

University of Oregon University Theatre

DECEMBER 31, 2003

Schematic Design Report



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EXECUTIVE SUMMARY

The goals of this project are to:

- Create a state of the art Studio Theatre which allows flexibility for production design and will serve as the University of Oregon's non-traditional theatre venue for years to come.
- Improve Back of House facilities serving all three theatres which will coexist in the new facility.
- Create a new lobby which serves both the Robinson Theatre and the new Studio Theatre while acting as a beacon and social space serving the entire U of O Community.
- Mitigate the negative effect of the scale of the Robinson Theatre 1949 addition.
- Enhance the relationship with historically significant Villard Hall.
- Respect, celebrate, and improve the natural features and elements surrounding the project including the mature and significant trees, the Dad's Gate, and the original central campus pedestrian axis.
- To improve the general and ADA access to the entire Theatre Complex.

DESIGN PROCESS

The design process for the University of Oregon's University Theatre began with the formation of the User Group to establish both program and design goals for the project. The result of that effort was summarized in the Theatre Expansion Project Description document dated January 2002. In April 2002, Thomas Hacker Architects were selected to join the committee in the development of the Project Design. The Conceptual Design Phase occurred in the Spring term of 2002 with the Schematic Design following in the Fall term of 2002. The Schematic design documented in this report is the collective result of all participants efforts and reflects a balanced response to program, site, and budgetary goals, established at the beginning of the project.

PROJECT SCHEDULE

The project schedule is directly related to the success of the current fundraising effort. If, however, the Design Development Phase commences in September, 2003, Construction Documents could be complete by June, 2004, with construction commencing August, 2004, and final occupancy by September 2005.

PROJECT DESCRIPTION

When it was built in 1949 as an addition to Villard Hall, the 350 seat Robinson Theatre was a state of the art facility which became a well used home for the theatre department for the University of Oregon. Since that time, however, developments in theatre arts education has created a need for alternative theatre facilities. While the more traditional Robinson Theater functions well for many productions, it does not provide the flexibility needed for experimental theatre. Currently, all non-traditional theatre productions are held in the Arena Theater, a converted classroom in Villard Hall. While the intimacy of the Arena Theatre has been greatly appreciated, the department has long understood that it has technical limitations and is too small.

The addition of the new 150-seat Studio Theatre will replace the Arena Theater and provide the University with a facility that will accommodate the current and future needs of the department. The theater is a black box with fully flexible seating allowing for multiple performance configurations. The performance space is served from the floor above by a new Control Booth, Technical Gallery, and a suspended tension grid maximizing lighting flexibility and student safety.

Both Theaters will share a new, multi-level Lobby which has been sized to accommodate audiences from both theatres for shows running concurrently, but also designed to provide an intimate public environment when occupied by the audience from only one of the theaters. The Lobby, with exposed structure is enclosed in glass with louvers which will control light levels and create a transparent beacon which reinforces and activates the pedestrian campus axis it faces. Located adjacent to the Dad's Gate, the theatre will be visible to the public arriving on new public transit BRT stop on 11th Avenue. To provide a more graceful and ADA compliant arrival to the theater, the building entry is approximately at the same elevation as the adjacent pedestrian axis. This North-South axis and the Dad's Gate figured prominently in the original Campus Plan designed by the Architect Ellis F. Lawrence. the pedestrian path and the gate have been underutilized as recent campus development has been focused elsewhere. With the more visible Theater project and the new transit stop, the path and Dad's Gate are expected to return to their originally intended prominence.

This project is also intended to improve the existing back-of-house facilities. Currently, the scene shop is located directly behind the Robinson Theatre Stage creating acoustical conflicts. Because there is no space for Set Assembly other than the Stage itself, major set construction can not occur while a production is in progress. The new Scene Shop will be positioned to serve both theatres directly. The loading dock will be relocated further west to provide easier access and allow production materials to be loaded directly into the scene shop making the entire set design and construction process more efficient.

The existing Costume Shop presently is located in the basement of Villard Hall with low ceilings, inadequate ventilation, and no windows. The new location will be on the second floor over the Scene Shop. It will be larger, with high ceilings and large windows facing south to admit the best quality light for the detailed work required of costume design.

Villard Hall is listed on the National Register of Historic Buildings. The 1949 Robinson Theatre addition was not sensitive to the extraordinary work of architecture which is part of the U of O

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campus heritage. The University Theatre has been designed to help mitigate the negative impact of the Robinson Theatre and to respect the historic character of Villard Hall. While the two buildings will be noticeably different, the proportions, scale, massing, material, and pattern of the expansion will allow the two to coexist gracefully. All of the walls of the theatre and support spaces will have windows to both admit light during the day and emit light at night engaging the surrounding areas.

Area Comparison - June 2, 2003										University Planning Office / FT	
[all areas net square feet]											
[no off-site facilities included]	Exist'g	Prog area	Previous	Current	delta	%	delta	%	delta	%	
Description of Space	net s.f.	net s.f.	Scheme	Scheme	existing	existing	program	program	previous	previous	
New Lobby/Foyer	0	1,000	2,205	1,288	1,288	n/a	288	129%	-917	58%	
Ticket Box Office/Service Counter/Storage	108	200	348	348	240	n/a	148	174%	0	100%	
Robinson Lobby:	771	771	1,640	1,170	399	152%	399	152%	-470	71%	
subtotal lobbies	879	1,971	4,193	2,806	1,927	319%	835	142%	-1,387	67%	lobbies subtotal
Studio Theatre	0	3,500	3,808	3,294	3,294	n/a	-206	94%	-514	87%	
Green Room (new, pro-rated @ 50%)	0		245	227	227	n/a	227	n/a	-18	93%	
Sound and Light Booth & tech gallery	0		1,824	1,664	1,664	n/a	1,664	n/a	-160	91%	
sub-subtotal Studio Theare	0	3,500	5,877	5,185	5,185	n/a	1,685	n/a	-692	88%	studio th. subsub-total
Robinson Theatre	2,986	2,986	2,986	2,986	0	100%	0	100%	0	100%	
Control Room	189		744	744	555	394%	n/a	n/a	0	100%	
Green Room (existing)	435	435	435	435	0	100%	0	100%	0	100%	
Arena Theatre	1,152	0	0	0	-1,152	0%	n/a	n/a	n/a	n/a	
Pocket Playhouse Theatre (stage = 653 s	1,482	1,482	1,482	1,482	0	100%	0	100%	0	100%	
subtotal all theatres	6,244	8,403	11,524	10,832	4,588	173%	1,685	129%	-692	94%	theatres subtotal
Robinson Dressing & Make Up	978	1,500	978	978	0	100%	-522	65%	0	100%	
Black Box Dressing & Make Up	0	1,300	1,200	1,200	1,200	n/a	-100	92%	0	100%	
Manager's Office	101	0	160	160	59	n/a	160	n/a	0	100%	
Scene Studio Area	1,597	2,000	2,164	2,308	711	145%	308	115%	144	107%	
Set assembly area	0	700	1,350	1,350	1,350	n/a	650	193%	0	100%	
Paint Studio/Paint Booth	0	225			0	n/a	-225	0%	0	n/a	
Lighting Laboratory	0	400			0	n/a	-400	0%	0	n/a	
subtotal scene	1,597	3,325	3,514	3,658	2,061	229%	333	110%	144	104%	scene subtotal
Costume Studio (Suite of Rooms)	1,078	1,500	2,036	1,908	830	177%	408	127%	-128	94%	
Costume shop office	0	120			0	n/a	-120	0%	0	n/a	
Fabric storage	250	250	200	200	-50	80%	-50	80%	0	100%	
Fitting room (pro-rated @ 50%)	0	150	245	227	227	n/a	77	151%	-18	93%	
Costume storage: shoes, racks, boxes	0	600			0	n/a	-600	0%	0	n/a	
Laundry	0	150			0	n/a	-150	0%	0	n/a	
Dye and Craft Area (w/ wash & dry)	227	400	725	725	498	319%	325	181%	0	100%	
subtotal costume/craft	1,555	3,170	3,206	3,060	1,505	197%	-110	97%	-146	95%	costume subtotal
General Storage	416		1,817	1,637	1,221	394%	1,637	n/a	-180	90%	
Prop Storage					0	n/a	0	n/a	0	n/a	
Furniture Storage					0	n/a	0	n/a	0	n/a	
Acting/Directing Studio #1	0	1,600	0	0	0	0%	-1,600	0%	0	0%	
Acting/Directing Studio #2 (former Arena	0	1,152	1,152	1,152	1,152	0%	0	100%	0	100%	
Scene/Costume Design Studio	0	750	0	0	0	0%	-750	0%	0	0%	
Sound Studio	0	150	0	0	0	0%	-150	0%	0	0%	
TOTALS (net square feet)	11,770	23,321	27,744	25,483	13,713	217%	1,418	109%	-2,261	92%	
	Exist'g	Prog area	Previous	Current	delta	%	delta	%	delta	%	
	net s.f.	net s.f.	Scheme	Scheme	existing	existing	program	program	previous	previous	

LANDSCAPE/SITE DESIGN

Campus Trees

A number of mature significant trees exist within the vicinity of the project. The proposed building expansion was significantly influenced by an analysis of the likely root zones of these trees and expertise from a consulting ISA certified arborist. On the north side, development was completely avoided to assure preservation of a number of significant trees including a very large Ginkgo and an historic Dawn Redwood. On the south side, the building footprint was set back from a number of significant trees including a Giant Sequoia, Japanese Cedar (*Cryptomeria*) and London Planetree.

Significant Open Spaces

The area near the Robinson Theatre/Villard Hall includes a number of significant open spaces. "Dads' Gate" is immediately NW of the project and is the north terminus for the original central axis of the U of O campus. "Deady Hall Walk" runs east/west on the south side, "Old Campus Quadrangle" runs north/south on the east side, and "Villard Hall Open Area" runs east/west on the north side. No improvements are proposed for the north and east sides of the complex, thus preserving the integrity of those open spaces.

For Deady Hall Walk, the existing fir trees that define the space are afforded extra care by strictly limiting development that would impact them. For the Dad's Gate area, large existing trees that line the main accessway will be preserved. In addition, (4) new trees are proposed to be planted in locations that will enhance and formalize the original promenade as recommended in the Campus Tree Plan. A clear view will be maintained between the Dad's Gate and the Lillis Business Complex terminuses. Pathways will be maintained or enhanced in these zones as described below.

Pathways, Connectivity and Accessibility

Once the proposed Lane Transit District BRT station is completed at the north side of the Dad's Gate, pedestrian traffic through this open space will increase significantly. The proposed design will transform the main axis from a vehicular focused environment to one that is pedestrian focused. As proposed, all existing standard parking spaces will be removed. Only service vehicles and a select number of vehicles using accessible parking spaces in the Deady/Villard courtyard will be permitted to pass through the Dad's Gates. Vehicular loading and unloading of patrons of the expanded theatre complex will occur just outside the Dad's Gate.

The locations of existing pathways in the project vicinity work reasonably well. In contrast, the existing vertical grade change between the Dad's Gate and the existing Robinson Theatre lobby does not allow for a direct accessible route and results in poor access for persons with disabilities. The current ADA route is extremely circuitous, and includes a cumbersome switchback ramp. This expansion project provides a tremendous opportunity to rectify this unfortunate situation.

As proposed, the existing steep bank will be removed and a new lobby will be located at a grade that is nearly level with the Dad's Gate. Transitions to the main lobby space will be direct from all

adjacent pathways. Transitions to the existing and new theatre spaces will be located internally giving patrons a choice of routes by elevator or stairs. All other new pedestrian paths on site will be designed with a slope that is less than 1:20, which will eliminate the need for ramps and associated handrails and/or landings.

(2) accessible parking spaces that currently exist at the Robinson lobby entry are proposed to be relocated just outside the Dad's Gates. Other accessible spaces currently located between Deady and Villard will also be preserved, with specific locations to be determined as the design is refined.

Service Area

The existing service facility for the Theatre complex is a highly visible and unsightly component within an open space that has significant historical character. The proposed design moves this function further to a much less conspicuous location. This also creates the opportunity to substantially improve the courtyard between Deady and Villard.

STRUCTURAL DESIGN

General Configuration

The University Theatre will be located to the west and south of the existing Robinson Theatre on the University of Oregon campus. The new building will be roughly L-shaped in plan with approximate overall dimensions of 180 feet by 145 feet. Most portions of the building will be two stories high, although the floor area is laid out on three levels in a split-level configuration: the northwest areas have a lower lobby area below the stage level and the south areas have floor areas above the stage level. Portions of the main lobby and the new theatre will contain tall single-story areas.

Portions of the existing Robinson Theatre will be demolished as part of the expansion. These areas include the existing lobby, restrooms, and control room (which will be undermined by adjacent excavation), the one-story offstage area directly to the south of the fly tower, and the south wall of the workshop area behind the stage and east of the offstage area. Although an attempt was made to minimize demolition of the existing lobby restrooms in the interests of reducing costs, this does not appear to be a practical approach. The extent of new wall construction around these areas and the adjacent excavation for the lobby impact the restroom areas significantly, and the effort required to shore up these areas during excavation and foundation construction would likely exceed their replacement cost.

The walls around the offstage area are part of the primary lateral force-resisting system of the existing theatre building, so their removal will necessitate the strengthening of the wall on the west side of the stage. The walls will be strengthened by adding 20" of reinforced concrete thickness to the wall piers on either side of the proscenium, with the goal of providing additional strength and stiffness equivalent to that of the wall portion that was removed. A new 8" concrete wall will also be needed at the south end of the existing stage to restore the lateral strength that is lost by the removal of the south walls. Temporary shoring will be needed to support the south edge of the existing roof of the workshop area behind the stage before new structural elements are installed to support this roof.

Gravity System

The gravity system for the new suspended floors at the stage, mezzanine, and second floor levels will most likely consist of conventional steel wide-flange beams framing into wide-flange girders supported by square hollow tube steel columns or concrete bearing walls. The structural steel will support 3-inch metal deck with 3 inches of normal weight concrete fill. We expect the floor beams to vary in size depending on span; estimated steel tonnage for the floors is approximately 12 pounds per square foot. This preliminary gravity floor framing system will utilize composite action with shear studs at uniform spacing to help control deflections and reduce overall steel tonnage. The typical deck span is 10 feet or less. The typical spacing of shear connectors is 1 foot on center with a maximum spacing of 2 feet on center. The concrete slab on metal deck will most likely be reinforced with conventional #4 reinforcing bar at 12 inches on center each way or welded-wire fabric throughout with reinforcing bars at crack-critical areas.

Roof decks will typically consist of 2" metal deck with 3" normal weight concrete topping, with typical deck spans of 8'. Concrete is needed in most of the roof areas for acoustic, vibration, or diaphragm strength reasons. The roof structure over the new studio theatre will consist of 48" composite open-web joists spanning approximately 65' between exterior precast concrete bearing walls. The roof over the lobby is currently planned to be architecturally exposed structural steel beams and girders. Supporting the lobby roof will be architecturally exposed built-up columns in tree-like branching configurations that contain many detailed member connections. Roofs in most areas other than the theatre and lobby will most likely consist of steel wide-flange beams framing into wide-flange girders or concrete bearing walls. Beams will typically be spaced approximately 8 feet apart, and estimated steel tonnage for the roofs will be approximately 10 pounds per square foot. Estimated steel tonnage will likely be higher in roof areas with architecturally exposed steel or areas that support mechanical equipment, such as over the costume shop.

The roof, tech level floor, and stairs of the east-west corridor just south of the existing Robinson Theatre will be supported by a series of steel tube columns adjacent to the existing theatre wall.

Exterior concrete walls are expected to be 8" thick precast panels and may be constructed either on-site or off-site. Interior concrete walls will be needed for lateral resistance in several locations, including around the elevator shaft, and will most likely be 8" cast-in-place concrete.

Seismic Design Criteria

For the design of the theatre addition, the governing code is the 1998 Oregon Structural Specialty Code. The latest addition of this Code is essentially the 1997 Uniform Building Code (UBC) with amendments. The seismic design criteria are based on the following information:

- Zone 3 ($Z=0.3$)
- Normal use facility ($I=1.0$)
- Soil Profile Type S_b

The design intent of the addition is to seismically separate it from the adjacent existing structures. The two buildings must be completely separated above the stage level so that no additional lateral forces are imposed on the existing Robinson Theatre. Seismic joints will be required at the west and south walls of the existing Robinson Theatre, including between the new control room and the west wall of the existing theatre. Joint sizes will vary depending on the elevation, but are likely to be a maximum of four inches wide at the roof level.

Lateral System

The primary lateral system for the theatre expansion will most likely consist of reinforced concrete shear walls at various locations in the building. All walls stack vertically in the building and continue down to the foundation. Walls will typically be 8" thick with #5 bars at 12" spacing each way. Some of the exterior shear walls, particularly around the scene studio, have tall, narrow piers and may require heavily reinforced boundary zones at the ends of each wall segment. Floor and roof diaphragms will consist of metal deck with normal weight concrete fill.

Concrete shear walls are currently planned to be located on the north side of the restroom/lobby area, the east wall of the lobby (separated by a joint from the west wall of the existing theatre), on either side of the vestibules entering Robinson Theatre, and around the elevator shaft. Shear walls will also be on all four sides of the studio theatre and around the scene studio/costume shop. A line of wall will be located on the south side of the main east-west corridor. The south and west walls of the studio theatre will be composed of alternating rectangular and T-shaped panels that create window openings between them. The panels will be connected at the corners with welded steel embed connections, and a continuous steel beam will be needed around the perimeter of the theatre roof to serve as diaphragm chords. The south wall of the scene studio/costume shop will consist of T-shaped panels only, without rectangular panels; this will necessitate the use of thicker, more heavily reinforced walls and heavy steel members framing the window openings.

The addition is currently configured with roofs at several different heights, each of which is generally rectangular in plan. Vertical lateral load-resisting elements, such as walls or bracing, must be located around the perimeter of each of these roof elements to provide a complete load path for lateral forces from the roof and floor levels down to the foundation. In a few locations, such as on the west side of the lobby, the building configuration does not lend itself to ideal placement of shear walls. In these cases it may be possible to transfer some lateral forces between adjacent roofs at slightly different elevations by means of short cantilevered columns and steel drag strut members. Configuration of the lateral load path in this manner should only occur where it is absolutely necessary. If this strategy is deviated from on a more widespread basis than is currently assumed, the result will be increased steel tonnage and more costly connection detailing.

Foundation System

The foundations for the theatre expansion will consist of conventional concrete spread footings. Most of the lobby level areas will require excavation to reach the desired grades. 10" thick concrete retaining walls will typically be needed around the perimeter of the expansion. The exception is along the west elevation, where the exterior grade will be approximately at the lobby level.

The building site is underlain by silt over a layer of blue sandstone. Some of the building elements, particularly tall, narrow shear walls, will need foundations that extend down to this sandstone layer to utilize its higher soil bearing values. In the current building configuration, the location of the east stairway will necessitate excavation into the sandstone. There is a potential for some savings in excavation costs if this stair does not extend down to the lobby level and if the lobby level does not extend past the limits of the studio theatre.

Part of the excavation will occur adjacent to the existing south wall of Robinson Theatre for a corridor at the lobby level. The existing wall is supported by concrete piers and footings that bear on the sandstone layer. Although we do not anticipate a need to provide gravity support for the existing wall during construction, the excavation will extend below the wall strip footing and some means of soil shoring will be necessary to avoid undermining the slab on grade floor of the existing theatre behind the wall.

The ground floor slabs on the lobby level and portions of the stage level will most likely be a reinforced concrete slab on grade, probably 5 or 6 inches thick and reinforced with #4 or #5 bars at 16 inches on center each way.

Stair and Miscellaneous Framing

The structural framing for all of the new stairs will most likely be steel channel stringers with sheet metal treads and landings filled with 2 inches of concrete topping. The stairs will most likely be hung from the steel framing. We anticipate that the stairs will be a contractor-designed item. We also anticipate that the walkable tension grid over the new theatre that supports lighting, etc., as well as the structure for the raised seating and any exterior curtain wall or cladding elements will be contractor-designed items.

MECHANICAL AND ELECTRICAL DESIGN

Project Goals:

One of the project goals for the University of Oregon's University Theatre is to design a sustainable building. The design team will review for consideration the following sustainable design guidelines into our design:

- The University of Oregon's Sustainable Development Plan
- The US Green Building Council's LEED Rating System
- The Four System Conditions of The Natural Step (TNS)
- The Oregon Office of Energy's SEED program

One aspect of sustainable design is a careful analysis of the building's energy use and the source of that energy. The project goal is to use no fossil fuels. The options to reach the sustainable energy source goal will be reviewed.

The mechanical systems that heat and cool the building are one of the major users of energy and, as a result, their selection has a significant impact on the sustainability of the building.

Water and Energy Budgets:

Water Budget:

A completely sustainable building would use no more water than the amount of rainfall that falls on its roof annually.

Energy Budget:

A completely sustainable building would use no more energy than the amount provided from the sun. The solar energy that hits the roof of our building would be the energy budget. Unfortunately; current technology allows only approximately 10% of this energy to be harnessed for use in this building. By implementing some of the systems described in this narrative, this energy use can be reduced by 20% to 50%.

Mechanical Design Assumptions:

Outdoor Conditions for Eugene, Oregon (Based on 2001 ASHRAE Fundamentals Handbook)

ASHRAE 1% Summer Design Conditions:	87°F DB/ 65°F WB (0.4% Summer Design is 91°F DB/ 67°F WB)
ASHRAE 99% Winter Design Conditions:	26°F (99.6% Winter Design is 21°F)
Range (Daytime high to nighttime low):	27.6°F (Good for night flushing)

Indoor Conditions:

Cooling Season:	76°F ±2°F for the majority of the occupied hours.
Heating Season:	70°F±2°F
Relative Humidity:	No humidity control.

Note: If the building were naturally ventilated the summer indoor design condition would increase to the low 80's. Keeping the offices and classrooms below the outside air temperature would require good summer shading and careful control to pre-cool the office in the morning and then let them "float" through the hottest part of the day with the windows closed. As the design progresses, we will calculate the number of hours that may be above 78°F.

Outside Air Requirements (1997 UBC Table 12-A, and ASHRAE Std 62-1999):

The air supply will vary from 15 to 20 CFM/person pending the space use.

HVAC

System Options:

The first step in designing a sustainable mechanical system is to reduce the cooling and heating loads in the building. This can be done by using thermally efficient windows, highly insulated walls and roofing, natural daylighting, and efficient lighting with dimmable electronic ballasts. This will serve to reduce the size of the mechanical equipment. Specifying equipment with heat recovery systems built in will then further reduce the energy required.

To meet the 20% energy saving required by the SEED program an energy model of the building will be constructed to determine the operating costs of each system. The results will be published in a report showing first cost, operating costs, maintenance costs, simple payback and life cycle costs.

Central Chilled Water:

The campus central chilled water plant is currently out of capacity. Instead of increasing the size of this plant, or adding a chiller to the new Theatre Building, the design strategy will be to minimize cooling loads and passively cool the building through natural ventilation that utilizes the building mass. This may be supplemented with mechanical ventilation. In areas where natural ventilation is not possible due to physical or structural restrictions, mechanical cooling will be provided.

An option for mechanical cooling is to store a volume of chilled water in the building during the night to be used during the peak times. It is anticipated the central chilled water system is only short of capacity during peak cooling hours and at night the system will have capacity to charge a chilled water storage system. The best system option will be reviewed and presented in later design phases.

Central Steam:

The campus boiler plant has adequate capacity to serve the heating load of the new Theatre expansion. 20 psi steam will be piped into the Theatre expansion from the nearby steam tunnel and will be converted to heating water by shell and tube heat exchangers. The heating water pumps will have variable speed drives and pump the heating water to various heating coils. Radiant panels for perimeter heat will also be investigated.

Natural and Mechanical Ventilation:

The climate in Eugene is very suited to natural ventilation. Even on the rare summer day that reaches the low 90s, the nighttime temperature is in the 60s. The current design would incorporate exposed thermal mass in occupied spaces. The Theatre expansion would be night flushed to “charge” this mass to provide a comfortable interior temperature even on warm summer days. In addition to the night flushing the design will consider the following options:

1. Operable Windows and/or perimeter louvers controlled by the occupants
2. Shafts to create a thermal stack effect.
3. Cross ventilation strategies (acoustics needs to be addressed carefully for these)
4. Mechanical fan assistance on peak days.
5. “Casablanca” style fans.
6. Winter ventilation through a 100% outside air unit with heat recovery.

Control System:

A Siemens DDC control system will monitor and control all HVAC functions and will be managed through a central computer station with a graphics interface. Night flushing will be incorporated into all mechanical options.

Exhaust Systems:

A rooftop exhaust fan will exhaust air from all toilet rooms, janitors' closets and copy rooms.

Specialty Systems:

CO₂ Monitoring and Occupancy Sensors:

The use of CO₂ monitoring and occupancy sensors are proposed to save energy and reduce the quantity of outside air required. CO₂ monitoring and associated controls are especially effective in the theatre areas.

Indirect/Direct or Direct Heat Recovery:

Code minimum outside air requirements will be met with a 100% outside air heat recovery system.

Fixed internal loads:

Areas within the new Theatre area that present a continuous high internal load within a small area will be addressed using DX cooling unit sized for efficiency of the load.

Campus Maintenance Staff Mechanical System Preferences

Note: The following information with respect building facilities and the new University Theatre has been gathered from previous visits to the U of O campus and discussions with campus staff. This information is generic and applicable to new systems and facilities.

1. VAV Systems with Return Fans.
2. Return air systems are all ducted.
3. Steam pressure relief valves are all lever arm controlled.
4. Campus controls are standardized around Siemens Controls with pneumatic valve actuators and electric damper actuators (Belimo).
5. Heat pipe systems are preferred for heat recovery systems.
6. Natural ventilation with a night flush is an acceptable alternative to air conditioning.
7. Air handling units require a heating coil.
8. Exposed rooftop units are not permitted; a penthouse for equipment is preferred.
9. Chilled water piping (if required) shall be schedule 80 PVC or copper.
10. Heating water piping shall be steel schedule 40 or copper (mechanical coupling are not allowed). Brass unions are to be used between steel and copper piping.
11. Fire protection piping shall be schedule 40 piping only.
12. Steam piping shall be schedule 40 and condensate is schedule 80 piping.
13. The following systems where specifically not desired:
 - a. Fan Coil Units
 - b. Fan Powered Terminal units
 - c. Electric heating

FIRE PROTECTION

A new 6" fire service will be provided for the University Theatre. The building will be totally sprinkled in accordance with NFPA 13 using a wet pipe sprinkler system. Fire department connections will be provided on-site at locations accessible by fire department vehicles (pumper trucks) and in close proximity with fire hydrants.

PLUMBING

Sanitary Waste: A 4" sanitary waste pipe will be stubbed out of the University Theatre and connected to the existing sanitary sewer. Sanitary waste piping extending out beyond 5-feet from the building will be done as part of the Civil Package.

Storm Drainage: Building storm drainage will be provided thru internal roof leaders and will connect into the existing storm system.

Domestic Water: A new water service will be provided to serve the University Theatre. The connection will tie into the water service 5-feet outside of the expansion and enter thru the ground level mechanical room. The water service backflow device will be provided within a vault onsite. Additional backflow devices will be provided as required by code to isolate mechanical equipment from the potable water system.

Domestic Hot Water: Domestic hot water will be produced by a shell and tube heat exchanger from campus steam. An electric hot water heater will be provided for the summer months. A pumped, recirculating, hot water system will return hot water to the hot water heater to assure hot water in the system at all times.

Natural Gas: The building does not require natural gas.

Fixtures: Water conserving water closets and low flow lavatories will be specified. Waterless Urinals are being investigated and will be considered for the project pending their approval for use in Oregon.

ELECTRICAL SYSTEMS

Power Distribution

1. Normal Service: A new electrical service to the University Theatre will be provided. A transformer will be located southeast of the project site, adjacent to the existing 500kVA transformer feeding Robinson, Villard and Deady Hall. The 12,470 transformer primary will be derived with load-break taps at the existing 500kVA transformer. Service voltage will be provided at 480Y/277V to the new theatre.
2. Main Distribution: The main service board is proposed to be located in the lower level of the new facility in a dedicated electrical room with emergency transfer switch (ATS), isolation transformers and other general purpose panelboards. Power will be distributed at 480V where load type permits to keep feeder size and costs down. Step down isolation transformers as required by the theatre criteria will be provided to serve the theatre electronics (lighting dimmers, sound, video, communications and company switches) at their lower voltages (208Y/120V) and provide the necessary isolation.
3. Emergency Service: Emergency power will be provided to support Life Safety loads (egress, exit lighting). 1008 relays will be used to switch designated house and other dimmed theatre light circuits to provide path of egress illumination. Due to the estimated loads, emergency power for the facility Life Safety loads will be from the campus central emergency power system.
4. Theatre Lighting Power: Power for theatre lighting dimmers will be provided thru dedicated panels fed thru an isolation transformer. Transformer shall have a K-factor rating of 13. Transformers will be located as near as possible to the load served and be mounted on house keeping pads with vibration isolation to prevent noise transmission to adjacent spaces.
5. Sound, Video and Communications (SVC) Power: SVC power will be provided from a panel fed from its own dedicated isolation transformer. The SVC panel will be provided with an isolated ground bus and loads down stream will be wired with isolated ground circuits and receptacles with isolated ground conductors in addition to safety ground conductors.
6. Company Switch: A dedicated feeder will be provided to the theatre area with a large amperage pin-and-sleeve receptacle for the "Company Switch".
7. HVAC Loads: Mechanical loads will be provided thru a panel dedicated for such loads.

Lighting:

One of the project's lighting design goals is to maximize the use of daylight to illuminate the spaces. Because excess light of any kind is in conflict with black box theatre, the windows will be covered during performances. However, the theatre is equally important as an instruction space. Therefore, the shades can be open during the day to take advantage of available daylight. Windows into areas outside of the theatre proper (costume, shop, set assembly) will be designed to maximize the use of daylight.

Optimizing daylight contributions require providing the occupants with the knowledge and tools to control their own environment to make it successful. This involves manual dimming systems for electrical lighting in private offices, dual switching in some areas, automatic dimming in classrooms and manual shades to control daylight.

A sustainable building design typically incorporates daylighting techniques to conserve energy and lower operating costs. Daylight harvesting supplements the electric lighting system, reducing the energy consumed and heat rejected by luminaires into the building. This lower heat rejection also simplifies the HVAC requirements for the space, further conserving energy needed to operate the building.

The non-theatrical lighting system will consist of luminaires, ballasts, lamps, and controls to provide a complete and operational system. Current energy efficient technologies will be used wherever possible. The Oregon Energy Code will be used as a design minimum, but it is anticipated that the sustainable systems implemented will substantially exceed that standard.

Linear fluorescent lamps used throughout the building will be T8 or T5 fluorescent with electronic ballasts. Compact fluorescent lamps and ceramic arc-tube metal halide lamps will be used in both indoor and outdoor areas. Low mercury fluorescent lamps will be specified for indoor areas. Long life lamps will be used wherever possible.

Where daylighting controls are used, luminaires with a combination of indirect and direct distribution will be specified to 'blend' the electric light and the daylight, masking the transition between the two sources.

Maintenance concerns are always an issue. Luminaire locations will be coordinated with the owner and architect. The majority of luminaires will be accessible by ladder for maintenance, but lifts may be required in areas with high ceilings in the theatre and set assembly.

Lighting Criteria

Illumination Levels: Lighting will be designed to IES standards for illumination levels.

<u>Area</u>	<u>Horiz Ltg Level</u>	<u>Controls</u>
Lobby	10-25	photocell dim or switch
Offices	40-50	manual switch and occupancy
Shop, prop assembly	40-50	manual switch and occupancy
Costume	40-50	manual switch and occupancy
Green Room	20-40	manual dim/switch and occupancy
Theatre utility spaces	(per Theatre Consultant direction)	
Corridors	5-15	photocell or time of day sweep
Stairwells	5-15	photocell or time of day sweep
Utility Rooms, Toilets, Storage	10-20	occupancy sensor
Exterior (vehicle)	1.0-2.0	photocell
Exterior Walks/Plaza	0.1-2.0	photocell

Telecommunications

Telecommunications is proposed to be extended from the Villard Hall MCC. Within the building, voice, data, and CCTV services will all use CAT 5E cables for distribution. A typical office and the control rooms will be provided with two faceplates, four CAT 5E to each faceplate.

Security

Security System provisions have not been defined. It is proposed that rough-in be provided consisting of conduit into doors frames, provisions for motion detectors, annunciator panel, and control panel to allow the future installation of a complete intrusion alarm system to protect the building during non-occupied periods.

Fire Alarm

The Villard Fire Alarm system will be extended to cover the University Theatre. The system is anticipated to include individually addressable detectors, manual stations, sprinkler flow and tamper switches.

Existing Building Observation:

Note: The following observations are based on a brief 5/15/02 walk-through of these buildings with the facilities maintenance staff.

Robinson Theatre

The Robinson Theatre was built in the late 1940's. The building consists of classrooms, set shops, storage and the performance theatres.

A. Mechanical Systems:

Description: The building is served from the central campus 20 psi steam system and by a 2-½" chilled water piping system which serves the classroom areas. The main theatre is served by a forced air heating and ventilation system that is not used during performances because of fan noise. The main theatre is not used during the summer because the theatre is too warm.

General Conditions: The main theatre system is past its serviceable life and does not function as intended.

B. Electrical System

Robinson Theatre: Lighting system uses a lot of fluorescent wraparound luminaires for lighting. The theatre uses both HID and fluorescent lightings for stage prep, prop set up. The HID sources are very harsh on the eyes as the staff works at all visual angles. Exit lights have been upgraded to LED type. Activities in the shop/prep area are very compressed and panels need proper clearance from activities in the space.

Villard: The electrical service to Villard has been recently upgraded with Siemens equipment. The service has a 1400A main circuit breaker on a 1600A bussed board. The Robinson Theatre is fed with an 800A feeder. The fire alarm system in Villard is a recent upgrade consisting of a Cerebus addressable system. This system provides coverage for Villard and Robinson.

Exterior Lighting: Exterior lighting uses a historic style light fixture consisting of 15' foot tall single ornamental with a polycarbonate acorn style lens.

THEATRICAL DESIGN

PART I. GENERAL

- A. The primary purpose of this report is to establish recommended operating criteria, recommended theatrical systems, elements and equipment for the University Theatre project.
- B. These recommendations reflect the initial detailed project program and project development, as indicated by our participation in meetings, discussions and correspondence with the Architects, Consultants, and members of the University Committee.
- C. Selections of appropriate systems and equipment are further based upon the following criteria:
 - 1. Functional viability, systems must be capable of quickly changing from one configuration to another during a brief change over period.
 - 2. Economy, for both initial installation and maintained operations during the life of the building.
 - 3. Safety for operators, technicians, performers and public.
- D. The systems within the +/-150-seat variable form Studio Theatre will be designed to primarily support performing arts productions at the University of Oregon, and secondarily other University functions.
- E. The stage will feature a resilient floor for the protection of dancers and actors. The overhead "tension grid" (discussed below) will support safe and effective theatrical lighting positions for all performances, and will provide access to suspension points for scenic elements.
- F. The information below describes the systems that enable this facility to meet the performance requirements. These descriptions should serve as the conceptual project criteria for the University Theatre.
- G. All systems are building-integrated systems unless otherwise noted as FF&E (fixtures, furniture and equipment).

PART II. STUDIO THEATRE

A. Rigging - Tension Grid / Catwalk System

1. A tension grid and perimeter catwalk walking surfaces will be suspended below the room's ceiling. A tension grid surface is fabricated of taught aircraft cable woven on 2" centers. This allows access to all points above the Studio Theatre. Rigging lines are attached to the building structure above the grid and then pass through the grid to the floor. This solution has the advantages of safely supporting quick changeovers without the use of ladders for rigging purposes (thereby allowing work to go on below). The surface is sufficiently transparent to sound for audio devices.
2. The Technical Gallery will be constructed with pipe lighting rails allowing a walking surface adjacent to linear lighting positions.
3. The walls below the Technical Gallery will have "Unistrut" mounting channel firmly affixed to the walls on a regular interval to be used to attach lighting or scenic elements.
4. Over working head height at the Tension Grid there will be a grid of steel or Unistrut with a rated live load capacity appropriate for the suspension of scenic elements and equipment. An inventory of loose rigging hardware will be provided.

B. Production Power

1. In addition to the power required for the building's in-house systems, the following production power connections will be provided.
 - a. One 100A, 120/208VAC, 3-phase "company switch" receptacle for rigging or lighting power. The 100A receptacle will be heavy duty safety-protected receptacle, provided with power distribution boxes ("distro-box") for breakout into various forms of lower amperage power. The company switch will be located at the tension grid level.
 - b. Two 50A, 120/208VAC, 1-phase receptacles for audio power. The 50A receptacles will be heavy duty and safety-protected receptacles, provided with power distribution boxes ("distro-box") for breakout into various forms of lower amperage power.

C. Fire Curtain

1. For a theatre of this type, a fire curtain is not required, however a complete sprinkler system will be provided. See Architect for further information.

D. Projection Screen Assembly

1. For the formal presentation of film, a projection screen will be provided.

E. Theatrical Draperies (FF&E)

1. In the Studio Theatre, an inventory of black drapery legs and a full width white lino cyclorama will be provided.
2. All curtain fabrics will be certified fire retardant, treated to comply with pertinent national and local building and fire codes.

F. Variable Acoustics

1. Manually operated tracked black velour draperies will be provided at the upper perimeter walls for use in adjusting the acoustic reverberation time of the Studio Theatre. This will give the Users a range of room responsiveness within this educational and experimental facility.

G. Theatrical Lighting Control Systems

1. Positions and Distribution

- a. The theatrical lighting system will provide the most advanced technology available as well as means to incorporate future advancements over the system's life. The system design will consider the User's projected operating procedures and capabilities. The system will be configured as a tool in support of creative production design and education.
- b. The tension grid as described above allows access to all points above the Studio Theatre. Theatrical lighting fixtures are readily mounted to pipe railings and stanchions above the tension grid. By placing the lens of the fixture adjacent to the wire grid, stage lighting may be provided through this walk-on surface without shadowing on actors or scenery. A perimeter catwalk will provide additional lighting, projection and audio device mounting positions.
- c. A number of distribution locations will be located at the floor level of the Studio Theatre. These location will allow fixture to be positioned at floor level ether on portable light ladders, booms or within the scenery itself.

2. Dimming and Control

- a. Lighting positions will be circuited with approximately 170 branch load circuits which terminate at dimmer racks in the dimmer room. These circuits will be 20 amp circuits. The dimming system will be based on a "dimmer per circuit" concept, utilizing a small capacity dimmer for each circuit, and will thus not require circuits to be patched for use. Care will be taken to assure that there is an appropriate level of circuit distribution provided for each potential performing area format.
- b. The dimmers will be solid-state and digitally controlled from a main console which can be located in the control room or at various technical positions at the floor level. All control devices will be interconnected on an Ethernet based control network. The consoles will support a hand-held focus remote controller which will provide basic control access directly from various lighting positions for the simplification of focus, service sessions and demonstrations.

3. Production Control Panel

- a. The Production Control Panel is the primary backstage center for all controls that relate to the basic operation of the Studio Theatre. This panel typically contains controls for house lighting, work/rehearsal lighting, production intercommunications and paging, and other production related items.

4. Cue Light Signal System

- a. Red signal lights, operated at a portable Auxiliary Control Panel, will be strategically located in backstage technical and performer waiting areas. These signal light stations will consist of signal lights and receptacles for portable plug-in units which can then be placed where desired. The signal lights will operate on 120VAC, allowing the receptacles to also be used as non-dim circuits, which can be integrated into a lighting console cue.

5. Lighting Control Data Network

- a. A small, dedicated Ethernet network will be included in the Studio Theatre for the interconnection of the theatre lighting console as well as other theatrical lighting equipment.

6. Production Power

- a. See description for theatrical rigging systems above in paragraph B for production power connections.

H. Theatrical Lighting Fixtures (FF&E)

1. Lighting for theatrical performances will be portable lighting instruments clamp-mounted on pipe rails above the tension wire grid and also from Technical Gallery lighting positions, low wall positions and floor level booms.
2. A full complement of fixtures, with varied wattages and focal lengths suitable to specific functions and respective mounting locations will be provided. All theatrical lighting, with the exception of followspots, will utilize quartz-halogen or tungsten-halogen lamps.
3. Two followspots will be provided and will be selected for placement in various locations in the Studio Theatre.

I. House Lighting

1. See electrical documents for house lighting provisions.
2. House lighting will be controlled at the theatrical lighting control console, the production control panel, as well as through usher stations located at each entrance to the Studio theatre. Controls typically include zoned and master controllers, keyed take-command switches, and all-on/normal pushbuttons.

J. Rehearsal and Work Lighting Provisions

1. Work lighting will be provided by wall and structure mounted fixtures. This system provides lighting in technical areas during non-performance times. Work lights will be centrally controlled as well as controlled at entry points to any given area.
2. Rehearsal lighting includes non-dimmed semi-permanent theatrical fixtures for use limited to rehearsals or basic presentations. A switch control section for rehearsal lights will be included in the Production Control Panel. Rehearsal lighting will also be controllable through the theatrical lighting control console.
3. "Blue lights" will enable low floor illumination of back stage circulation areas for performers and stagehands.

K. Stage Floor

1. The construction of the stage floor is very critical and is considered a working system. The floor will be a resiliently supported dance floor of double tempered Masonite top surface construction, and will provide cushion for dancers while maintaining rigidity for the prevention of floor bearing 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 a 250 pound point load.

L. Seating

1. All audience seating will be on padded, stacking, loose chairs. All seating accommodations for the disabled will be provided.
2. A system of portable riser platforms will be provided. This platform system will allow the seating in the Studio Theatre to be reconfigured, as the needs of the various productions require.

M. Audio Systems

1. The sound system will provide sound reinforcement and archival recording for live speech, theatrical and some music events, as well as playback of prerecorded audio (Computer hard disk, CD, tape, etc.) for the range of performances including:

Live theatrical events, including drama, musical theatre, dance, etc.
Live musical events including, popular music, jazz, etc.
Lectures, speeches and narration
2. The system will also provide multi-channel theatrical sound effects recording and playback.
3. Loudspeaker systems will provide even coverage of the entire audience seating area. A 24-channel mixing console will be provided for use at both the control room and house sound mix positions. The console will accommodate various live and recorded program inputs during performances and presentations. Other playback, archival recording and signal-processing equipment will also be provided.
4. A complement of portable equipment including microphones, loudspeakers, cables, patch cords and stands will be recommended for inclusion in the contract documents or listed for direct purchase by the Owner.
5. Note: The sound system will not provide emergency paging capability. Emergency paging, if used on the project, must be provided by independent systems.

N. Assisted-Listening System for the Hearing Impaired

1. An assisted-listening system will be provided, using campus standard FM radio transmission. A number of portable receivers will be 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.

O. Production Intercom System

1. A local four-channel intercom system will provide two-way voice communication between various back-of-house and front-of-house technical positions. Portable belt packs, headsets, and loudspeaker "biscuit" stations will be provided to support the primary activities of each performance space.

P. Program Monitoring / Paging System

1. The program monitor/page system provides audio performance monitoring and paging to back-of-house areas. Front-of-house paging is not currently anticipated. Audio will also be fed to the video distribution system and to the assisted-listening systems.
2. The communication system will not provide emergency paging capability. Emergency paging, if used on the project, must be provided by independent systems.

Q. Production Video Distribution System

1. A basic production video system, providing direct video and modulated video & audio feeds, will be used for technical production monitoring of events and rehearsals. An industrial-quality color video camera will be able to be located as required to provide a full stage view. Provisions will be made for an infrared camera to permit observance of scene changes in blackouts.
2. Video distribution equipment will route signals to technical production areas and designated front-of-house positions for latecomer video. A split from the audio monitoring system will be modulated with the video source signal, allowing standard television receivers to receive the video & audio feed on a standard TV channel.

R. Cabling Infrastructure

1. SVC systems receptacle panels will provide industry-standard receptacles for connection of microphone, line-level, loudspeaker, video, intercom, control and other SVC equipment with the house SVC wiring infrastructure. The Control Room will house patch panels that provide audio and video tie line points between Studio Theatre and other designated rooms in the facility.
2. The systems wiring infrastructure will primarily accommodate in-house fixed and portable equipment. Cable passes and other temporary wiring routes will be provided to accommodate the additional requirements of touring, rental or other portable equipment. Microphone and line-level audio signal distribution will be effected using traditional shielded twisted-pair copper wiring. An empty conduit or raceway system should be considered, designed to support the future installation of fiber optic cabling or additional standard copper cabling. Should a method of fiber cabling be a recognized standard at the time of design and construction of the project, it will be incorporated into the design of the cable infrastructure.

ELECTRICAL AND HVAC LOADS & CRITERIA FOR THEATRICAL SYSTEMS

PART I. THEATRICAL SYSTEMS ELECTRICAL SCOPE

- A. In general, theatrical systems are specified under Division 11, and therefore the design, documentation, coordination and Construction Administration (CA) thereof are the responsibility of the Theatre Consultant. Power infrastructure and connection is the responsibility of Division 16, and therefore the design, documentation, coordination and CA thereof is the responsibility of the Electrical Engineer. Control and low voltage wiring will be designed and documented by the Theatre Consultant, but conduit will be sized and documented by the Electrical Engineer. The scope of wiring and installation varies between sections, as delineated by the following:
1. **Theatrical Rigging and Variable Acoustics Systems:** All equipment listed in these sections will be supplied and installed by the Specialty Sub-Contractor and will be included in our contract documents unless otherwise noted. Other than the connection panels listed below, the electrical loads anticipated for this project are relatively few. *All conduit, wire, distribution panels, etc. are specified and supplied under Division 16.*
 2. **Theatrical Lighting Control Systems:** All equipment in this section will be furnished to the project site by the Theatrical Lighting Manufacturer and will be included in our contract documents and system budget recommendations unless noted. *All installation, conduit, wire, distribution panels, disconnects, etc. are specified, supplied and installed under Division 16.*
 3. **Architectural Lighting:** Architectural lighting for public areas will be designed by the architectural lighting designer. Dimming of the house lights and control of these lights will be a part of the Theatrical Lighting Control System, and therefore documented as described above in Division 11. *All emergency lighting transfer is provided and installed under Division 16, and therefore the design, documentation, coordination and CA thereof is the responsibility of the Electrical Engineer.*
 4. **Miscellaneous Stage and Technical Areas Power:** The locations and type of general purpose power specific to theatre function will be established by the Theatre Consultant. *Power infrastructure supply and connection is the responsibility of Division 16, and therefore the design, documentation, coordination and CA thereof is the responsibility of the Electrical Engineer.*
 5. **Stage and Technical Areas Work Lighting:** The locations, type and control of stage and technical areas work lighting specific to theatrical function will be established by the Theatre Consultant. *Supply and connection of fixtures and infrastructure is the responsibility of Division 16, and therefore the design, documentation, coordination and CA thereof is the responsibility of the Electrical Engineer.*

6. **Sound, Video and Communication (SVC) Systems:** All equipment in this section will be furnished to the project site by the SVC Contractor and will be included in our contract documents and system budget recommendations unless noted. SVC Contractor will supply and install all equipment and provide, pull and terminate all wire. *All conduit, back boxes, pull strings, distribution panels, disconnects, etc. are specified, supplied and installed under Division 16.*

PART II. ELECTRICAL POWER LOADS

A. INTRODUCTION

1. Electrical loads are estimated maximum demand excluding starting loads. Loads are given in HP for motors and in kW for other equipment. Amperage is indicated where industry standards exist. *Conversion to ampacity and determination of wiring and protection sizes is the responsibility of the Electrical Engineer.*
2. Performance related equipment will be idle much of the time, but during periods of high activity most of it will be in use simultaneously. Diversities between various systems are noted where applicable.

B. THEATRICAL LIGHTING TRANSFORMERS

1. TRANSFORMER TL-1

- a. This transformer is dedicated to the theatrical lighting dimmers and house architectural lighting dimmers for the Studio theatre. The transformer should be a Delta-Wye transformer, with a K13 rating to accommodate the harmonics created by electronic dimming. The transformer should be a 480V primary with secondary at 133V with four 2% taps (1 above and 3 below) in order to compensate for voltage losses in dimmer chokes and long branch-circuit loads. This transformer should feed only the main dimmed lighting panelboard TL-A for the Studio Theatre. Final size of the transformer to be determined by the electrical engineer in coordination with Auerbach + Associates.

2. TRANSFORMER TL-2

- a. A second transformer must be provided for all other lighting panels and company switches. This transformer may feed other building lighting systems that are not likely to create high harmonic currents.

3. SVC SYSTEM TRANSFORMER

- a. A dedicated isolation transformer will be required for SVC systems. Assume 75kVA.

C. THEATRICAL LIGHTING PANELS

1. PANELBOARD TL-A

Location: Dimmer Room
Purpose: Studio Theatre Lighting Dimmers and Architectural Lighting Dimmers
Notes: Feed from Transformer TL-1. Appropriate fault current protection to be determined by Electrical Engineer

STUDIO THEATRE – THEATRICAL AND HOUSE LIGHTING DIMMERS

Supply Size: 150kW
Configuration: 120/208-volt 3-phase 4-wire & equipment ground conductor.
(1) - 600-amp feed with circuit protection; dimmer racks will be bussed together. Feeds and protection are sized for the potential of a single rack being heavily loaded.
Notes: Total dimmer capacity is substantially larger than required supply. Diversity is taken at each dimmer rack, as well as main switchboard.

Feeders shall be copper. Feeder neutral should be sized as a current carrying conductor and oversized by a factor of 2. Approximate maximum dimmer rack dimensions are: 48" W x 24" D x 86" H for the two, and a total weight of 2000lbs. All dimmer racks require 12" clear space above for cooling air circulation and 36" clear space in front. Feeders must come from below and branch loads must come from above.

Architectural house light dimmers and lobby dimmers are included within the theatrical dimming. Architectural lighting loads should be estimated by the Electrical Engineer in collaboration with the lighting designer. The house light loads are not likely to occur at the same time as a large theatrical load.

If determined by the Electrical Engineer, a 3-phase 120/208 volt emergency power source via an Emergency Lighting Transfer Switch to selected house lighting dimmers may be used. In this case, an Emergency Lighting Transfer Switch shall be provided that shall comply with NFPA110, UL 1008 and would be located in the dimmer room. Alternatively, battery pack emergency lighting would be provided. Emergency lighting systems are to be designed by the Electrical Engineer and provided under Div. 16.

- a. The theatrical lighting dimmer racks will be the terminus of branch circuit distribution. There will be approximately (170) 20A circuits and (3) 50A circuits wired (with individual neutrals) to wiring devices throughout the Studio. Approximately 75% of the circuits are located at the catwalk/tension grid levels, and 25% are located along the walls at audience level.
- b. A network of control wiring will be distributed throughout the Theatre and Studio at all lighting positions (approximately 12 locations in the Studio). This dedicated Ethernet network will terminate at a patch panel/hub location in the dimmer room. One 20A, 1Ø, 120VAC duplex outlet is required adjacent to each control receptacle panel to provide power to the lighting control device.
- c. Theatrical lighting dimming and control system will include control of the house lighting fixtures and the lobby lighting fixtures (this is termed the “architectural lighting control system”). Selection of the architectural lighting fixtures is not a part of the Theatrical Lighting Control specification.
- d. Work lighting should be low voltage relay controlled from several locations in the Studio. *Fixtures, local controls and relay cabinets would not be a part of the theatrical lighting control specification and should be included under Div 16.*

D. THEATRICAL GENERAL PURPOSE LIGHTING PANELS

1. General Information

- a. The following panel is located in the building’s technical support spaces to provide general service power for lighting equipment, motors, tools and controls. These panels are fed from transformer TL-2 or from the main building switchboard, they are not fed from the isolation transformer TL-1. Panel sizes reflect theatrical equipment only. Panels are provided and installed under Division 16.

2. Panelboard G-1

Location: Studio Dimmer Room
Purpose: Non-dimmed lighting and general service loads
Diversity: Approximately 50% simultaneous use with Theatrical Dimmers.
Configuration: 120/208-volt 3-phase 4-wire & equipment ground, 100-amp main
Notes: Stage work lighting to be developed by Auerbach + Associates and Electrical Engineer. Final load to be determined as part of final design.

E. COMPANY SWITCHES

1. Company switches are fused/circuit breaker protected disconnects to allow the temporary installation of theatrical equipment. A certain amount of diversity between the installed system and company switches is assumed. This equipment is specified and installed as part of the Division 16 work. Auerbach + Associates will assist in specification.

2. CO-PL-1

Location: Studio Tension Grid Level
Purpose: Lighting Effects, chain hoist power, stage machinery
Configuration: 120/208-volt 3-phase 4-wire & equipment ground, 100-amp heavy duty "pin and sleeve" fused and safety-protected receptacle.
Feed: TL-2
Diversity: Approximately 80% simultaneous use with Theatrical Dimmers.
Notes: Mating portable power distribution box ("distro-box") for breakout into various forms of lower amperage power will be provided under loose equipment Section 11065.

F. SOUND, VIDEO AND COMMUNICATION (SVC) SYSTEMS

1. SVC Systems equipment for the Studio will be idle much of the time, but during periods of high activity most of it will be used simultaneously.
2. Loads given are anticipated maximum demands, including anticipated diversities within each system. Additional diversities between the various systems are noted where applicable. Any code required de-ratings or start-up loads are not included in the loads given.
3. Amperage is indicated where industry standards exist. Otherwise, conversion to amps and determination of wiring and protection sizes are the responsibility of the Electrical Engineer.

4. Technical Power Panel SC-1A

Location: Studio Control Room
Purpose: SVC Systems equipment racks as well as stage receptacles
Supply Size: 50 kW (approx. 80% of maximum connectable load)
Configuration: 120/208 volt 3-phase, 4-wire & equipment ground & "SVC Systems" isolated technical ground, 125-amp main.
Notes: An insulated bus is required for "SVC Systems" isolated technical ground, bonded to the "SVC Systems" isolated technical ground busbar in Distribution Panel SC-1.
Must feed only SVC Systems equipment. No exceptions.
All SVC Systems circuits & receptacles must have "SVC system" isolated technical grounds. At the source of the isolated ground network, a single connection will be made to the building safety ground.
Include 10% spare 20 amp branch circuit breakers (minimum of 1), and 25% additional space in technical power panel for future breakers.

5. SVC Systems Isolated Ground Technical Power

- a. Dedicated isolated technical ground power must be provided for all SVC Systems. When possible, it is recommended that a portion of the SVC system be capable of operating from the Emergency Power System, specifically that portion providing stage communication to technical personnel.
- b. The integrity of the isolated technical ground starts at the connection to the earth itself. The ground connection must be at a point that provides a very low-impedance, noise-free path to the earth. It is often possible to use incoming water mains or building steel as the ground connection, but sometimes ground rods must be driven into the earth.
- c. Once the clean ground source-point has been established, it must be tied to a ground distribution system. The ground source-point is connected by insulated wire to each local circuit breaker panel that serves audio equipment. The ground connections must be insulated from all other grounds. The feeds to the technical power breaker panels should be in a "star" configuration and should not loop from one panel to the next panel.
- d. At each breaker panel the technical isolated ground is brought to a barrier buss which is insulated from the panel itself. The green safety ground wires from each duplex outlet are brought to this buss. The white neutral lines from the duplexes are brought to the standard neutral buss in the panel, which is electrically bonded to the panel. The duplex outlets must be hospital-grade with isolated technical safety ground.

- e. Care is required to prevent accidental ties between technical ground and other grounds. The safety ground on SVC System equipment is tied to chassis and the chassis is bolted to the equipment rack. This requires that the equipment racks not be connected to any ground other than the isolated technical ground. This includes all incoming metal conduits to the equipment racks.
- f. Typically, we ask the electrical engineer to specify the work of the electrical contractor. The electrical contractor provides and installs all of the empty SVC conduit, power feeders, clean power units, breaker panels, duplex outlets, isolated technical ground system, etc. required for the SVC Systems. The SVC contractor is responsible, as far as power and ground are concerned, for providing all of the power receptacles and grounding busbars within the equipment racks (power and grounds within the racks are usually shop-fabricated before the racks are delivered to the job site). The electrical contractor must then provide the power conduit and wiring, and terminate all AC power feeds to these equipment racks.

PART III. ADDITIONAL ELECTRICAL INFORMATION

A. WORK LIGHTING

- 1. Catwalks/Tension grid to be illuminated with compact fluorescent jelly jars at +/-15' o.c.
- 2. Studio floor area worklight is to be provided by fluorescent fixtures mounted over head height of the tension grid level. Fixture housings shall be completely black and paracube louvers installed to minimize the visibility of the fixtures from the floor.
- 3. All work lighting will be controlled via low voltage switch locations at the entry points of each area as well as at a central location in the control room. See theatrical lighting control system description above.

B. RUN LIGHTING

- 1. The Studio will have compact fluorescent blue walkway "run" lights at the catwalks that will be on the low voltage relay control system.
- 2. Lighting spill and intrusion shall be controlled at all entry points to the Studio with the use of vestibules ("sound and light locks" or "SLL") lit by incandescent downlighting (at least two lamps per SLL) on the dimming system. In addition, walkway lighting may also be provided in the SLL's.

C. BACKSTAGE ROOMS

1. All dressing and make-up counters shall have fixtures such as a common mirror vanity light with cages per NEC. Every two stations shall have one dedicated 20A power receptacle (Stations can be calculated at 2'-6" each). Dressing counter power must be switched with an indicator light in the hallway per NEC requirements.
2. The Costume Shop will require power for steamers, sewing machines, dye vats and hookups for washers and dryers per program.
3. The Scene Shop will require power for small and large tools, dust collection and welders.
4. The Loading Dock area will require power for heavy shop tools.

PART IV. HVAC LOADS FROM THEATRICAL EQUIPMENT

A. INTRODUCTION

1. Heat loads are estimates based on the expected use of the various performance related systems. Personnel and Audience loads are not included. All information is based on design information currently available, and is provided to allow design parameters for the air handling system to be calculated.
2. Theatrical Lighting is the principle source of heat loads for the Studio Theatre. Two estimates for theatrical presentations are given. The "Peak" figures are based on requirements for bright scenes and major lighting effects which may last approximately 15-20 minutes. The "Average" figures are based on an average load over an entire performance.
3. Motorized Theatre Equipment has a minimal effect on the stage and auditorium, and can be considered to be included in the figures given.

B. STUDIO THEATRE

1. Equipment Peak Load: 58 kW
2. Equipment Average Load: 28 kW
3. Note: Equipment loads generally distributed as follows:
75% at tension grid level
25% at audience level

C. DIMMER ROOM (3% of equipment loads)

- a. Equipment Peak Load: $58 \text{ kW} \times .03 = 1.74\text{kW}$
- b. Equipment Average Load: $28\text{kW} \times .03 = .84\text{kW}$
- c. Notes: Maximum ambient temperature of 80°F. Maximum 60% relative humidity.

D. CONTROL ROOMS

1. Heat loads vary tremendously in equipment and control rooms, depending on usage. Electronic control equipment is very sensitive to temperature and humidity above specified working ranges. The equipment and control rooms must be maintained at an ambient temperature of approximately 75-degrees Fahrenheit, at a maximum 60% relative humidity, even during periods when the majority of the building is not in use.
2. Lighting control equipment in the control room typically only includes loads akin to two computer terminals, and as such do not represent a significant contributor of heat.
3. Two projections for equipment heat loads are given. "Average" figures are based on the average current drawn over an entire performance lasting two to three hours. "Peak" figures are based on the current drawn for brightly illuminated scenes or very loud amplification levels, which last no more than 30 minutes. Projected heat loads from the SVC Systems equipment are based on electrical and heat loading data for power amplifiers, by far the largest heat producers of any of the performance equipment.
4. Projected "Average" and "Peak" occupancy numbers are also given, based on the minimum and maximum number of personnel expected to use these spaces during theatrical presentations.
5. The equipment and control rooms must be kept comfortable throughout the entire range between "Average" and "Peak". User operable controls in each room should be provided to keep the room comfortable during the "Peak" periods.

6. Auditorium Control Room

a. Equipment Load

(1) Average 2 kW

(2) Peak 4 kW

b. Occupant Load

(1) Average 2 people

(2) Peak 4 people

E. ARCHITECTURAL LIGHTING FIXTURES

1. The total potential electrical load from the architectural lighting fixtures within the Auditorium space should be estimated by the Electrical Engineer in collaboration with the architectural lighting designer. All fixtures will utilize incandescent sources. It is assumed that the architectural lighting and the theatrical lighting will not be used concurrently for long durations.

ACOUSTICAL DESIGN

A. Acoustical Function / Improvements

1. Studio Theatre

The performance space will provide a very quiet, neutral acoustical environment with low reverberation times conducive to excellent speech intelligibility and audio playback. The space will be acoustically “non-directional” to support flexible staging.

2. Teaching, Public, and Support Spaces

All teaching, public, and support spaces will be appropriately quiet and include moderate amounts of sound-absorbing material to provide comfortable acoustical environments for teaching and/or gathering.

B. Sound Isolating Components

1. Critical Space Separations

Corridor separations between the Robinson Theatre and the Studio Theatre and between the Scene Shop and both Stages will be provided.

2. Door Vestibules (i.e. Sound/Light Locks)

Vestibule entries will be provided between both Theatres and their respective Lobby areas.

3. Shop Spaces

The Scene Shop will be isolated from both Theatres/Stages by corridors and multiple sets of loading doors. The Set Assembly area will be isolated from the Robinson Theatre by a new operable door/partition.

4. Specialty Doors

Various types of doors and door arrangements (including sound-retardant door/frame assemblies, field gasketed doors, and vestibules) will be provided to maximize sound isolation between spaces.

5. Shell construction

Although exterior noise is not a serious issue on the site (due to the siting of critical spaces away from roadways), reasonably heavy shell construction (concentrated at the Studio Theatre) will be provided.

C. Noise Control Elements

1. Mechanical Spaces

Adequate separation between noisy mechanical equipment and quiet performance spaces will be provided.

2. Airhandlers

High quality, quiet airhandlers will be provided to minimize fan and airflow noise in critical spaces.

3. Components

Oversized ductwork, sound traps and duct lining will be provided to minimize fan and airflow noise in critical spaces.

D. Room Acoustic Design

1. Sound-Absorbing Materials

Sound-absorbing materials will be provided in performance, teaching, public, and support spaces to optimize reverberation times for speech intelligibility, sound system use, and user comfort.

2. Room Shaping

Sound-reflecting elements are envisioned for the Studio Theatre (to be developed in future design phases) if they do not conflict with theatrical design.

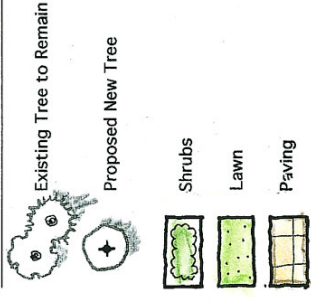
University of Oregon – University Theatre
Schematic Design Report
December 31, 2003

DRAWINGS



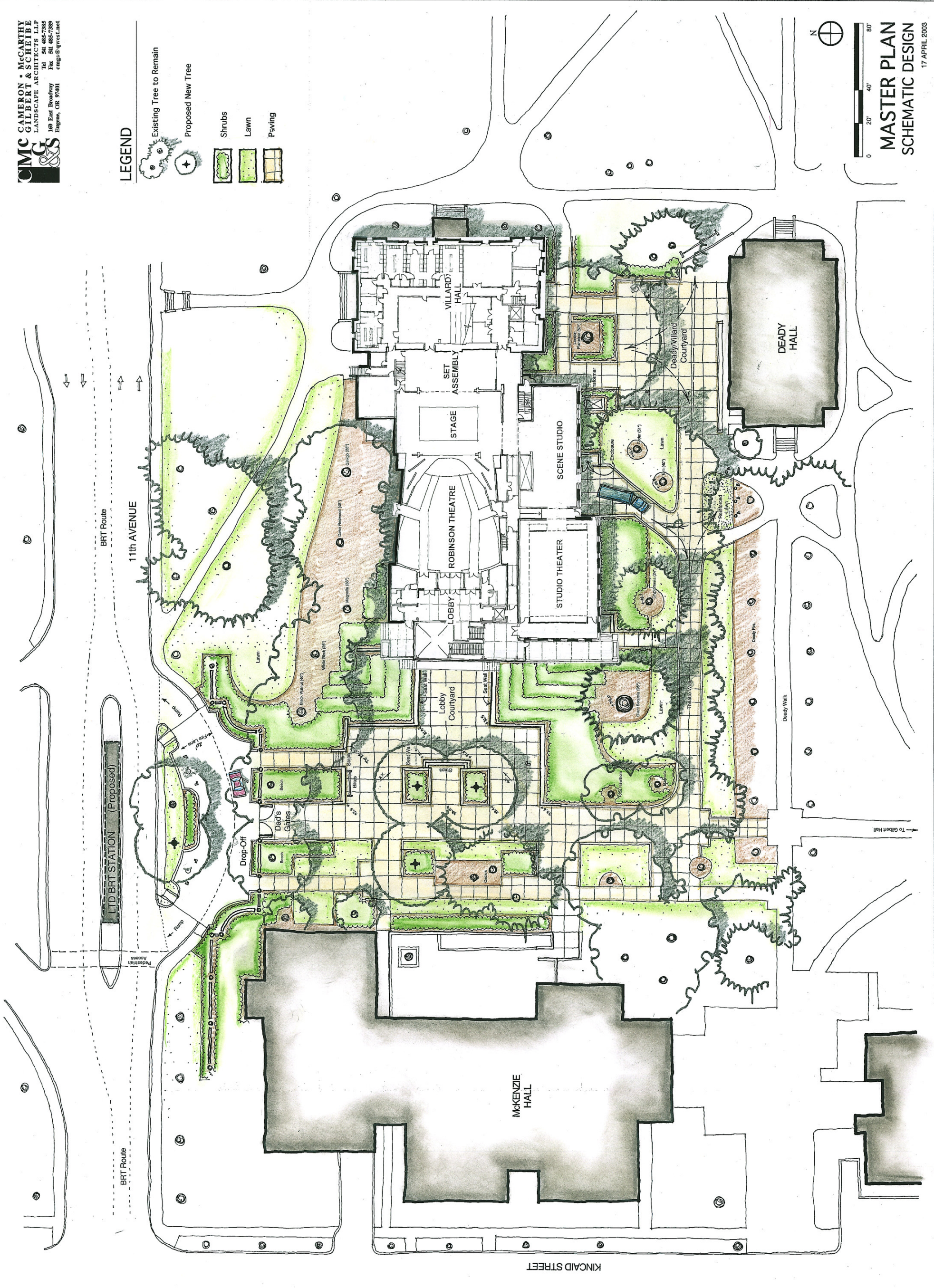
R. HOYEN - 03

LEGEND

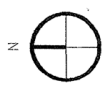
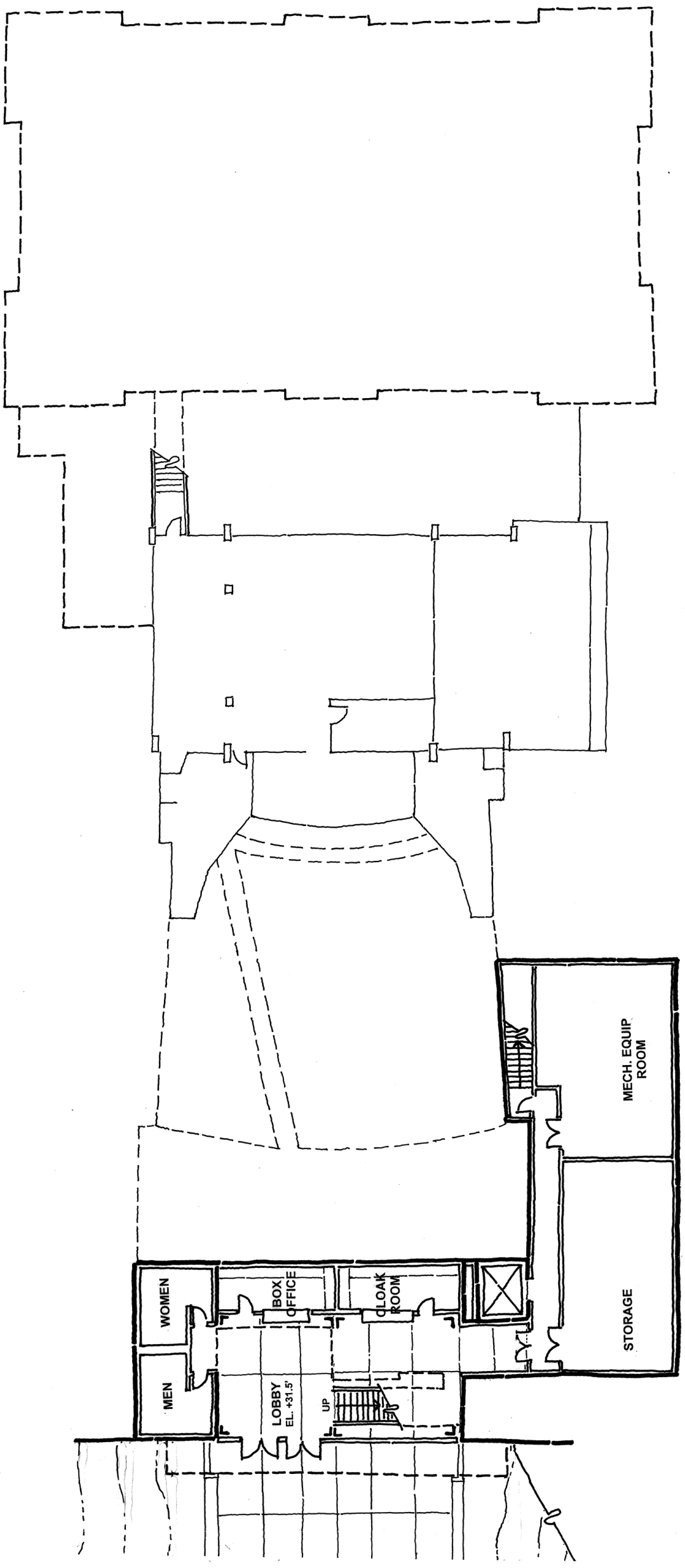


MASTER PLAN
SCHEMATIC DESIGN

17 APRIL 2003



UO THEATRE EXPANSION



LOBBY LEVEL

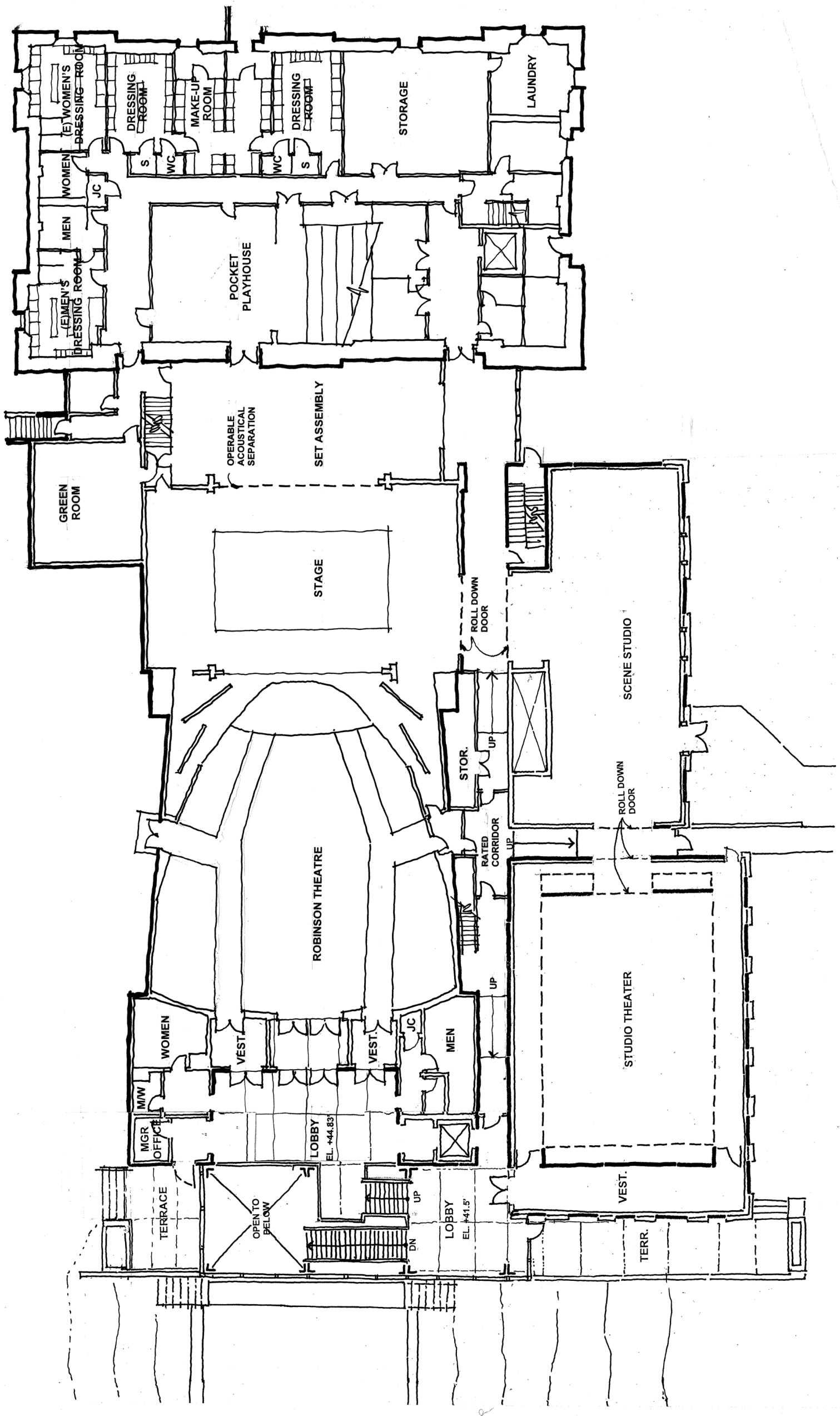
APRIL 17, 2003



THOMAS HACKER
ARCHITECTS INC.

UO THEATRE EXPANSION

UNIVERSITY
OF OREGON



STAGE LEVEL

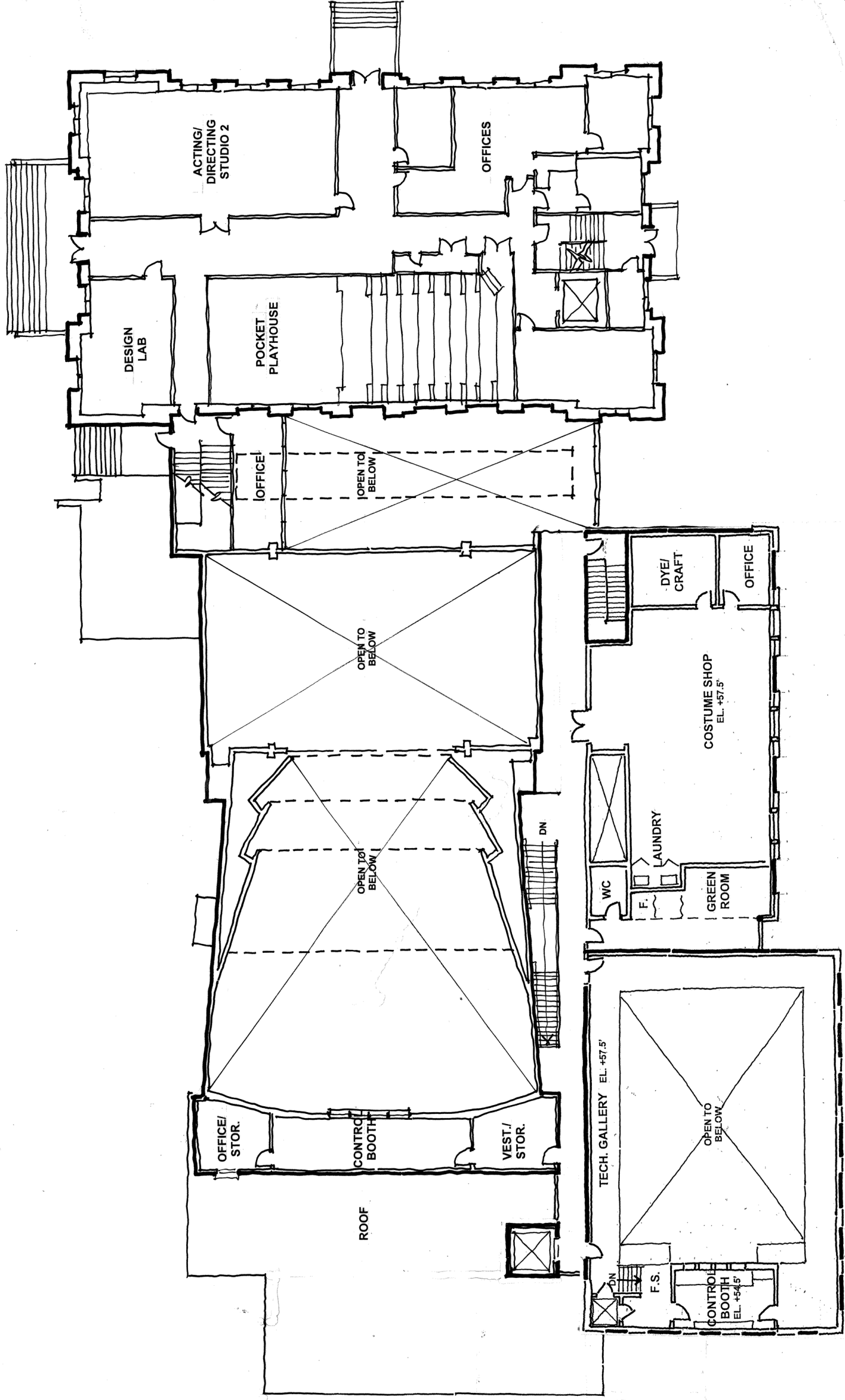
APRIL 17, 2003



THOMAS HACKER ARCHITECTS INC.

UO THEATRE EXPANSION

UNIVERSITY OF OREGON



TECH LEVEL

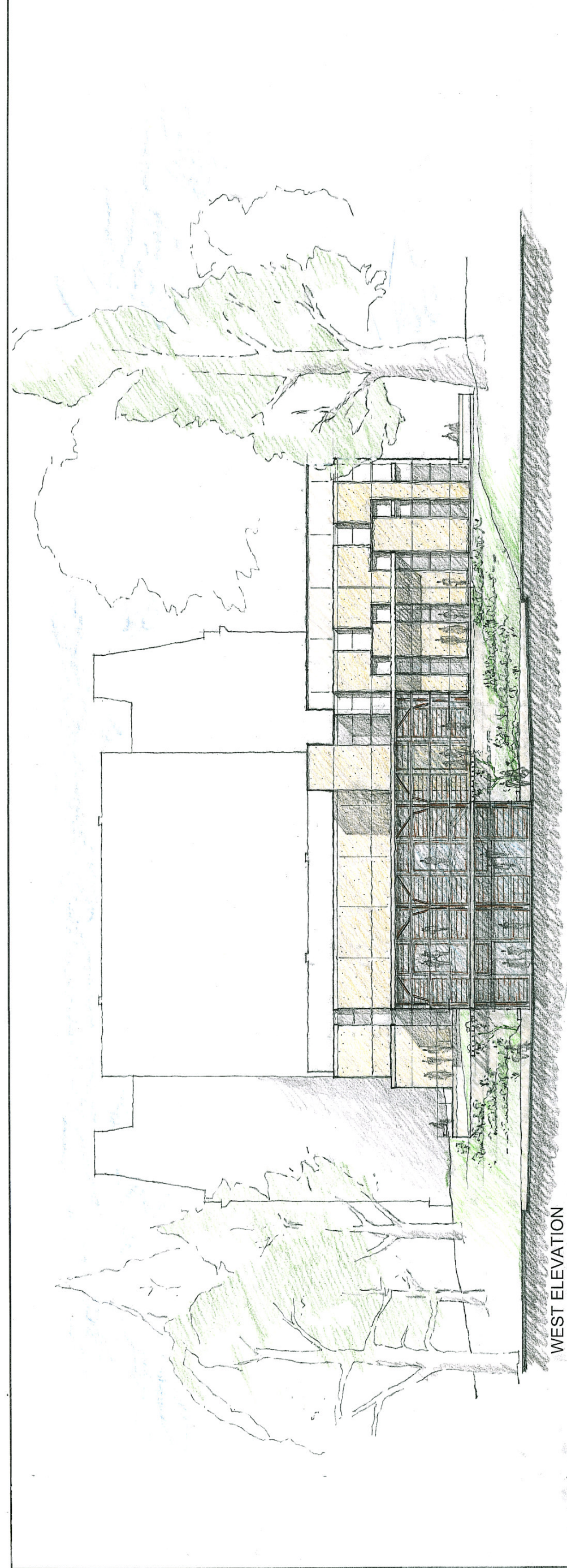
APRIL 17, 2003



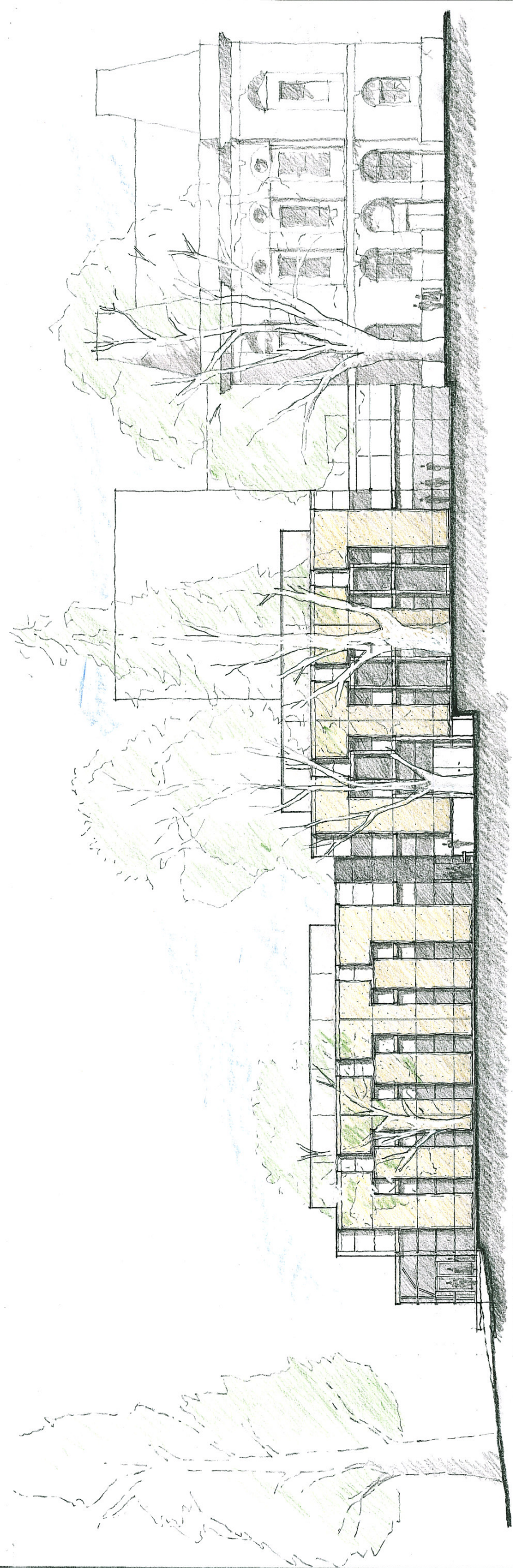
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OF OREGON



WEST ELEVATION



SOUTH ELEVATION

APRIL 17, 2003

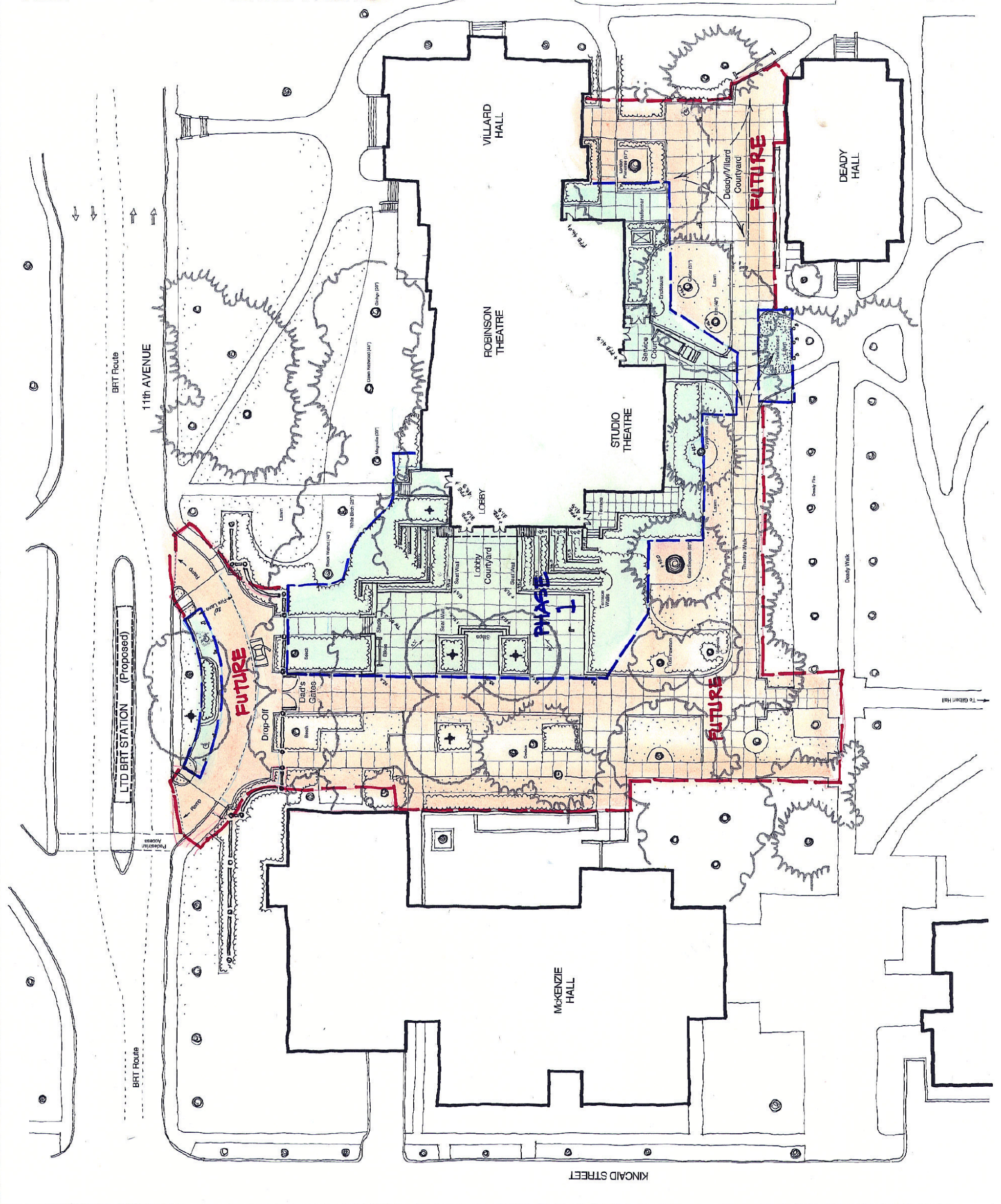
LEGEND

- Existing Tree to Remain
- Proposed New Tree
- Shrubs
- Lawn
- Paving
- PHASE I**
- FUTURE**



MASTER PLAN
SCHEMATIC DESIGN

6 DECEMBER 2002



PHASING DIAGRAM
UO THEATRE EXPANSION

University of Oregon – University Theatre
Schematic Design Report
December 31, 2003

COST ESTIMATE

U of O THEATER EXPANSION
 Eugene, Oregon
 Thomas Hacker Architects
 Portland, Oregon
 SCHEMATIC DESIGN ESTIMATE

Architectural Cost Consultants, LLC
 James A. Jerde, AIA Stanley J. Pszczolkowski, AIA
 6441 SW Canyon Court, Suite 103
 Portland, Oregon 97221
 Phone (503) 297-7210 Fax (503) 297-7187

Estimate Date: 04-Feb-03
 Document Date: 06-Dec-02
 Print Date: 04-Feb-2003
 Print Time: 06:00 PM
 Constr. Start: 01-Jul-05

EXECUTIVE SUMMARY	Cost	Total
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BASIC PROJECT					
BASIC EXPANSION	24,945	sf	\$186.96	\$4,663,751	
BASIC SITE WORK	21,946	sf	16.78	368,147	
SUB-TOTAL NEW CONSTRUCTION	24,945	sf	\$201.72 /sf		\$5,031,898
VILLARD HALL REMODEL					
FIRST FLOOR	2,300	sf	\$76.22	\$175,308	
ROBINSON THEATRE					
PAINT STORAGE ROOM	120	sf	80.00	9,600	allowance
SUB-TOTAL REMODEL	2,420	sf	\$76.41 /sf		\$184,908
TOTAL BASIC PROJECT	24,945	sf	\$208.75 /sf		\$5,207,206
EXPANDED PROJECT OPTIONS:					
BUILDING					
Add thermal insul. in Robinson clg.	8,000	sf	2.50	\$20,000	
Robinson Theatre HVAC upgrade	1	sum		75,701	allowance
					\$95,701
SITE					
Future Site Work	33,645	sf	8.76	294,790	
					\$294,790
THEATRICAL FF&E					
Theatrical Draperies					
Studio Theatre	1	sum	10,000.00	\$10,000	
Theatrical Lighting Fixtures					
Studio Theatre	1	sum	65,000.00	65,000	
Variable Seating Platforms					
Studio Theatre	1	sum	75,000.00	75,000	
Loose Seating					
Studio Theatre & Directors' Studio	1	sum	40,000.00	40,000	
					\$190,000

The above estimates are for direct construction cost only. They do not include furnishings & equipment (except basic theatrical equipment), consultants' fees, plan check fees, inspection & testing fees, financing costs nor any other normally associated development costs. The above estimates do not include seismic upgrades to the existing building.

The above costs assume a competitively bid project, with at least three qualified bidders in each of the major sub-trades as well as the general contractors.

The estimate assumes a **01-Jul-05** construction start. If the project is delayed beyond that time, the above estimate must be indexed at approximately 2-4% per year.

U of O THEATER EXPANSION

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BASIC PROJECT

Quantity Unit Cost/Unit Cost Total

BASE BUILDING

Demolition					
miscellaneous	1	sum	20,000.00	20,000	
haul & dispose	1	sum	4,000.00	4,000	
Sub-total	24,945	sf	0.96 /sf		\$24,000
Building related site work					
ss shoring	1,800	sf	20.00	36,000	
ss mass excavation / cut & fill	2,545	cy	15.00	38,175	
ss footing excavation / cut & fill	526	cy	20.00	10,520	
ss level & grade	10,000	sf	0.20	2,000	
s gravel under slab	223	cy	22.00	4,912	
s vapor barrier	13,866	sf	0.15	2,080	
s perimeter drain	720	lf	12.00	8,640	
Sub-total	24,945	sf	4.10 /sf		102,327
Structure					
s foundations	24,945	sf	2.00	49,890	
slab on grade					
s lobby level	5,100	sf	4.00	20,400	
s stage level	6,957	sf	4.00	27,828	
poured in place basement walls					
ss outer perimeter	2,160	sf	22.00	47,520	
ss inner @ existing	1,416	sf	20.00	28,320	
precast wall system					
ss exposed to exterior	5,884	sf	12.00	70,608	
s interior	112	sf	12.00	1,344	
supported floors					
stage level	4,198	sf @	11.00 lb/sf		
ss	23	ton	2,200.00	50,796	
tech level	9,500	sf @	11.00 lb/sf		
ss	52	ton	2,200.00	114,950	
roof	12,777	sf @	10.00 lb/sf		
ss	64	ton	2,200.00	140,547	
metal deck					
s stage level floor	4,198	sf	2.50	10,495	
s tech level floor	9,500	sf	2.50	23,750	
s roof	12,777	sf	2.20	28,109	
concrete metal deck fill					
s stage level floor	4,198	sf	3.50	14,693	
s tech level floor	9,500	sf	3.50	33,250	
roof					
s over studio theatre	4,526	sf	4.00	18,104	
s over costume shop and adj. areas	2,774	sf	4.00	11,096	
s other	5,477	sf	3.00	16,431	
s seismic joints	562	lf	50.00	28,100	
ss spray-on fireproofing	24,945	sf	0.00	0	
s architectural columns in lobby area	4	sets	12,000.00	48,000	
ss exit stairs	1	flts	8,500.00	8,500	
ss interconnecting stairs	2	flts	10,000.00	20,000	
ss lobby stair	1	flts	32,000.00	32,000	

U of O THEATER EXPANSION

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BASIC PROJECT

	Quantity	Unit	Cost/Unit	Cost	Total	
BASE BUILDING - Continue						
Structure - continued						
tension grid frame						
s	perimeter tube steel	160	lf	75.00	12,000	
s	1-1/2" rod and bottom plate hangers	24	ea	100.00	2,400	
s	2" perimeter pipe rails	160	lf	60.00	9,600	
ss	entry canopy	330	sf	50.00	16,500	
miscellaneous metals						
	miscellaneous	1	sum	20,000.00	20,000	
	Sub-total	24,945	sf	36.29 /sf		905,231
Envelope						
exterior wall						
ss	stucco on concrete	5,884	sf	8.00	47,072	
ss	furring inside exposed precast walls	5,884	sf	1.50	8,826	
ss	insulation R-19	5,884	sf	0.85	5,001	
s	wall flashing	1	sum	10,000.00	10,000	
s	wall caulking	1	sum	4,000.00	4,000	
windows						
ss	window wall @ lobby	2,325	sf	40.00	93,000	
ss	other windows	3,049	sf	35.00	106,715	
ss	sunscreens @ west lobby windows	1,104	sf	25.00	27,600	allowance
doors						
s	main entry	2	pr	3,200.00	6,400	
s	terrace	1	pr	3,200.00	3,200	
s	stairway exit	1	ea	1,200.00	1,200	
s	service yard	1	pr	2,400.00	2,400	
s		1	ea	1,200.00	1,200	
s	roof membrane	12,777	sf	3.00	38,331	
s	roof insulation	12,777	sf	1.75	22,360	
s	parapet coping	700	lf	17.50	12,250	
s	base & reglet	350	lf	10.00	3,500	
s	other roof flashing	1	sum	6,000.00	6,000	
s	roof caulking	1	sum	8,000.00	8,000	
mechanical screen						
ss	structural framing	3,000	sf	8.00	24,000	10' tall
ss	metal panel system	3,000	sf	12.00	36,000	
	Sub-total	24,945	sf	18.72 /sf		467,055
Interiors						
partitions						
s	partitions	15,930	sf	5.50	87,615	
furring						
s	on conc. or existing bldg	5,076	sf	3.25	16,497	
s	on tilt-up	5,884	sf	3.25	19,123	
s	elevator shaft	960	sf	7.50	7,200	
s	plumbing wall	160	sf	8.00	1,280	

U of O THEATER EXPANSION

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BASIC PROJECT

BASE BUILDING - Continue

	Quantity	Unit	Cost/Unit	Cost	Total	
Interiors - continued						
doors	62	lvs				
sound/lightlock doors						
s Robinson Theatre vestibule	8	pr	3,000.00	24,000		@ Robinson Theatre
s Studio Theatre vestibule	2	pr	3,000.00	6,000		
s Studio Theatre vestibule	5	ea	1,600.00	8,000		
s other	5	ea	1,600.00	8,000		
s toilets	3	ea	1,000.00	3,000		
s office	8	ea	1,000.00	8,000		
s stairs	3	ea	1,000.00	3,000		
s corridors	1	pr	2,000.00	2,000		
s	5	ea	1,100.00	5,500		
s costume shop	1	pr	1,800.00	1,800		
s mech. /elect.	1	pr	1,800.00	1,800		
s storage	3	pr	1,800.00	5,400		
s elev. smoke doors	0	ea	3,000.00	0		none indicated
s other	1	ea	1,000.00	1,000		
s bi-fold @ laundry	2	pr	600.00	1,200		
roll-up doors						
s studio theatre / scene	3	ea	5,880.00	17,640		
s robinson / scene	2	ea	6,720.00	13,440		
ss set assembly	1	ea	5,040.00	5,040		
floor coverings	20,601	sf				
lobby level	4,259					
ss lower lobby & elev. lobby	1,436	sf	4.00	5,744		carpet
ss box office & cloak room	324	sf	3.00	972		carpet
s toilets	400	sf	12.00	4,800		ceramic tile
s back corridor	750	sf	1.00	750		sealed concrete
s mech. & stor.	1,349	sf	1.00	1,349		sealed concrete
ss exit stair	40	sf	1.00	40		sealed concrete
stage level	11,029					
s upper lobby & toilet room vestibule	2,317	sf	4.00	9,268		carpet
s toilet rooms	384	sf	0.00	0		existing to remain
ss manager's office	144	sf	4.00	576		carpet
ss studio theater vestibule	572	sf	4.00	2,288		carpet
ss studio theater						
s 1/4" double tempered masonite	2,848	sf	3.50	9,968		
s 2 layers 3/4" A-C plywood	2,848	sf	3.00	8,544		
s 2"x4" sleepers @ 2" on center	2,848	sf	1.33	3,797		
s 3/4" thick, 4" sq. mason "super W"						
ss pads 2' oc on shims	2,848	sf	2.00	5,696		
ss scene studio	2,365	sf	1.00	2,365		sealed concrete
ss back corridors	2,211	sf	1.00	2,211		sealed concrete
ss storage rooms	148	sf	1.00	148		sealed concrete
ss exit stair	40	sf	1.00	40		sealed concrete
existing Robinson Theatre	360					
ss auditorium entry vestibules	360	sf	5.00	1,800		carpet

U of O THEATER EXPANSION

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BASIC PROJECT

	Quantity	Unit	Cost/Unit	Cost	Total	
BASE BUILDING - Continue						
Interiors - continued						
railings - cont'd						
tech gallery						
s	232	lf	80.00	18,560		
s	28	lf	80.00	2,240		
wall finishes						
lobby level						
ss	528	sf	30.00	15,840		wood panels
ss	1,120	sf	1.00	1,120		paint
s	972	sf	0.60	583		paint
ss	1,216	sf	12.00	14,592		full height ct @ wet walls
s	2,790	sf	0.60	1,674		paint
s	2,180	sf	0.60	1,308		paint
s	450	sf	0.60	270		paint
stage level						
ss	264	sf	20.00	5,280		wood panels/paint
s	1,305	sf	0.00	0		existing to remain
s	450	sf	0.60	270		paint
ss	1,988	sf	8.00	15,904		wood panels/paint
studio theater						
s	1,072	sf	0.60	643		paint
s	2,680	sf	12.00	32,160		acoust. wall panels
s	2,828	sf	0.60	1,697		paint
s	5,391	sf	0.60	3,235		paint
s	900	sf	0.60	540		paint
s	450	sf	0.60	270		paint
tech level						
s	2,660	sf	2.00	5,320		undefined
s	8,050	sf	0.60	4,830		paint
casework						
cloak room						
s	9	lf	90.00	810		
s	25	lf	30.00	750		
box office						
s	9	lf	90.00	810		
s	25	lf	160.00	4,000		
toilets						
s	16	lf	150.00	2,400		
fitting rooms						
s	10	lf	80.00	800		
green room						
s	5	lf	160.00	800		
s	5	lf	110.00	550		
control room						
s	60	lf	175.00	10,500		
	24,945	sf	23.42 /sf		584,257	

U of O THEATER EXPANSION

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BASIC PROJECT

	Quantity	Unit	Cost/Unit	Cost	Total	
BASE BUILDING - Continue						
Specialties						
toilet accessories						
partitions						
s	5	ea	1,000.00	5,000		
s	2	ea	1,150.00	2,300		
s	1	ea	350.00	350		
s	4	ea	250.00	1,000		
s	1	sum	3,000.00	3,000		
signing						
ss	1	sum	0.00	0		in FF&E budget, verify
s	24,945	sf	0.15	3,742		
s	12	ea	250.00	3,000		
ss	3,049	sf	6.00	18,294		allowance
window treatments						
unistrut grid						
s	300	lf	25.00	7,500		@ 7' over tension grid in Studio
s	350	lf	20.00	7,000		walls of Studio theatre
s	1	sum	5,000.00	5,000		miscellaneous specialties
	24,945	sf	2.25 /sf		56,186	Sub-total
Equipment - per Auerbach						
theatrical rigging						
studio theatre						
s	1	sum	10,000.00	10,000		ropeline hardware
s	1	sum	30,000.00	30,000		variable acoustics draperies & track
tension grid						
s	1	sum	60,000.00	60,000		studio theatre
	24,945	sf	4.01 /sf		100,000	Sub-total
Appliances						
s	1	ea	0.00	0		washer in FF&E budget, verify
s	1	ea	0.00	0		dryer in FF&E budget, verify
	24,945	sf	0.00 /lf		0	Sub-total
Furnishings						
s	1	sum	0.00	0		studio theatre seating in FF&E budget
	24,945	sf	0.00 /lf		0	Sub-total
Conveying systems						
s	1	ea	80,000.00	80,000		passenger/service elevator hydraulic
	24,945	sf	3.21 /lf		80,000	Sub-total
Mechanical - new area - per PAE						
	24,945	sf	25.00	623,625		HVAC
	24,945	sf	6.00	149,670		Plumbing
	24,945	sf	2.00	49,890		Fire sprinklers
	24,945	sf	33.00 /sf		823,185	Sub-total

U of O THEATER EXPANSION
 Eugene, Oregon
 Thomas Hacker Architects
 Portland, Oregon
 SCHEMATIC DESIGN ESTIMATE

Architectural Cost Consultants, LLC
 James A. Jerde, AIA Stanley J. Pszczolkowski, AIA
 6441 SW Canyon Court, Suite 103
 Portland, Oregon 97221
 Phone (503) 297-7210 Fax (503) 297-7187

Estimate Date: 04-Feb-03
 Document Date: 06-Dec-02
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 Print Time: 06:00 PM
 Constr. Start: 01-Jul-05

BASIC PROJECT	Quantity	Unit	Cost/Unit	Cost	Total	
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BASE BUILDING - Continue						
Electrical - new area - per PAE						
power distribution	24,945	sf	5.00	124,725		
lighting systems	24,945	sf	4.00	99,780		
lighting controls						
devices	24,945	sf	2.50	62,363		
equipment connections	24,945	sf	1.00	24,945		
fire alarm	24,945	sf	0.50	12,473		
security	24,945	sf	0.50	12,473		
tele/data	24,945	sf	0.30	7,484		
theatre	24,945	sf	0.60	14,967		
Sub-total	24,945	sf	14.40 /sf		359,208	
Theatre - per Auerbach						
theatrical light control						
studio theatre						
console, remote, dimmer racks	1	sum	75,000.00	75,000		
front of house dimming and control	1	sum	5,000.00	5,000		
performance sound, video & com. sys.						
studio theatre	1	sum	115,000.00	115,000		
Sub-total	24,945	sf	7.82 /sf		195,000	
SUB-TOTAL BASE BUILDING				3,696,449	3,696,449	
Contingency			7.00%	258,751		
Index to Constr. Start			6.00%	237,312		
Gen. Conditions			8.00%	335,401		
Gen. Contr. Fee			3.00%	135,837	967,302	26.17%
TOTAL DIRECT CONSTRUCTION COST BASE BUILDING	24,945	sf	\$186.96 /sf		\$4,663,751	
	24,945	sf	1,425 sf			
new			remodel in existing Robinson			
lobby level	4,300	sf	0			
stage level	11,155	sf	1,425			
tech level	9,490	sf	0			

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BASIC PROJECT	Quantity	Unit	Cost/Unit	Cost	Total
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BASIC SITE WORK					
Demolition					
building	1	sum	\$0.00	\$0	
site	21,946	sf	0.75	16,460	
Sub-total	21,946	sf	0.75 /sf		16,460
Utilities					
storm drain system	20,000	sf	0.50	10,000	
sanitary sewer system	1	sum	10,000.00	10,000	
domestic water service	1	sum	10,000.00	10,000	
fire water service	1	sum	15,000.00	15,000	
electrical service	1	sum	15,000.00	15,000	
site lighting	1	sum	12,000.00	12,000	
Sub-total	21,946	sf	3.28 /sf		72,000
Earthwork					
erosion control	1	sum	2,000.00	2,000	
mass excavation & fill, level & grade	21,946	sf	0.60	13,168	
Sub-total	21,946	sf	0.69 /sf		15,168
Hardscape					
paving					
s terraces @ bldg.	1,000	sf	6.00	6,000	
s transformer pad	96	sf	5.00	480	
s other concrete paving	8,600	sf	4.00	34,400	
trash enclosure					
s footings	24	lf	25.00	600	
s walls	144	sf	30.00	4,320	
s gate	1	pr	1,200.00	1,200	
s site wall footings	651	lf	20.00	13,020	
s site walls	1,350	sf	22.00	29,700	
s curbs	280	sf	12.00	3,360	
s steps	210	sf	30.00	6,300	
s bike racks	16	lf	200.00	3,200	
s site furniture	1	sum	0.00	0	
Sub-total	21,946	sf	4.67 /sf		102,580
Landscaping					
s plant beds/shrubs/trees	10,500	sf	5.00	52,500	
s finish lawns	1,000	sf	2.50	2,500	
s reinforced lawns	750	sf	3.50	2,625	
s tree protection/landscaping	1	sum	15,000.00	15,000	
s irrigation supply upgrade	1	sum	5,000.00	5,000	
Sub-total	21,946	sf	3.54 /sf		77,625
SUB-TOTAL BASIC SITE WORK				283,832	283,832
Contingency					
Index to Constr. Start	01-Jul-05	10.00%		28,383	
Gen. Conditions		6.00%		18,733	
Gen. Contr. Fee		8.00%		26,476	
		3.00%		10,723	84,315
TOTAL DIRECT CONSTRUCTION COST BASIC SITE WORK					\$368,147

in FF&E budget

U of O THEATER EXPANSION

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REMODEL VILLARD 1st FLOOR

Quantity Unit Cost/Unit Cost Total

FIRST FLOOR DRESSING ROOMS & TOILETS

Demolition					
miscellaneous interior demo	2,000	sf	\$3.00	\$6,000	
haul & dispose	1	sum	1,200.00	1,200	
Sub-total	2,300	sf	3.13 /sf		\$7,200
Interiors					
partitions					
partitions	1,670	sf	5.50	9,185	
doors					
	9 lvs				
singles	9	ea	1,000.00	9,000	
pairs	2	pr	2,000.00	4,000	
floor coverings					
	1,930	sf			
corridors	260	sf	3.00	780	
dressing rooms	1,670	sf	1.00	1,670	
dressing room toilets	48	sf	1.00	48	
bases					
rubber base	478	lf	1.50	717	
cove base	40	lf	5.00	200	
wood	82	lf	5.00	410	
ceilings					
corridors	260	sf	3.50	910	
dressing rooms	1,670	sf	1.00	1,670	
dressing room toilets	48	sf	1.00	48	
painting					
walls & ceilings	6,000	sf	2.00	12,000	
doors	17	ea	75.00	1,275	
casework					
wardrobes	87	lf	130.00	11,310	
cubbies	25	lf	120.00	3,000	
vanities	52	lf	60.00	3,120	
base cabinets	18	lf	150.00	2,700	
benches	48	lf	40.00	1,920	
changing room cubicles	6	ea	800.00	4,800	
Sub-total	2,300	sf	29.90 /sf		68,763
Specialties					
signing					
interior	2,300	sf	0.15	345	
toilet accessories	1	sum	400.00	400	
mirrors	1	sum	1,000.00	1,000	
fire hose cabinets	1	ea	250.00	250	
miscellaneous specialties	1	sum	1,000.00	1,000	
Sub-total	2,300	sf	1.30 /sf		2,995
Mechanical					
HVAC	2,300	sf	5.00	11,500	
Plumbing	2,300	sf	10.00	23,000	
Fire sprinklers	2,300	sf	2.00	4,600	
Sub-total	2,300	sf	17.00 /sf		39,100

allowance

U of O THEATER EXPANSION Eugene, Oregon Thomas Hacker Architects Portland, Oregon SCHEMATIC DESIGN ESTIMATE	Architectural Cost Consultants, LLC James A. Jerde, AIA Stanley J. Pszczolkowski, AIA 6441 SW Canyon Court, Suite 103 Portland, Oregon 97221 Phone (503) 297-7210 Fax (503) 297-7187	Estimate Date: 04-Feb-03 Document Date: 06-Dec-02 Print Date: 04-Feb-2003 Print Time: 05:57 PM Constr. Start: 01-Jul-05
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REMODEL VILLARD 1st FLOOR	Quantity	Unit	Cost/Unit	Cost	Total
FIRST FLOOR DRESSING ROOMS & TOILETS - Continued					
Electrical service & distribution basic lighting security fire alarm Sub-total	2,300 2,300 1 1 2,300	sf sf sum sum sf	3.00 4.00 500.00 500.00 7.43 /sf	6,900 9,200 500 500 17,100	
SUB-TOTAL FIRST FLOOR DRESSING ROOMS & TOILETS				135,158	135,158
Contingency Index to Constr. Start 01-Jul-05 Gen. Conditions Gen. Contr. Fee	10.00% 6.00% 8.00% 3.00%			13,516 8,920 12,608 5,106	40,150
TOTAL DIRECT CONSTRUCTION COST REMODEL VILLARD 1st FLOOR		2,300	sf +/-	\$76.22 /sf	\$175,308

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FUTURE SITE WORK	Quantity	Unit	Cost/Unit	Cost	Total
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COURTYARD BETWEEN DEADY AND VILLARD					
Demolition					
building	1	sum	\$0.00	\$0	
site	33,645	sf	0.60	20,187	
Sub-total	33,645	sf	0.60 /sf		20,187
Utilities					
storm drain system	6,100	sf	0.35	2,135	
site lighting	1	sum	6,000.00	6,000	
Sub-total	33,645	sf	0.24 /sf		8,135
Earthwork					
erosion control	1	sum	2,000.00	2,000	
mass excavation & fill, level & grade	33,645	sf	0.20	6,729	
Sub-total	33,645	sf	0.26 /sf		8,729
Hardscape					
paving	20,100	sf	6.00	120,600	
curbs	1,400	sf	12.00	16,800	
site furniture	1	sum	0.00	0	
Sub-total	33,645	sf	4.08 /sf		137,400
Landscaping					
plant beds/shrubs/trees	5,245	sf	5.00	26,225	
finish lawns	8,300	sf	2.00	16,600	
tree protection/landscaping	1	sum	10,000.00	10,000	
Sub-total	33,645	sf	1.57 /sf		52,825
SUB-TOTAL COURTYARD BETWEEN DEADY AND VILLARD				227,276	227,276
Contingency	10.00%			22,728	
Index to Constr. Start	01-Jul-05	6.00%		15,000	
Gen. Conditions		8.00%		21,200	
Gen. Contr. Fee		3.00%		8,586	67,514
TOTAL DIRECT CONSTRUCTION COST COURTYARD BETWEEN DEADY AND VI				\$8.76 /sf	\$294,790

in FF&E budget

U of O THEATER EXPANSION

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Estimate Date: 03-Mar-03
 Document Date: 25-Feb-03
 Print Date: 03-Mar-2003
 Print Time: 05:35 PM
 Constr. Start: 01-Jul-05

REVISION PER 25-FEB-03 SKETCH

	Quantity	Unit	Cost/Unit	Cost	Total
BASE BUILDING					
Feb. 4, 2003 estimate Building	24,945	sf	186.96	4,663,717	4,663,717
substract constants					
studio lighting	1	sum		(195,000)	
theatre equipment	1	sum		(100,000)	
plumbing	1	sum		(149,000)	
elevator	1	sum		(80,000)	
mark-ups on above	1	sum		<u>(137,131)</u>	
adjusted cost per sf	24,945	sf	160.46	4,002,586	
adjusted area	(3,113)	sf	160.46		<u>(499,501)</u>
Adjusted basic building expansion					4,164,216
Site	21,946	sf	16.78	368,254	
add landscaping	2,000	sf	5.00	10,000	
delete site walls					
footings	651	lf	20.00	(13,020)	
walls	1,350	sf	22.00	(29,700)	
mark-ups on above	1	sum		<u>(12,692)</u>	
Adjusted basic site expansion	21,946				<u>322,842</u>
SUB-TOTAL NEW CONSTRUCTION	21,832	sf	\$205.53 /sf		\$4,487,058
Villard Hall Remodel First floor	2,300	sf	\$76.22	\$175,306	
Robinson Theatre Paint storage room	120	sf	80.00	9,600	
SUB-TOTAL REMODEL	2,420	sf	\$76.41 /sf		\$184,906
TOTAL DIRECT CONSTRUCTION COST BASIC PROJECT	21,832	sf	\$213.56 /sf		\$4,662,364

CODE NARRATIVE

The following summary describes the approved code compliant strategy established upon Building Department Review of preliminary documents:

A two-hour area wall separation is maintained between the theatres and Villard Hall, as well as between the Robinson Theatre and the New Construction. By providing an automatic sprinkler system throughout, the new construction can be Type II, 1-hr. The Type II, 1-hr. construction type allows us to expose the structure thereby reducing cost and could also have a significant positive impact on the architecture. The maximum stories allowed are two. The Lobby Level is considered a basement as the Stage Level is not 6 feet above grade for more than 50% of the perimeter, nor 12 feet above grade at any point. The Theatre Expansion is therefore considered to be two stories plus a basement.

(Type III construction is also allowable within the Uniform Building Code and will be considered and reviewed with the building department when the project proceeds into the Design Development phase.)

Chapter 2 Building Area

207 Floor area is the area included within the surrounding exterior walls of a building or portion thereof, exclusive of vent shafts and courts.

Floor	Area 1	Area 2	Total
Lobby Level	2,316	*2,586	4,902
Stage Level	3,760	8,819	12,579
Tech Level	-	6,160	6,160
Total	6076	17,565	23,641

*Area in the basement, does not meet the definition of a story. (See definition of first story, section 220.)

Chapter 3 Occupancy Classified

301	Assembly	A-2.1
302	Mixed Use or Occupancy Assembly Offices/Classrooms	A-3 B
303.1.2	Occupancy Separations A-2/A-3 A-2/B A-3/B	per table 3-B none required 1 hour none required

Chapter 5 General Building Limitations

Table 5B	Type of construction	Type II, 1-hr.
508	The values for Type-II One-hour are used since an automatic sprinkler system is being substituted for one-hour construction, but the actual construction of the building is the same as Type II-N.	
	Allowable Area – A-3 Occupancy 13,500 sf/floor	
504.2	Areas of buildings over one story	27,000 sf (5-B Area multiplied by 2)
506	Maximum Height of Buildings	
	Table 5B A-3	65' or 2 stories
	Actual stories	
	Area 1:	2 stories
	Area 2:	2 stories and a basement
Table 5A	Exterior Walls:	
	Bearing	Two-hour N/C less than 5 feet, One-hour N/C less than 20 feet, NR, N/C elsewhere.
	Nonbearing	Same as bearing except NR, N/C 40 feet or greater.
	Openings	Not permitted less than 5 feet, Protected less than 10 feet.

Chapter 6 Types of Construction

Table 6-A	1. Bearing Walls - exterior	N
	2. Bearing Walls – Interior	N
	3. Non-bearing Walls – exterior	N
	4. Structural Frame	N
	5. Partitions	N
	6. Shaft enclosures	1 hour
	7. Floors and floor-ceilings	N
	8. Roofs and roof-ceilings	N
	9. Exterior doors and windows	see 603.3.2
	10. Stairway Construction	see 603.4 below.
603.1	The structural elements of Type II-N shall be of noncombustible materials. Floor construction of Type II-N buildings shall be of noncombustible material, provided, however, that a wood surface or finish may be applied over such non-combustible material. Walls and permanent partitions of Type II-N buildings shall be of noncombustible materials.	
603.2	Structural framework shall be as specified in Chapter 22 for iron and steel, Chapter 19 for concrete, and Chapter 21 for masonry.	
603.4	Stairways of Type II-N buildings shall be of noncombustible construction. Stairways shall comply with the requirements of Chapter 10.	
603.5	Roofs shall be of noncombustible construction. Roof coverings shall be as specified in Chapter 15.	

Chapter 10 Means of Egress

Table 10A Occupancy Load

Fixed Seating			150 occupants
Lobby	3624 sf	@7 sf/occupant	518 occupants
Scene/Costume	4220 sf	@50 sf/occupants	85 occupants
Green Room	448 sf	@20 sf/occupant	23 occupants
Offices	624 sf	@100 sf/occupant	7 occupants
Storage/Mechanical	1560 sf	@300 sf/occupant	6 occupants
Total Building Occupancy			789 occupants

University of Oregon – University Theatre
Schematic Design Report
December 31, 2003

BUILDING DEPARTMENT MEETING NOTES

MEETING NOTES

Date : November 25, 2002
Project : University of Oregon – University Theatre
Job No. : 0213
Re : Initial Meeting with City of Eugene Code Officials
Present :

City Officials

Charlotte Curtis, Code Annalist
Yvonne Williams, Residential Plans Reviewer
Molly Ritter, Public Works, Erosion Prevention

University of Oregon

Fred Tepfer, Planning Associate
Kay Coots, Director of Environmental Health and Safety

Thomas Hacker Architects

Jonah Cohen, Principal
Paul Kinley Project Architect

cc : Charlotte Curtis (to distribution to City of Eugene Officials)
Fred Tepfer (for distribution to U of O)
T·H·A Consultant Team

ITEMS

1.1 The meeting began with Fred introducing the overall goals of the project. Specifically the University of Oregon is planning to build an addition of approximately 20,000 gsf to the existing Robinson Theatre-Villard Hall complex which will house a new Studio (Black Box) Theatre with related lobby and other theatrical support spaces. The overall schedule is still undetermined as the project is not fully funded yet and it could take as many as 5 years for completion.

1.2 Jonah then indicated the purpose of today's meeting was to generally introduce the project to City officials and also to confirm that basic code assumptions are reasonable. Because the project is in Schematic Design, no elements of the design have been fixed. The Design Team intends to meet often with City Officials at all stages of the project with the goal that final permit drawings contain no surprises for the City or the design team.

1.3 Jonah then explained the context the project needed to address including: the program goals; the existing site constraints and amenities such as trees and grades; the relationship of the project to the original campus Master Plan central axis connecting the Dad's gate to the Library; and the State Historic Preservation office's interest in the project because of Villard Hall's Landmark status. He then described the proposed design concept with floor plans which were given to Charlotte at the conclusion of the meeting.

1.4 The design calls for 2 story additions to occur on the west and south faces of the existing Robinson Theatre building. No major changes to either Robinson or Villard are anticipated as part of this project. A continuous seismic joint will be built between the existing buildings and the additions. All new construction will fully comply with ADA requirements and the new lobby entrance will also provide an accessible route outside the building from the west which the current facility does not allow.

1.5 Prior to the meeting THA Architects had forwarded a memo dated November 22, 2002 to Charlotte Curtis which outlined 2 possible code strategies for the project. This memo was reviewed with the following comments.

1.5.1 Based on the information provided Strategy # 2 which provides a two-hour area separation between the theatres and Villard Hall as well as between the Robinson Theatre and the new additions was preferred and appeared reasonable except that the construction type should be identified as Type II-1 Hr with a modification to Type II-N as a result of providing an automatic sprinkler system. As the project develops, the design team will continue to develop the code strategy and alert the City to any changes.

1.5.2 Any area separation walls must be consistently vertical as described in a reference article which Charlotte shared with the design team.

1.5.3 Any area calculations of new or existing buildings must include vents and shafts.

1.5.4 The Lobby level can be considered a basement as it is not 6 feet above grade for more than 50% of its perimeter, nor 12 above grade at any point.

1.5.5 A clear exit path with curb separation must be provided on the south side of the building adjacent to but not overlapping the building loading dock.

1.6 Charlotte confirmed this project will likely require an erosion control permit. From submission to permit assume a normal turnaround of 5-8 weeks.

Attendees! Please review these notes carefully as they will form the basis of future work on this project. If you feel that anything is incorrect or incomplete, please call Jonah Cohen at 503.227.1254.

Thomas Hacker Architects wishes to thank the members of the Building Committee who participated with enthusiasm in the collective effort to make this a successful project.

APPROVAL/SIGNATURES

Wendy Larson, Committee Chair

Jeffery Mason

Jerry Hooker

Janet Rose

Sandy Bonds

John Schmor

Rachel Kinsman Steck