Rivoli Theater Preliminary Design Report

SUMMARY REPORT

Opsis Architecture

January 2017

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RIVOLI THEATER

PRELIMINARY DESIGN REPORT

prepared for the

Rivoli Theater Restoration Coalition
&
Pendleton Foundation Trust

by

Opsis Architecture

in association with

Auerbach Pollock Friedlander

Froelich Engineers

Interface Engineering

Peter Meijer Architects

ToPa 3D
&
ACC Cost Consultants

January 2017

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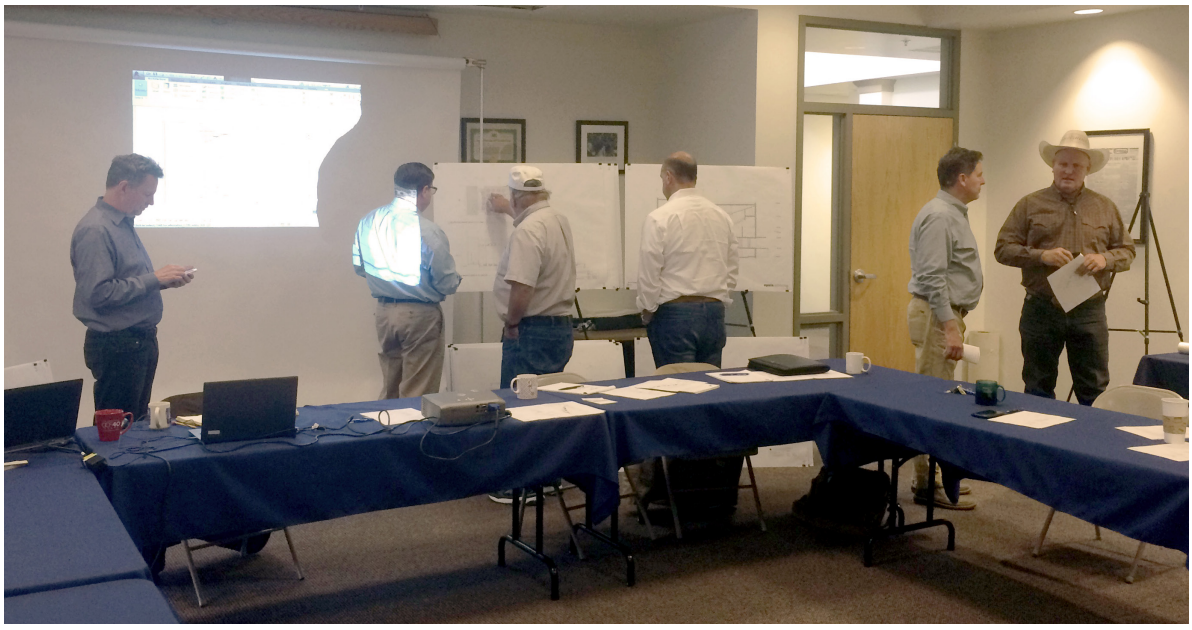

INTRODUCTION

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INTRODUCTION

EXECUTIVE SUMMARY

This study was commissioned by the Rivoli Theater Restoration Coalition (RTRC) as a follow-up to the 2011 Rivoli Theater Feasibility Study in an effort to build on the extensive volunteer work and building improvements that have occurred over the last five years. This subsequent scope of work is based on the desire to realize structural upgrades to the Rivoli Theater in a coordinated effort with developing an updated design layout based on refinements to the space program and limiting proposed development within the constraints of the existing building footprint.

Opsis Architecture, in association with Auerbach Pollock Friedlander (APF), Froelich Consulting Engineers, Interface Engineering, Peter Meijer Architect (PMA), ToPa 3D, and ACC Cost Consultants, was retained by the RTRC to develop a detailed assessment of the existing facility and prepare preliminary design and structural plans for the renovation of the Rivoli Theater. As an outcome of the preliminary design work contained in this report, Froelich Engineers is developing construction bid documents for the structural upgrades that are coordinated to support the design intent of the planned renovation.

The six-month program verification, preliminary building design, and structural upgrade design effort was initiated in June 2016 and completed in January 2017. This inclusive process included several workshops with the project Steering Committee combined with project stakeholder meetings, an open house event, and a regulatory review meeting.

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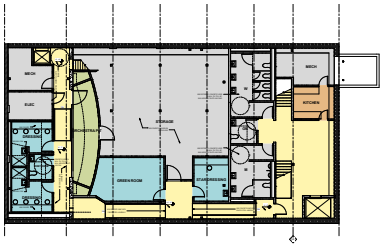
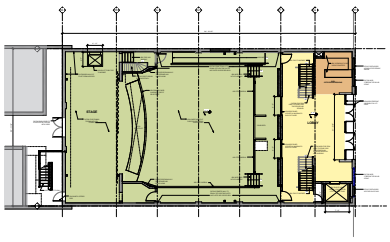
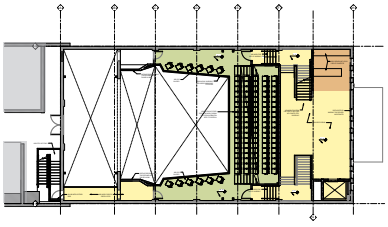
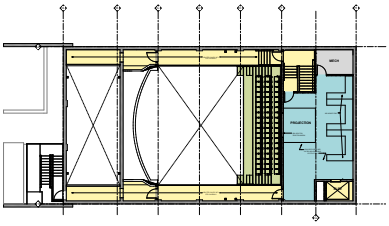








The scope of work included:

- Existing building conditions documentation through 3D scanning and on-site field verification.
- Detailed space program verification
- Preliminary design layout for all levels with building cross-sections
- Preliminary structural upgrade design options with preferred direction
- Preliminary historic review analysis and approval process
- Code analysis and initial regulatory review
- Overall project cost estimate with phased implementation cost estimates
- Illustrative floor plans, sections, and renderings

SPACE PROGRAM

The multi-use theater with a flat floor audience seating area accommodates a variety of moveable seating arrangements from auditorium layout to theater in the round and thrust arrangements. Tables and chairs can be setup for dinner theater and music events, films, weddings, dances, and other uses.

The program space needs for the Rivoli Theater include a highly adaptable theater that will serve a wide variety of community needs with both front-of-house and back-of-house support spaces. The multi-use theater will have a flat floor audience seating area that will accommodate moveable seating arrangements from an auditorium layout to theater in the round and thrust theater configurations. The theater will include a motorized orchestra lift to support musical theater and provide convenient access to a below stage storage that allows tables and chairs to be easily accessed reducing setup time for dinner performances, music events, and weddings.

INTRODUCTION

The theater will also offer a venue for films, symposiums, dances and other events. A reconfigured balcony will provide high quality intimate seating with wings that wrap the side walls.

Other program spaces will include increased lobby space at three levels that include concession areas. Restrooms and catering kitchen will be located at the lower level with dressing rooms, green room and large storage area. Administrative offices will be incorporated into a new upper level inserted into the back of the existing balcony. Technical lighting catwalks will be integrated as well as theatrical rigging capability.

PRELIMINARY BUILDING DESIGN

The design for the Rivoli Theater will be contained within the walls of the existing building to meet the programmatic space needs. The program requirements are accommodated by excavating the underutilized basement, with a low ceiling height, to create useable floor area and also inserting a fourth level at the back of the existing balcony. This coordinated design effort brings together structural upgrades and program space needs with the architectural, theatrical, mechanical, electrical, plumbing, and code compliant requirements into a cohesive and creative design solution.

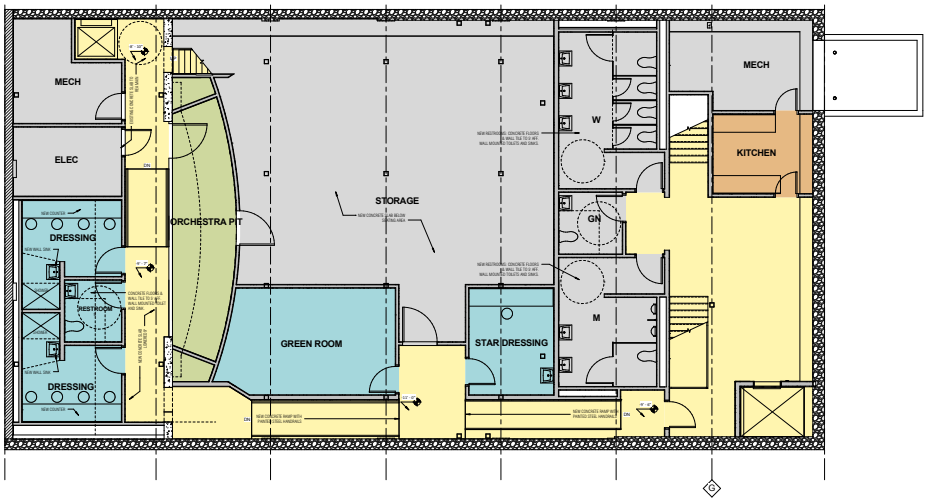
Maximizing the Rivoli's capability to accommodate diverse programming opportunities and optimize the facility's utilization and revenue-generating potential is an economic driver for the project. Providing a high-quality back-of-house dressing room, green room, and adequate storage capacity are other important aspects of the Rivoli renovation and transformation that will make the facility attractive to visiting performers and musicians. Accommodating the administrative staff within the Rivoli will mitigate the cost of lease space and optimize the operational efficiencies.

PRELIMINARY BUILDING DESIGN

LEVEL 1: BASEMENT

Excavating the basement level will create necessary usable floor area to accommodate public restrooms, dressing rooms, green room, orchestra pit, general storage, catering kitchen, and mechanical/electrical spaces. Elevator access will be provided to the basement lobby that will contain the women's, men's, and gender neutral restrooms. A catering kitchen situated next to the lobby, with concession areas directly above, will provide convenient elevator access to serve the theater, main level lobby, and the balcony level lobby.

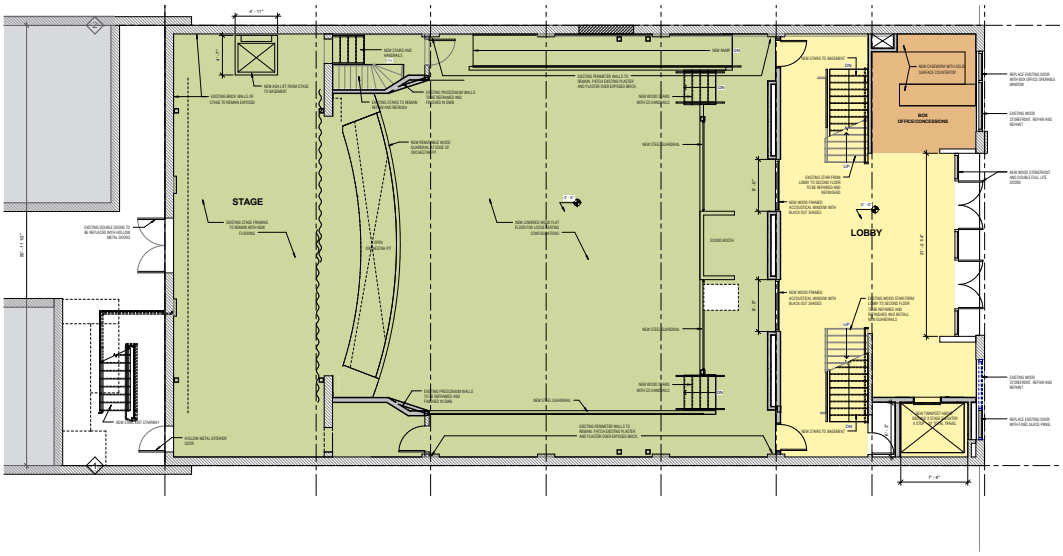
Theater support spaces include two four-person dressing rooms, unisex restroom, star dressing room, and green room. The backstage support area will have direct stage access from an ADA lift and stair. The orchestra pit will have either a manually removed stage extension platforms or, preferably, a motorized lift. A large general storage area beneath the house seating will provide direct access to the stage and audience seating area through a motorized orchestra pit lift.



PRELIMINARY BUILDING DESIGN

LEVEL 2: LOBBY & THEATER

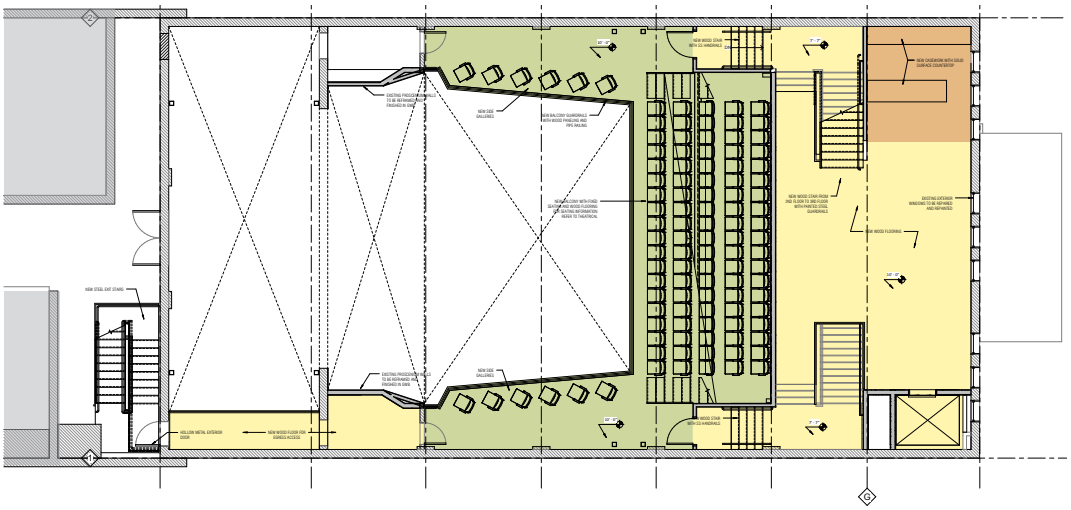
The main level will include a new entry storefront and expanded lobby with a combined concessions area and box office. New public stairs to the basement level, located under the existing stairs to the balcony, will be provided as well as elevator access to all levels of the building. The theater seating area will be restructured and reconfigured into a flexible flat floor layout that is 30 inches below the existing stage and lobby. Both stair and ADA compliant ramp access to the audience seating area will be provided with an ADA seating location at the back of the house next to the sound booth. The flat floor multi-use theater will accommodate a variety of seating arrangements from auditorium layout to theater in the round and thrust theater. Moveable chairs and tables can be set up for dinner theater and music performances, weddings, dances, and a variety of other events. The stage house will include a new rigging gallery and line sets, ADA lift to the dressing rooms in the basement, and expanded stage apron with a motorized orchestra lift that provides access to the orchestra pit and basement storage area.



PRELIMINARY BUILDING DESIGN

LEVEL 3: BALCONY

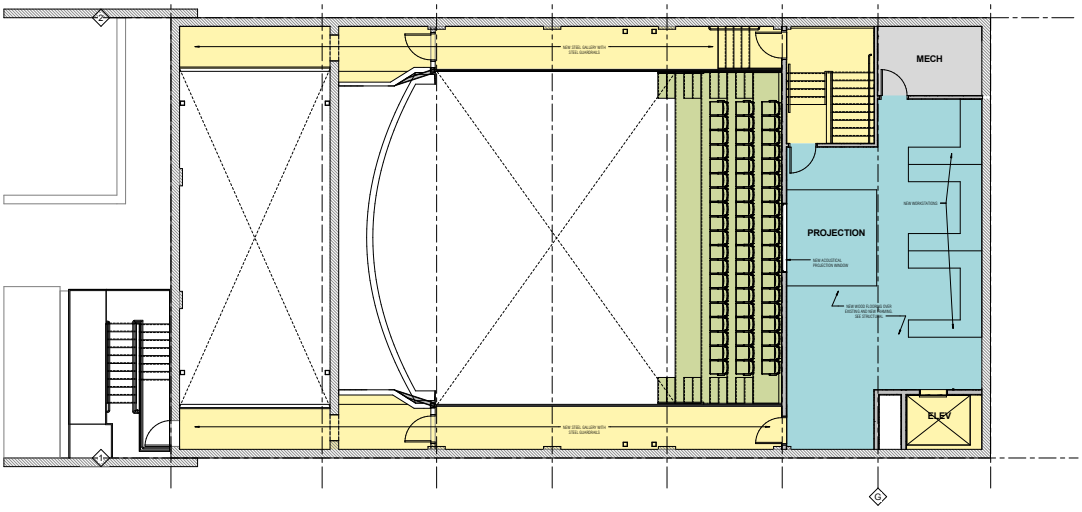
The existing balcony will be reconfigured and reduced in size, improving sightlines. It will accommodate 95 fixed seats and 12 loose seats positioned in wrapping wings for a total of 107 seats, creating an intimate theater experience reminiscent of the original theater balcony. Elevator access to the balcony lobby will include a concession area. Stair access will be created to a new fourth level with a required egress route through the stage to an exterior stair.



PRELIMINARY BUILDING DESIGN

LEVEL 4: OFFICES & CATWALKS

This new floor level is created by removing surplus seating with compromised sightlines to accommodate needed space for administrative offices, projection room, and access to the perimeter theatrical lighting catwalks and catwalk in the middle of the house. Elevator access will be provided to this level as well as a required egress route through the stage to an exterior stair.



THEATRICAL UPGRADES

GENERAL

The primary purpose of this report is to establish recommended operating criteria, theatrical systems, elements and equipment for the Rivoli Theater Renovation. The elements of this narrative detail our understanding of the project program to date. This narrative is intended to serve the project design team, identifying a scope of systems and operational concepts.

Our recommendations for systems and equipment are based upon the following criteria:

- Functional viability for the activities to be accommodated
- Economy with respect to initial capital cost and long term maintained operation
- Ease of operation and safety for staff, operators, technicians, performers, and the public

THEATRICAL UPGRADES

GENERAL PLANNING STATEMENT

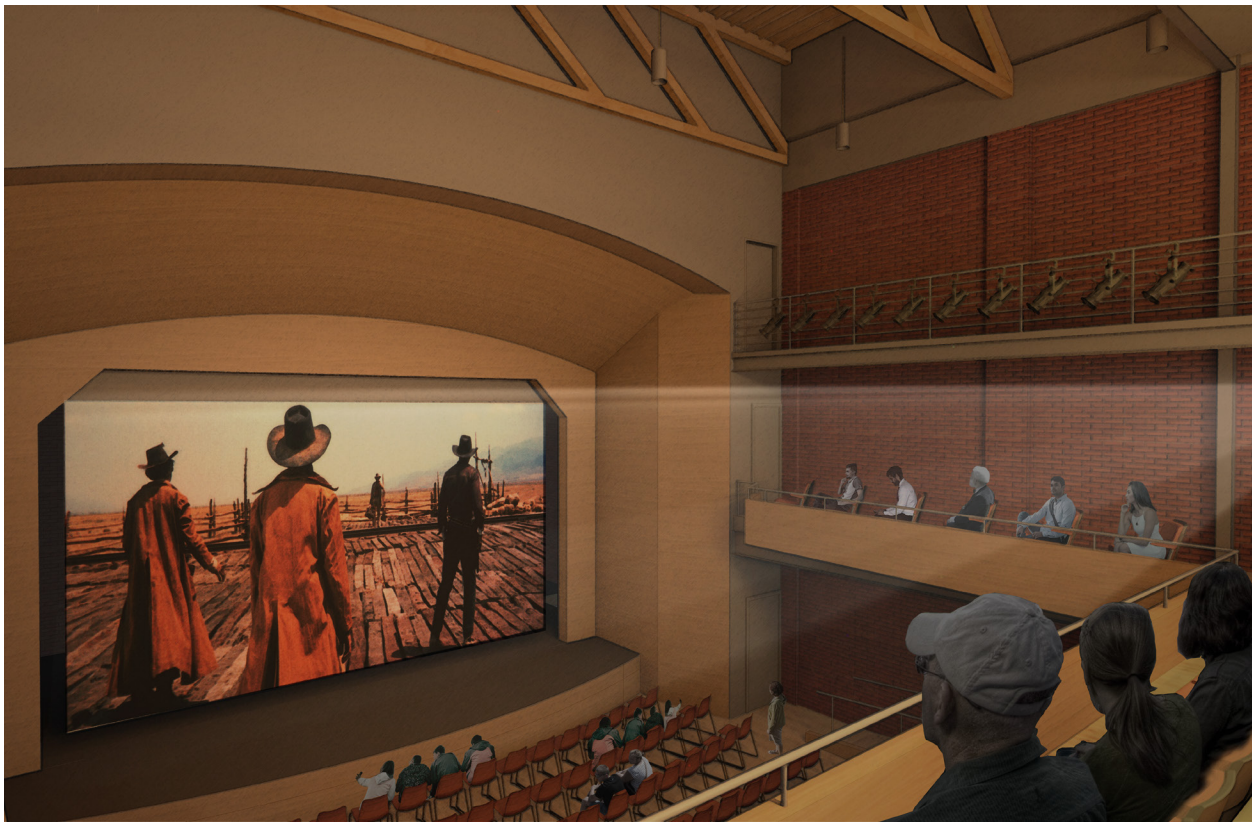
The 300-seat renovated Rivoli Theater supports an array of production types including musical performance, dance, drama, moving image presentation, comedy, catered dining and cocktail events, and lectures. The theater is designed in proscenium configuration with a flat floor lower orchestra for variable seating schemes utilizing loose seats and tables. A raised seating area at the rear of the orchestra provides an in-house mix control position and wheelchair seating with sightlines over standing. The forestage is equipped with an orchestra pit lift which can be set at various elevations for seating, stage extension, or orchestra pit. Access to the orchestra pit and dressing rooms is by stairs down stage left and elevator up stage left. The total seat count, including the orchestra pit seating, is a maximum of 318.

THEATRICAL UPGRADES

Accessible wheelchair seating is provided distributed at the orchestra front and rear, and at the side gallery in compliance with Americans with Disabilities Act (ADA). Wheelchair companion, transfer, and semi-ambulant seating are provided.

The stage is approximately 17’-6” feet deep clear from the plaster line to the upstage wall and 49’-0” clear from stage right wall to stage left wall wide. The apron provides another three feet of stage depth. The proscenium opening is approximately 16’-6” high by 30’ wide.

The stage features a resiliently-mounted wood floor for dance which is designed with snubbers to take heavy stage loads.



THEATRICAL UPGRADES

The stage is served by a motorized rigging system. The fly tower is approximately 40 feet from the stage floor to the underside of the roof. Stage lighting positions are provided at one over audience catwalk, stage electrics on motorized rigging, auditorium and Stage side lighting positions, and at the “balcony front” position.

All working areas on catwalks and galleries have fall protection. A central enclosed control booth is located behind the balcony at the third level above the lobby.

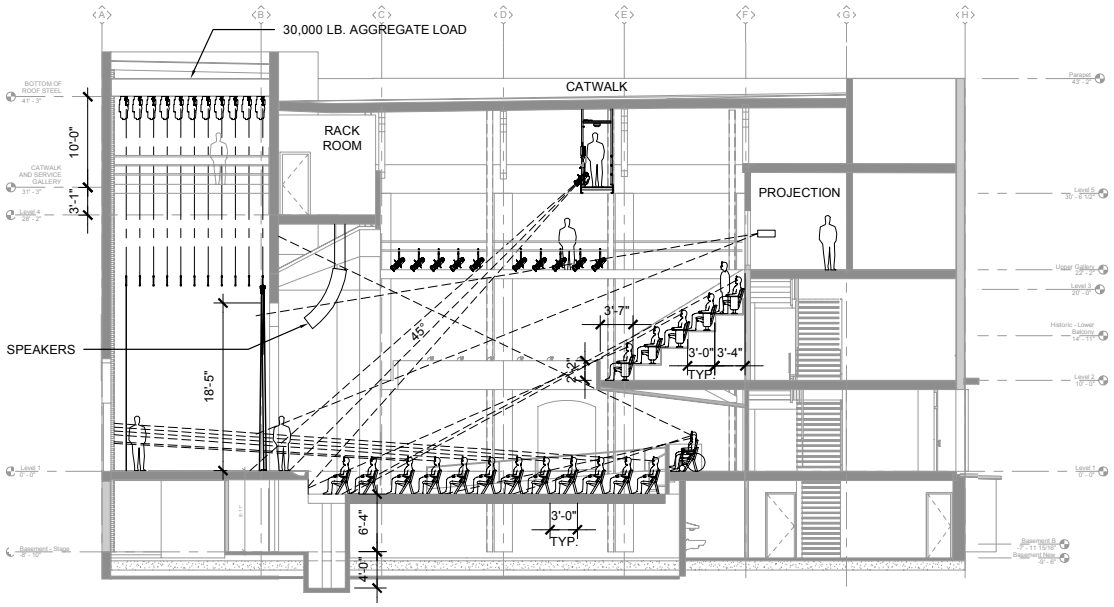
A lighting and sound control booth and the in house mix position have unobstructed sightlines to the stage for the full width and height of the proscenium opening. The in-house mix position allows for unencumbered aural monitoring for live sound mixing during productions.

THEATRICAL UPGRADES

THEATER RIGGING & DRAPERY SYSTEM

The motorized rigging systems accommodate the basic hanging, shifting, and storing of scenery, stage draperies, masking, and theatrical lighting “electrics”. The motorized rigging hoists are conceived as a dead haul system designed to accommodate 40-foot long, 4-line, truss battens mounted at approximately 12” centers. The live load capacity of each line set is based on 30 pounds per linear foot, in keeping with accepted theater industry standards. As an interim costs savings measure any number of motorized battens may be replaced with dead hung battens at a substantially lower cost.

Operation of the motorized rigging system is from a hand-held pendent which can be located at the stage floor and the maintenance galleries. The battens travel from 3’-6” above the stage floor to approximately 33’- 0” above the stage floor. Two traveler tracks are provided for manual curtains, including the main drape. Scrim and cyclorama are provided on walk-along track. Borders (teasers) will be provided to mask vertical sightlines and legs for masking horizontal sightlines.



THEATRICAL UPGRADES

“Electrics” borders made of a heat and fire resistant material will protect adjacent draperies and scenic elements from damage. Configurations will be determined in a later design phase. All curtain fabrics are certified inherently fire retardant or fire retardant, treated to comply with pertinent national standards and local codes.

The motorized rigging system is provided by the theatrical rigging contractor. The galleries and catwalks are under structural work. Electrical power conduit and wire to the motors is provided by the electrical contractor. Draperies are provided and installed by the theatrical drapery contractor.

FALL PROTECTION

Fall protection is provided at all lighting catwalk locations, service galleries, side lighting positions, and “balcony rail”. The theater consultant will define the conceptual scope of the fall protection system for design by others. Fall protection includes the use of harnesses and lanyards with fall arrest system for all workers in the catwalks galleries and balcony rail.

Fall protection is furnished and installed by a fall protection contractor. The theater consultant provides conceptual design criteria. A fall protection design-build contractor or designer provides detailed design and criteria.

THEATER DIMMING & RELAY SYSTEM

The performance lighting system incorporates the most advanced technology available for the given budget, and is capable of incorporating future advancements over the life of the system. It is configured for use by house technicians as well as the various local and touring groups using the facility, and is a tool in support of creative production design.

THEATRICAL UPGRADES

The front-of-house lighting positions are carefully designed as a critical part of the overhead audience architecture, allowing for the mounting locations of spotlights at a multitude of lighting angles.

On-stage lighting positions are from electrics and selectively located wall pockets. Side lighting is accommodated by floor booms and house box boom positions.

Lighting positions are circuited with approximately 48 branch load circuits terminating at dimmer/relay racks in the dimmer room. These circuits are 20 amps. The dimming system is based on a “dimmer per circuit” concept, utilizing a small capacity dimmer with through-power relay for each circuit.
The dimmers are solid-state and digitally controlled from a main console located in the control booth. All control devices are interconnected on an ethernet based control network. Dedicated input network receptacles are located at the control booth, at a house-mix position, and on stage (see lighting control data network description on the following page). The system supports wireless hand-held focus remote controllers, which provide basic control access for focus or service sessions.

Relays and system control processors are located in an electrical, which is fully air conditioned with its own thermostatic control. The dimming equipment requires the ambient room temperature be maintained at no more than 85℉.

Onstage, the production control panel is the primary backstage center for all controls that relate to the basic operation of the theater. This panel typically contains controls for house lighting, work/rehearsal lighting, rigging, production intercommunications and paging, and other production-related items.

THEATRICAL UPGRADES

The control booth will contain a portable auxiliary console for control of house lights and work/rehearsal lights. It is typically used by the stage manager in rehearsal situations and performances. There are connection receptacles on stage, at a mid-house tech receptacle panel and in the control booth.

A lighting control data network provides for reliable, fast communications between control devices and automated theatrical devices. The ethernet-based network allows headroom for growth and future modifications in systems communications protocols. Presently, the lighting industry is bound to the standard protocol DMX-512 for control and data-receiving lighting and effects devices such as color-changers and automated lights.

The ethernet network translates DMX-512 control input to ethernet via ethernet nodes, distributes the signal to the lighting positions, and outputs DMX-512. We believe that, over time, the DMX-512 protocol will be abandoned for pure ethernet. The network in the theater accommodates this evolution. If the change in the industry is effected prior to the building's installation, the initial system will be configured to respond.

House lighting utilizes LED lighting fixtures which are zoned and dimmer-controlled for selective illumination of seating areas, permitting appropriate adjustment of lighting for individual events and dim-down and dim-up before and after performances and intermissions. Fixtures provide smooth illumination of the audience area to a maximum intensity of 30 foot-candles for lecture use. House lighting is designed by the electrical contractor.

THEATRICAL UPGRADES

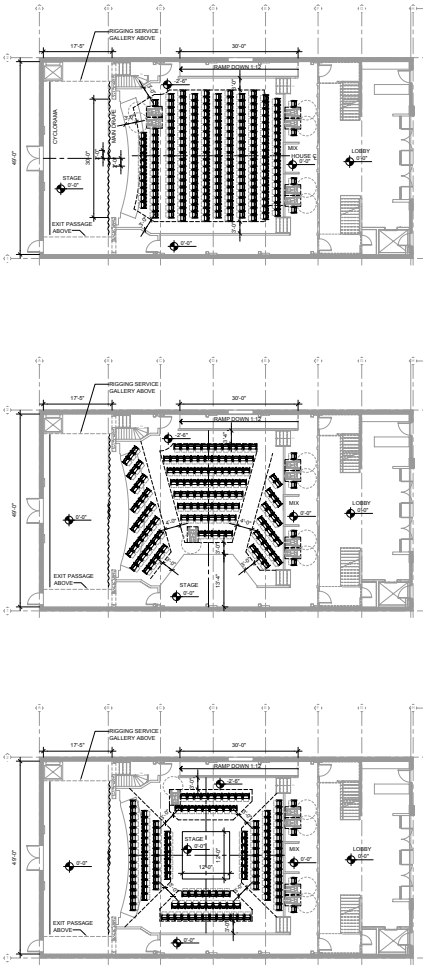
House lighting is controlled at the theatrical lighting control console, the auxiliary control console, the on-stage production control panel, as well as through usher stations located at each entrance to the audience chamber. Controls typically include zoned and master controllers, keyed take-command switches, and all-on/normal push buttons.

Work lighting using LED energy efficient sources is provided by wall and structure mounted fixtures at all off-stage levels and along ceiling catwalks. This system provides lighting in technical areas during non-performance times. Work lights are centrally-controlled and controlled at entry points to any given area. Rehearsal lighting includes non-dimmed semi-permanent LED theatrical fixtures for use limited to rehearsals or basic presentations. A switch control section for rehearsal lights is included in the on-stage production control panel and at the auxiliary control console. Rehearsal lighting is also controllable through the theatrical lighting control console. The theater consultant will provide criteria and review but is not designing or documenting the work lighting system.

The control and followspot booths are equipped with LED work lighting and LED track lighting. The track lighting is dimmed with local wall-box dimmers and is intended to be used as the sole source of lighting for the booth during performances.

Relay panels, distribution, receptacles and all associated equipment are furnished by the theatrical lighting contractor. Installation of the dimming equipment, distribution, and receptacles is by the electrical contractor. The electrical contractor furnishes and installs all necessary individual power, conduit, wire, and junction pull boxes.

THEATRICAL UPGRADES



THEATER LIGHTING FIXTURES

Lighting for theatrical performances is by portable LED lighting instruments clamp-mounted on pipe rails of the catwalks and also from side lighting positions and on-stage “electrics battens”. A modest complement of fixtures, with color changing suitable to specific functions and respective mounting locations is provided. The followspots can be used from the control booth. The base theatrical fixture package will be determined in a later design phase. Lighting fixtures are delivered to the site, unpacked, and aligned by the theatrical lighting supplier. Fixtures are installed by the owner.

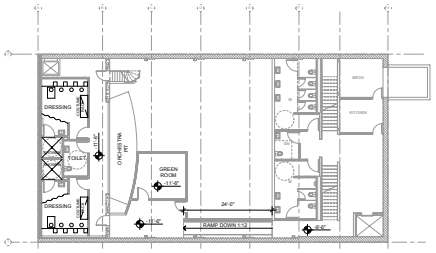
THEATER FIXED SEATING

Audience seating in the balcony includes self-rising, fully upholstered chairs, riser-mounted where possible. Seating at the orchestra level utilizes stacking or folding chairs for flexibility. Seats and backs of fixed and portable chairs will be upholstered in coordinating fabric. Standards and arm rests will be determined at a later phase. Fabric will comply with flammability requirements. Aisle lights are provided to comply with code for path of egress illumination. Fixed seating is provided and installed by the fixed seating contractor. Portable seating is delivered to the site and set up for demonstration by the contractor. Aisle light power and terminations are by the electrical contractor.

THEATRICAL UPGRADES

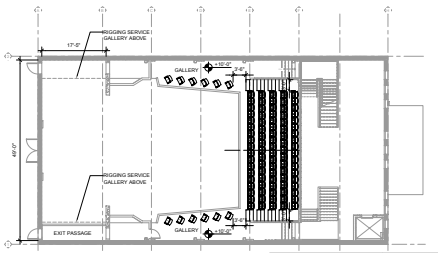
RECITAL SCREENS

The design allows for accommodation of a musical ensembles with a shell enclosure which will be closely coordinated to meet the required acoustical properties established by the acoustician. Ceiling units are not anticipated at this time. Recital screen units are designed to nest and store efficiently on stage. The recital screen contractor provides the ceiling towers sub-structure with finishes determined by the architect.



STAGE FLOOR

The construction of the stage floor is critical and considered as a working system. The floor is a layer of tempered hardboard on a resiliently-supported, two-layer plywood subfloor system set on sleepers and resilient rubber pads. The floor layers are fastened with screws to allow for repair of the floor in the event of local damage. The details include over-deflection snubber blocks. This construction provides sufficient cushion for dancers while maintaining the necessary rigidity to prevent excess deflection, keeping freestanding scenery from shaking under the rigors of dancer movement. The floor should be capable of supporting a 150-pound per square foot live load, as well as 250-pound point loads. The stage floor is provided by the flooring contractor and will be documented by the architect.



THEATRICAL UPGRADES

THEATER AUDIO & VIDEO (AV) SYSTEMS

The sound system provides sound reinforcement for live speech, amplified voice/musical theater, and popular music events. It also accommodates playback of prerecorded audio (CD, digital file, etc.) for live theater events, video presentations, musical entertainment, dance, media presentations, convocations, and seminars. The system also provides audio/video archival recording capability to facility users. A variety of loudspeaker systems provide coverage for the entire seating area. Requirements for the various loudspeaker systems described below will be reviewed during the Design phase, as will the feasibility of using traditional loudspeakers vs. self-powered units.

Please note that the sound system will not provide emergency paging capability. Emergency paging, if used on the project, is outside of the theater consulting scope of work and should be provided by an independent system.

Theater loudspeaker systems may include the following:

- Primary loudspeaker system: This typically provides primary sound coverage to the audience area.
- Subwoofer systems: Low frequency loudspeakers—deployed in positions to be determined—and associated with the primary loudspeaker systems. The use of cardioid pattern subwoofers is assumed to minimize the buildup of low-frequency energy onstage.
- Front fill loudspeaker system: This typically provides coverage for the seating areas closest to the lip of the stage, which are not fully covered by the primary loudspeaker position. The front fill loudspeakers also bring the sonic image closer to the stage for the seating rows closest to the stage. The front fill loudspeaker system will either be fixed in the lip of the stage, portable, or placed at the stage edge when in use.

THEATRICAL UPGRADES

- Mixing console: Accommodation for a minimum 48-channel digital sound mixing console is provided for use at the control room position. The mixing console accommodates various live and prerecorded program inputs during performances and presentations, with a limited amount of “snapshot” preset control and automation capability.
- Playback, archival recording, and signal-processing equipment: All are located in equipment racks adjacent to the mixing console and in the control booth. The archival recording system consists of a patchable two-track digital recording device, such as CD-R and/or hard drive.
- Wireless microphone system: This is tpically provided with a minimum of 6 channels with both handheld and lavaliere type transmitters to accommodate different production needs.
- Playback source equipment: Equipment may include digital audio file format player interfaces (iPod and similar), computers, mini-disc, and CD/DVD disc formats. No reel-to-reel playback or analog cassette tape support is anticipated. This equipment may also support limited digital file format, flash, or CD recording.
- Separate monitor mixing console and full stage monitor loudspeaker system: This equipment is not included; however, infrastructure for the connection of active speakers on stage is provided.
- Portable equipment: Microphones, loudspeakers, and cables will be provided.

THEATRICAL UPGRADES

Cabling infrastructure: An audio patching system permits connection of audio signals from the stage area to the mixing console and signal processing equipment. This is the backbone of the audio system, providing wiring infrastructure to accommodate in-house equipment while permitting easy interface of touring, rental, or other portable equipment which will also be facilitated by a cable snake chase from the stage to the mid-house mix position and to the control booth.

Microphone and line-level audio signal distribution is accomplished using shielded-twisted-pair copper wiring with 110 ohm characteristic impedance capable of supporting audio signal transport in either traditional analog format, or in AES3 digital format. The shielded-twisted-pair transport infrastructure is reinforced by category 6 copper and single-mode and multi-mode optical fiber to accommodate audio and video signals in a variety of present and possible future formats. A digital fiber optic transport solution has several benefits over copper wire including immunity to electrical (EMI) and radio (RFI) interference, elimination of ground loop possibilities, and elimination of signal loss. In a later design phase, we will investigate the specific functional and economic trade-offs of analog versus digital transport as applied to this specific project.

An empty conduit or raceway system designed to support the future or additional cabling will also be incorporated.

THEATRICAL UPGRADES

Audio and video systems receptacle panels provide industry-standard receptacles for connection of microphone, line-level, loudspeaker, video, intercom, control, and other AV equipment with the house AV systems wiring infrastructure. The central equipment rack at the booth houses patch panels that provide audio and video tie line points between the theater's various control and equipment rooms, lobbies, and other associated areas.

Note: Installation of AV equipment, wire and cable, and terminations by the AV contractor is included in the theater equipment allowance. Installation of conduit, cable trays, standard back boxes, and pull boxes is by the electrical contractor.

Assistive-listening system: An assistive-listening system for those with hearing impairments uses FM wireless transmission technology, utilizing bandwidths specifically licensed for this type of use without any risk of interference to nearby aviation communications. A number of portable receivers are provided to meet the requirements of the Americans with Disabilities Act (ADA). Accordingly, sufficient receivers must be available for 4% of the total seating capacity.

Production intercom system: A two-channel production intercom system provides two-way voice communication between various back of house and front of house technical positions. Portable belt packs, headsets, and loudspeaker "biscuit" stations are provided to support the primary activities of the performance space in both front of house and back of house areas. Permanent and portable control stations are provided to control both the production intercom and program monitor/page/recall systems.

THEATRICAL UPGRADES

Program monitoring/paging/recall system: The program monitor/page/recall system provides audio monitoring of performances, back of house page announcements to the back of house areas, front of house pages to the front of house areas, as well as audience recall chimes or messages to the front of house lobby areas. Back-of-house paging originations are provided from the stage manager's control station, integrated with the production intercom system.

Video projection system: The front projection screen is sized to accommodate multiple projection formats including widescreen (16:9), computer widescreen (16:10), and standard video (4:3). A motorized video front-projection system is provided for video, text, graphics, and data projection.
The front projection system consists of a high brightness, high-resolution video projector, video playback equipment, video switching equipment, and a video network with patch bays for signal routing. The video projector is mounted in the control booth on the centerline of the projection screen. Playback equipment and switching equipment is mounted in an equipment rack(s) in the control booth. Connection points are located at the stage and audience areas to accommodate playback of media from a portable rack. Connection points will accommodate the Coalition's selection of a wireless connection platform, such as Apple Air.

Playback equipment accommodates currently available sources via rack mounted playback decks. The patch bay and wired network as well as the video switcher accepts signals from loose equipment including laptops and hand held cameras to facilitate signal routing to the video projector.

THEATRICAL UPGRADES

Screen masking: No screen masking is provided. Aspect ratios other than 16:9 (such as 4:3 and 5:4) may be displayed, but the unused portions of the screen will not be masked. The projection screen may include a bottom masking skirt.

Production video system: A basic production video system, providing video-only feeds is used for technical production monitoring of events and rehearsals. Audio in back of the house areas is accomplished via the program monitoring/paging audio system (see section above). A high-definition color video camera is located as required to provide a full stage view. Video distribution equipment routes baseband video signals to technical production areas and to the lobby monitor location.

A high definition distribution system allows distribution of HD content to monitors in specific front of house or back of house areas to accommodate latecomers.

Splits from the audio monitoring system may feed future archival video recording equipment.

Control system: A simple control system with touch panel controls is installed in the rack(s) in the control booth. This system allows control over different elements of the audio and video systems (projection screen, projector, video switcher, audio digital signal processor). This system will provide an interface that will simplify the operation of the different audiovisual systems in the theater. Two fixed control panels will be provided, one in the rack(s) and one in the stage area.

THEATRICAL UPGRADES

All AV system equipment is furnished and installed by the audio visual contractor, who furnishes, installs, and terminates AV signal wiring and also furnishes any specialty backboxes and equipment. The electrical contractor provides individual power feeds from local panels to the AV equipment racks. All, power wiring, technical ("isolated") grounding and conduit, and empty signal-level conduit and standard back boxes, pull boxes and junction boxes for AV-related equipment are furnished and installed by the electrical contractor.

ORCHESTRA LIFT

The use of the orchestra pit will rely on an orchestra pit lift with a resiliently-mounted stage floor identical to that installed permanently onstage. The lift—actuated by a Serapid "link-lift" or Gala "spira-lift" system—will not require caissons, as these two lift systems should work well without excavation, distributing new loads over steel frames set in the pit as functional "grade beams".

At stage level, the lift will serve to extend the forestage nearly 8' from the curtain line for ensembles of various sizes. In orchestra pit mode, the lift will align with a performance floor set approximately 8'- 6" below stage level, with access from below the stage at Dressing Room level. At audience level, the lift will accommodate additional seating. A railing with removable aisle gates shall be provided to protect audience members when the lift is in orchestra pit mode. The height of this railing shall be identical to the stage height above the elevation of the first row of seating. Inasmuch as this railing is regarded similarly to a balcony railing, the normal requirement of 42" guardrail protection is waived.

The motorized lift system is provided by the theatrical rigging contractor. Electrical power conduit and wire to the motors is provided by the electrical contractor. Flooring is provided by the flooring contractor.

STRUCTURAL UPGRADES

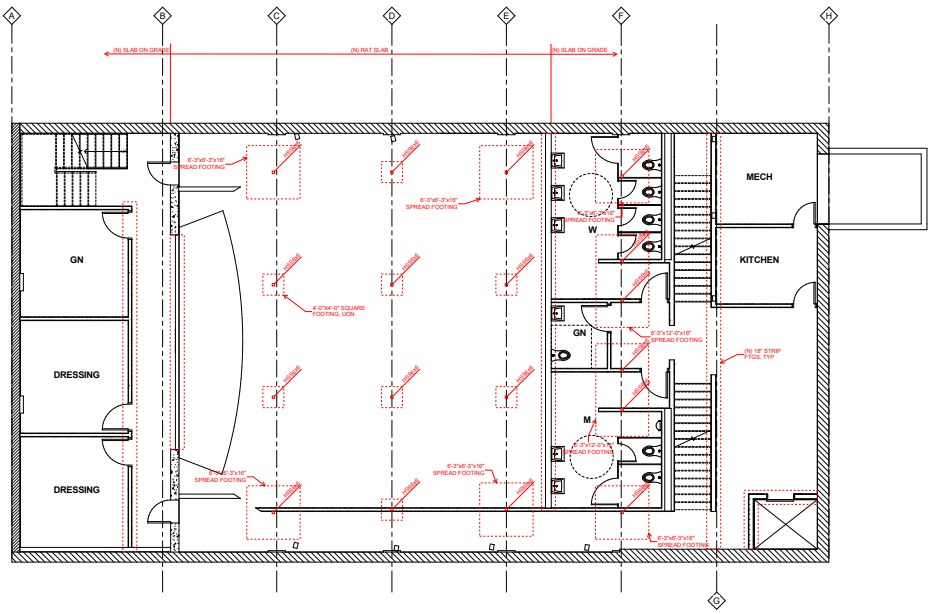
BACKGROUND & PURPOSE

The Rivoli Theater Coalition commissioned Froelich Engineers to perform a schematic design of the Rivoli Theater restoration. The structural goals of the project are as follows:

- Prepare structural design for the new theater concept
- Assist with initial cost estimate work

BASEMENT & MAIN FLOOR

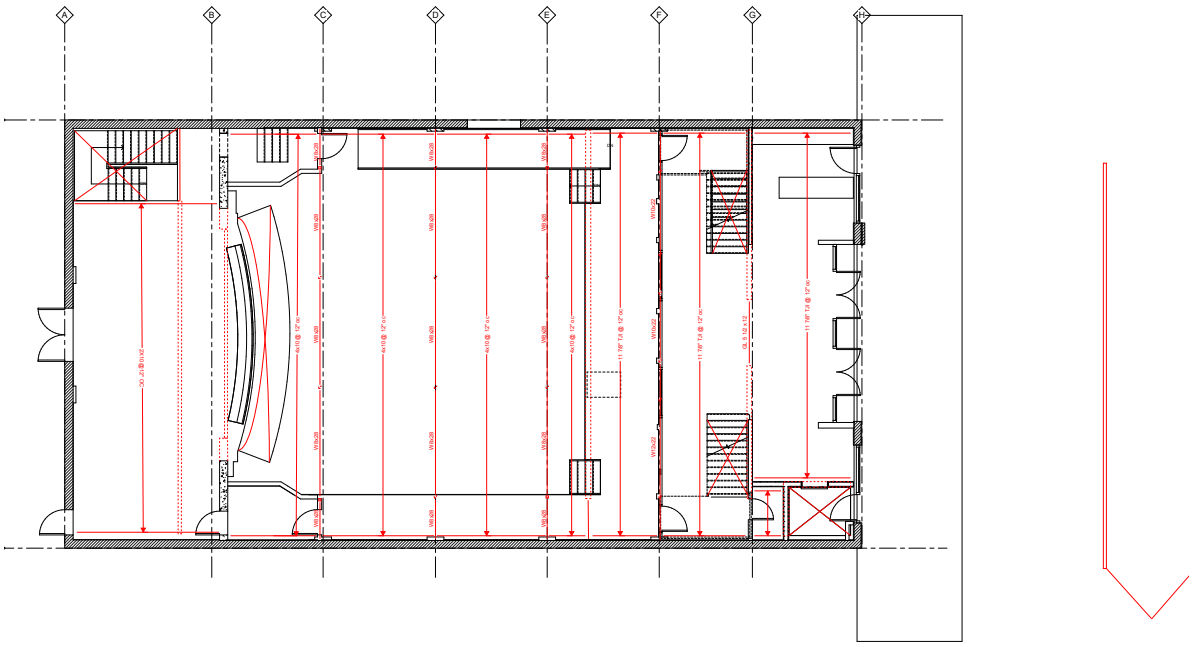
The basement is approximately one to two feet too short to use as an occupied space. Therefore, the basement is to be excavated down to capture this space. The existing sloped main floor framing will be demolished and re-framed flat. This framing will be supported on steel columns and beams. The purpose of the steel beams is to keep the depth as shallow as possible, limiting the amount of excavation and increasing headroom. Wood joists and plywood decking will support the new main floor.



STRUCTURAL UPGRADES

The approximately two-foot deep excavation will require that the finish floor remain at least two feet away from the edge of the existing wall foundations. Therefore a two-foot wide by two-foot deep shelf will reside at the north end of the basement. At the south end, a necessary hallway up against the existing wall rules out a shelf there. In this area, the excavation is anticipated to extend below the existing wall foundation. Underpinning of the wall is planned in this area. A new elevator pit is planned at the southeast corner. Underpinning of the wall is planned in this area to accommodate the depth of the pit. The remainder of the basement will have a series of new wood bearing walls and column pads that support the various upper levels. A four-inch thick slab on grade will be installed throughout the basement level as well as ramps and steps to accommodate ADA requirements and the anticipated orchestra pit.

Portions of the main stage framing have been damaged by fire and previous modifications. We anticipate adding new framing in 40% of the floor joists to address these damaged areas.

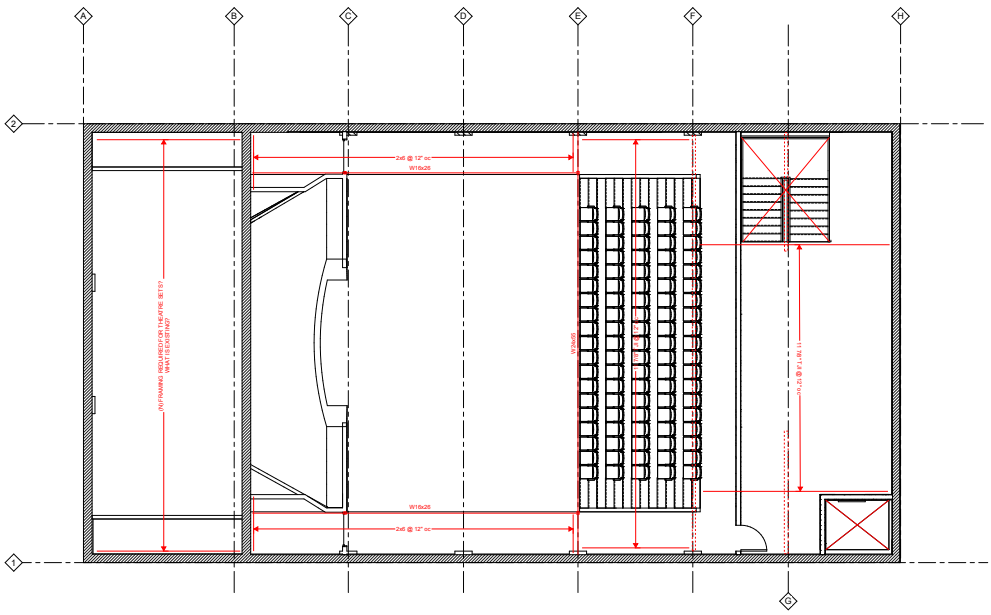


STRUCTURAL UPGRADES

SECOND FLOOR FRAMING

The second floor framing will be significantly re-built. Removing much of the existing wood framing will accommodate new stair configurations and new viewing and seating. In some areas of the lobby entry, existing framing will be saved, but much of the framing will need to be verified in the field.

The new seating area will be supported by a primary steel girder that will clearspan the majority of the theater. The depth of the beam dictates that it reside within the void space under the seating. Supporting steel columns will pass down the basement to carry this girder. At the north and south walls, balcony seating will be supported by steel beams. The floor of the balconies and main viewing areas will be wood framed with 2x8 and 2x12 LVL members with plywood sheathing. The new stairs will require removal/modification of some of the existing wood-framed floors. Salvaging the framing in these areas is a priority; however, we anticipate significant re-framing of the floors.



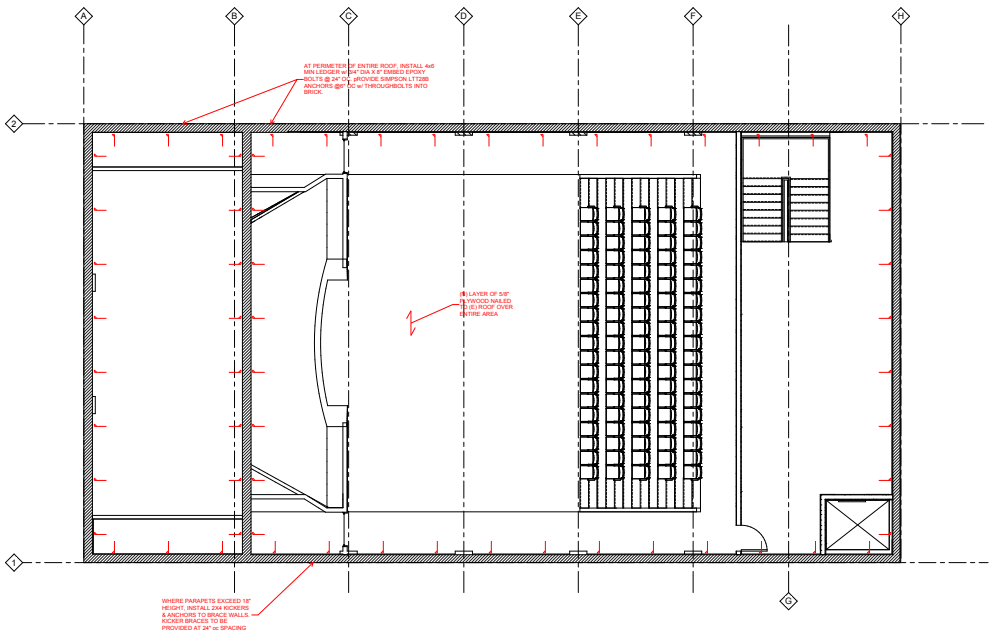
STRUCTURAL UPGRADES

FLY TOWER UPGRADE

Upgrading the fly tower allows support for up to five “setlines” to support future theatrical sets and/or curtains. Each setline is to be rated for approximately 6,000 pounds of capacity. To do this, new steel tube columns will run up the full height of the fly tower to carry new steel beams to support this future load.

THIRD FLOOR FRAMING

The 3rd floor will support the projection room, offices, and upper balcony lighting and egress. The eastern portion of the theater will house the projection room and offices. The floors and walls of these areas will be wood-framed. Along the north and south walls, steel channels will be supported by columns and steel knee-braces. These walkways will extend the length of the theater and pass through new openings in the brick walls to provide exits through the fly tower and out the back of the theater.



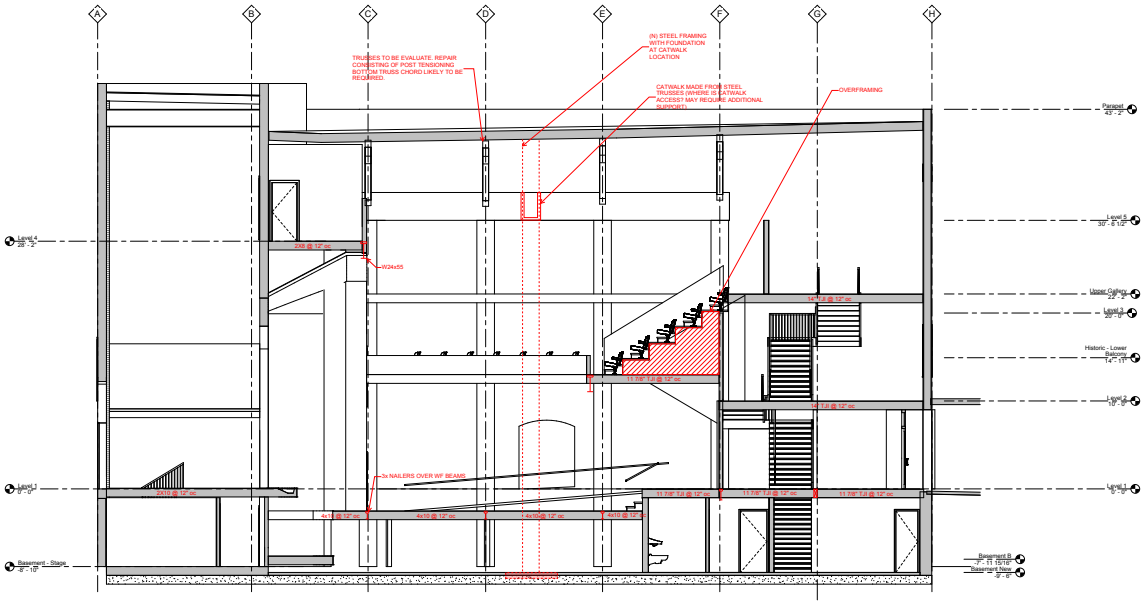
STRUCTURAL UPGRADES

CATWALK

The fourth level will have a clearspan catwalk running across the length of the theater. This catwalk will be used by staff for lighting of the main stage and will consist of two steel trussed supported on tubesteel columns placed against the inside face of each wall.

ROOF TRUSSES

The existing timber roof trusses were evaluated by Carlson Testing, Inc., in 2010. There is no indication of distress, rot, or other forms of deterioration in the evaluation. We know a new roof was installed around the time of the report to limit any water intrusion. Some of the trusses are covered in a significant amount of bird waste. A visual inspection of each truss is to occur when construction begins. No new loads are to be imposed on these trusses until inspection and analysis occurs.



STRUCTURAL UPGRADES

ROOF FRAMING / VOLUNTARY SEISMIC UPGRADE AT ROOF

The roof will receive a new layer of plywood sheathing throughout the main roof and flytower. As part of voluntary seismic strengthening we will be connecting the roof to the perimeter walls. Epoxy anchors will tie the existing roof trusses and purlins to the brick walls. Some new roof joists are anticipated where new rooftop HVAC units are needed.

OTHER ITEMS

The 2x8 floor joists supporting the main stage will need to be strengthened as the longer spans do not comply with modern code floor loads.

A new steel-framed exterior egress stair will be built at the back alley. This stair will provide egress from the fly tower at multiple levels.

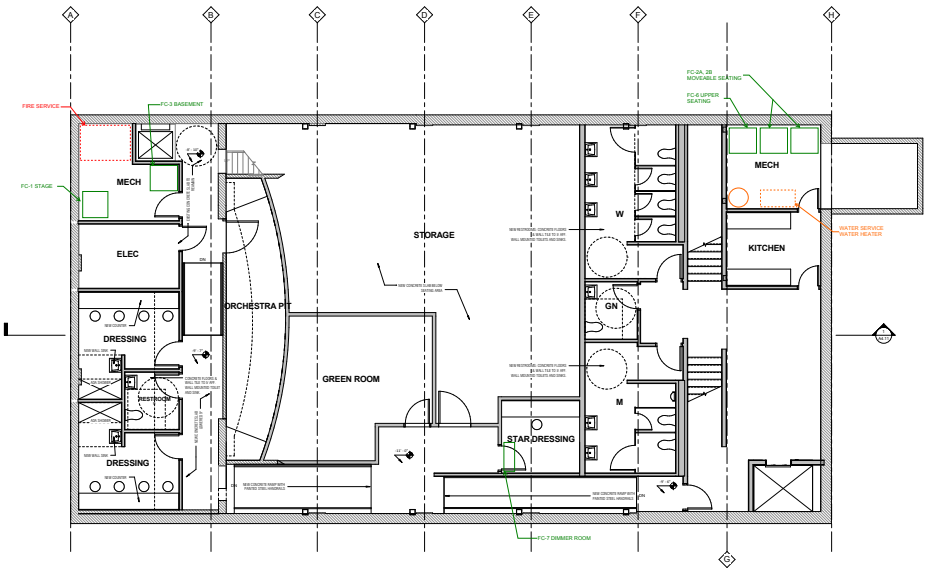
The original canopy will likely need to be replaced/restored. The interior of the canopy will be re-framed with clearspan metal decking to restore the cover it provided.

MEP UPGRADES

PROPOSED MECHANICAL SYSTEM

The following is the proposed mechanical system for this project:

- A 25-ton variable refrigerant flow (VRF) heat pump system will be mounted on the roof, connected to fan coils for each zone. Outside air/relief will be ducted from fan coils to sidewall louvers and/or rooftop vents. The control system will be integral to VRF.
- The following is a preliminary list of the fan coils:
  - FC-1 (basement west): stage – 2 ton
  - FC-2 (basement east): seating – 7.5 ton
  - FC-3 (basement west): basement – 4 ton
  - FC-4 (level 3): 1st/2nd entrance – 2 ton
  - FC-5 (level 3): 3rd level – 2 ton
  - FC-6 (basement east): upper seating – 5 ton
  - FC-7 (dimmer room): dimmer room – 2 ton
- Air distribution will be ducted overhead with exposed grilles at open ceilings and ceiling mounted grilles in ceiling areas. The upper seating will have under seat type displacement diffusers.
- A 300 cfm exhaust fan will serve the basement toilets, kitchen, and exhaust sidewall.

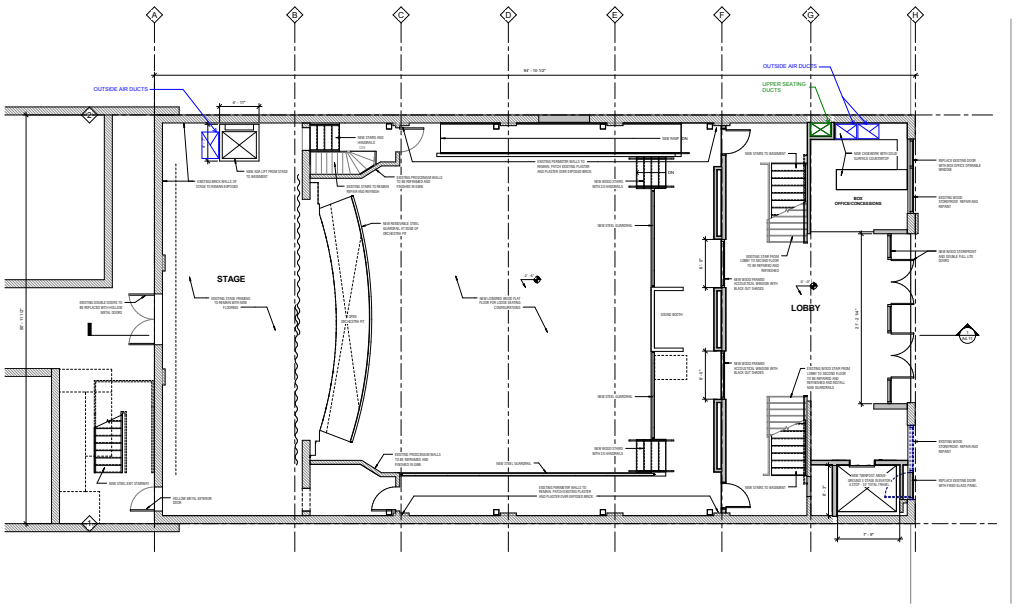


MEP UPGRADES

PROPOSED PLUMBING SYSTEM

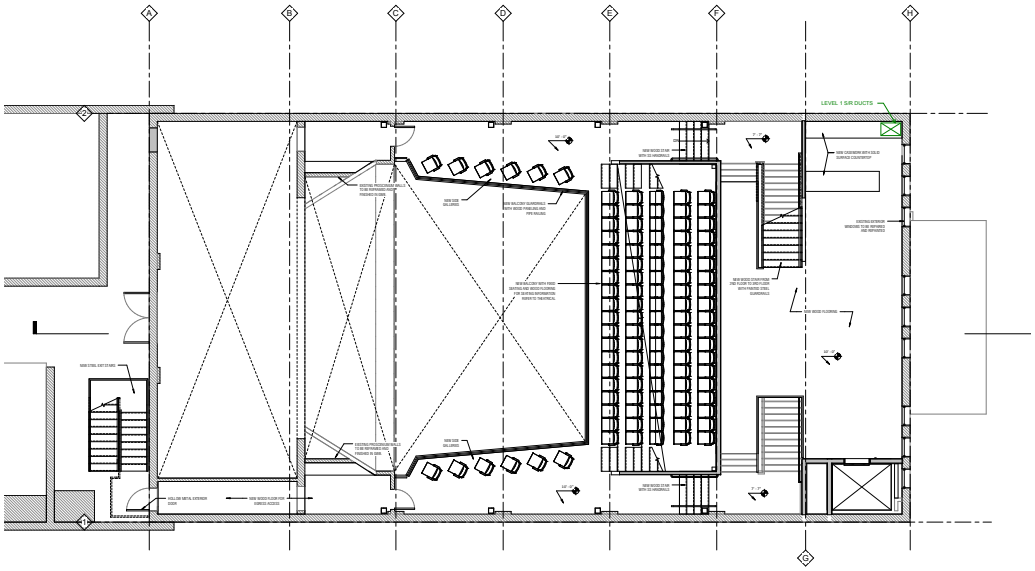
The following are the proposed plumbing systems for this project:

- Water, sewer, storm will be served from the east, fire service from the west.
- Installation of new domestic water and DWV piping to serve new equipment, devices, and fixtures.
- The domestic water system will be from a new service to the building, including meter, backflow prevention, and pressure regulation devices as necessary. The domestic water piping will be copper with brazed joints below grade and soldered joints above grade.
- The sanitary waste system will be a new service within the building. The waste and vent piping system will be no-hub cast iron with heavy duty couplings below grade and no-hub cast iron with standard duty couplings above grade.
- The storm drainage system will be a new service within the building. The waste and vent piping system will be no-hub cast iron with heavy duty couplings below grade and no-hub cast iron with standard duty couplings above grade.



MEP UPGRADES

- The plumbing fixtures will be ADA compliant as appropriate for the designated locations.
- The plumbing fixtures will conserve water within the parameters of governing code standards.
- The domestic hot water will be provided by a central electric water heater with circulation.
- Hose bibbs will be provided at approximately 100-foot intervals at the ground level exterior of entire building and at roof hatch/ access areas.
- Condensation drains will be provided at all HVAC cooling units.
- The elevator(s) will have a sump pump and alarm system serving each elevator pit.
- A sewage ejector will be required for basement fixtures.



MEP UPGRADES

FIRE SUPPRESSION SYSTEM RECOMMENDATIONS

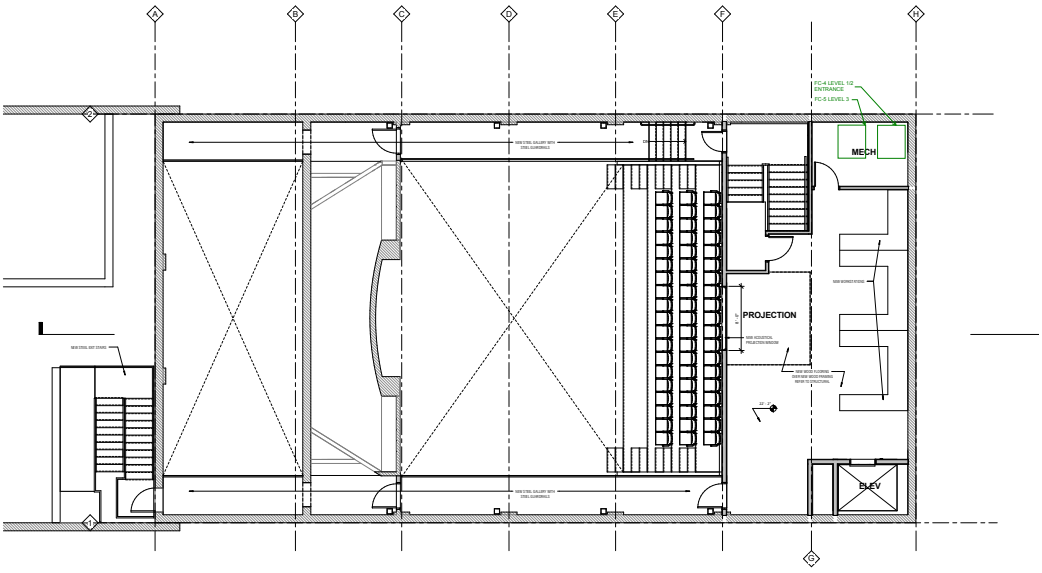
The following are the proposed fire suppression requirements for this project:

- A new complete coverage NFPA 13 compliant sprinkler system is anticipated.
- A new six-inch dedicated fire sprinkler service with dedicated fire backflow preventer is anticipated.
- Because the highest floor level does not appear to be more than 30-feet above the lowest level of fire department access, standpipes in the stairwells are not anticipated; however, the stage and auditorium require standpipes.
- If available water supplies are inadequate to provide pressure to the highest sprinklers, a fire pump will be provided.

ELECTRICAL SERVICE & DISTRIBUTION

The proposed main electrical service is one 800-amp, 208/120 volt switchboard with a main circuit breaker. This eliminates the need for step-down transformers in the building, allowing for flush/ surface-mounted panelboards in each wing of the theater.

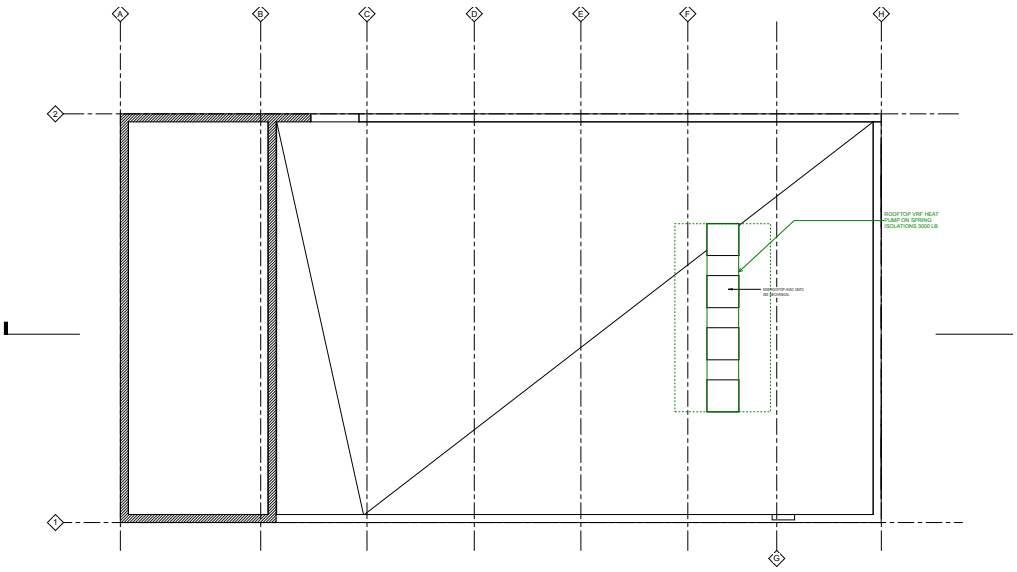
The most likely point of service for utility power is from the existing



MEP UPGRADES

pole-mounted transformers located in the rear area of the back of the theater. The existing service will need to be replaced and will route overhead from the pole to a new weather head style utility connection also located on the back of the building by the rear brick wall facing the alleyway. From this weather head, there will be one four-inch conduit for primary power routed to an exterior located CT/metering cabinet. This serves as Pacific Power's demark point and will have the meter located next to the enclosure also mounted to the rear outer wall (street level). This configuration will reduce the size of the electrical equipment inside the building as well as limit required access from the utility.
Now, there is no need to enter the building. From the meter the service will terminate in a new switchboard located in the new basement level electrical room on the west side of building closest to service entry point.

Switchboards and panelboards will be based on circuit breakers for convenience of local resetting of overcurrent protection when a fault has been cleared and removed safely.
The following panelboards are anticipated: one 400-amp panel



MEP UPGRADES

for mechanical loads, one 225-amp panel for plug-in loads and one 125-amp panel for lighting located in the main mechanical/electrical room with the main service. For the east wing, there will be a 225-amp panel for plug-in loads and HVAC loads and one 225-amp panel for theater lighting and audio equipment. This minimizes branch circuit lengths and the need for a conduit crossing under the main seating/stage area.

Sub-metering: the above panels are set to allow HVAC, lighting, and receptacle loads to be in separate panel board sections from one another, which allows for sub-metering of each major load type if desired. A recommended one-line power distribution diagram has been included with the narrative and design/build specifications to detail the recommended design approach. Surge protection will be provided at the main service to prolong the life of solid-state loads, including lighting ballasts, PC and server power supplies, consumer electronics, and variable frequency drives of motors. Feeder circuit wiring will be copper XHHW-2. Branch circuit wiring will be copper THWN-2 with one exception: MC cable is allowed in areas with suspended ceiling space overhead with accessible void space above. Branch circuit wiring assumes eight duplex receptacles per 20-amp circuit for general purpose use and six duplex receptacles per 20-amp circuit where outlets are located by tele/data outlets. Self-testing GFCI outlets will be used where required by code.

It is recommended that integral USB-charger ports be placed in one outlet in staff workstation areas and tamper-proof outlets in any spaces where children will be present normally (hallways, lobby, multipurpose room, etc.). The electrical service is sized to allow the addition of up to a 50kW photovoltaic array to be added in the future with a spare set of 2-foot conduits routed to the roof making the building ‘PV ready’.

MEP UPGRADES

EMERGENCY POWER

We are proposing to use either a central battery system for emergency power to egress lighting, or unit batteries. Since our light sources will be mostly LED-based, most commercial manufacturers still require the unit battery backup for their lighting to be mounted remotely; typically above a ceiling tile within twenty feet of the luminaire served. This is contrary to unit batteries for fluorescent lighting, where for most luminaires the emergency battery could fit into the ballast channel of the luminaire.

A central emergency lighting inverter would be located in the basement level main electrical room; this conditioned space prolongs the battery life span. The inverter will feature maintenance-free VRLA lead-calcium batteries which have up to a 20-year design life expectancy and, completely sealed, do not off gas. The inverter would provide the code required minimum 90-minute runtime in the case of a power outage.

RACEWAY FOR TELECOM

Raceway for future telecom data outlets and AV outlets is planned in each space, including one 1-inch conduit from accessible ceiling space to a minimum 2.5-inch deep 4x4 box for data at each outlet.

AV includes 1.25 inch conduit between 5x5 boxes designated at ceiling projector or flat screen monitor locations in the back stage, greenroom, main theater space, and the anticipated location of the AV rack. Conduit sleeving will be routed from ceiling space to AV rack location for future ceiling speakers. IT spaces will include a main telecom room at the same level as the main electrical room (shared room space). These will be a minimum of three four-inch conduits from the back of building alleyway to the main IT rack in the mechanical/electrical room for utilities, pending input from the local service providers.

MEP UPGRADES

CATV

CATV is one RG-6 cable to the Telecom room from the service location indicated on the drawings. Each outlet is to be terminated with an 'F' connector.

The conduit will be indicated as running from the back box locations to the nearest accessible ceiling or other space suitable for running CATV cable.

SECURITY

All exterior doors will have an electric latch or strike for remote locking and/or door contacts for alarm. The main entry and the entryway into the theater area will have card readers for access control.

The security system components will include:

- Proximity card reader locations
- Electric lock or strike locations
- Door contact locations
- Request to exit device locations
- Key pad for alarm (de)activation

A conduit or other pathway will be indicated as running from the component locations to the nearest accessible space suitable for running security cable.

LIGHTING

GENERAL SUMMARY

The recommended lighting levels for the project will meet the Illuminating Engineering Society Standards unless otherwise noted. Natural daylight will be limited and most lighting will be provided via LED electric lighting systems. Glare control of both natural daylight and electric lighting systems will enhance the performance environment.

ELECTRIC LIGHTING SYSTEMS

White LED sources will be used in outdoor locations (front of house) and spaces with high ceilings that require a high-intensity source. Interior lighting will be designed to minimize energy consumption to 25 percent below the reference standard of the Oregon Energy Code. The design will also feature daylighting controls (see below) to minimize use of indoor lighting during daylight hours for the front entrance.

TARGET ILLUMINATION LEVELS

SPACE	ILLUMINATION LEVEL	LIGHTING POWER DENSITY
Restrooms	100-200 lux (10-20fc) at floor	0.68w/sf
Common/Open Theater Space	323-377 lux (30-35fc) at floor	0.78w/sf
Prep/Dressing Room	430-484 lux (40-45fc)	0.9w/sf
Offices	323-377 lux (30-35fc)	0.62w/sf
Waiting/Reception	323-377 lux (30-35fc) at floor	0.78w/sf
Kitchen	430-538 lux (40-50fc) on task surfaces	1.0w/sf
Utility/Mechanical	323-377 lux (30-35fc)	1.0w/sf
Circulation Spaces	161-215 lux (15-20fc)	0.68w/sf

LIGHTING

LIGHTING CONTROL SYSTEMS

The foundation for lighting control starts with the lighting control system type. The building will use a digital lighting controller based on the Wattstopper DLM series and will be tied to room daylighting sensors, occupancy sensor(s), and manual wall dimming with LED feedback lights. The manual dimming will be located at the room entry to facilitate room control. The digital controller will allow automatic lighting settings to be adjusted by remote control without needing a ladder to reach the sensors themselves.

The building automation system will be used to directly control exterior lighting through a switching module tied to the BAS controller and an astronomical time clock. If the fire alarm or security system goes into alarm, the exterior lighting can be turned on automatically at night for the fire and police department.

Standard dual-technology—ultrasonic and infrared—occupancy sensors will automatically control the lighting in enclosed room spaces with ceilings under 14’ 0” in height, including corridors. Combined wall switch/occupancy sensors will be used in small offices. These also provide automatic-on capability as a person enters a space.

EMERGENCY LIGHTING

The building will remain lighted, either electrically or via daylight measures, during occupied hours. Ties between the security system and emergency lighting control, and between occupancy sensors, daylighting sensors, and the emergency lighting circuits, will be utilized to minimize lighting remaining on within the building 24 hours a day. Emergency lighting relays (UL 924 listing) will be used where needed to ensure emergency lighting remains off in unoccupied areas and where daylighting alone can provide over 1.0 footcandles.

LIGHTING

FIRE ALARM SYSTEM

A microprocessor-based, analog-addressable fire detection and alarm system will be installed to provide notification to the building occupants. System annunciators will be located in the front office area and the main entrances. The system will report off-site for remote monitoring and will comply with the Oregon Structural Specialty Code (OSSC) and National Fire Alarm and Signaling Code (NFPA 72).

Alarm notification will be provided by ADA compliant visual notification appliances and an emergency voice alarm communication system for transmission of an audible alert followed by voice instruction.

Smoke detection will be provided in spaces when required by code. Duct-mounted smoke detectors will be installed in air handling systems when required by code.

Single-action manual pull stations will be installed as required by code, with a recommended “screecher” hinged cover over each pull station to discourage tampering by the public if located in a common area.

The system will have emergency power backup—24 hours of battery backup power in normal mode, fifteen minutes of battery backup in alarm mode.

Installation and testing will comply with the requirements of the City of Pendleton.

COST ESTIMATE & PHASING

The cost estimate for the preliminary design was broken down into three phases.

PHASE 1: STRUCTURAL COMPONENTS

Phase 1 covers all structural components required to protect the existing investment and allow for future construction. The scope includes full excavation of the basement, underpinning of the perimeter walls, new foundations, floor and roof framing support, and support for theater rigging and enhancements.

PHASE 2: COMPLETE THEATER

Phase 2 includes all components necessary for a fully-functional theater. The scope for this phase includes exterior improvements; interior walls and floors; interior finishes; theatrical equipment; and mechanical, plumbing, and electrical services for a fully-functional facility.

PHASE 3: ENHANCEMENTS

Phase 3 includes value-added enhancements beyond what is necessary for a functional theater. These components are elective and include equipment such as additional lighting, rigging, and specialized AV components.

COST ESTIMATE & PHASING

		Demolition, Earthwork, Concrete, and Steel Structure	Complete Theater		Theater Enhancements	
		PHASE 1	PHASE 2	SUB TOTAL	ALTERNATES	GRAND TOTAL
01 GC / OH&P (REFER TO MARKUPS)		$ -	$ -	$ -	$ -	$ -
02 EXISTING CONDITIONS		$ 96,186	$ 87,684	$ 183,870	$ 6,738	$ 190,608
03 CONCRETE		$ 32,624	$ 30,933	$ 63,557	$ -	$ 63,557
04 MASONRY		$ -	$ 2,560	$ 2,560	$ -	$ 2,560
05 METALS		$ 165,167	$ 91,496	$ 256,663	$ -	$ 256,663
06 WOOD , PLASTICS & COMPOSITES		$ -	$ 397,400	$ 397,400	$ -	$ 397,400
07 THERMAL AND MOISTURE		$ 1,850	$ -	$ 1,850	$ 70,850	$ 72,700
08 OPENINGS		$ -	$ 102,900	$ 102,900	$ -	$ 102,900
09 FINISHES		$ -	$ 452,001	$ 452,001	$ -	$ 452,001
10 SPECIALTIES		$ -	$ 22,152	$ 22,152	$ -	$ 22,152
11 EQUIPMENT		$ -	$ 1,180,800	$ 1,180,800	$ 555,000	$ 1,735,800
12 FURNISHINGS		$ -	$ -	$ -	$ 3,752	$ 3,752
13 SPECIAL CONSTRUCTION		$ -	$ -	$ -	$ -	$ -
14 CONVEYING EQUIPMENT		$ -	$ 135,000	$ 135,000	$ 25,000	$ 160,000
21 FIRE SUPPRESSION		$ -	$ 87,340	$ 87,340	$ -	$ 87,340
22 PLUMBING		$ -	$ 86,010	$ 86,010	$ -	$ 86,010
23 HVAC		$ -	$ 387,045	$ 387,045	$ -	$ 387,045
26 ELECTRICAL		$ -	$ 315,370	$ 315,370	$ -	$ 315,370
27 COMMUNICATIONS		$ -	$ 28,670	$ 28,670	$ -	$ 28,670
28 ELECTRONIC SAFETY AND SECURITY		$ -	$ 43,005	$ 43,005	$ 43,005	$ 86,010
31 EARTHWORK		$ 96,174	$ 46,731	$ 142,905	$ -	$ 142,905
32 EXTERIOR IMPROVEMENTS		$ -	$ 5,000	$ 5,000	$ -	$ 5,000
33 UTILITIES		$ -	$ 75,000	$ 75,000	$ -	$ 75,000
SUBTOTAL		$ 392,001	$ 3,577,097	$ 3,969,098	$ 704,345	$ 4,673,443
ESTIMATING CONTINGENCY	15.00%	$ 58,800	$ 536,565	$ 595,365	$ 105,652	$ 701,016
ESCALATION (Construction Start 2017)	6.00%	$ 27,048	$ 246,820	$ 273,868	$ 48,600	$ 322,468
GC's / INSURANCE / BOND	11.50%	$ 54,953	$ 501,455	$ 556,408	$ 98,739	$ 655,147
GENERAL CONTRACTOR OVERHEAD AND PROFIT	4.00%	$ 21,312	$ 194,477	$ 215,790	$ 38,293	$ 254,083
TOTAL		**$ 554,114**	**$ 5,056,414**	**$ 5,610,528**	**$ 995,629**	**$ 6,606,157**

NOTE:

ESCALATION - INITIAL BUDGET ESTIMATES BASED UPON 2016 UNIT PRICING. FINAL NUMBER IS ESCALATED TO 2017 CONSTRUCTION START