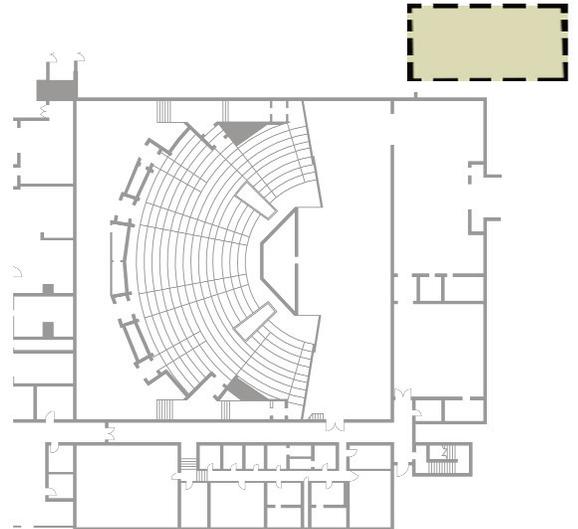
**Estimated Cost:** \$44,000.00

#### Basis of Cost

This cost estimate is based on approximately \$10/sf for a new sprung wood floor with appropriate layers of plywood and masonite for screwing down stage sets, as well as making the orchestra pit usable once again by making a portion of the floor removable. The stage area is approximately 4,400 sf.

### M8 Black Box

The University would like to add a Black Box Theater to the Fine Arts Complex in the future. This would most likely be located in the open grass space between the current Morgan Theater and the Visual Arts wing. When this happens, it would make sense to create a new Scene Shop where the current loading dock is for the Morgan to be shared by the two venues (see items M5 and M2).



**PRIORITY:** 4  
**CATEGORY:** F - Function  
**CONTINGENT:** No

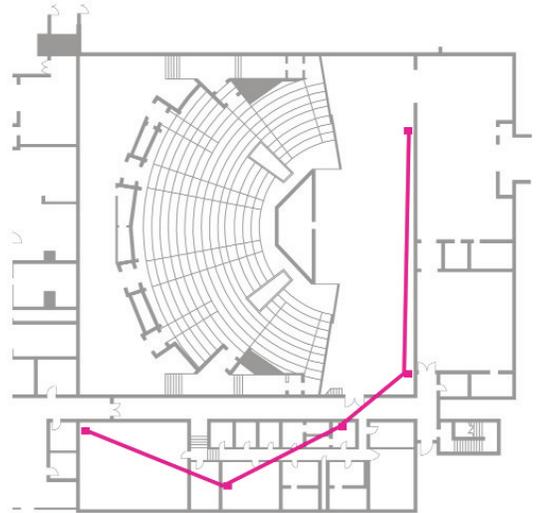
**Estimated Cost:** \$1,000,000.00

#### Basis of Cost

As per the design team's latest experience with the cost of black box theaters, it is estimated that a new black box theater for the university would be around 5,000 sf and be roughly \$200/sf to construct. This would probably include some support spaces such as restrooms, storage, circulation, dressing rooms, etc. This is directly related to the existing building i.e. tying into campus utilities, etc.

### **M9 Intercom/Stage Monitoring System**

It is desirable to add comprehensive intercom and stage monitoring system in all dressing and green rooms for the Morgan Theater.



Monitoring system will berun from the dressing roomsto the microphone systems on the stage.

**PRIORITY:** 4  
**CATEGORY:** F - Function  
**CONTINGENT:** No

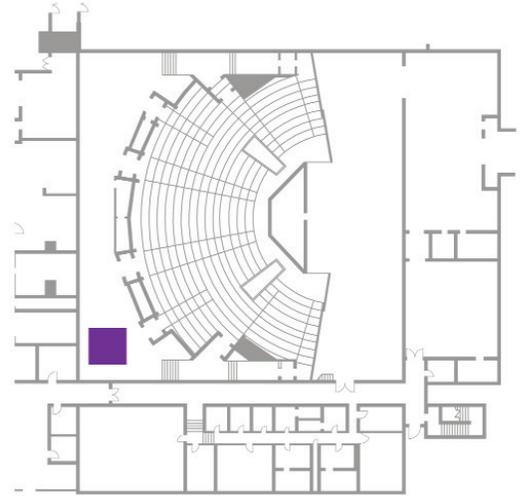
**Estimated Cost:** \$10,000.00

#### Basis of Cost

This is a lump sum given by Spectrum Engineers to add a comprehensive intercom and stage monitoring system to all dressing and green rooms.

### M10 Dimmers

It is recommended to replace the old dimming system, relocate it to a better location and add dimmer circuits.



**PRIORITY:** 4  
**CATEGORY:** F - Function  
M - Maintenance  
**CONTINGENT:** No

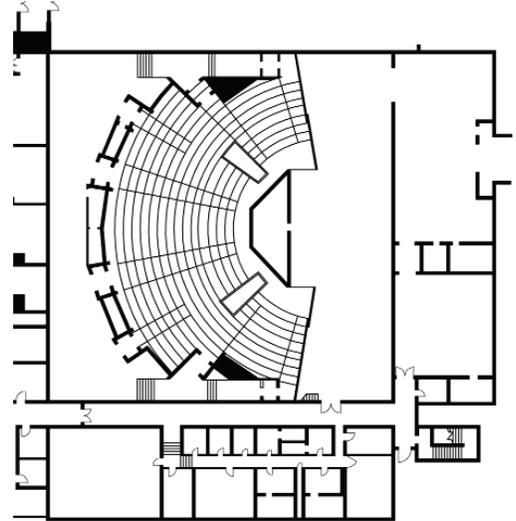
**Estimated Cost:** \$250 - \$450,000.00

#### Basis of Cost

This is a cost range given by Spectrum Engineers to replace the current dimming system with a new one as well as dimming circuits and place them in a better location than up in the catwalk space over the hall.

**M11 Lighting, Control Network**

It is recommended to replace the existing lighting control signals with digital network - distributed DMX/Data for smart stage lights.



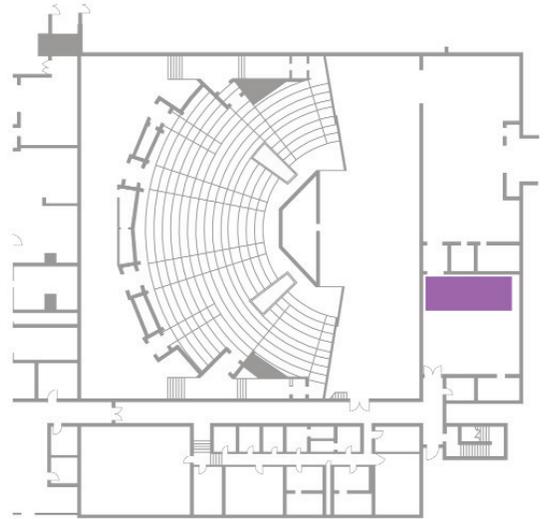
**PRIORITY:** 4  
**CATEGORY:** F - Function  
M - Maintenance  
**CONTINGENT:** No  
**Estimated Cost: :** \$15,000.00

Basis of Cost

This is a lump sum given by Spectrum Engineers to replace the existing lighting control signals with a digital network with DMX/data for smart stage lights.

**M12 HVAC – Dye Shop Exhaust**

It is recommended to provide an independent stand-alone exhaust system for the dye shop including exhaust fan, canopy hood and ductwork.



**PRIORITY:** 1  
**CATEGORY:** HS - Health Safety  
**CONTINGENT:** No

**Estimated Cost:** \$11,000.00

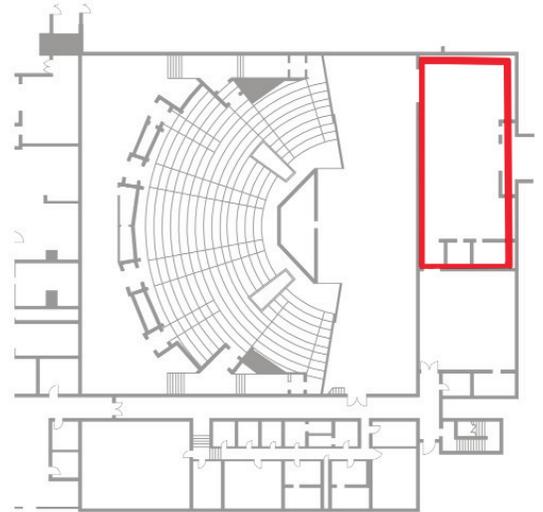
Basis of Cost

This is a lump sum given by VBFA to provide a stand-alone exhaust system for the dye shop. This includes an exhaust fan, canopy hood and associated duct work.

### M13 HVAC – Scene Shop

The HVAC system serving the scene shop located behind the Morgan Theater stage is not adequately equipped to serve present operations. There is no paint booth or sawdust collection system. Currently a pit with sidewall exhaust grilles is used for painting purposes, or weather permitting, the item being painted is sometimes moved outside. There is no sawdust or ventilation system serving the various woodworking areas and machines. The costume shop also requires ventilation in the dye-shop.

Provide complete shop HVAC system for scene shop and costume including a paint booth, sawdust collection system and dye-shop exhaust system.



**PRIORITY:** 1  
**CATEGORY:** HS - Health Safety  
**CONTINGENT:** No

*Note: If M2 is done, the cost of M13 applies to the new location. If M2 is not done, this cost shall apply to the current scene shop location.*

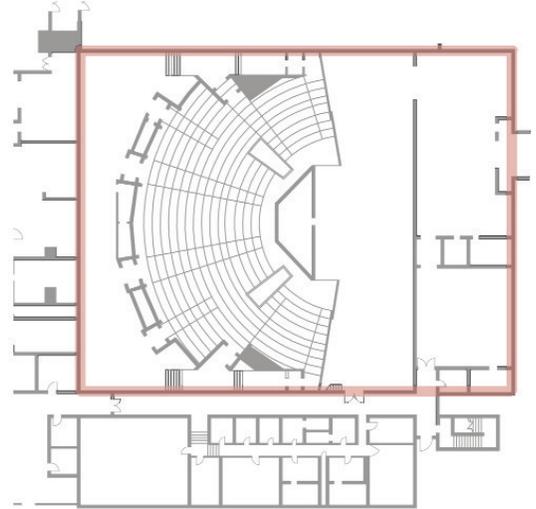
**Estimated Cost:** \$87,000.00

#### Basis of Cost

This is a lump sum given by VBFA to provide a complete HVAC system including a paint booth, sawdust collection system, welding hood and exhaust fans.

**M14 Walls, Exterior, Shear Transfer**

The steel roof deck diaphragm connection to the walls appears to be inadequate for current code requirements in the area of the Morgan Theater. The system now consists of blocking trusses between the cantilevered ends of the main girder trusses and rod x-bracing along the wall parallel to the girder trusses. It appears that the connection of the blocking trusses to the concrete walls needs to be strengthened and the rod x-bracing needs to be replaced with angle or tube x-bracing. There also appears to be a need to add deck transfer along the east wall of the Morgan Theater Stage from the concrete wall to the roof diaphragm.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M17 Walls, Exterior, Seismic Bracing

**Estimated Cost:** \$12,000.00

Basis of Cost

This is a lump sum given by Calder Richards for adding appropriate shear transfer to the high wall at the concert hall.

### M15 Steel Roof Deck

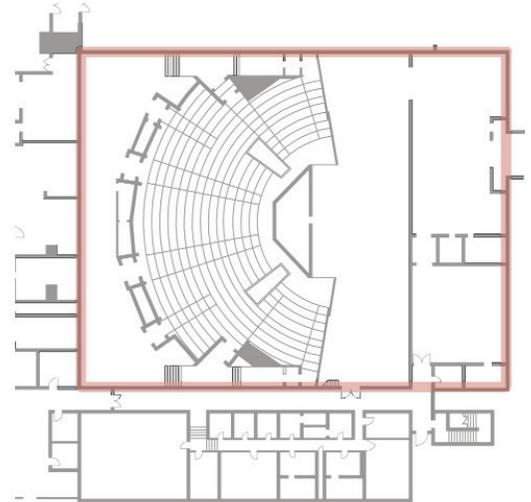
The existing roof diaphragm over the Morgan Theater consists of a steel roof deck which is welded to the supporting roof framing. Based on our observations it appears that the deck would match the properties of what would be currently a Type "B" steel roof deck with interlocking side laps (the drawings did not include specifications for the deck). The deck gage appears to be a 20 gage deck and it appears to be welded with puddle welds at each deck flute and top seam welds at 12" o.c. at the side laps. The deck according to the architectural drawings is topped with a vermiculite topping, most likely used to help with sound. There is no welding at side seams.

#### Code Issues

A calculation was made of the code required demand on the deck. The calculated demand was just under the allowable capacity in the Morgan Theater. This is based on using modern values that would be used for new construction for the strength of the existing roof deck.

Based on the above assumptions it is recommended that the roof decks be strengthened by adding a strip of custom bent and cut 16 gage sheet metal at the ends of the diaphragm (similar to a product called Sheartranz by Verco). This will give the deck the added capacity it needs to meet the calculated demands.

Note that before construction begins this information must be verified with a detailed investigation to determine if our as-built assumptions are correct and to determine if the assumed deck capacities are valid for the in place welds.



**PRIORITY:** 2  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** No

**Estimated Cost:** \$6,250.00

#### Basis of Cost

This is a lump sum given by Calder Richards for updating the roof diaphragm when the next re-roof opportunity should arise.

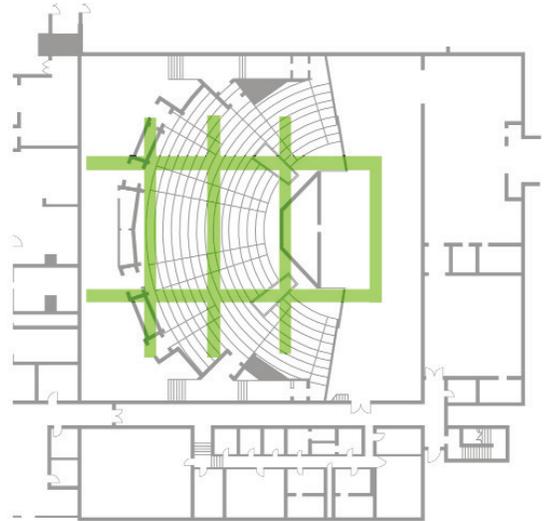
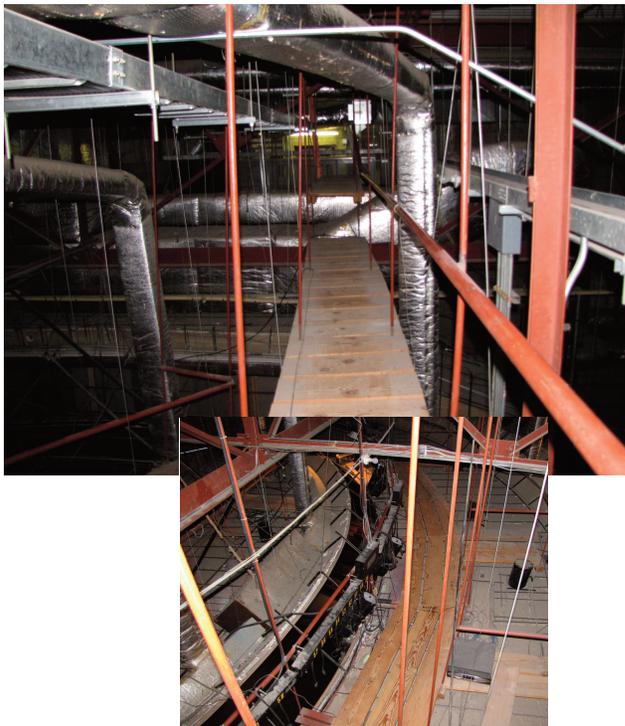


## M16 Catwalks

The current catwalks above the house in the Morgan Theater are made of wood and are not secured in a safe or adequate fashion for safe navigation. The wood material would not meet current fire codes in an A-occupancy of this size if it were constructed today. They also do not have any type of railings and are, therefore, a fall hazard. These catwalks are recommended to be replaced with steel catwalks with continuous guardrails and secured seismically according to current codes.

### Code Issues

The current IBC code does not require catwalks to be fire-rated. They only need to be built in accordance with the materials allowed by the code, depending on the type of construction for the building. However, due to minimal nature of the construction of the current catwalks and that there are currently no railings in place anywhere, it is highly recommended that the catwalks be replaced with steel catwalks and handrails constructed as per the current IBC code and OSHA.



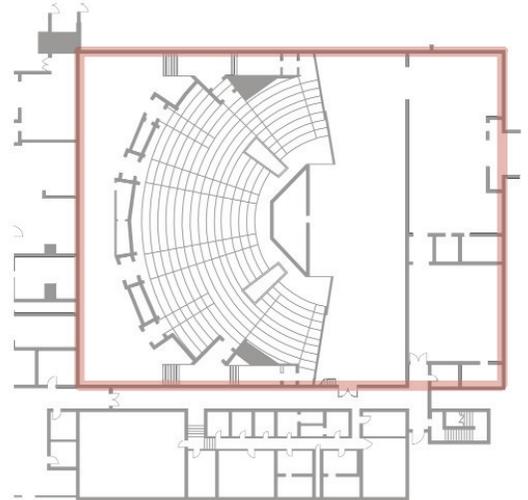
**PRIORITY:** 3  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M3 HVAC Seismic Bracing (ducts)  
M18 Lights, worklights  
M20 Fire sprinklers, Hall & Stage  
M21 Hall Ceiling  
M25 Lighting, house  
**Estimated Cost:** \$137,500.00

### Basis of Cost

This is a lump sum given by Calder Richards for new catwalks and railings to be installed and seismically secured in roughly the same location and layout as the existing catwalks.

**M17 Walls, Exterior, Seismic Bracing**

In the Morgan Theater the longitudinal walls are braced by the connection of the main girder to the tops of the concrete walls. This connection appears to be inadequate for out of plane seismic forces per current code requirements and needs to be strengthened.



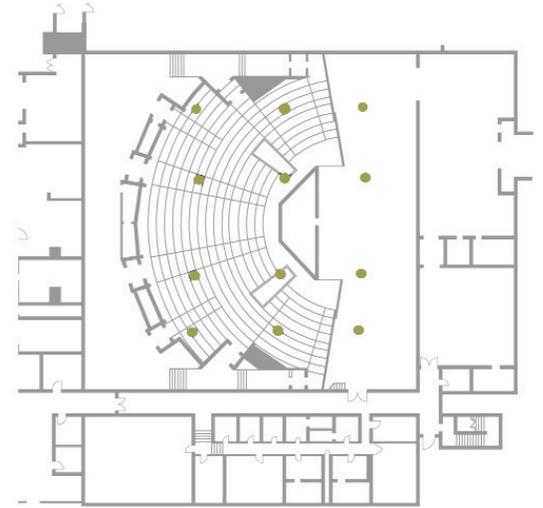
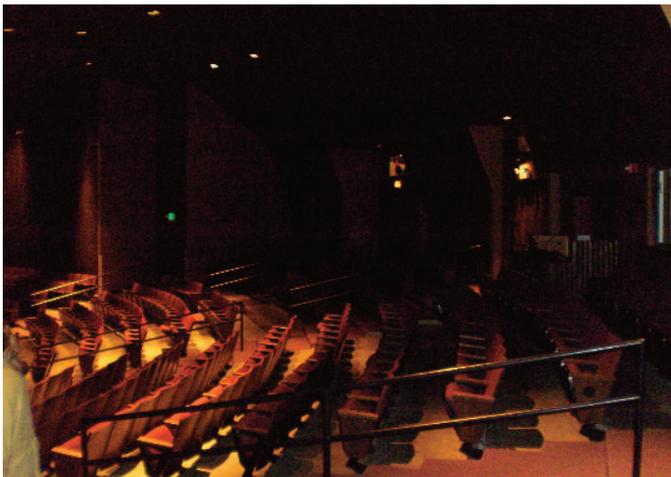
**PRIORITY:** 2  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M14 Walls - Exterior Shear Transfer

**Estimated Cost:** \$5,000.00

Basis of cost:  
\$500.00 per new bracing location.

**M18 Lights, Worklights**

Add worklights in house and stage. There are two existing worklights on the stage but they don't work well and are very inefficient. The University indicated that this would be an important energy issue.



**PRIORITY:** 2  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M3 HVAC Seismic Bracing (ducts)  
M16 Catwalks  
M20 Fire sprinklers, Hall & Stage  
M21 Hall Ceiling  
M25 Lighting, house

*Note: potential for energy funding*

**Estimated Cost:** \$35,000.00

Basis of Cost

This is a lump sum given by Spectrum Engineers to add work lights to the house and stage areas, which currently do not exist.

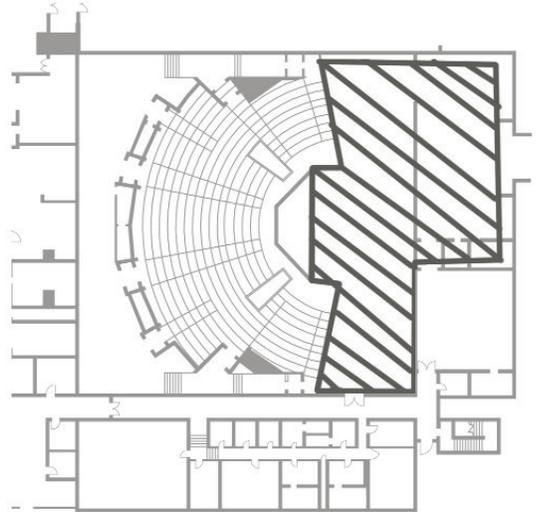


**M19 Fire Sprinkling Upgrade, Basement Area Beneath Stage and Scene Shop**

Fire Sprinklers currently exist under the Morgan Stage but are past their life expectancy. It is highly recommended to upgrade the heads on the system.

Code Issues

Automatic sprinklers currently exist in the basement and shop areas in the Morgan Theater, however, they need to be updated per current code. IBC now classifies this venue as an A-1 occupancy and would, therefore, require automatic sprinklers. The current IBC code also requires all stages to be sprinkled. In addition, the current DFCM design guidelines say "it is desirable that all buildings constructed by the State of Utah be equipped with an automatic sprinkler system to provide added life safety for the occupants and to protect the building from fire loss." Therefore, it is recommended that sprinklers be provided in all spaces within the FAC.



*Note: Basement area beneath stage*

**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** No

*Note: potential for risk/liability funding*

**Estimated Cost:** \$20,500

Basis of Cost: This is a lump sum given by VBFA derived from a \$3/sf installed cost because the sprinklers are existing vs. new.

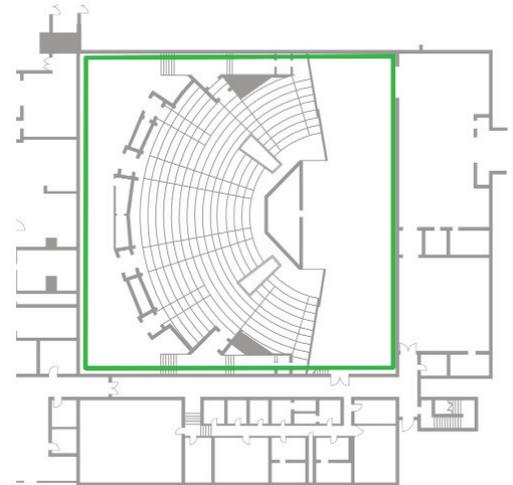
### **M20 Fire Sprinkling, Hall & Stage**

As automatic sprinklers have been recommended for the whole complex, the Morgan Theater Hall and Stage areas should be updated with new automatic sprinklers. The shop area and basement below the stage already have sprinklers that will be upgraded under project M19. It is recommended that the sprinklers be added to the Hall and Stage areas during the ceiling replacement recommended as project number M21.

This project should be considered when addressing ceiling, lighting and even mechanical/electrical upgrades (contingent to some extent).

#### Code Issues

There are no automatic sprinklers currently in the Morgan Theater proper. The current IBC code would classify this venue as an A-1 occupancy which requires automatic sprinklers. The current IBC code also requires all stages to be sprinkled. In addition, the current DFCM design guidelines say "it is desirable that all buildings constructed by the State of Utah be equipped with an automatic sprinkler system to provide added life safety for the occupants and to protect the building from fire loss." It is recommended that sprinklers be provided in all spaces within the FAC.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M3 HVAC Seismic Bracing (ducts)  
M16 Catwalks  
M18 Lights, worklights  
M21 Hall ceiling  
M25 Lights, house

**Estimated Cost:** \$75,000.00

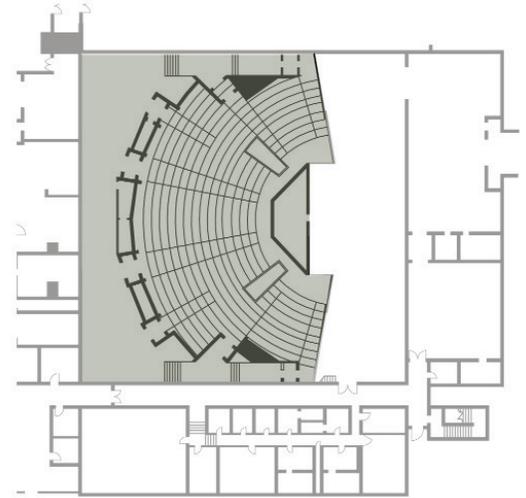
#### Basis of Cost:

\$5.00/sf includes new sprinkler lines and a new riser for this area of the system. Total square footage for stage and house is 15,000 x \$5.00/sf = \$75,000 total cost.

## M21 Hall Ceiling

The suspended ceiling system in the Morgan Theater lacks any kind of bracing for seismic loads. Based on experience from past earthquakes, this ceiling would most likely fail during a major earthquake and could receive significant damage in a moderate earthquake. As a result, this ceiling poses a major life safety hazard to the building's occupants. It may be possible to seismically brace this ceiling in place but it makes more sense to replace this ceiling since it does not meet the acoustic properties desired for the space.

In the redesign and replacement of this ceiling, it will be important to design it jointly with the new audio system (M4) in mind, as the original acoustics of the Morgan Theater were designed for un-amplified voice performances.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M3 HVAC Seismic Bracing (ducts)  
M16 Catwalks  
M18 Lights, worklights  
M20 Fire Sprinklers, Hall & Stage  
M25 Lights, house

**Estimated Cost:** \$282,500.00

Note: this includes the cost of replacing all diffusers in the hall (\$8,500.00).

### Basis of Cost

This estimated cost is for replacing the hall ceiling and includes the seismic bracing of it. It also includes the placement of scaffolding, removal of some seats and demolition of the existing ceiling.

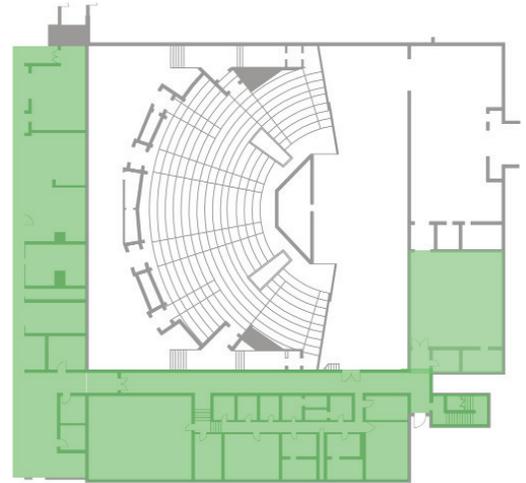
**M22 Fire Sprinkling, Dressing and Support**

It is recommended that the dressing room and support areas adjacent to the Morgan Theater receive new automatic sprinklers as recommended throughout the whole complex. These areas include the two stories of space just south of the Morgan Theater house area with classrooms and dressing room areas, as well as the two story costume shop and costume storage areas just east of the stage area. The scene shop already has a sprinkler system that will be upgraded under another project number (M19). It is recommended that the sprinklers be done concurrently when the ceilings, lighting and HVAC seismic upgrades are done, because access above ceiling will be optimal.

This project should be considered when addressing ceiling, lighting and even mechanical/electrical upgrades (contingent to some extent).

Code Issues

There are no sprinklers currently in the Morgan Theater dressing and support areas. The current IBC code would classify these auxillary spaces as part of the Morgan Theater’s A-1 occupancy and require sprinklers. Also, the current DFCM design guidelines say “it is desirable that all buildings constructed by the State of Utah be equipped with an automatic sprinkler system to provide added life safety for the occupants and to protect the building from fire loss.” It is recommended that sprinklers be provided in all spaces within the entire FAC.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M27 Ceiling, classrooms and support  
M28 Seismic Bracing, classrooms  
M24 General Lighting

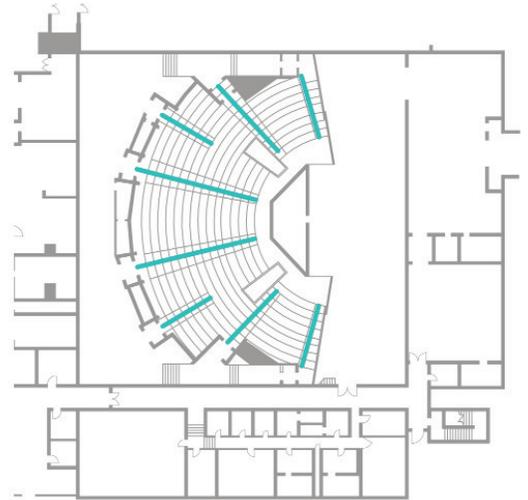
**Estimated Cost:** \$73,780.00

Basis of Cost:  
\$5.00/sf includes new sprinkler lines and a new riser for this area of the system. Total square footage 14,000/floor.

TOTAL SF: 28,000 x \$5.00/sf  
= \$73,780

### M23 Lights, Aisles

It is recommended to replace the old incandescent lights with more efficient LED aisle lights which are currently integral with the hall seats. This would replace 32 devices with controls and power supplies.



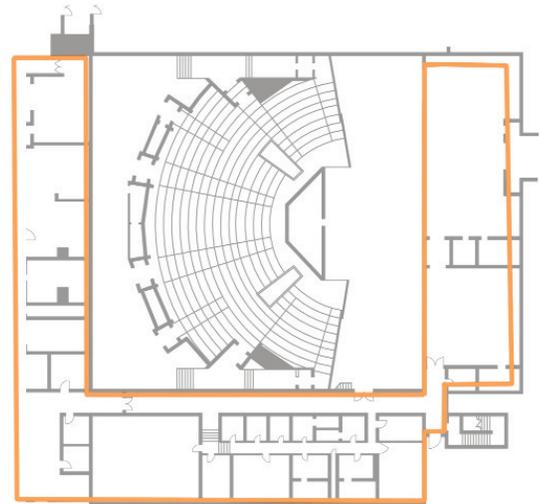
**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
M - Maintenance  
**CONTINGENT:** No  
**Estimated Cost:** \$15,000

#### Basis of Cost

This is a lump sum given by Spectrum Engineers to replace 32 incandescent lights, where they are, with more efficient LED aisle lights and associated controls and power supplies.

### M24 Lighting, General

The general lighting throughout the Morgan Theater auxiliary areas will need to be replaced with more efficient fixtures. This would include all areas surrounding the house and stage, excluding the house and stage areas themselves. Typically all classrooms, dressing areas, restrooms, costume shop and storage areas, scene shop, etc.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M22 Fire Sprinklers, dressing and support  
M27 Ceiling, classrooms and support  
M28 Seismic Bracing, classrooms

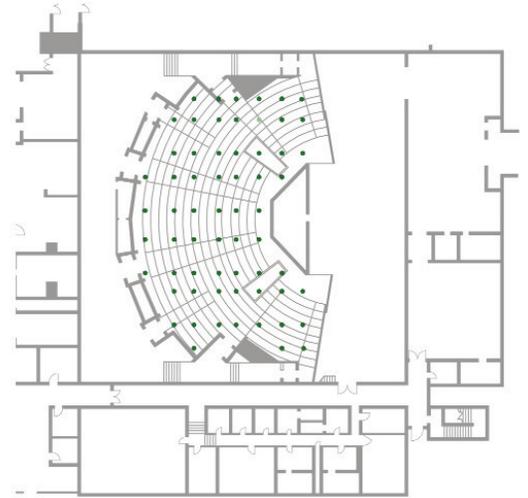
**Estimated Cost:** \$192,000.00

#### Basis of Cost

\$10.00/sf includes new lighting fixtures, associated wiring, etc. Total square footage is 19,200 (both floors) x \$10.00/s.f = \$192,000.00.

### M25 Lights, House

It is recommended to renovate all 65 houselights using tungsten halogen lamp fixtures. This venue would also be a good candidate for a solid state lighting solution available in the future. This solution provides reduced energy and low maintenance. Lighting control requires replacement also.



**PRIORITY:** 3  
**CATEGORY:** M - Maintenance  
**CONTINGENT:** M3 Seismic Bracing (ducts)  
M16 Catwalks  
M18 Lights, worklights  
M20 Fire Sprinklers, hall and stage  
M21 Hall ceiling

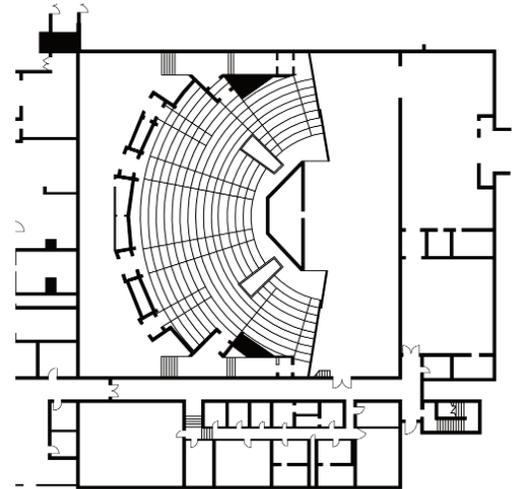
**Estimated Cost:** \$90 - \$300,000.00

#### Basis of Cost

This is a cost range given by Spectrum Engineers to replace all 65 house lights and their associated controls. The range depends on the fixtures chosen, tungsten halogen being the low end and solid state being the upper end.

### M26 Domestic Potable Water Piping

The conventional waste and wet systems appear to be in good condition. These systems could last another 20 to 30 years, though as galvanized domestic hot and cold pipes age they are susceptible to rusting and pitting which is not uncommon. The rust can plug faucet aerators, pipe strainers and discolor fixtures. Pitting is a major cause of leaks. Furthermore the galvanized piping within the Morgan Theater is not sufficiently seismically restrained.



**PRIORITY:** 4  
**CATEGORY:** M - Maintenance  
**CONTINGENT:** M22 Sprinklers: Fire Sprinkling, Dressing and Support  
M24 Lighting, General  
M27 Ceiling, classrooms and Support  
M28 Seismic Bracing (ducts), classrooms

**Estimated Cost:** \$275,000.00

#### Basis of Cost

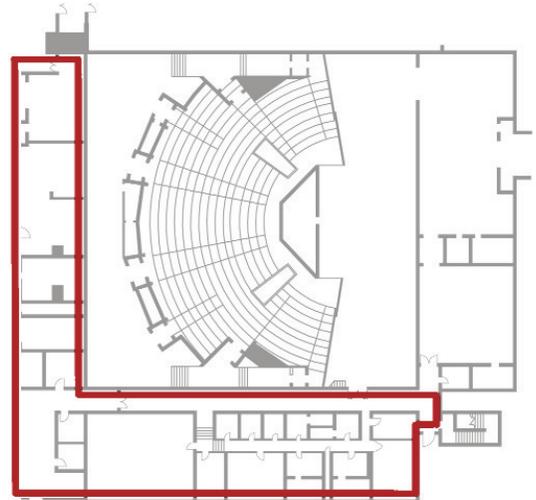
This is a lump sum given by VBFA for the replacement of the current galvanized domestic hot and cold piping. This cost includes the cost of patching.

**M27 Ceiling, classrooms and Support**

Replace lay-in ceiling tile in ceilings with new seismically braced system.

Code Issues

The current ceilings are not seismically braced and are recommended to be replaced. During the replacement, current seismic codes will be used in the design which will address this life safety issue.



**PRIORITY:** 2  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** M22 Fire Sprinklers, dressing and support  
M24 Lighting, general  
M26 Domestic Potable Water Piping  
M28 Seismic Bracing, classrooms

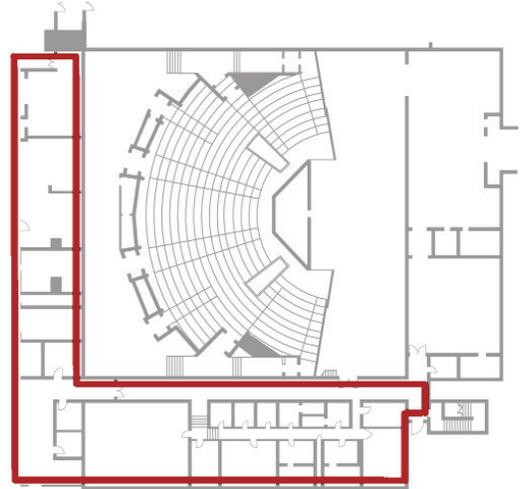
**Estimated Cost:** \$112,000.00

Basis of Cost

\$4.00/sf includes new ceiling tiles, grid and seismic bracing, etc. Total square footage 28,000 sf x \$4.00/sf = \$112,000.00

**M28 Seismic Bracing (ducts), classrooms**

The ductwork in the classroom areas of the Morgan Theater will need to be seismically braced as this is both a life safety issue as well as an acoustic issue with the ducts in some areas resting directly on the ceiling itself transmitting vibration noise throughout the building.



**PRIORITY:** 1  
**CATEGORY:** LF - Life Safety  
**CONTINGENT:** M22 Fire Sprinklers, dressing and support  
M24 Lighting, general  
M26 Domestic Potable Water Piping  
M27 Ceiling, classrooms and support

**Estimated Cost:** \$56,000.00

*Note: this cost includes the cost of diffusers.*

Basis of Cost

\$2.00/sf basis. Total square footage 28,000 x \$2.00/sf = \$56,000.00.

## VISUAL ARTS

The Visual Arts Building is composed mainly of classrooms and gallery space, and is connected to the Morgan Theater through the entry ramp area.

The identified projects include:

- V1 Air Handler and HVAC Controls Upgrade
- V2 Fire Sprinkling
- V3 Elevator, stand alone
- V4 Oil Switch
- V5 Water Piping
- V6 Lighting, Gallery
- V7 Air Conditioning, add to bldg
- V8 Lobby Entry ADA Access
- V9 Ramp Area Ceiling/Lighting Replacement
- V10 Power Replacement
- V11 Ceilings
- V12 Lighting

## VISUAL ARTS

### V1 Air Handler and HVAC Controls Upgrade

The building is served by two separate air-handlers. The air-handler serving the south offices is a constant volume air-handler. Constant volume re-heat boxes provided separate thermostatic control. The air handler serving the classroom bay is constant volume multi-zone with (5) thermostatic zones.

The existing pneumatic controls should be upgraded to DDC. The motorized actuators and dampers should be replaced as well. The existing chiller is also undersized and has outlived its useful life. The chiller should be replaced with a new larger chiller that will accommodate both air-handlers. See item V7 for chiller cost and description.



**PRIORITY:** 3/4  
**CATEGORY:** F - Function  
M - Maintenance  
**CONTINGENT:** V7 Air Conditioning  
**Estimated Cost:** \$68,000.00

#### Basis of Cost

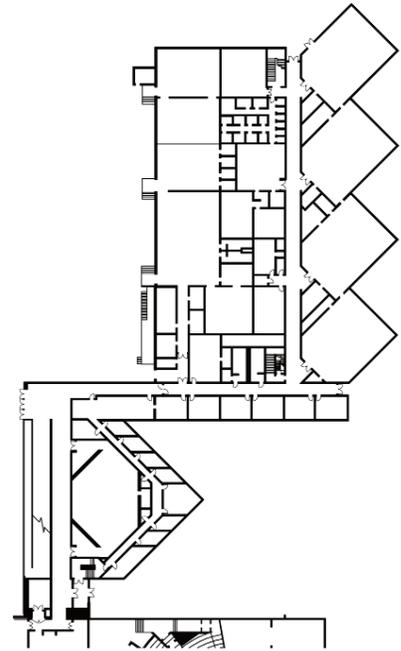
This is a lump sum given by VBFA for the upgrade of the current air handlers.

## V2 Fire Sprinkling

Add new sprinklers/replace any current sprinkler heads (outlived useful life of 20-yrs.) This project should be considered when addressing ceiling, lighting and even mechanical/electrical upgrades (contingent to some extent).

### Code Issues

There are no sprinklers currently in the Visual Arts wing of the complex. While the current IBC code would not require automatic sprinklers for the 'B' occupancy area of classrooms, the current DFCM design guidelines say "it is desirable that all buildings constructed by the State of Utah be equipped with an automatic sprinkler system to provide added life safety for the occupants and to protect the building from fire loss." It is recommended that sprinklers be provided in all spaces within the FAC including the Visual Arts Wing.



**PRIORITY:** 2  
**CATEGORY** LS - Life Safety  
**CONTINGENT:** Vg Ramp Ceiling Lighting  
V11 Ceilings  
V12 Lighting

**Estimated Cost:** \$481,750.00

### Basis of Cost

This is a lump sum given by VBFA and Method Studio for the addition of a fire sprinkling system in the Visual Arts wing (both floors) based on \$5/sf.

There are seven zones which are broken out by cost as follows:

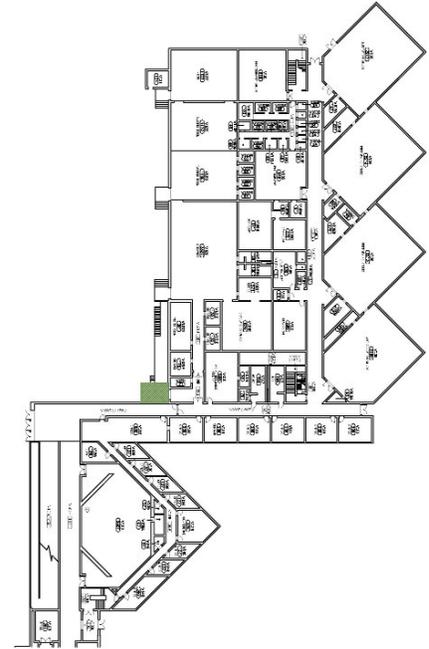
Zone 1 - 10,200 s.f. x \$5/sf = \$51,000  
Zone 2 - 11,300 s.f. x \$5/sf = \$56,500  
Zone 3 - 11,100 s.f. x \$5/sf = \$55,500  
Zone 4 - 21,500 s.f. x \$5/sf = \$107,500  
Zone 5 - 11,250 s.f. x \$5/sf = \$56,250  
Zone 6 - 31,000 s.f. x \$5/sf = \$155,000

### V3 Elevator, stand alone

It is recommended that a stand-alone elevator (separate from the one discussed in item G4) be added to the Visual Arts wing which would greatly improve the ADA accessibility to the second level of the building. This would only need to run from the main floor to the second floor, not to the basement level, as per the University's request.

#### Code Issues

The Visual Arts wing does not currently have any ADA access to the second level by elevator. The only access is by way of the lobby ramps, which are currently steeper than current ADA code allows. It is recommended that a stand-alone elevator be added to the Visual Arts wing to not only satisfy current ADA access for the second level, but to assist in moving large art pieces and/or furniture around in the building. Due to the difference in height of the floor levels in the Visual Arts wing and the Kent and Morgan Theaters, this elevator would need to be stand-alone and could not be combined with the elevator currently recommended for the Kent and Morgan Theater areas.



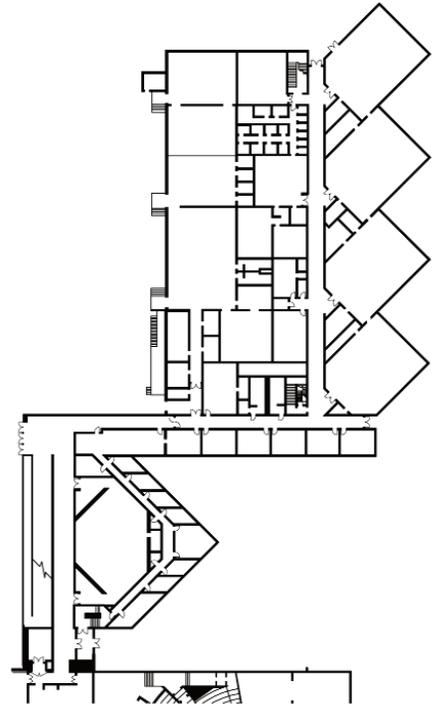
**PRIORITY:** 3  
**CATEGORY:** LS - LifeSafety  
F - Function  
**CONTINGENT:** No  
**Estimated Cost:** \$80,000.00

#### Basis of Cost

This cost is based on a two-stop hydraulic elevator at \$40,000 per stop.

**V4 Oil Switch**

It is recommended to replace the old 15 kV oil switch with a new solid dielectric switch.



**PRIORITY:** 4  
**CATEGORY:** M - Maintenance  
**CONTINGENT:** No

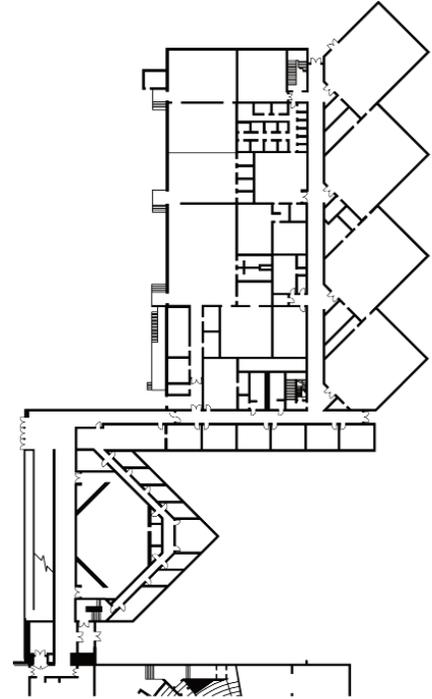
**Estimated Cost:** \$45,000.00

Basis of Cost

This is a lump sum given by Spectrum Engineers to replace the 15 kV oil switch with a new solid state dielectric switch.

## V5 Water Piping

The conventional waste and wet systems appear to be in good condition. These systems could last another 20 to 30 years. As galvanized domestic hot and cold pipes age they are susceptible to rusting and pitting. This is not uncommon in galvanized domestic water lines. The rust can plug faucet aerators, pipe strainers and discolor fixtures. Pitting is a major cause of leaks. Furthermore the galvanized piping is not sufficiently seismically restrained.



**PRIORITY:** 4  
**CATEGORY:** M - Maintenance  
**CONTINGENT:** V2 Fire Sprinklers  
V11 Ceilings  
V12 Lighting

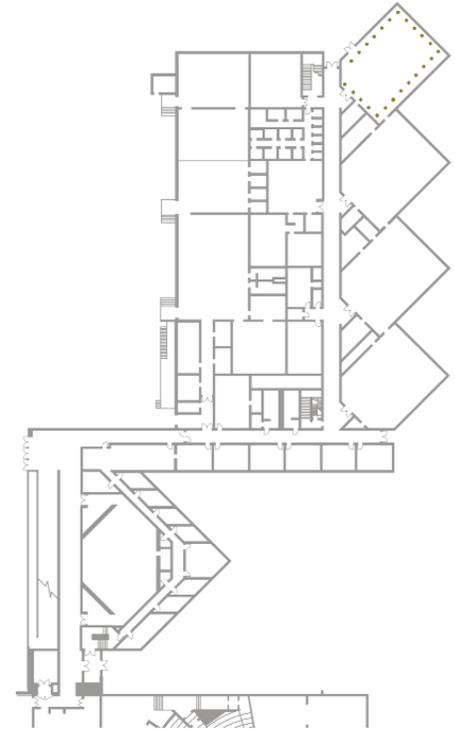
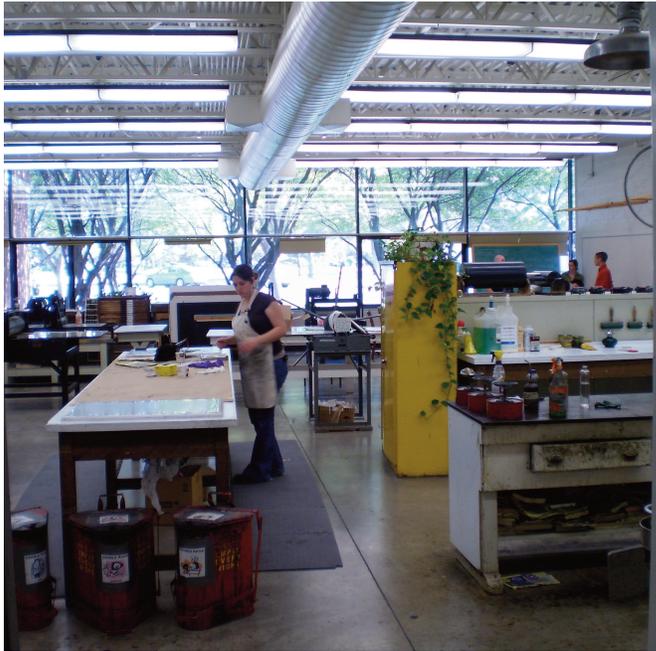
**Estimated Cost:** \$432,000.00

### Basis of Cost

This is a lump sum given by VBFA for the replacement of the current galvanized domestic hot and cold piping. This number includes the cost of patching.

## V6 Lighting, Gallery

It is recommended that the University replace and/or augment the gallery lighting and controls (studio 102).



**PRIORITY:** 4  
**CATEGORY:** M - Maintenance  
F - Function  
**CONTINGENT:** No

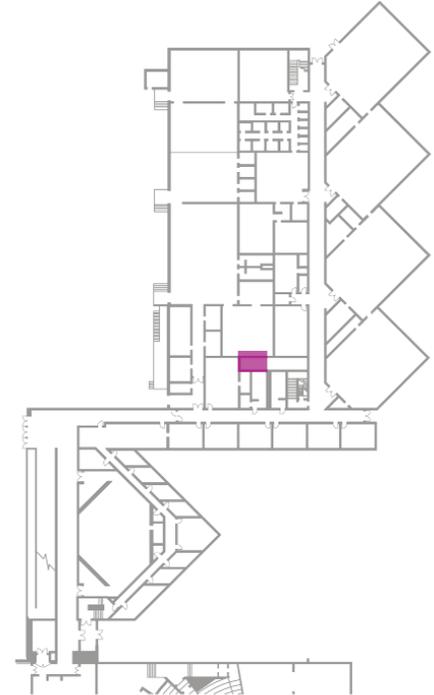
**Estimated Cost:** \$56,000.00

### Basis of Cost

This is an estimated cost given by Spectrum Engineers for the replacement/augmentation of gallery lighting and controls. The gallery is 2,400 s.f. at \$15/s.f. for lighting which equals \$36,000; and \$20,000 for controls for a total of \$56,000.00.

**V7 Air Conditioning, add to bldg**

The Visual Arts wing currently has no air conditioning. It is recommended that this be added by replacing the existing chiller, cooling tower, condenser water pumps, chilled water pumps, air-handler cooling coils and water treatment.



**PRIORITY:** 2/3  
**CATEGORY:** F - Function  
**CONTINGENT:** V1 Air handlers and controls

**Estimated Cost:** \$215,000.00

Basis of Cost

This is a lump sum given by VBFA for the replacement of the current chiller, and its associated systems mentioned above, in the building allowing the addition of air conditioning for the Visual Arts wing.

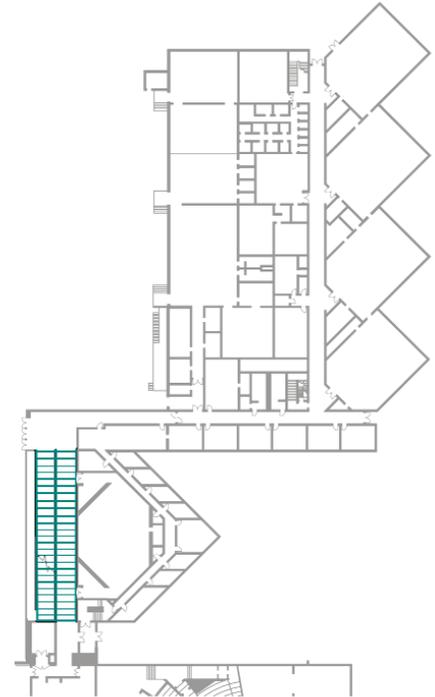
## V8 Lobby Entry ADA Access

The ramps in the lobby of the Visual Arts lobby are too steep for current ADA requirements. This will need to be addressed by either lengthening the ramps into the lobby, which could be part of the remodel/addition at the Master Lobby/Courtyard (item G4), or if the ADA access to the hall is provided elsewhere in the building.

These steep slopes could be retrofit with elongated steps which are more easily navigated by the elderly and mildly handicapped, as well as provide a clear designation that these ramps are not meant for wheelchairs, which is not the case currently, as they are a liability.

### Code Issues

The ramps in the lobby of the building are steeper than current ADA code allows. It has been recommended that these ramps either be replaced, re-configured or be superseded by adding an elevator in the courtyard serving the Kent and Morgan Theaters (see G4).

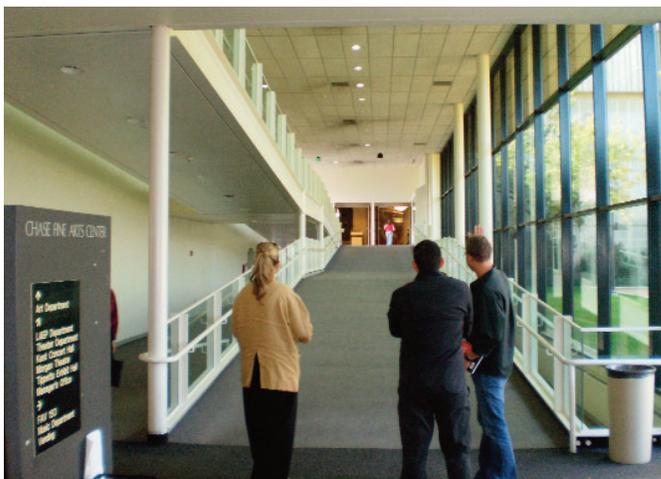


**PRIORITY:** 1/2  
**CATEGORY:** F - Function  
LS - Life Safety  
**CONTINGENT:** No

**Estimated Cost:** \$135,000.00

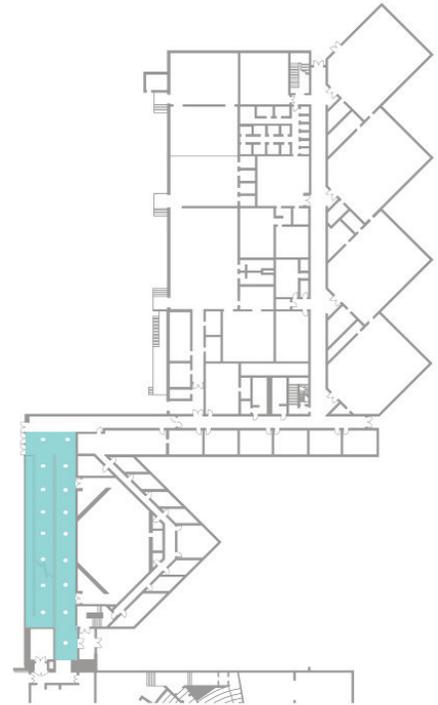
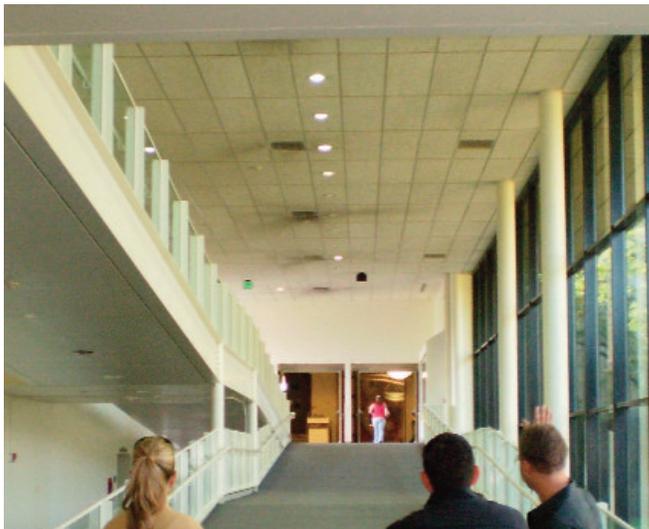
### Basis of Cost

This is an estimate based on the possible replacement of the entire ramp system with either a new ramp system or a stair system if the proposed elevator is added to the area. Some of the costs/sf include: slab on grade demo - \$3/sf, new slab on grade install - \$3/sf, new suspended slab install - \$13/sf, new column install - \$2/sf, and a \$4/sf contingency. The estimated square footage of the area is 5,400 s.f. Note: elevator is needed for this option. Issues are all ADA issues. This includes new handrails.



**V9 Ramp Area Ceiling/Lighting Replacement**

The ramp area of the Visual Arts wing leading into the lobbies of the Morgan and Kent currently has a non-standard size ceiling grid and tiles, which are not seismically braced. It is recommended that the ceiling grid be updated to a new 24" x 24" acoustic tile grid, seismically braced, and that the current lighting be replaced with newer, more efficient, lighting. This would also dress up this space as the ceiling tiles are discolored and dirty.



**PRIORITY:** 2/3  
**CATEGORY:** F - Function  
**CONTINGENT:** V2 Fire Sprinkling

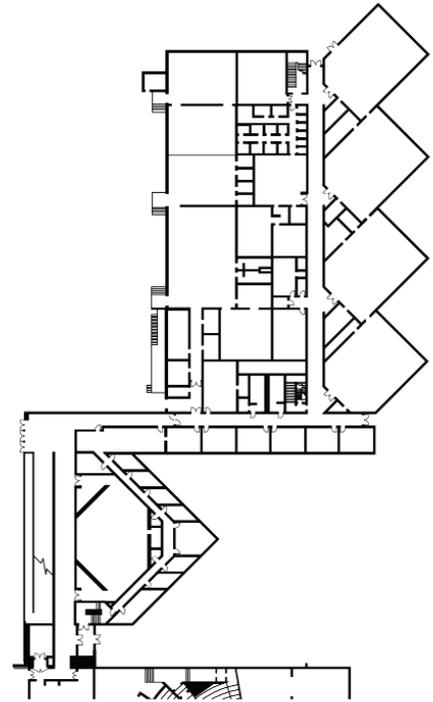
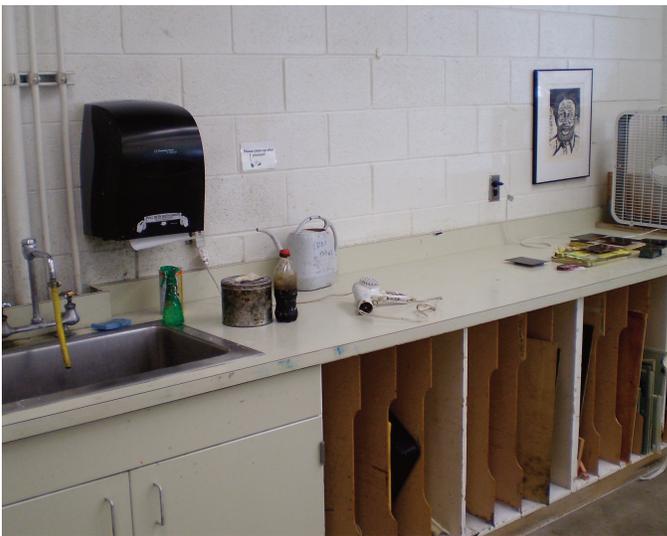
**Estimated Cost:** \$97,200.00

Basis of Cost

The cost estimate for this item is based on 5,400 sf and a lighting cost of \$15/sf and a ceiling cost of \$4/sf. Ceiling diffusers are included in this cost.

### V10 Power

The existing 120/208V distribution in the Visual Arts building is inadequate for the many computers that are used today in the visual arts computer labs. This project will upgrade the 120/208V distribution for additional capacity and panelboards.



**PRIORITY:** 1  
**CATEGORY:** LS - Life Safety  
F - Function  
**CONTINGENT:** No  
**Estimated Cost:** \$60,000.00

#### Basis of Cost

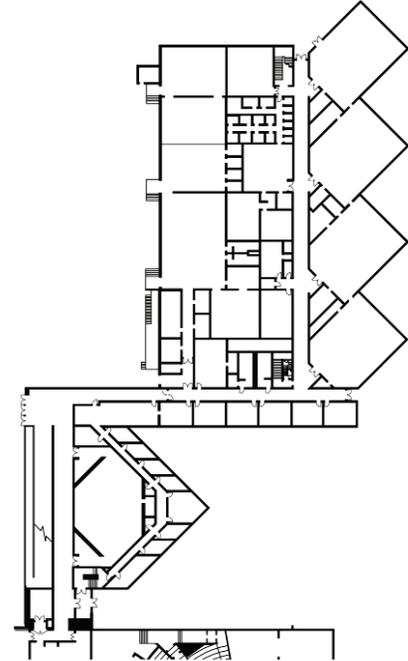
This is a lump sum given by Spectrum Engineers for the upgrade of the current 120/208V distribution for additional capacity and panel boards.

**V11 Ceilings**

The lay-in acoustic tile ceilings throughout the Visual Arts wing will need to be replaced with a newer, seismically braced system. These are mostly classrooms and this does NOT include the entry ramp area leading into the Morgan and Kent Theaters. That will be addressed under item V10.

Code Issues

The current ceilings in the Visual Arts wing are not seismically braced and are recommended to be replaced. During the replacement, current seismic codes will be used in the design which will address this life safety issue.



**PRIORITY:** 2  
**CATEGORY:** LS - Life Safety  
**CONTINGENT:** V2 FireSprinklers  
V12 Lighting

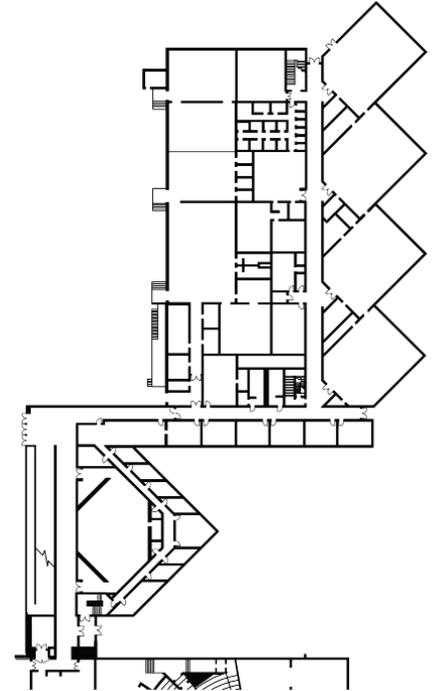
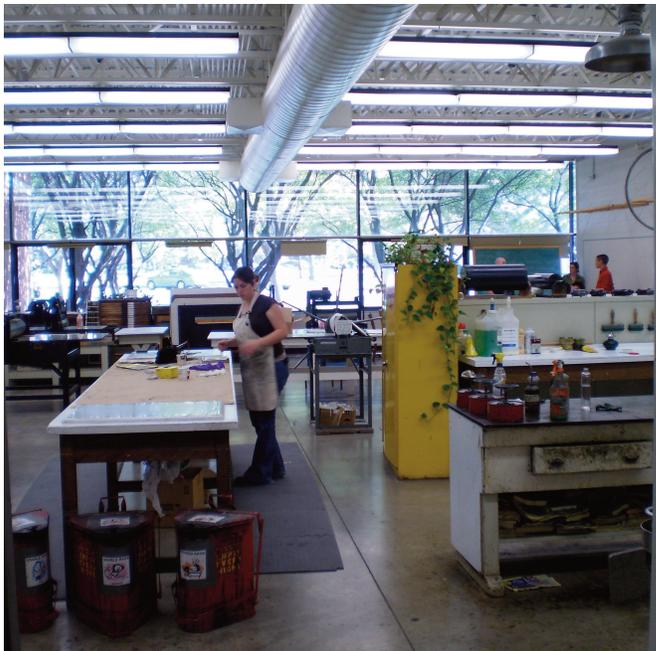
**Estimated Cost:** \$351,200.00

Basis of Cost:

\$4.00/sf includes new ceiling tiles, grid and seismic bracing, etc. Total square footage is 87,800 (both floors) x \$4.00/sf = \$351,200.00.

## V12 Lighting

The general lighting throughout the Visual Arts wing will need to be replaced with more efficient fixtures. These are mostly classrooms and this does not include the entry ramp area leading into the Morgan or Kent Theaters. That will be addressed under item V10.



**PRIORITY:** 2  
**CATEGORY:** F - Function  
**CONTINGENT:** V2 FireSprinklers  
V11 Ceilings

**Estimated Cost:** \$878,000.00

### Basis of Cost:

\$10.00/sf include new fixtures, wiring, switching, etc. Total square footage is 87,800 sf (both floors) x \$10.00/sf = \$878,000.00.

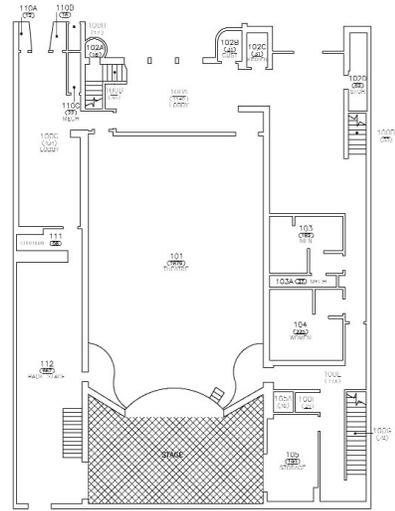
## LYRIC THEATER

The historic Lyric Theater is located in downtown Logan on Main street. It was restored and expanded in 2000 but this work did not include the Fly System.

L1 Fly System

## L1 Fly System

The fly system in the Lyric Theater needs to be replaced. It needs to also remain a manual rigging system as it is a teaching facility for students needing to learn to operate the older systems.



**PRIORITY:** 2/3  
**CATEGORY:** F - function  
**CONTINGENT:** No

**Estimated Cost:** \$300-\$500,000.00

### Basis of Cost

This estimate is a difficult one. The fly system appears to hang from the roof structure of the building and the replacement of the system would most likely trigger a structural upgrade for the roof. This is the reason for the range in cost.

## SECTION D

### PROPOSED PROJECT GROUPINGS

Through the course of the facility assessment and development of essential projects, natural project “groupings” have emerged.

The following list represents the major projects that could be grouped together for minimal cost and disruption.

## PROPOSED PROJECT GROUPINGS

### KENT CONCERT HALL

	est. cost	total cost
<i>Group 1</i> <u>Classroom Area</u>		
a. K1 Ceiling, Classrooms	\$137,600	
c. K9 Duct Diffuser/Sound mitigation/Seismic Bracing	\$134,000	
d. K13 Fire Sprinkling	\$228,200	
e. K22 Domestic Potable Water	\$228,000	
f. K26 General Lighting upgrade	\$456,400	
<b>TOTAL</b>		<b>\$1,184,200</b>
 <i>Group 2</i> <u>Hall Area</u>		
a. K3 Seismic Bracing (Ducts), Duct/Diffuser sound mit.	\$228,195	
b. K4 Lights, house	\$120,000	
c. K14 Fire Sprinkling, house and stage	\$115,300	
d. K15 Ceiling replacement w/ acoustic clouds	\$627,000	
e. K19 Catwalk Replacement	\$168,750	
f. K21 Lights, Worklights	\$25,000	
<b>TOTAL</b>		<b>\$1,284,245</b>
 <i>Group 3</i> <u>Hall Area</u>		
a. K16 Walls - Exterior, Bracing	\$8,000	
b. K17 Walls - Exterior, Shear Transfer	\$15,000.00	
<b>TOTAL</b>		<b>\$23,000</b>
 <i>Group 4</i> <u>General Area</u>		
a. K7 Lights, Lobby	\$25,000	
b. G1 Wayfinding	\$7,000	
c. G4 Master Lobby/Courtyard	\$1,000,000	
<b>TOTAL</b>		<b>\$1,032,000</b>

### MORGAN THEATER

#### *Group 1* House Area

a. M14 Exterior Walls, Shear Transfer	\$12,000	
b. M17 Exterior Walls, Seismic Bracing	\$5,000	
<b>TOTAL</b>		<b>\$17,000</b>

#### *Group 2* House Area

a. M2 Shop Relocation	\$238,000	
b. M5 Rehearsal Space	\$70,000	
c. M8 Black Blox	\$1,000,000	
<b>TOTAL</b>		<b>\$1,308,000</b>

*Group 3* Dressing & Support Areas

a.	M22 Fire Sprinkling, dressing/support areas	\$73,780	
b.	M24 Lighting, General	\$192,000	
c.	M26 Domestic Potable Water Replacement	\$275,000	
d.	M27 General ACT Ceiling upgrade/seismic	\$112,000	
e.	M28 Seismic Bracing (ducts)	\$56,000	
	<b>TOTAL</b>		<b>\$708,700</b>

*Group 4* House Area

a.	M3 Seismic Bracing, ducts, house	\$5,000	
b.	M16 Catwalk Replacement	\$137,500	
c.	M18 Lights, Worklights	\$35,000	
d.	M20 Fire Sprinkling, Hall & Stage	\$75,000	
e.	M21 Hall Ceiling	\$282,500	
f.	M25 Lights, house	\$300,000	
	<b>TOTAL</b>		<b>\$835,000</b>

**VISUAL ARTS**

*Group 1*

a.	V1 Upgrade Air Handler/DDC Controls	\$68,000	
b.	V7 air conditioning	\$215,000	
	<b>TOTAL</b>		<b>\$283,000</b>

*Group 2*

a.	V2 Fire Sprinkling	\$481,750	
b.	V5 Domestic Potable Water	\$432,000	
c.	V9 Ramp Area/Ceiling Lighting	\$97,200	
d.	V11 Ceilings (six zones, w/mechanical zones)	\$351,200	
e.	V12 General Lighting (six zones, w/mechanical zones)	\$878,000	
	<b>TOTAL</b>		<b>\$2,240,150</b>

## SECTION E

### DETAILED MASTER ISSUES SPREADSHEET

Based on the facility conditions reports, tour and investigations, along with input from the Facilities, Design & Construction staff, the following prioritized Master Issues were composed. The Prioritized Master Issues Spreadsheet is the tool used to develop and organize the issues that emerged during the analysis of the Fine Arts Complex. This tool is particularly helpful as it can be sorted in many different ways i.e. by priority, by contingent projects, by code, etc. In this report, we have sorted by Building, then by Contingency and Priority.

Generally, this listing provides a tabulated, prioritized and color coded summary of the recommended projects.

The projects are listed along with a brief description (*specific details can be found in the projects summary section of this report*), cost, priority ranking, assigned category and whether the project is "contingent" on other projects.

We have categorized the projects as follows:

LIFE SAFETY  
FUNCTION  
MAINTENANCE  
AESTHETICS

Projects have been prioritized on a scale of 1 - 4, with 1 being the highest priority for the university. Many of the projects interconnect and impact one another. This plan was developed in large part to help define those contingencies in a more clear, efficient way. If a project impacts another, those contingencies are identified on the summary sheet. It is the university's intent to consider those contingencies as projects are reviewed for implementation.

It is the University's desire that projects ranked with a priority 1, are addressed first and foremost. It is also the University's desire that like projects that impact one another, are strategically considered so cost and operations are impacted minimally.

## SECTION F

### COST TABLES

Each project has had a cost estimate prepared based on the scope of work described in the Project Summary Section (*and in the Master Issues List in the preceding section*).

A complete cost table follows, as well as summary cost tables by building. The complete cost table includes an additional line item for upgrading all finishes in the building resulting in a total facility upgrade cost.

These costs are construction costs only.

USU FINE ARTS COMPLEX  
 COST ESTIMATE BY PROJECT/BUILDING

Note: construction cost estimate only

05.10.2010

General
Kent Concert Hall
Morgan Theater
Visual Arts
Lyric Theater

CODE	DESCRIPTION	S.F Cost or Low Range	Cost
G1	Wayfinding/Exiting	\$3,000.00	\$7,000.00
G2	Public Restrooms		\$70,000.00
G3	Controls, Security		\$125,000.00
G4	Master Lobby/Courtyard		\$1,000,000.00
G5	Upgrade Clock System		\$20,000.00
G6	Emergency Lighting		\$55,000.00
G7	Asbestos Abatement	\$14-\$16/s.f.	nic
G8	Precast Concrete Panels (strengthen exist.)		\$162,000.00
G8	Precast Concrete Panels	\$571,000.00	\$1,080,000.00
G9	Generator		\$65,000.00
G10	Electrical Distribution		\$575,000.00
G11	Overflow Roof Drains		\$386,000.00
K1	Ceilings, Classrooms		\$137,600.00
K2	Acoustic Shell (Stage)	\$150,000.00	\$300,000.00
K3	Duct Diffuser/Sound Mitigate/Seismic Bracing (Hall)		\$119,300.00
K4	Lights, House	\$120,000.00	\$350,000.00
K5	Upgrade Air Handler/DDC Controls (Hall/stage)		\$168,000.00
K6	Upgrade Air Handler/DDC controls (Classroom Wing)		\$203,000.00
K7	Lights, Lobby		\$25,000.00
K8	Loading Dock Air Intake		\$75,000.00
K9	Duct Diffuser/Sound Mitigate/Seismic Bracing (Clstrm.)		\$10,000.00
K10	Sound Control, Relocation		\$10,000.00
K11	Dressing Room Upgrade		\$135,000.00
K12	Rigging	\$215,000.00	\$375,000.00
K13	Fire Sprinkling, Classrooms		\$228,195.00
K14	Fire Sprinkling, Hall & Stage		\$115,300.00
K15	Ceilings, Hall		\$627,000.00
K16	Walls - Exterior, Bracing		\$8,000.00
K17	Walls - Exterior, Shear Transfer		\$15,000.00
K18	Steel Roof Deck		\$12,500.00
K19	Catwalks		\$168,750.00
K20	Entrance, Ramps/Steps		\$16,600.00
K21	Lights, Worklights		\$25,000.00
K22	Domestic Potable Water		\$228,000.00
K23	Hot Water Storage Tank		\$15,000.00
K24	Dimmer Replacement	\$190,000.00	\$290,000.00
K25	Lights, Aisles		\$20,000.00
K26	General Lighting, Classrooms		\$456,390.00

USU FINE ARTS COMPLEX  
COST ESTIMATE BY PROJECT/BUILDING

Note: construction cost estimate only

05.10.2010

General
Kent Concert Hall
Morgan Theater
Visual Arts
Lyric Theater

<u>CODE</u>	<u>DESCRIPTION</u>	<u>S.F Cost or Low Range</u>	<u>Cost</u>
M1	Upgrade Air Handlers, DDC Controls		\$147,000.00
M2	Scene Shop Relocation		\$238,000.00
M3	Seismic Bracing (Ducts)		\$5,000.00
M4	Audio System Upgrade	\$55,000.00	\$100,000.00
M5	Rehearsal Space		\$70,000.00
M6	Stage Rigging	\$195,000.00	\$245,000.00
M7	Stage Floor Replacement		\$44,000.00
M8	Black Box		\$1,000,000.00
M9	Intercom/Stage Monitoring System		\$10,000.00
M10	Dimmer Replacement	\$250,000.00	\$450,000.00
M11	Lighting Control Network		\$15,000.00
M12	HVAC - Dye Shop Exhaust		\$11,000.00
M13	HVAC - Scene Shop		\$87,000.00
M14	ext. Walls, Shear Transfer		\$12,000.00
M15	Steel Roof Deck		\$6,250.00
M16	Catwalks		\$137,500.00
M17	Ext. Walls, Seismic Bracing		\$5,000.00
M18	Lighting, Worklights		\$35,000.00
M19	Fire Sprinkler Upgrade (Basement & shop)		\$20,500.00
M20	Fire Sprinkling, Hall & Stage		\$75,000.00
M21	Hall Ceiling		\$282,500.00
M22	Fire Sprinkling, Dressing & Support		\$73,780.00
M23	Lights, Aisles		\$15,000.00
M24	Lighting, General		\$192,000.00
M25	Lights, House	\$90,000.00	\$300,000.00
M26	Domestic Potable Water Replacement		\$275,000.00
M27	Ceiling, Classrooms & Support		\$112,000.00
M28	Seismic Bracing, Ducts		\$56,000.00
V1	Upgrade Air Handler/DDC Controls		\$68,000.00
V2	Fire Sprinkling		\$481,750.00
V3	Stand Alone Elevator		\$80,000.00
V4	Oil Switch		\$45,000.00
V5	Domestic Potable Water		\$432,000.00
V6	Gallery Lighting		\$56,000.00
V7	Air Conditioning		\$215,000.00
V8	Lobby Entry ADA Access		\$135,000.00
V9	Ramp Area/Ceiling Lighting		\$97,200.00
V10	Power Replacement		\$60,000.00
V11	Ceilings, throughout		\$351,200.00
V12	General Lighting		\$878,000.00
L1	Fly System	\$300,000.00	\$500,000.00
<b>TOTAL MASTER ISSUES:</b>			<b>\$15,097,315.00</b>

Note: does not include asbestos abatement

USU FINE ARTS COMPLEX  
COST FOR COMPLETE REMODEL/UPGRADE

5.10.2010

<b>TOTAL MASTER ISSUES:</b>	<b>\$15,097,315.00</b>
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<b>Additional items for full remodel</b>	
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Flooring upgrades (carpet, VCT)	148,900.00
General painting throughout	468,370.00
Asbestos Removal (related to VCT replacement)	<u>922,800.00</u>

<i>Sub-Total additional items:</i>	<b>\$1,540,070.00</b>
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<b>TOTAL COST FOR FULL REMODEL:</b>	<b>\$16,637,385.00</b>
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## GENERAL PROJECT COSTS

USU FINE ARTS COMPLEX  
COST ESTIMATES BY PROJECT/BUILDING

05.10.2010

General
Kent Concert Hall
Morgan Theater
Visual Arts
Lyric Theater

<u>CODE</u>	<u>DESCRIPTION</u>	<u>S.F Cost or S.F Cost or Low Range</u>	<u>Cost</u>
G1	Wayfinding/Exiting	\$3,000.00	\$7,000.00
G2	Public Restrooms		\$70,000.00
G3	Controls, Security		\$125,000.00
G4	Master Lobby/Courtyard		\$1,000,000.00
G5	Upgrade Clock System		\$20,000.00
G6	Emergency Lighting		\$55,000.00
G7	Asbestos Abatement	\$14-\$16/s.f.	nic
G8	Precast Concrete Panels (strengthen exist.)		\$162,000.00
G8	Precast Concrete Panels	\$571,000.00	\$1,080,000.00
G9	Generator		\$65,000.00
G10	Electrical Distribution		\$575,000.00
G11	Overflow Roof Drains		\$386,000.00
<b>TOTAL GENERAL AREAS</b>			<b>\$3,545,000.00</b>

# KENT CONCERT HALL PROJECT COSTS

USU FINE ARTS COMPLEX  
COST ESTIMATES BY PROJECT/BUILDING

05.10.2010

General
Kent Concert Hall
Morgan Theater
Visual Arts
Lyric Theater

CODE	DESCRIPTION	S.F Cost or Low Range	Cost
K1	Ceilings, Classrooms		\$137,600.00
K2	Acoustic Shell (Stage)	\$150,000.00	\$300,000.00
K3	Duct Diffuser/Sound Mitigate/Seismic Bracing (Hall)		\$119,300.00
K4	Lights, House	\$120,000.00	\$350,000.00
K5	Upgrade Air Handler/DDC Controls (Hall/stage)		\$168,000.00
K6	Upgrade Air Handler/DDC controls (Classroom Wing)		\$203,000.00
K7	Lights, Lobby		\$25,000.00
K8	Loading Dock Air Intake		\$75,000.00
K9	Duct Diffuser/Sound Mitigate/Seismic Bracing (Clstrm.)		\$10,000.00
K10	Sound Control, Relocation		\$10,000.00
K11	Dressing Room Upgrade		\$135,000.00
K12	Rigging	\$215,000.00	\$375,000.00
K13	Fire Sprinkling, Classrooms		\$228,195.00
K14	Fire Sprinkling, Hall & Stage		\$115,300.00
K15	Ceilings, Hall		\$627,000.00
K16	Walls - Exterior, Bracing		\$8,000.00
K17	Walls - Exterior, Shear Transfer		\$15,000.00
K18	Steel Roof Deck		\$12,500.00
K19	Catwalks		\$168,750.00
K20	Entrance, Ramps/Steps		\$16,600.00
K21	Lights, Worklights		\$25,000.00
K22	Domestic Potable Water		\$228,000.00
K23	Hot Water Storage Tank		\$15,000.00
K24	Dimmer Replacement	\$190,000.00	\$290,000.00
K25	Lights, Aisles		\$20,000.00
K26	General Lighting, Classrooms		\$456,390.00
K27	Dimmers	\$190,000.00	\$290,000.00
K28	Lights, Aisles		\$20,000.00

<b>TOTAL KENT CONCERT HALL</b>	<b>\$4,443,635.00</b>
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# MORGAN THEATER PROJECT COSTS

USU FINE ARTS COMPLEX  
COST ESTIMATES BY PROJECT/BUILDING

05.10.2010

General
Kent Concert Hall
Morgan Theater
Visual Arts
Lyric Theater

<u>CODE</u>	<u>DESCRIPTION</u>	<u>S.F Cost or Low Range</u>	<u>Cost</u>
M1	Upgrade Air Handlers, DDC Controls		\$147,000.00
M2	Scene Shop Relocation		\$238,000.00
M3	Seismic Bracing (Ducts)		\$5,000.00
M4	Audio System Upgrade	\$55,000.00	\$100,000.00
M5	Rehearsal Space		\$70,000.00
M6	Stage Rigging	\$195,000.00	\$245,000.00
M7	Stage Floor Replacement		\$44,000.00
M8	Black Box		\$1,000,000.00
M9	Intercom/Stage Monitoring System		\$10,000.00
M10	Dimmer Replacement	\$250,000.00	\$450,000.00
M11	Lighting Control Network		\$15,000.00
M12	HVAC - Dye Shop Exhaust		\$11,000.00
M13	HVAC - Scene Shop		\$87,000.00
M14	ext. Walls, Shear Transfer		\$12,000.00
M15	Steel Roof Deck		\$6,250.00
M16	Catwalks		\$137,500.00
M17	Ext. Walls, Seismic Bracing		\$5,000.00
M18	Lighting, Worklights		\$35,000.00
M19	Fire Sprinkler Upgrade (Basement & shop)		\$20,500.00
M20	Fire Sprinkling, Hall & Stage		\$75,000.00
M21	Hall Ceiling		\$282,500.00
M22	Fire Sprinkling, Dressing & Support		\$73,780.00
M23	Lights, Aisles		\$15,000.00
M24	Lighting, General		\$192,000.00
M25	Lights, House	\$90,000.00	\$300,000.00
M26	Domestic Potable Water Replacement		\$275,000.00
M27	Ceiling, Classrooms & Support		\$112,000.00
M28	Seismic Bracing, Ducts		\$56,000.00
M29	Seismic Bracing, Seismic (classrooms)		\$5,000.00

<b>TOTAL MORGAN THEATER</b>	<b>\$4,024,530.00</b>
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## VISUAL ARTS PROJECT COSTS

USU FINE ARTS COMPLEX  
COST ESTIMATES BY PROJECT/BUILDING

05.10.2010

General
Kent Concert Hall
Morgan Theater
Visual Arts
Lyric Theater

CODE	DESCRIPTION	S.F Cost or Low Range	Cost
V1	Upgrade Air Handler/DDC Controls		\$68,000.00
V2	Fire Sprinkling		\$481,750.00
V3	Stand Alone Elevator		\$80,000.00
V4	Oil Switch		\$45,000.00
V5	Domestic Potable Water		\$432,000.00
V6	Gallery Lighting		\$56,000.00
V7	Air Conditioning		\$215,000.00
V8	Lobby Entry ADA Access		\$135,000.00
V9	Ramp Area/Ceiling Lighting		\$97,200.00
V10	Power Replacement		\$60,000.00
V11	Ceilings, throughout		\$351,200.00
V12	General Lighting		\$878,000.00

<b>TOTAL VISUAL ARTS</b>	<b>\$2,899,150.00</b>
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## LYRIC THEATER PROJECT COSTS

USU FINE ARTS COMPLEX  
COST ESTIMATES BY PROJECT/BUILDING

05.10.2010

General
Kent Concert Hall
Morgan Theater
Visual Arts
Lyric Theater

CODE	DESCRIPTION	S.F Cost or Low Range	Cost
L1	Fly System	\$300,000.00	\$500,000.00

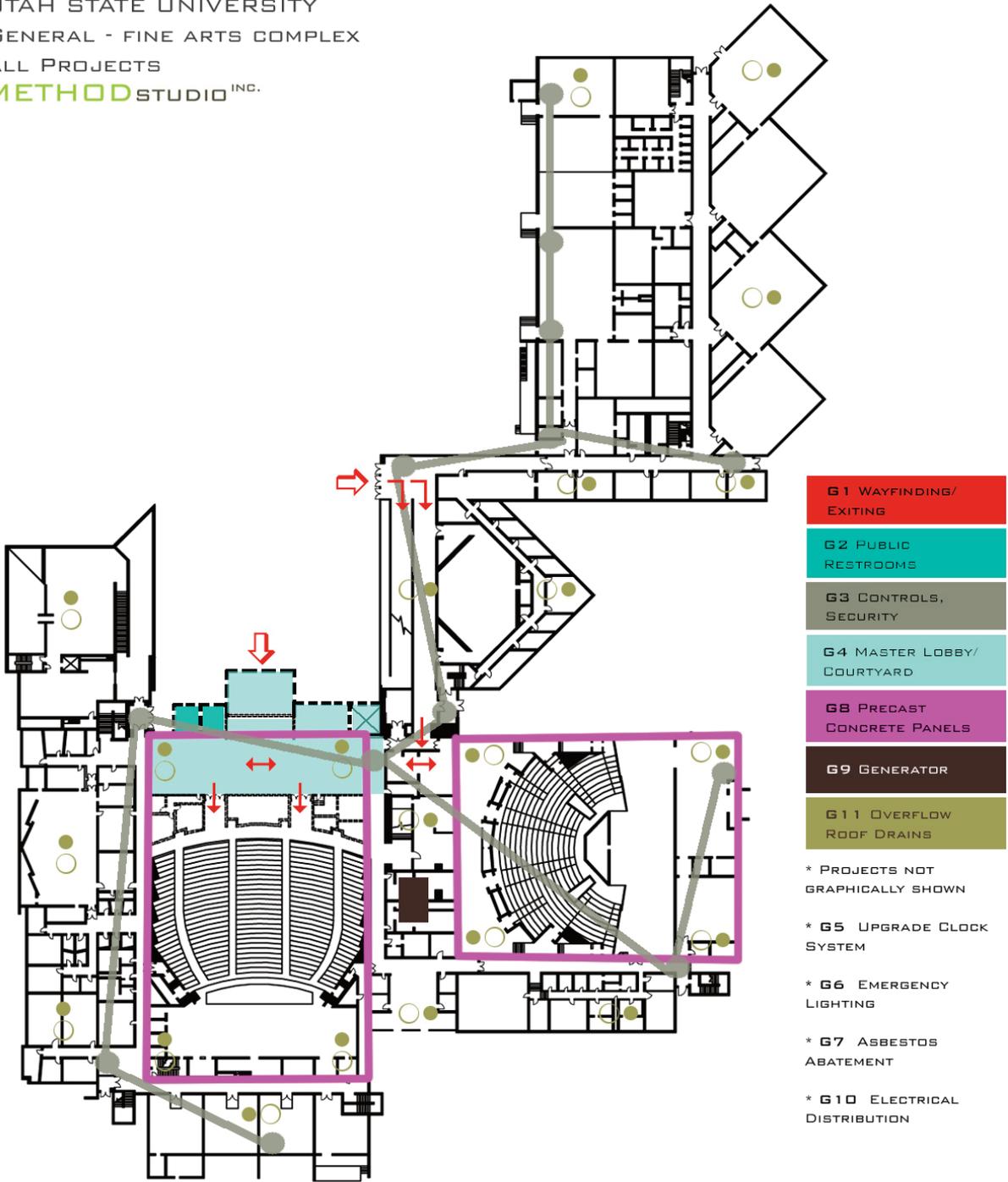
<b>TOTAL LYRIC THEATER</b>	<b>\$300,000.00</b>	<b>\$500,000.00</b>
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## SECTION G

### PROJECT FLOORPLAN OVERLAYS

The following drawings depict graphically all projects within each building as well as projects that are contingent upon one another. The projects are shown in their general location with each project highlighted in its individual color. The overlays allow a *general* visual understanding of where these projects will intersect. This exercise brings a visual awareness of the complexity of the work and the importance of strategic phasing both financially and operationally.

UTAH STATE UNIVERSITY  
 GENERAL - FINE ARTS COMPLEX  
 ALL PROJECTS  
 METHODSTUDIO<sup>INC.</sup>



- G1** WAYFINDING/  
EXITING
- G2** PUBLIC  
RESTROOMS
- G3** CONTROLS,  
SECURITY
- G4** MASTER LOBBY/  
COURTYARD
- G8** PRECAST  
CONCRETE PANELS
- G9** GENERATOR
- G11** OVERFLOW  
ROOF DRAINS

- \* PROJECTS NOT GRAPHICALLY SHOWN
- \* **G5** UPGRADE CLOCK SYSTEM
- \* **G6** EMERGENCY LIGHTING
- \* **G7** ASBESTOS ABATEMENT
- \* **G10** ELECTRICAL DISTRIBUTION

USU FINE ARTS COMPLEX  
 KENT CONCERT HALL - ALL PROJECTS  
 METHODSTUDIO INC.

K1 CEILING, CLASSROOMS  
 K2 ACOUSTIC SHELL (STAGE)

K3 DUCT DIFFUSER/ SOUND MITIGATE/ SEISMIC BRACING (HALL)

K4 LIGHTS, HOUSE

K5 UPGRADE AIR HANDLER / DDC CONTROLS (HALL & STAGE)

K6 UPGRADE AIR HANDLER / DDC CONTROLS (CLASSROOM WING)

K7 LIGHTS, LOBBY

K8 LOADING DOCK AIR INTAKE

K9 DUCT DIFFUSER/ SOUND MITIGATE/ SEISMIC BRACING (CLASSROOMS)

K10 SOUND CONTROL, RELOCATION

K11 DRESSING ROOM UPGRADE

K12 RIGGING

K13 SPRINKLING, CLASSROOMS

K14 SPRINKLING, HALL & STAGE

K15 CEILINGS

K16 WALLS- EXTERIOR, BRACING

K17 WALLS - EXTERIOR, SHEAR TRANSFER

K18 STEEL ROOF DECK

K19 CATWALKS

K20 ENTRANCE RAMPS/STEPS

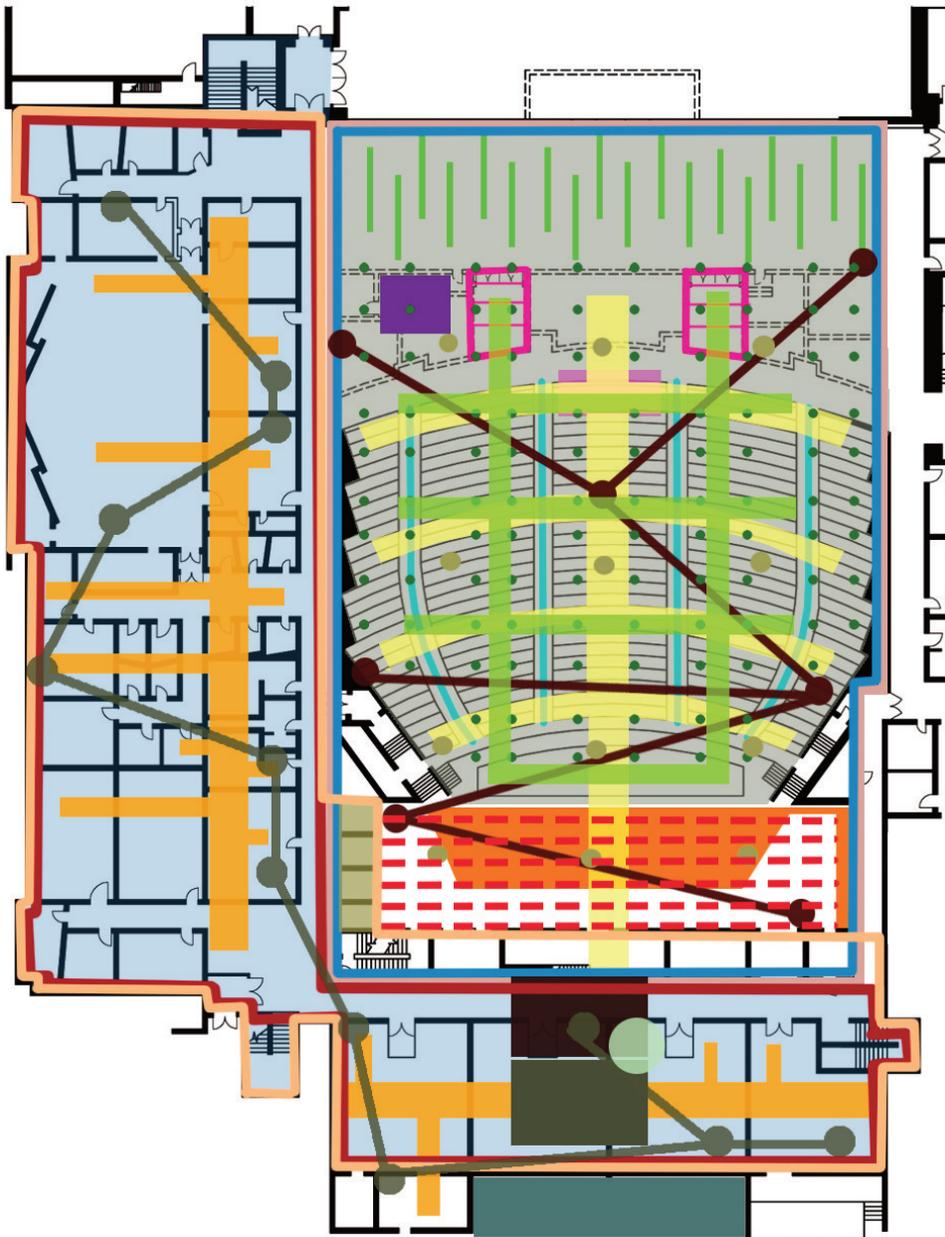
K21 LIGHTS, WORKLIGHTS

K23 HOT WATER STORAGE TANK

K24 DIMMER REPLACEMENT

K25 LIGHTS, AISLE

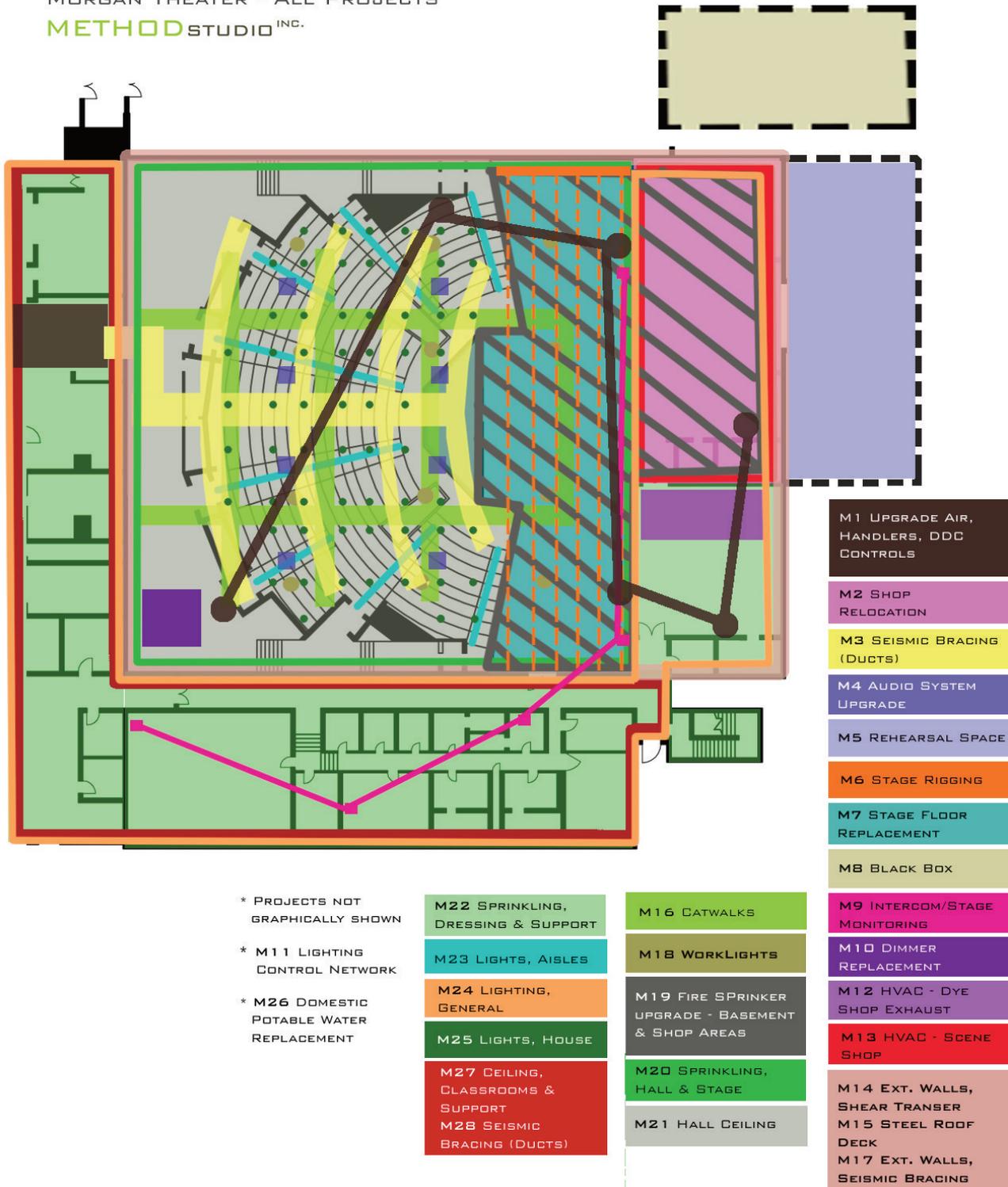
K26 GENERAL LIGHTING



\* PROJECTS NOT GRAPHICALLY SHOWN

\* K22 DOMESTIC POTABLE WATER

UTAH STATE UNIVERSITY  
MORGAN THEATER - ALL PROJECTS  
METHODSTUDIO<sup>INC.</sup>





- V1 UPGRADE AIR HANDLER/ DDC CONTROLS
- V3 STAND ALONE ELEVATOR
- V6 GALLERY LIGHTING
- V7 AIR CONDITIONING
- V8 LOBBY ENTRY ADA ACCESS
- V9 RAMP AREA/ CEILING LIGHTING

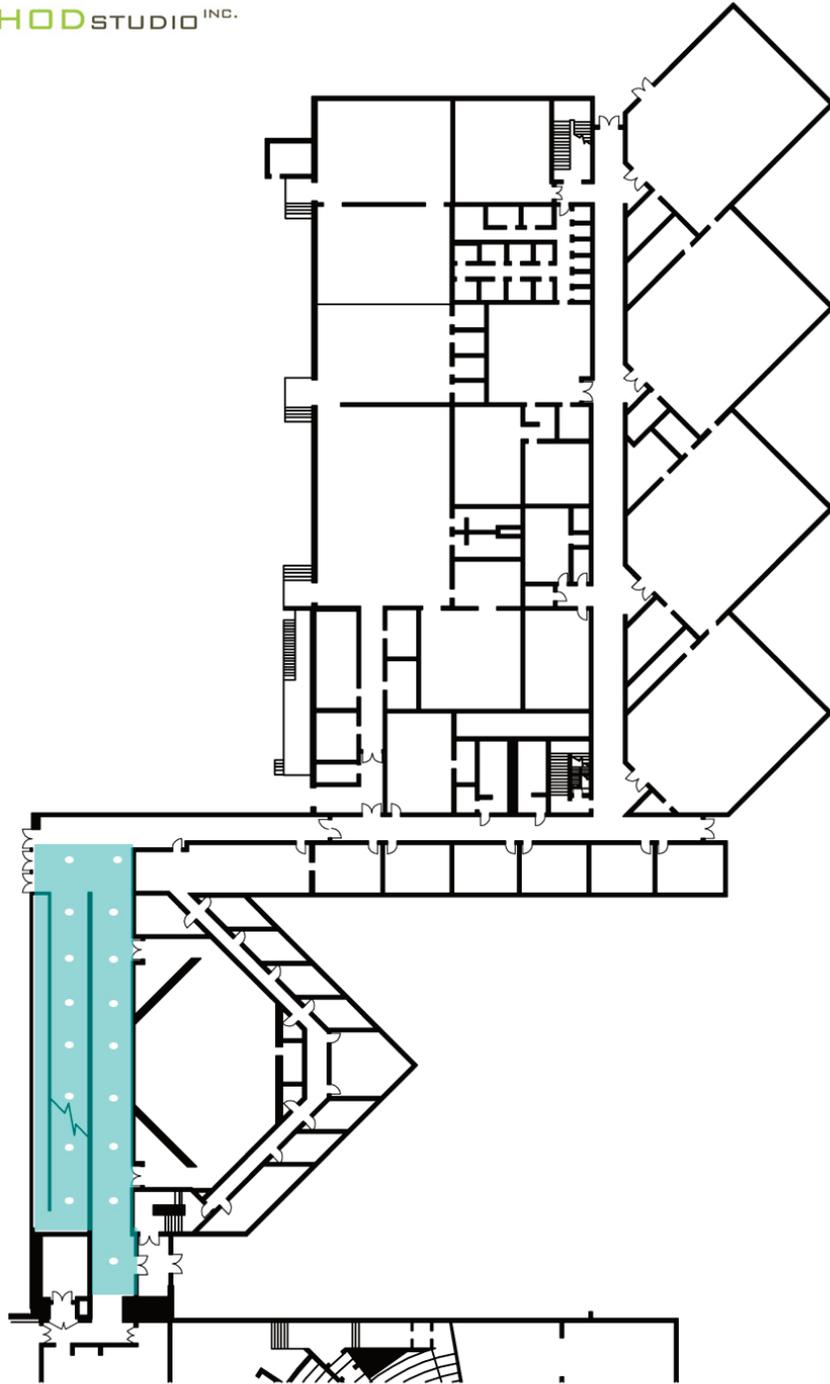
- \* PROJECTS NOT GRAPHICALLY SHOWN
- \* V2 FIRE SPRINKLING, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES
- \* V4 OIL SWITCH
- \* V5 DOMESTIC POTABLE WATER
- \* V10 POWER REPLACEMENT
- \* V11 CEILINGS, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES
- \* V12 GENERAL LIGHTING, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES



- V1 UPGRADE  
AIR HANDLER/  
DDC CONTROLS
- V7 AIR CONDITIONING

*Please see Section D, Potential Project Groupings*

UTAH STATE UNIVERSITY  
 VISUAL ARTS - CONTINGENT PROJECTS - GROUP 2  
 METHODSTUDIO<sup>INC.</sup>



**V9 RAMP AREA/  
 CEILING LIGHTING**

\* PROJECTS NOT GRAPHICALLY SHOWN

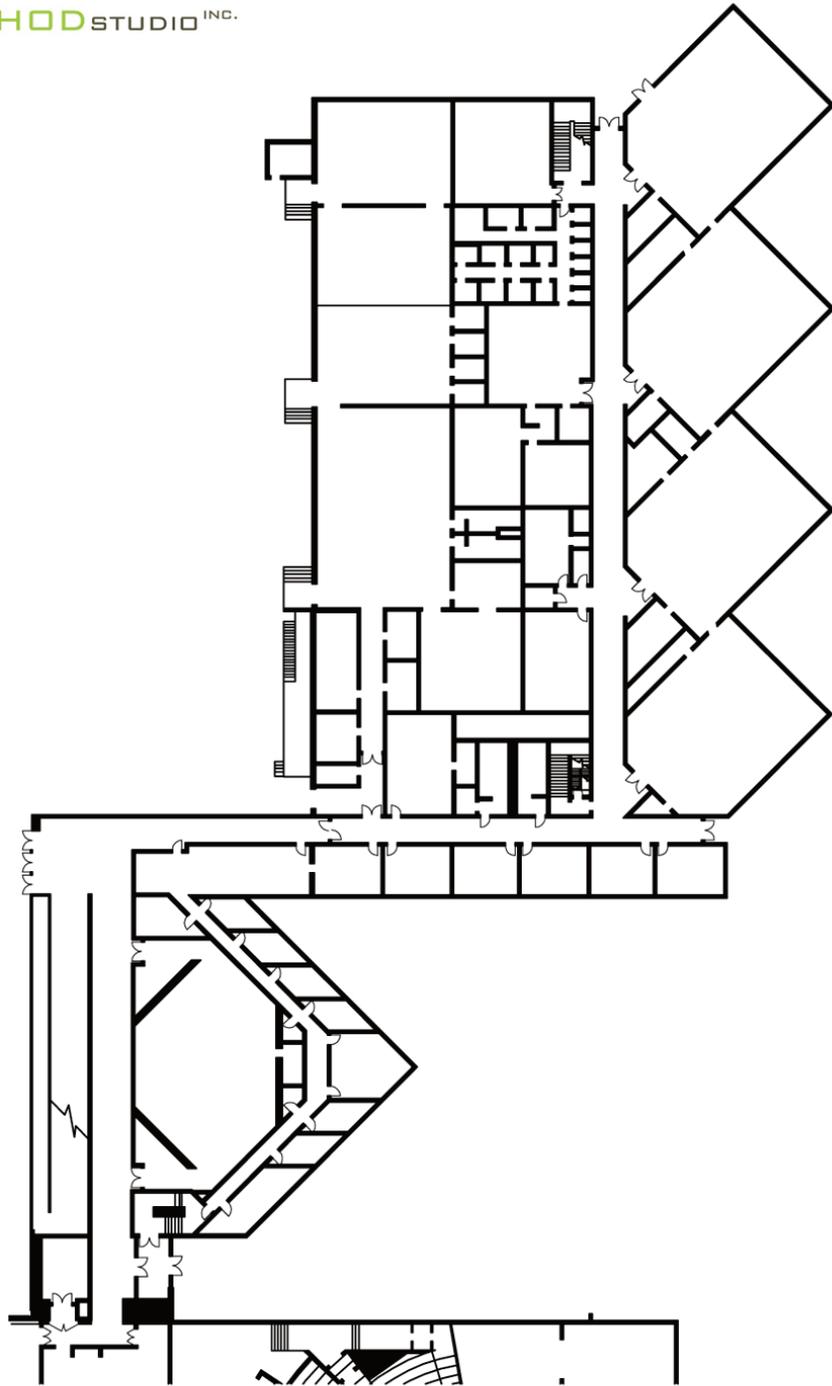
\* V2 FIRE SPRINKLING, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

\* V5 DOMESTIC POTABLE WATER

\* V11 CEILINGS, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

\* V12 GENERAL LIGHTING, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

UTAH STATE UNIVERSITY  
 VISUAL ARTS - CONTINGENT PROJECTS - GROUP 3  
**METHOD**STUDIO<sup>INC.</sup>



\* PROJECTS NOT GRAPHICALLY SHOWN

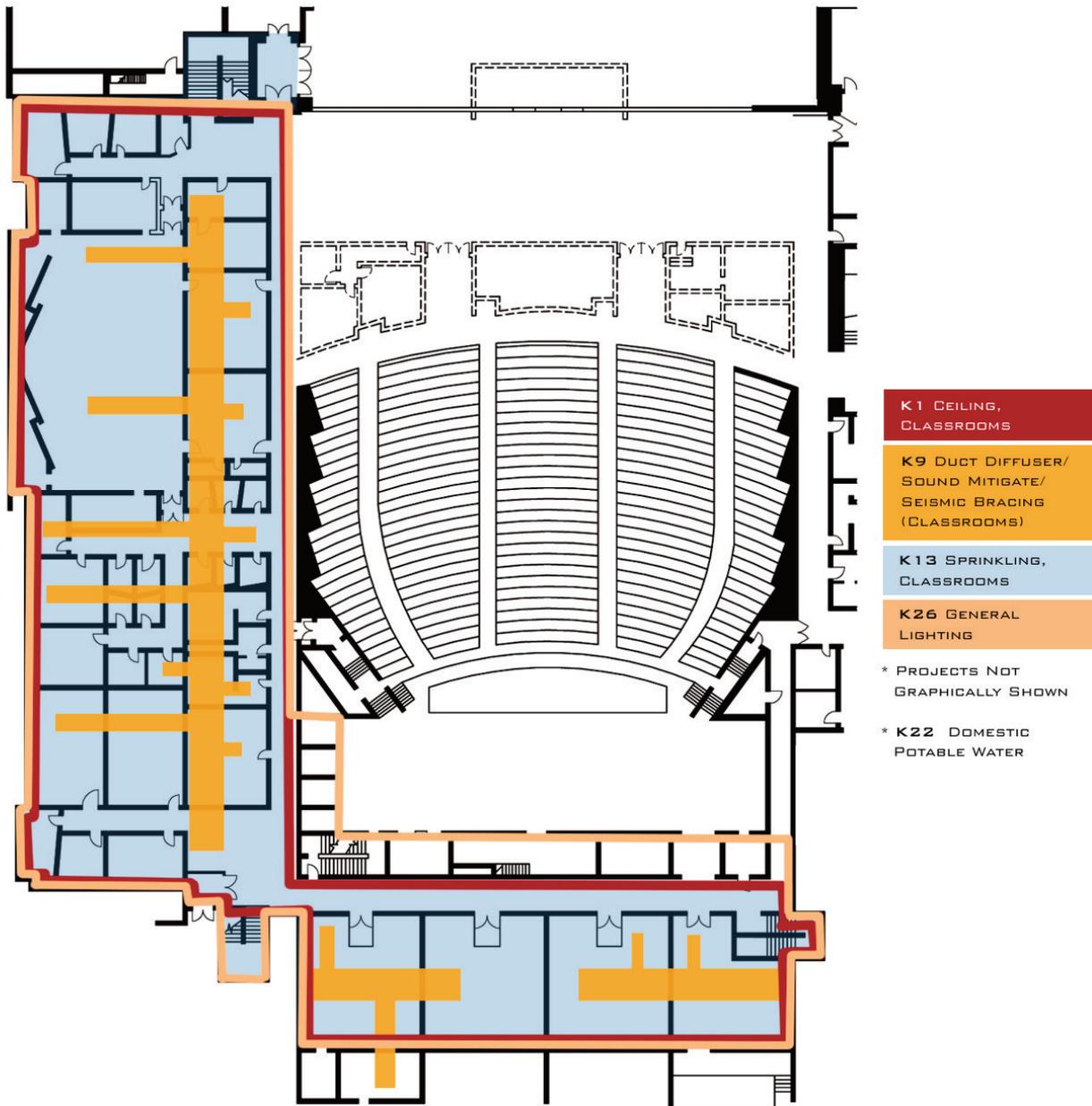
\* V2 FIRE SPRINKLING, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

\* V5 DOMESTIC POTABLE WATER

\* V11 CEILINGS, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

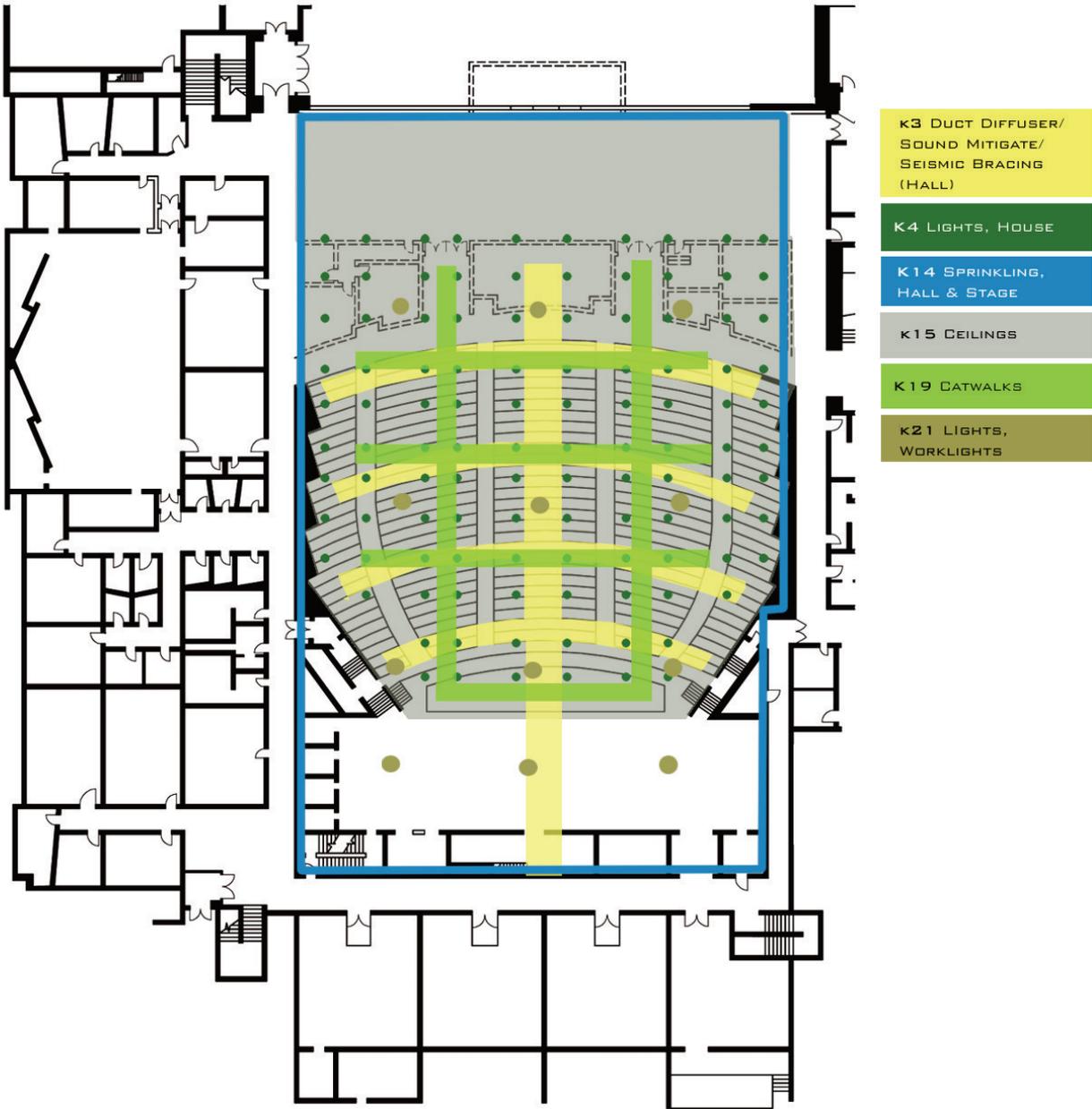
\* V12 GENERAL LIGHTING, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

USU FINE ARTS COMPLEX  
 KENT CONCERT HALL - CONTINGENT PROJECTS - GROUP 1  
 METHODSTUDIO<sup>INC.</sup>

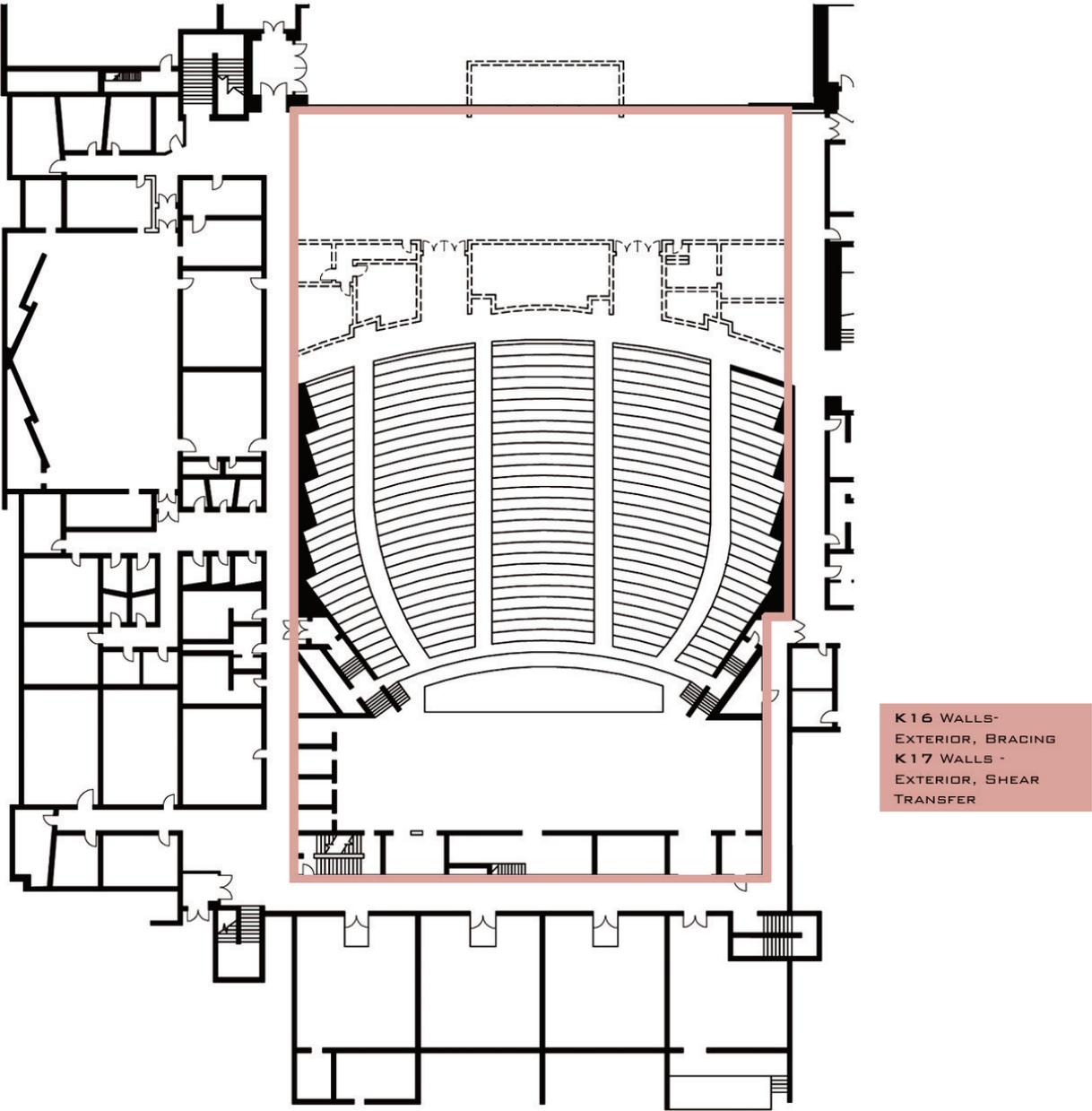


*Please see Section D, Potential Project Groupings*

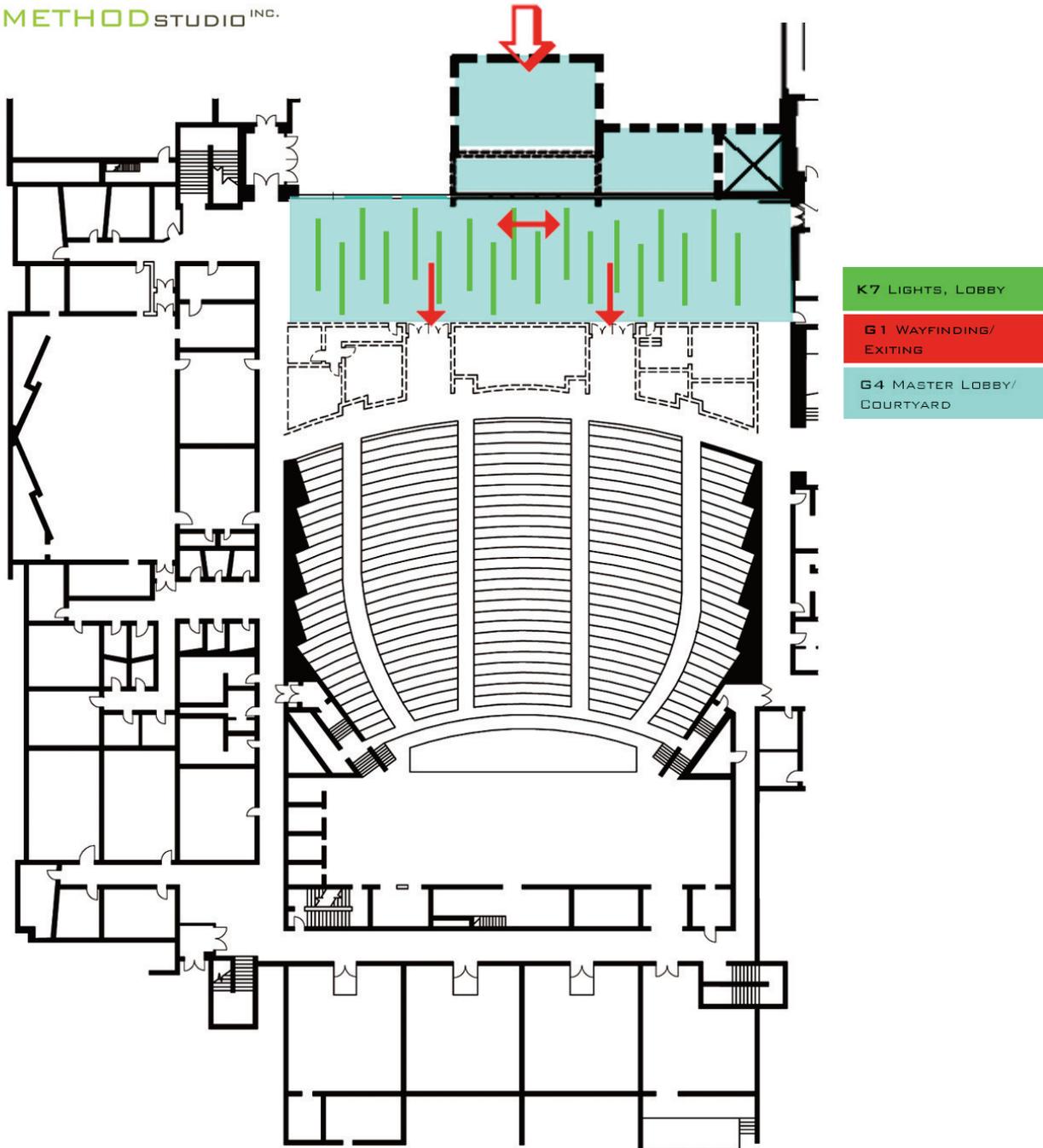
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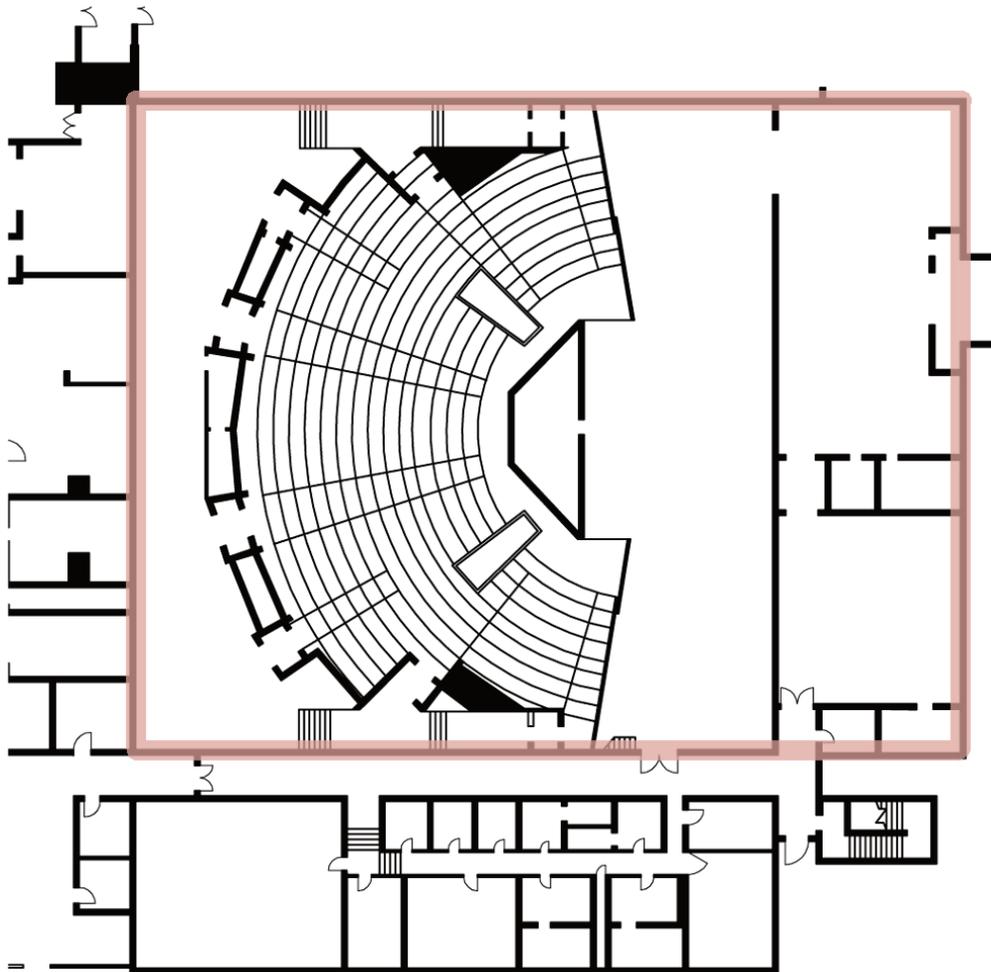


USU FINE ARTS COMPLEX  
KENT CONCERT HALL - CONTINGENT PROJECTS - GROUP 3  
METHODSTUDIO<sup>INC.</sup>



USU FINE ARTS COMPLEX  
KENT CONCERT HALL - CONTINGENT PROJECTS - GROUP 4  
METHODSTUDIO INC.



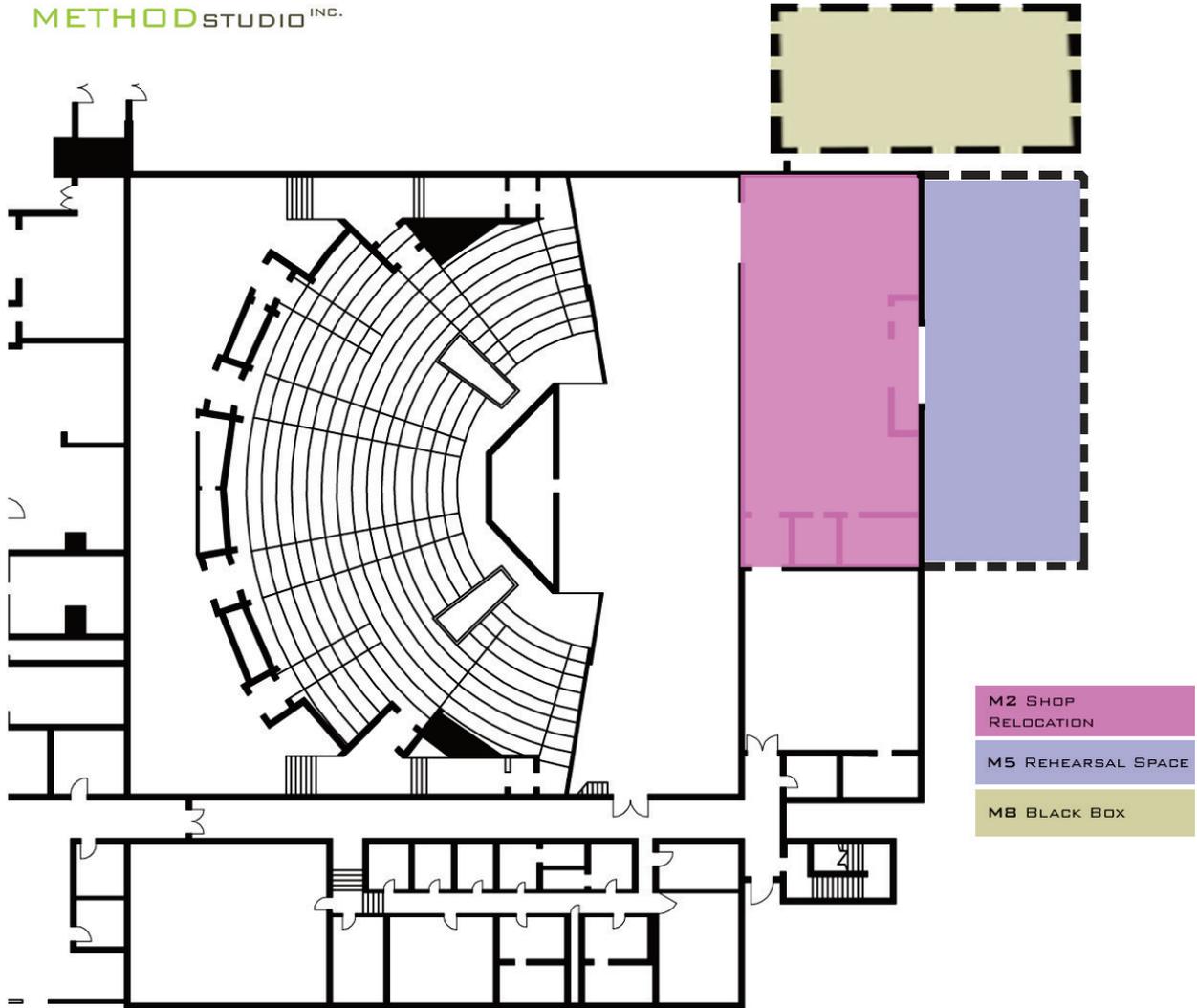


M14 EXT. WALLS,  
SHEAR TRANSER

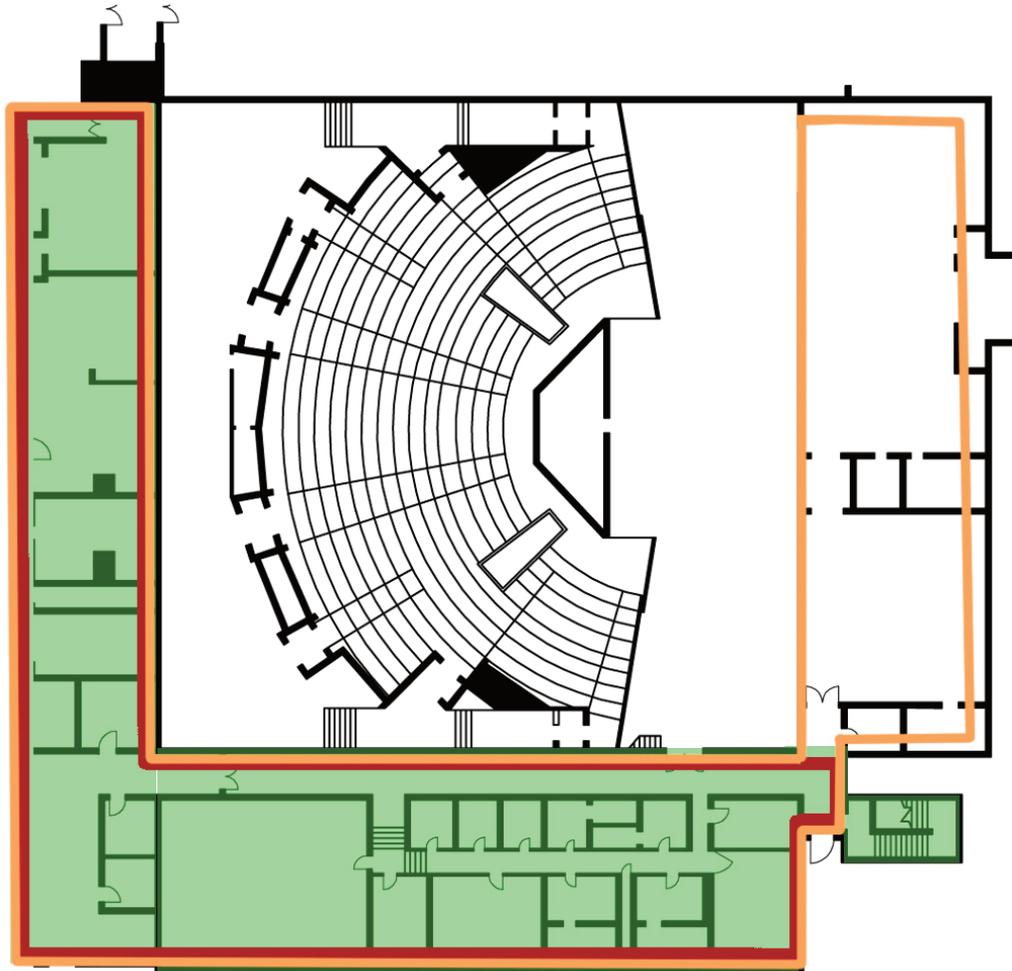
M17 EXT. WALLS,  
SEISMIC BRACING

*Please see Section D, Potential Project Groupings*

UTAH STATE UNIVERSITY  
MORGAN THEATER - CONTINGENT PROJECTS - GROUP 2  
METHODSTUDIO INC.



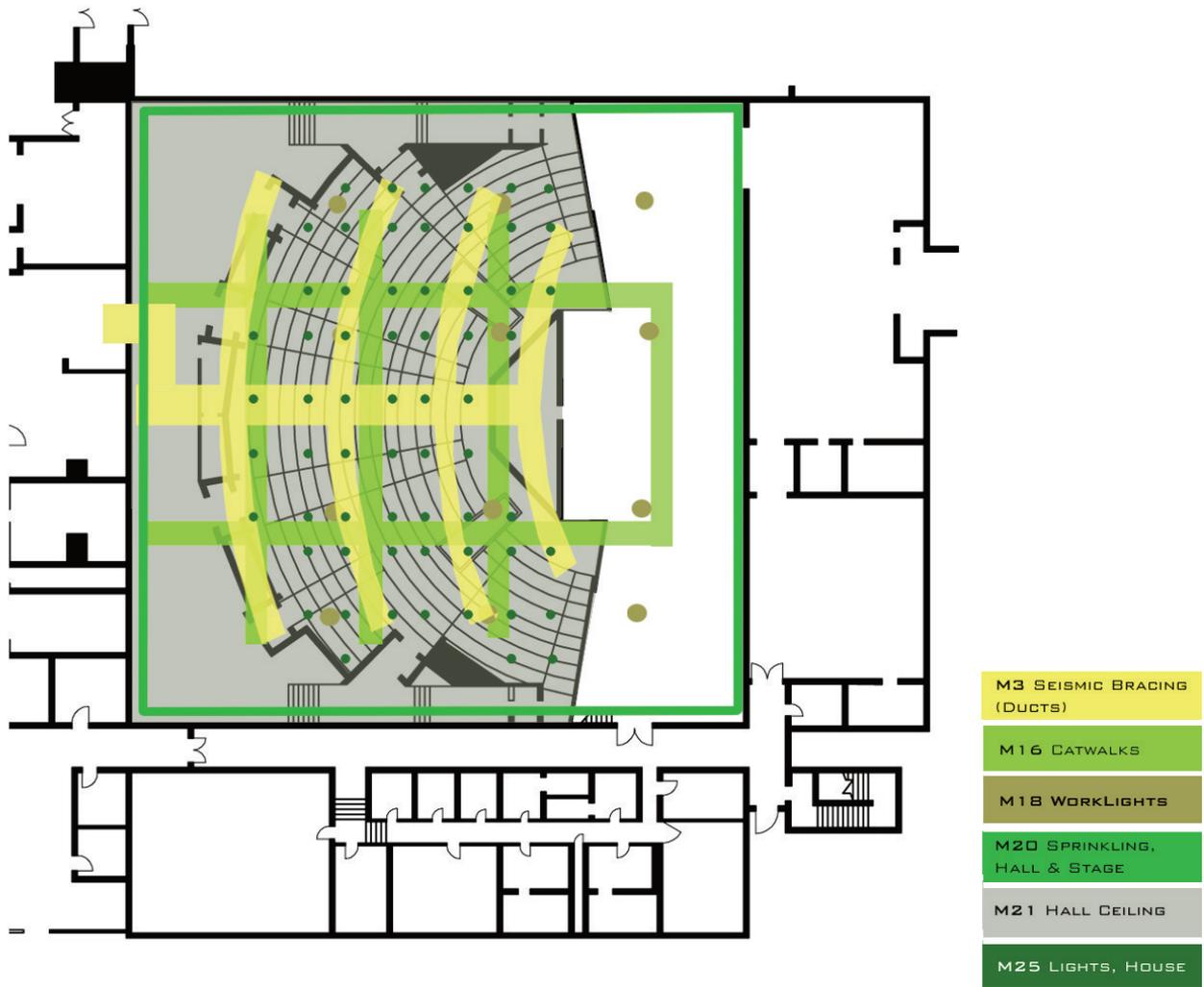
UTAH STATE UNIVERSITY  
 MORGAN THEATER - CONTINGENT PROJECTS - GROUP 3  
 METHODSTUDIO<sup>INC.</sup>



- M22 SPRINKLING, DRESSING & SUPPORT
- M24 LIGHTING, GENERAL
- M27 CEILING, CLASSROOMS & SUPPORT
- M28 SEISMIC BRACING (DUCTS)

\* PROJECTS NOT GRAPHICALLY SHOWN  
 \* M26 DOMESTIC POTABLE WATER REPLACEMENT

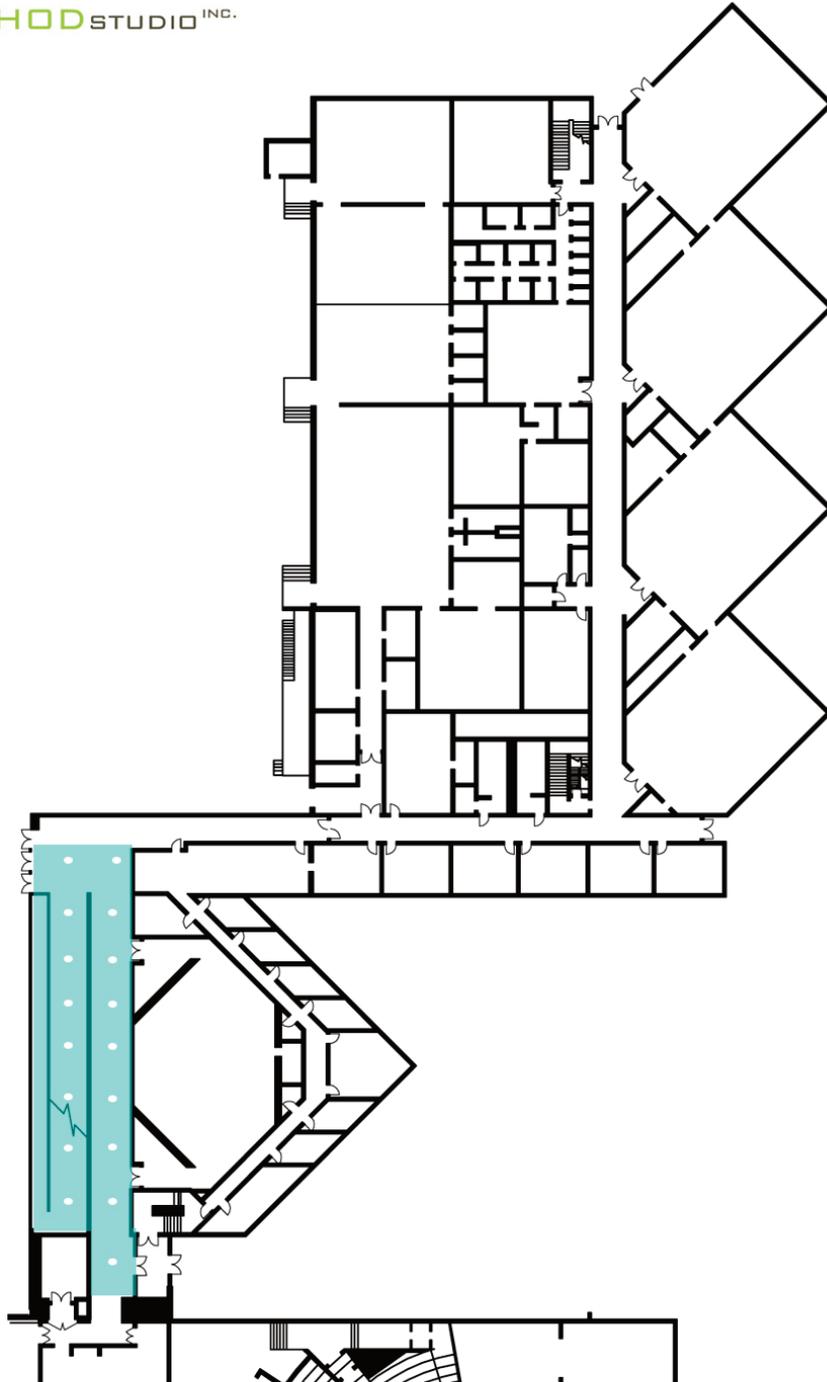
UTAH STATE UNIVERSITY  
 MORGAN THEATER - CONTINGENT PROJECTS - GROUP 4  
 METHODSTUDIO INC.





*Please see Section D, Potential Project Groupings*

UTAH STATE UNIVERSITY  
VISUAL ARTS - CONTINGENT PROJECTS - GROUP 2  
METHODSTUDIO<sup>INC.</sup>



**V9 RAMP AREA/  
CEILING LIGHTING**

\* PROJECTS NOT  
GRAPHICALLY SHOWN

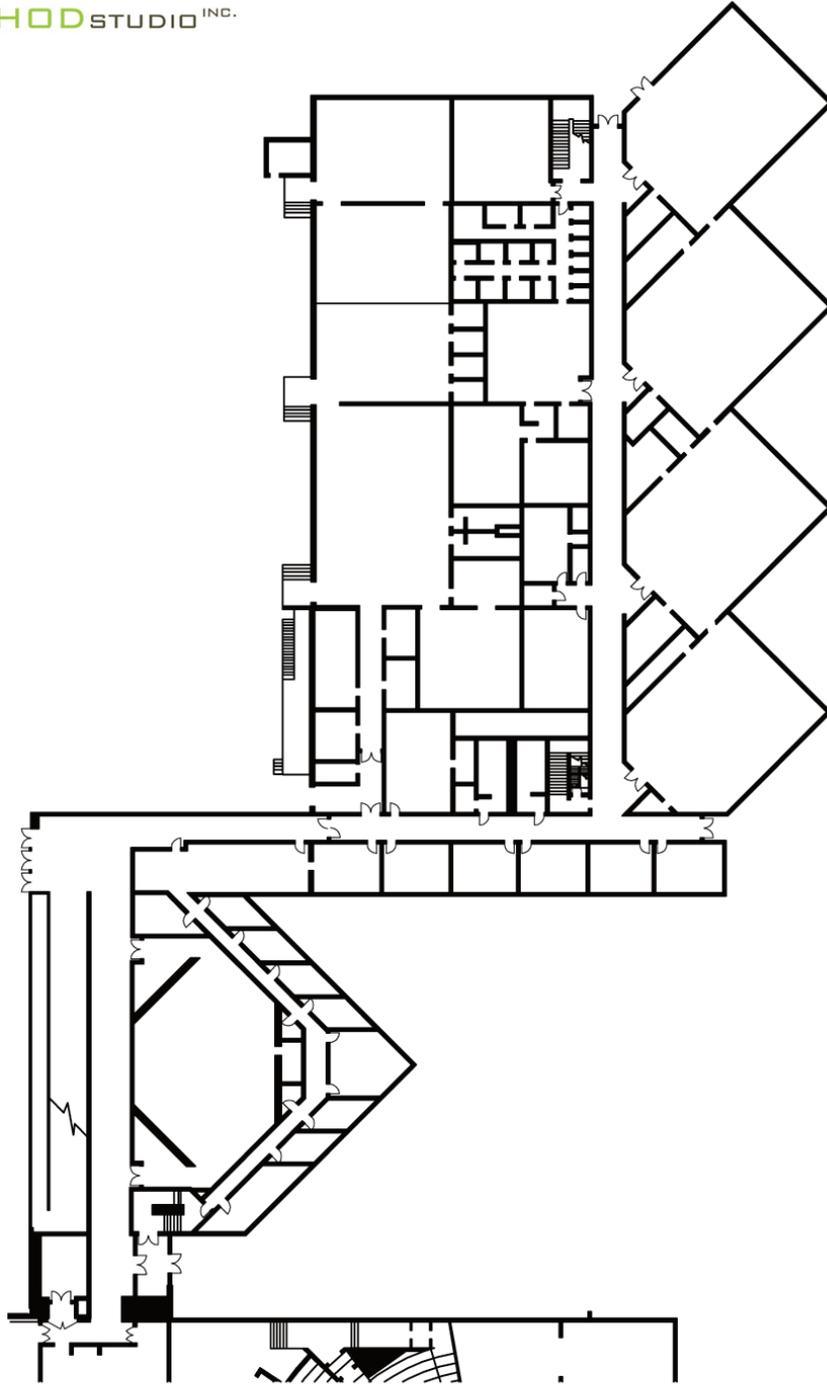
\* V2 FIRE SPRINKLING,  
CONSISTS OF SIX ZONES  
TO COINCIDE WITH  
MECHANICAL ZONES

\* V5 DOMESTIC POTABLE  
WATER

\* V11 CEILINGS,  
CONSISTS OF SIX ZONES  
TO COINCIDE WITH  
MECHANICAL ZONES

\* V12 GENERAL  
LIGHTING, CONSISTS  
OF SIX ZONES TO  
COINCIDE WITH  
MECHANICAL ZONES

UTAH STATE UNIVERSITY  
VISUAL ARTS - CONTINGENT PROJECTS - GROUP 3  
METHODSTUDIO<sup>INC.</sup>



\* PROJECTS NOT GRAPHICALLY SHOWN

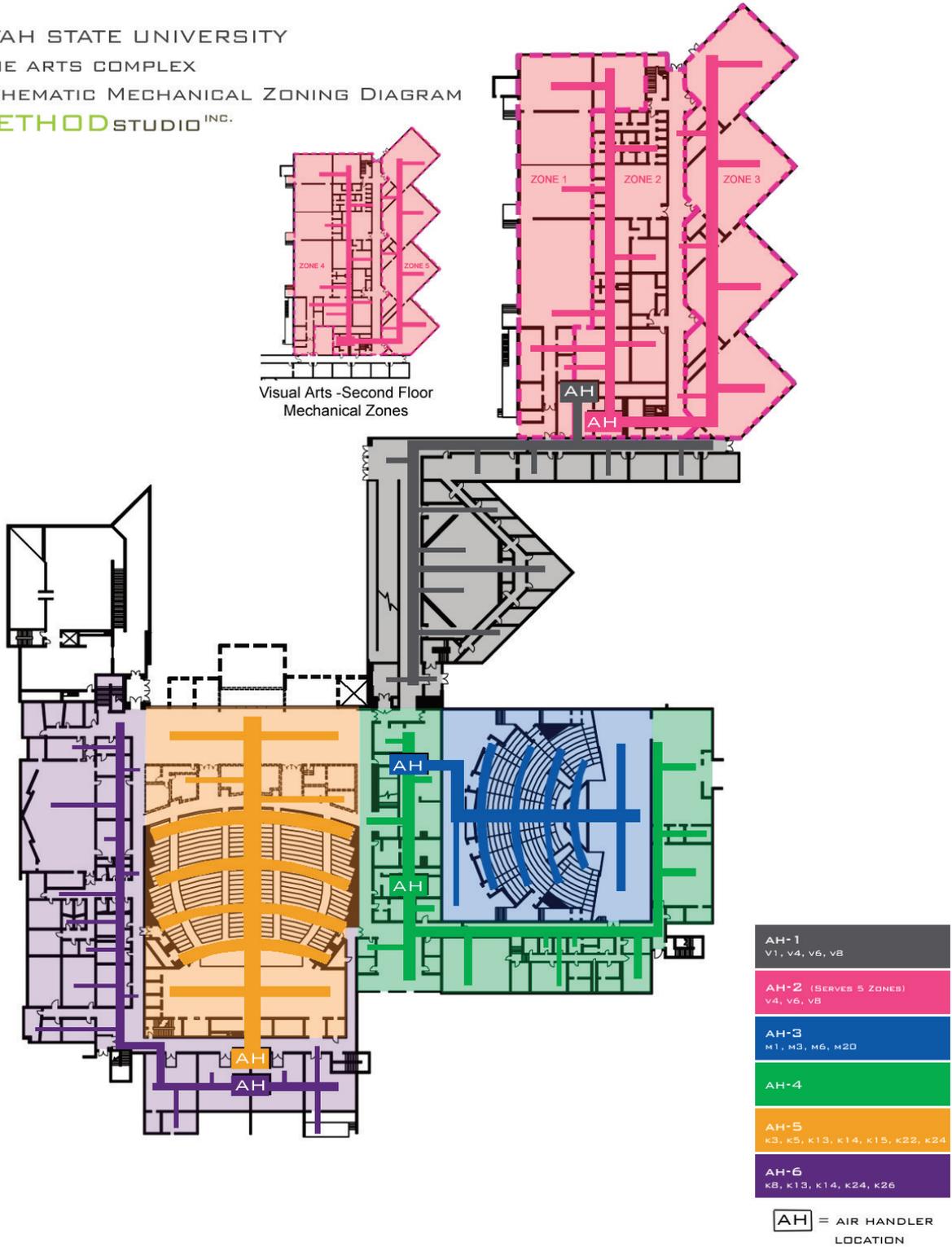
\* V2 FIRE SPRINKLING, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

\* V5 DOMESTIC POTABLE WATER

\* V11 CEILINGS, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

\* V12 GENERAL LIGHTING, CONSISTS OF SIX ZONES TO COINCIDE WITH MECHANICAL ZONES

UTAH STATE UNIVERSITY  
 FINE ARTS COMPLEX  
 SCHEMATIC MECHANICAL ZONING DIAGRAM  
 METHODSTUDIO INC.



## APPENDIX

1. CFAC Facility Remodel (Initial Idea Draft)
2. USU Fine Arts Center, Fine Arts Visual, and Museum of Art Capital Improvements Since 1988

# CFAC FACILITY REMODEL (Initial Idea Draft)

## CFAC Facility Remodel/Upgrade Issues: (\*Initial Idea Draft\*)

### Kent Concert Hall/Morgan Theatre

#### Fly Systems:

The fly systems in both venues are counterweight, manual systems from the original install when the building opened. There are two types of manual counterweight systems; single purchase and double purchase systems. In a single purchase system, like the system in the Morgan Theatre, the weight on the batten (the pipe on which lighting, curtains and set pieces are hung) is offset by the same amount of weight on the arbor (Figure 01). In a double purchase system, like the system in the Kent Concert Hall, the weight on the batten has to offset by double that amount on the arbor. (Figure 02).

The basic components of a fly system are:

- Batten – the pipe over the stage onto which lighting, set pieces and curtains are tied. Battens should typically be continuous lengths of Schedule 40 2” pipe.
- Lift lines – the wire rope that supports the batten and ties back to the arbor. Typically these are 3/8” wire ropes. Depending on the potential weight and total length, a batten will require between 4 and 8 lift lines.
- Loft blocks – the pulleys through which the lift lines run as they travel from the batten to the arbor. The loft blocks hang directly above the pick point (where the lift line ties to the batten) and helps the cable turn from vertical to horizontal on its way to the head block. Loft blocks must support all load weight that is transferred to the lift line that runs through it. Loft blocks turn on greased bearings that should be repacked on a regular schedule. Loft blocks are considered to have a 10 year lifespan.
- Head blocks – The set of pulleys directly above the arbor through which all the lift lines travel, transferring the lift lines from horizontal back to vertical before they tie to the arbor. Unlike loft blocks, head blocks must support the entire weight of the load. Like loft blocks, however, head blocks turn on greased bearing that should be repacked regularly and are considered to have a 10 year lifespan.
- Arbor – The arbor is the counterweight carrying frame to which all the lift lines tie. Counterweights, typically in the form of cut steel or cast iron bricks, are loaded or removed from the arbor to counter the weight on the batten. All arbors must have safety features that keep the bricks from leaving the arbor in the event of a runaway line (when the weight suddenly becomes unbalanced between the batten and the arbor causing uncontrolled movement of the line). Arbors must also be tied to a rigid guide structure to keep them from twisting on the lift lines as they travel.
- Floor (tension) block – this is the pulley beneath the arbor through which the hand line travels and is adjusted to maintain the proper tension on the hand line. Like the other blocks, the floor block turns on greased bearings that should be repacked regularly and are considered to have a 10 year lifespan.

## CFAC FACILITY REMODEL (Initial Idea Draft)

- Hand line – this is the rope that travels between the pulley at the bottom of the arbor and the floor block. The hand line is used by the fly system operator to move the line set up or down. Typically hand lines are made of hemp, polyester or nylon rope and must be inspected regularly for damage or wear. Worn or damaged hand lines should be replaced immediately.
- Rope lock – a lock through which the hand line travels that, when engaged, applies sufficient pressure to the hand line to prevent it from moving. Rope locks suffer from wear over time and tend to have a pressure adjustment to accommodate some of that wear. Rope locks would also be considered to have a 10 year lifespan.

While basic in-house maintenance has been performed on the fly systems in the 40 years they have been in operation, there has not been any comprehensive maintenance, such as repacking all of the blocks, during that time. The reason for this is, of course, money. The Morgan Theatre has 15 line sets and the Kent Concert Hall has 20. Since everything was installed at roughly the same time, everything tends to need maintenance at the same time. The typical cost to for maintenance on one line set is \$1000.00 (simple bearing repacking and system alignment) to \$3500.00 (a complete overhaul of the line) depending on the current condition of the equipment. After the last inspection we had on the fly systems, it was recommended that it would be more cost effective to replace each line set completely than to try and perform maintenance on what is there.

One of the reasons for this, and the biggest safety concern/current code violation of the fly systems, has to do with the rigid guide system for the arbors. Currently there are no rigid guides for any of the arbors on either fly system. Neither fly system was originally designed in such a way as to easily accommodate a rigid guide system. The recommendations we have received suggest that it will be more cost effective to rebuild the fly systems with rigid guides rather than try to adapt a rigid guide into the existing systems.

The final major safety concern involves the loading rail, the suspended platform at the top of the arbor where the brick weights are stored, loaded and unloaded. The load rails in the two venues are around 36' above the stage floor and need to meet OSHA standards for working at that height. Additionally, load rails need to be rated to support the entire possible weight of all the counterweight bricks used in the fly system at the appropriate safety factor. The Morgan Theatre has a potential of have 12,000 lbs of counterweight stored on its load rail, while the Kent Concert Hall, being a double purchase system, has a potential of 32,000 lbs. Neither venue was designed with a true load rail.

The fly systems are integral to the standard operation of both venues. All of the stage lighting, including work lights, is suspended on fly battens, as are all curtains, projection screens and acoustical shells. Fly systems tend to be one of the most dangerous systems on any stage because of the weight they suspend over people and the potential damage if the system is incorrectly operated.

To bring the fly systems up to a safe, usable standard all loft/head/floor blocks, lift lines, hand lines and rope locks need to be completely replaced. A rigid guide system must be installed for each potential line set (standard spacing is to have the line sets on 1' centers for the length of the rail), which will

# CFAC FACILITY REMODEL (Initial Idea Draft)

inherently include rebuilding the steel framework holding all the arbors that bolts to the floor. A safe loading rail must be constructed for each fly system.

An option to the manual counterweight system would be to install an automated rigging system. These systems use variable speed winches to raise and lower the battens, removing the need for a manually operated counterweight system. These systems tend to be safer and more reliable because they do not need counterweights or loading rails, but have been unpopular because they do not always meet the speed and control needs of some theatrical productions. J.R. Clancy, one of the leading theatrical rigging manufactures, has developed a variable speed automated rigging system controlled by a computer interface that has overcome these limitations ([http://www.jrclancy.com/catalog\\_powerlift\\_main.htm](http://www.jrclancy.com/catalog_powerlift_main.htm)).

After consultation with Kent Concert Hall and Morgan Theatre managers and departments, it is felt that an automated rigging/fly system would adequately meet the fly system needs of each venue. The rebuilding of the current manual counterweight systems, with the addition of the rigid guide systems and loading rails will likely end up being more expensive than ripping out the counterweight systems and replacing them with automated systems. Given the choice, the fly systems users would prefer the automated systems because they are safer to use overall.

## **Ceilings:**

Our understanding is that the ceilings in both the Morgan Theatre and the Kent Concert Hall do not meet current seismic code and need to be removed and rebuilt. As new ceiling designs are considered to meet seismic code, we would like to suggest a few additional needs be taken into consideration.

When both venues were designed, the acoustical needs of the rooms were different than they are now. In 1967 most of the productions held in these venues used little or no sound reinforcement while now almost all productions in these venues use some form of sound reinforcement. These means that the placement of the sound source has moved from being on the stage to a position generally above and in front of the stage and the overall average volume of a production has increased. This has dramatically changed the nature of the sound reflections in both venues, causing an overall degradation in intelligibility and sound quality. We strongly recommend that the current acoustical needs of the venues be taken into consideration as part of any new ceiling design.

The Kent Concert Hall is the most complicated as it is a mixed usage venue, hosting events ranging from class lectures to orchestra concerts to ballet performances. The required acoustical room design for each of these venues is different. For best quality sound for a lecture, sound reflections hitting the listener need to be reduced so only the primary source is being heard. For best quality sound for an orchestra performance, many more possible reflections are acceptable and even desirable to increase the “fullness” of the sound in the room.

The solution to this problem we’d prefer is to make the ceiling of the venue become a natural, adjustable extension of the acoustical shells used on the stage (See Figure 3.) In this example, the ceiling pieces are adjustable on a pivoting frame work so sound reflections can be directed to or away

# CFAC FACILITY REMODEL (Initial Idea Draft)

from the audience members as is appropriate for a given performance. The space above the ceiling is painted a flat black so as to disappear and the house lights are actually stage lighting instruments focused between each section.

Usage in the Morgan Theatre is a little less diverse. The majority of the performances there are based around the spoken work, so intelligibility is the greatest concern. The acoustical remodel accomplished several years ago addressed many of the acoustical problems in the room. When looking at a ceiling redesign for the venue, having adjustable ceiling panels still makes sense. While the majority of the performances in the venue will focus on intelligibility, it is also a wonderful venue for more intimate musical performances than can be held in the Kent Concert Hall.

The ceiling in the Morgan Theatre contains an additional concern. The part of the ceiling that extends over the thrust stage has become largely unnecessary. The theatrical lighting positions over the thrust hang below the ceiling in full view of the audience. (Figure 4)

We would prefer to have that portion of the ceiling removed completely, have the theatrical lighting positions raised from view and accessible catwalks installed to all of those positions.

## **House Lights:**

The lighting fixtures in both the Morgan Theatre and the Kent Concert Hall are nearing the end of their useful life spans. While the dimming and control systems that are part of the house light systems seem to be holding up very well, the wiring from the dimmers to the fixtures and the fixtures themselves are beginning to fail. A ceiling redesign and remodel would obviously include a change in the house lights.

The house light systems are used for two purposes, the first is to provide lighting for the audience as they enter or leave the venue, the second is to provide general light while normal work, such as custodial or stage work, is being performed in the venue. While the lighting fixtures in our venues are the same for both purposes, from an energy efficiency standpoint, they do not need to be.

For the audience, we will always want some form of dimmable incandescent lighting. Even color corrected fluorescent fixtures tend to be harsh and counter to the “feel” of a performance venue. However, in the “work light” situation, any energy efficient, bright lighting is acceptable and generally preferred. In a ceiling/house light redesign, we would like to see the addition of an energy efficient work light system designed tastefully alongside the normal house light system for so the less efficient incandescent system does not have to be used in the no-audience, normal work situations.

## **Aisle Lights:**

The aisle light systems in both venues are dying. The aisle lights themselves are attached to various seat legs scatter throughout the houses. They are small, hot-burning incandescent fixtures without much throw that raise the temperature of the seat arm to an uncomfortable level. The fixtures are powered through flexible conduit from a junction box in the floor below the seat. This causes a problem if the

# CFAC FACILITY REMODEL (Initial Idea Draft)

seat is ever broken because there are no attic stock aisle light legs remaining. When an aisle light leg breaks, that aisle light is taken out, the wires capped off as well as the junction box.

We would like to have an aisle light system installed that is not integral to the seating. As the aisle light are currently on constantly unless switched off at the circuit breaker, we would additionally recommend they be something low voltage, possibly a warm colored LED, tied to a photo sensor that turns them on when the house lights are off and turns them back off when the house lights are on.

## **Performance Venue Doors:**

Pretty much all of the main entry doors to the Morgan Theatre and Kent Concert Hall have some sort of problem, from broken latches and crash bars to problems with the hinges. We keep calling them in on individual work orders, but realistically, all the doors need to be looked at and repaired.

While we're on doors, none of the performance venue doors have magnetic hold openers tied to the fire alarm systems. Oh, and there aren't any handicap accessible doors in the building, that includes all the interior and exterior doors. Like many of the other things, I know this is known, but I'm putting it in the list again.

## **Venue Security:**

Venue Doors:

KCH Freight Elevator:

It's a well known secret among all music students that if you open the freight elevator on one level, run to another level and call it, then run back down, climb in and close the doors, you can lift the inside door as you reach the stage level, stopping the elevator there. This means there is no way to adequately secure the Kent Concert Hall. We need a way to lock out the elevator from the stage level.

## **Signage:**

The FAC/FAV complex is one of the most confusing. Entering from the northwest (Courtyard/Performance Hall side) it seems the whole building is the Museum. Once in the courtyard there are no signs directing you anywhere. Entering from the North, to the FAV wing that houses Art and LAEP, there is no signage until you get to the courtyard end of the hallway. Enter from the southeast, the Theatre Wing, there is no signage. It is the same for the southwest, the Music Wing. Additionally, except for the new sign associated with the Performance Hall on the north, there are no signs on the perimeter of the building telling visitors what the building is. Typically by the time they reach the new PH sign, they already know where they're going. Additionally, the main FAC loading dock is hard to find for deliveries, since there is no direction to it from the street (400 N).

Interior signage is a problem as well. Once you're in the building you'd better know where you're going or you'll wander around all day.

## **Kent Concert Hall – Specific**

**Front-of-House Sound Mixing Position Relocation:**

# CFAC FACILITY REMODEL (Initial Idea Draft)

The FOH sound mixing position is currently located at the back of the balcony in section CC, nearly 150' away from the stage. This causes some rather serious audio problems because the sound engineer is actually sitting behind the audience, hearing everything *after* the audience hears it. The biggest of these problems is that the sound system is generally driven more loudly than is comfortable for audience members.

What we would like to do is move the FOH mix position from the back of section CC to the front of that section. This would require the removal of some seats and cutting away a portion of the front of the balcony. Conduit would also need to be run through the tunnels and lobby ceiling under the balcony back up to the control booth to accommodate the audio wiring.

## **Banners:**

The acoustical studies we have commissioned for the Kent Concert Hall show that there are audio delays of up to six seconds in various places around the room. While this is a desirable effect for most music performances, it is very detrimental for intelligibility when the venue is being used as a lecture hall. Since lecture hall usage has been increasing over recent years, this intelligibility problem has become increasingly difficult to deal with.

Our recommendation is to install double layered velour banners similar to the banners installed in the Performance Hall on the plaster walls of the venue at the right and left of the audience. These banners should be hung using electric wenchers so they can be raised and lowered remotely. This, accompanied by the ceiling remodel and a change in the HVAC system to reduce background noise, would dramatically increase the usability of the venue for all programs held there.

## **Doorways/Fire System:**

Since the last fire system upgrade of the building we have been unable to allow the use of any smoke or haze in the venue. One reason for this is the sensitivity of the system. In order to use smoke or haze in the Kent Concert Hall we are required to take down the fire system in the Hall and post a fire watch. The other reason is that the nature of the entries into the venue makes it difficult to confine the smoke and haze just to the venue, allowing smoke and haze to bleed into the hallways surrounding the venue, which is unacceptable. This has drastically limited the types of programs that can be held in the venue as smoke and haze are very commonly used to enhance lighting effects.

We would like the doorways to be redesigned as two sets of doors with an air lock between them, preferably with a separate venting system from the lock to vent out any smoke or haze before it leaks into the surrounding hallways. The venue would also benefit greatly from the addition of these entries as light and sound locks.

## **Stage Floor:**

The Kent Concert Hall stage floor has quite literally reached the end of its life. In some places, owing to many repairs, the floor will no longer support the weight of even an upright piano.

(Pictures of stage floor. Specify the trap sections and that they are not necessary and can be removed. Mention empty conduit under the floor for audio cables and moving the floor dimmers so they're centered.)

Security:

# CFAC FACILITY REMODEL (Initial Idea Draft)

(Refer to the CFAC Locks and Cameras drawing, pointing out the fact that the elevator causes a serious security hole for the venue.)

## **Morgan Theatre – Specific**

### **Theatre Scene/Costume Shops:**

The Morgan Theatre Scene Shop that is attached to the east of the Morgan Stage has become woefully inadequate for the needs of the departments that benefit from its services. Additionally, because of its proximity to the stage, use of the shop and use of the stage are mutually exclusive. This has the effect of almost completely blocking non-Theatre department usage of the Morgan Theatre, even though it is high sought after by the Music department. The Costume Shop, located on the second floor on the southeast corner of the Theatre wing has also become too small to meet the needs required of it.

Along with simple space issues, both shops have some serious ventilation problems. While spray paint and paint sprayers are frequently used in the scene shop, there is not dedicated spray room with adequate ventilation. In the same light, the costume shop has a dye room for dyeing costumes, but that room has no outside ventilation at all.

To address the problems with the shops, we would like to see the construction of a new scene shop/costume shop addition to the east of the current shop, between the building and the road (Figure X). This would roughly follow the plan developed by Sasaki for this area. This would allow for the construction of a true dye room with adequate ventilation and plumbing, a true spray room with ventilation for plumbing and move the actual construction away from the stage area so scene shop and stage activities could happen at the same time. The old scene shop would be converted to a set assembly and rehearsal space. A mezzanine level could be constructed around the old shop space, open in the center to the floor, to accommodate design classes taught by the theatre department.

One of the additional space needs of the Theatre department has been for a new Black Box type theatre. The layout proposed by Sasaki was very efficient, placing this new space to the northeast of the new scene shop so the one shop can service both the Morgan Theatre and the new Black Box.

Should the Black Box be constructed at the same time as the new scene shop, when the Morgan Theatre comes up for renovation, the Theatre Department would then be able to move programs replaced during construction to the Caine Lyric Theatre and the new Black Box with minimal disruption. Then, when the Kent Concert Hall is renovated, the Theatre department could continue in the Caine Lyric Theatre and the Black Box while Music department events could be moved to the Morgan Theatre and the Performance Hall. This allows for minimal program disruption during construction times while still ultimately meeting the needs of the departments.

### **Doorways/Fire Systems:**

Even for than in the Kent Concert Hall, the Morgan Theatre needs to accommodate the usage of smoke and haze effects without requiring an expensive fire watch. In the modern theatrical environment, smoke and haze are now common and expected elements of theatrical lighting design, used to enhance to look and movement of the lighting. A lighting design program must be able to accommodate the use of these effects.

### **Security:**

# CFAC FACILITY REMODEL (Initial Idea Draft)

(Spelled out on the CFAC Lock and Cameras drawing)

**Basement (Prop storage) Mezzanine/Rehearsal Space – Orchestra Pit and Fire Suppression:**

## **Tippetts Exhibit Hall and Balcony – Specifics**

### **HVAC:**

(Already being addressed)

### **Track Lighting:**

(Already being addressed)

### **Acoustical Isolation – Balcony from Gallery:**

The Tippetts Gallery and Balcony share a fairly open floor plan. This makes it difficult to have an event in the Gallery at the same time as there is an event in the Balcony. Due to the heavy increase in Music department usage of the Balcony as a rehearsal and recital venue, several large problems are starting to develop between groups using both venues at the same time.

The major problem is noise from the balcony adversely affecting the environment in the Gallery. Moving musical groups to different venues is impossible since they are in the Balcony because there is already nowhere else to put them. Developing a method to enhance to glass wall between them in a way that would acoustically isolate the Balcony from the Gallery would be the best way to solve this.

### **Security:**

In order for the Gallery to meet the accreditation needs of the Art department, it needs to be made more secure. Security camera and keyway changes are spelled out in the general CFAC Locks and Cameras drawing.

## **CFAC General Areas:**

### **Hallway Floors:**

All of the hallways are covered in old tiles that have some level of asbestos content. With the amount of students in the hallways during the day, they have become huge echo chambers. The tiles should be removed and we would prefer to see carpet put in their place.

### **Restrooms:**

Restrooms across the building are a huge problem. Plumbing is unreliable and the general look of the restrooms is not up to par with the public performance role of the building.

# CAPITAL IMPROVEMENTS SINCE 1988

UTAH STATE UNIVERSITY  
Fine Arts Center, Fine Arts Visual, and Museum of Art  
Capital Improvements Since 1998

99114770	Fine Arts Complex Safety Improvements (Included FAC fire alarm system; heat detectors; Kent Concert Hall exit signs; magnetic door closers; gas/power to kiln & Sculpture Lab; track lighting at the Museum)	\$470,438
00039770	Guard Rails/Hand Rails	94,872
01073770	Roofing (Fine Arts Center)	30,593
02229770	Fine Arts Visual Fire Alarm/Generator Upgrade	174,274
02235770	Fine Arts Visual Chiller	89,390
03077770	Roofing (Fine Arts)	148,989
05063770	Roofing (Fine Arts Museum)	139,441
05154770	Museum Chiller Connection/Air Handler	351,813
05158770	Classroom Upgrades (Included Morgan Theater catwalk; screens)	6,092
06252770	Kent Concert Hall Seating/Ceiling Paint	317,204
07248770	Classroom Upgrades FY08 (Included FAV262 A/V upgrade; FAV226 whiteboards)	5,723
08150770	Roofing (Sculpture Lab)	45,015
08162770	Fine Arts Center Tippetts Gallery Lighting/HVAC	840,949
09142770	Fine Arts Complex Safety Repairs	350,000 Being designed
USU/2008	Fine Arts Center Furnishings	119,485
USU/2009	FAC214 (Choir Room) Remodel	<u>10,000</u> Being designed
	Total	<u><u>\$3,194,278</u></u>

The facilities may have had improvements through other state-funded capital improvement projects like Campus Electrical Upgrades, High Voltage Upgrades, Campus Safety Lighting, Miscellaneous Critical Improvements, Campus-Wide Benches, Classroom Upgrades, etc. Specific amounts for the three facilities are not identifiable.

## BIBLIOGRAPHY

Below is a list of prior reports and documents that provide specific detail and background related to the Fine Arts Complex.

1. FY2011 State Funded Capital Development Project Request  
Fine Arts Complex Addition / Renovation
2. FAV Operations Costs 2005 - 2008
3. Daryl Chase Fine Arts Center ISES Report, September 2001
4. Fine Arts Museum ISES Report, August 2001
5. Fine Arts Visual Arts ISES Report, May 2001
6. Locks and Cameras Drawings, Fine Arts Complex
7. School of Arts Master Plan, July 2003
8. CAD Files (existing from facilities)