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**An Introduction to Architectural  
Design: Theatres and Concert Halls,  
Volume 3**

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# **An Introduction to Architectural Design: Theatres and Concert Halls, Volume 3**

*J. Paul Guyer, P.E., R.A.*

## **CONTENTS**

- 1. ACCESS**
- 2. ENVIRONMENT**
- 3. PERFORMANCE SUPPORT**

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(This publication is the third in a series under editorial development dealing with the design of theatres and concert halls.)

**1. ACCESS.** Planning of circulation and access systems is necessarily integral with space planning for specific facilities. Access is influenced by external relationships to adjoining facilities and by site characteristics. Moreover, access and circulation systems have considerable impact on the realization of a Room design. While individual requirements will vary, this section provides a checklist of the questions that must be answered. The basic approach is to define major functional access criteria for the following users:

- Audience, to ensure firesafety exiting, Room entry orientation and control, and access to public facilities during performance.
- Performers, to permit firesafety exiting, movement within stagehouse and between it and backstage areas.
- Technicians, to prevent injury, and allow control point and equipment mount access.
- Scenery and Properties, to facilitate both horizontal and vertical movement.

The required information has two sources-recognized codes and standards, and functional operating requirements of performance-related activities. Owner criteria recognize guidelines set forth by the National Fire Protection Association in its Pamphlet No. 101, Life Safety Standards, with particular reference to Chapter 8, Assembly Occupancies.

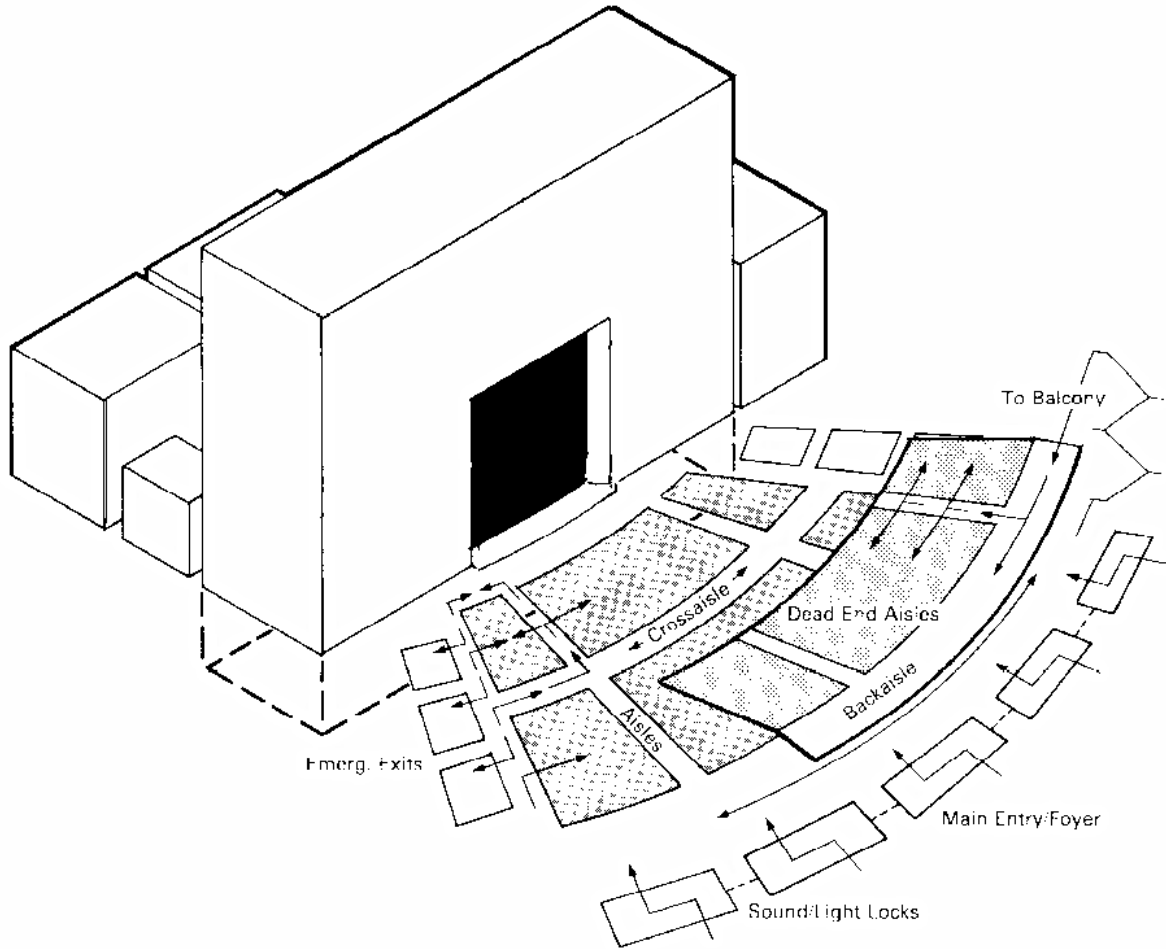


Figure 1

Access systems – audience

## 1.1 AUDIENCE ACCESS

**1.1.1 LIFE SAFETY AND EXIT PARAMETERS.** Life safety considerations have the greatest influence on the design of audience circulation and access. The best practice is to go directly to the referenced standards, paying careful attention to the design implications of categorical definitions. Chief among these is the size of the audience related to the number, size and location of means of egress. The main entry shall not be expected to handle more than 50% of the occupants, and if two additional exits are provided, each shall accommodate at least one third. 1000 or more occupants require at least three exits of equal size in addition to the main exit. Next, consider the line of

travel to the nearest enclosed (2 hour rated) exitway for positioning exits, which should not exceed 150 feet (or 200 feet if the room is sprinkler-equipped). It should not be possible to travel more than 20 feet to a dead end; the guiding principle is to ensure each occupant has a choice of at least two exits. Note that continental seating, because it slows movement, requires many more exit doors, and that no exitway or aisle may diminish in width toward the exit. Exit doors must be equipped with non-locking panic bolts, open in the direction of exit, and be identified with illuminated signs. Aisles and exitways must also be illuminated, fitted with battery- packs or emergency generator power systems in case of power failure. Ramped aisles are limited to a gradient of 1:8; and the rules governing maximum step riser heights differ for the main floor (7½") and balconies (8'). These factors form limits to the theoretical functional considerations developed.

**1.1.2 FUNCTIONAL PARAMETERS.** Entry to the Room must account for sound and light barriers, which are vestibules and door seals. Where acoustic separation is important double door sets are superior to extra special door seals on a single set since the seal doesn't function when the door opens. Vestibules should be of a size to admit several people and/or wheelchair occupants easily, so that the first door set can close behind before the inner set is opened. Except for exit considerations, the location of entries and layout of aisles are determined by factors discussed and by external relationships to audience support facilities and the building exterior. The Room's organization should facilitate newcomers' ability to find their seats without confusion. Entry patterns should minimize disturbances of seated patrons. Although entrance from the rear of the House is typical (perhaps because public areas tend to be zoned toward the street side of an urban building lot), entrance facing the audience tends to be more ultimate and social in orientation. Recognizing such options may mean the design can take advantage of site features or respond to other program relationships.

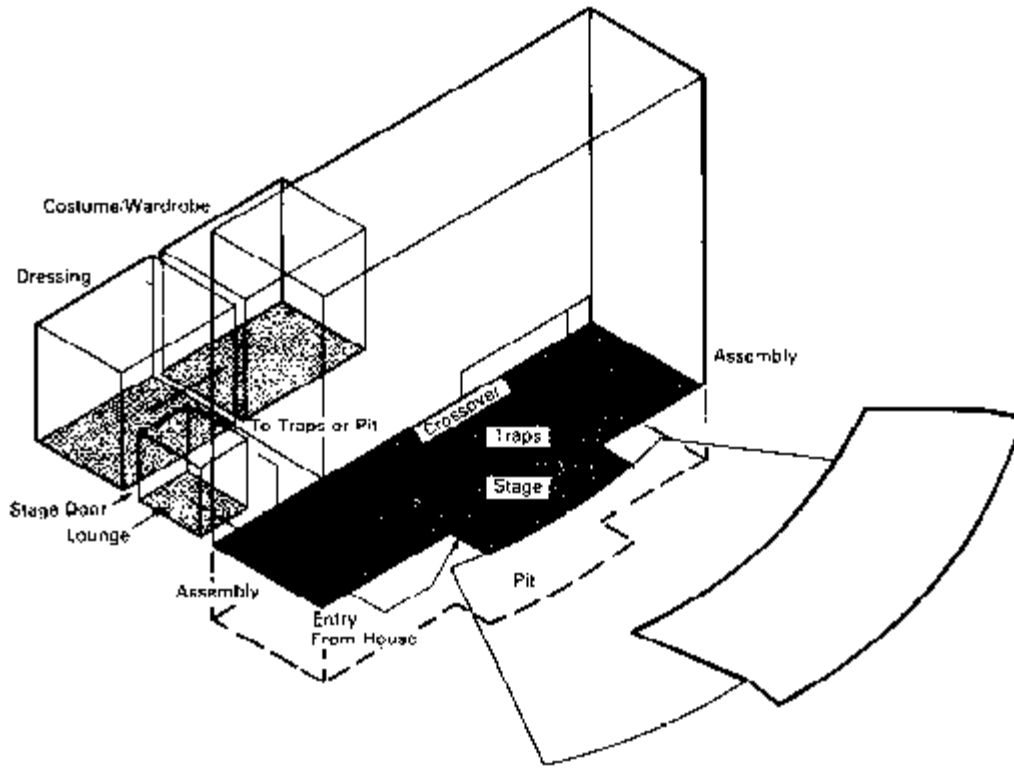


Figure 2

Access systems – performers

## 1.2 PERFORMER ACCESS

**1.2.1 LIFE SAFETY AND EXIT PARAMETERS.** Similar concerns apply to audience and performers- two ways out, short travel, adequate illumination, and non-hazardous routes. The performance area should be separated from the house, although final exit may converge in an enclosed passage provided there is no confusion as to direction of exit. Performers must also be able to exit from dressing rooms and backstage areas without entering the house or stagehouse.

**1.2.2 FUNCTIONAL PARAMETERS.** Multiple entry and circulation opportunities are essential to performance. Entry to performance space includes provision for crossing the stage unseen, entry from below via traps, pit access, and entries from the house

side which are especially important in Thrust and Surround configurations. This last is usually accomplished from actors' vomitories in the audience area rather than from audience aisles, but even Frontal Rooms should allow access to the Stage from the House via demountable or permanent steps at each side. Access to sets and musicians' risers at several levels should be considered, especially where a permanent acoustical enclosure is combined with portable platforms; door openings of sufficient height are needed. Space must be allowed for performers to assemble just before entering the stage or pit, perhaps carrying instruments, etc. Assembly area is in addition to backstage artists' lounges and warmup areas. The number of cast members onstage at one time depends on anticipated performance types. The recommended approach is to plan for critical circulation, such as crossover and assembly area, in addition to performance, scene and working space, for the most effective and flexible use of valuable stage area. Circulation space need not occupy the full height of a stagehouse.

### **1.3 TECHNICIAN ACCESS**

**1.3.1 LIFE SAFETY AND ACCIDENT PREVENTION.** The emphasis in technicians' areas is on prevention of injuries to themselves, bystanders and cast and audience members. Common sense, discipline, and a healthy respect for potential consequences of negligence are the most important guidelines; in many situations, technical systems cannot be both functional and foolproof. Reference to OSHA Safety Standards will help identify hazardous conditions and methods of abatement. Most access to equipment leads through other activity areas, such as the stagehouse and house balcony, and shares fire exit-ways. High fire hazard uses, including followspot and projection booths, are enclosed in noncombustible construction provided with two exits. Exits from other workstations are governed by the number of occupant technicians. The same is true for stairways and ladders, which normally need not conform to public egress requirements. They should, however, be noncombustible, non-slip, with adequate handrails and cages. Technician accessways are used all the time, not just during performance. An even higher level of safety consciousness is

required to prevent missteps and personal injuries when the audience is not a present reminder and work effort

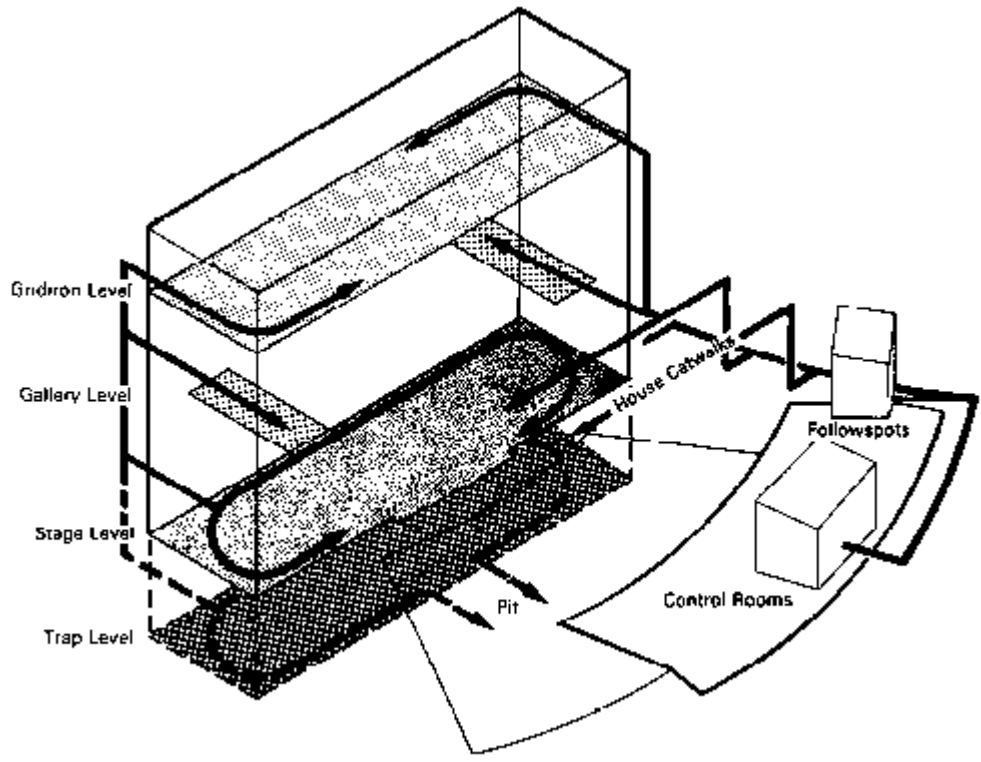


Figure 3  
Access systems – technicians

is great. Observance of this intent will keep personnel passages clear of obstructions, provide safety nets and toeboards to catch falling objects, and allow for secure equipment mounting with safety lines. Thorough grounding of electrical equipment and its location away from traffic will minimize occurrence of shocks and burns.

**1.3.2 FUNCTIONAL PARAMETERS.** Access to performance equipment has greatest influence on Room design where technical operations are concerned. The position of lighting and rigging devices must be set by functional requirements, and access follows. It is best to integrate them structurally wherever possible, as in gridiron, front-of-house lighting catwalks, and boom towers. With the possible exception of border



lights on winched battens, all lighting equipment must be accessible for final adjustment in place. In the stagehouse, this can be accomplished from portable ladders and manlifts, but front-lighting should always be associated with catwalks. Manned instruments, such as short-throw followspots and TV cameras should have preplanned locations including necessary power and communications jacks. Access to these locations, control booths and consoles should not conflict with audience access or vision, nor with fixed instruments. Onstage, working space must be generous to permit crew movement around waiting set pieces and a location should be provided for the stage manager's work-station. Other work area access includes the grid on loft blocks and weight loading gallery or pinrail. Ample clearance is needed around electrical equipment racks and dimmer banks which in some cases are located at one end of the stagehouse.

## **1.4 SCENERY ACCESS**

**1.4.1 LIFE SAFETY.** The primary goal is to remove people from danger as efficiently as possible; protection of property and equipment is a secondary concern. But inasmuch as retarding the spread of smoke and flames adds to the margin of safety for existing personnel, scrupulous attention need be given fire protection and detection systems in the stagehouse. All material used in the construction of the stage, stagehouse and scenery must be flameproof or fire-retardant, with a flame-spread rating of 25 or less. Treatment of draperies and fabrics should be repeated annually. Where hemp rigging is employed, it is wise to provide wire or chain safety lines on stored or unmoving battens and drops. And in addition to sprinklers and firehoses, strategically located fire extinguishers are highly recommended, including carbon dioxide and foam canisters near electrical equipment.

**1.4.2 FUNCTIONAL PARAMETERS.** The operating aspects of scenery movement are major influences in stagehouse design. Even Rooms without stagehouses and productions using fixed sets must facilitate the entry and assembly of substantial amounts of equipment, platforms and backdrops. A concert grand piano will be 5½

feet wide and up to 12 feet long, weighing 1000 pounds. While scenery drops and flats are relatively light in weight, they are unwieldy in size and very fragile. A demountable orchestra shell, depending on its design and purpose, may be both heavy and bulky. While the diverse characteristics of scenic material and accessory equipment establish the immediate parameters for design, early planning decisions have tremendous impact on the way these needs are best met. It is essential to match initial investment and known operating resources for long term effectiveness. A key factor is the cost and availability of manpower. For example, lighting instruments are costly and require special handling. They must be frequently repositioned unless remounting can be reduced by keeping a large stock in place at all times. Similarly, sets can be broken down into small units and reassembled for each new production, or they can be stored and reused in large units. While volunteer-participation programs benefit from comparatively abundant labor, there are some counter-productive aspects of reliance on predominantly manual effort: inability to accommodate first-rate bus and truck touring shows with preassembled equipment and scene components; inability to move swiftly from production to production or to have a recurring cycle of various performance formats; inability to consistently repeat success as the crew roster turns over; and inability to “revive” demonstrably successful repertoire after a season. Mobility is the important factor, whether achieved through stage mechanical equipment or by the application of many willing, well-directed hands. It is a mistake to suppose provision of motorized platform lifts, elevators, foldingwalls and sophisticated rigging systems will alone take care of these issues. Without forethought, half this equipment will be underutilized, purchased at the expense of vital needs, leaving many of the problems unsolved. Planners should invest enough time to thoroughly model and enact on paper the entire sequence of every production activity envisioned. The path of loading onto stage should be plotted from the receiving area (truck dock), storage area and workshop for continuous clearance in height and width and preferably on In part, this planning relates to support facilities one level. loading is usually from the side of (workshops, storage, dressing, warm-up, construction-rehearsal-performance conflicts), in part the stagehouse opposite the pinrail or counterto the intended primary use of the Room, and in part to external factors dictating the physical reweight pit, but

occasionally through the backlationship of building zones, site access, facility sharing, and budget constraints.

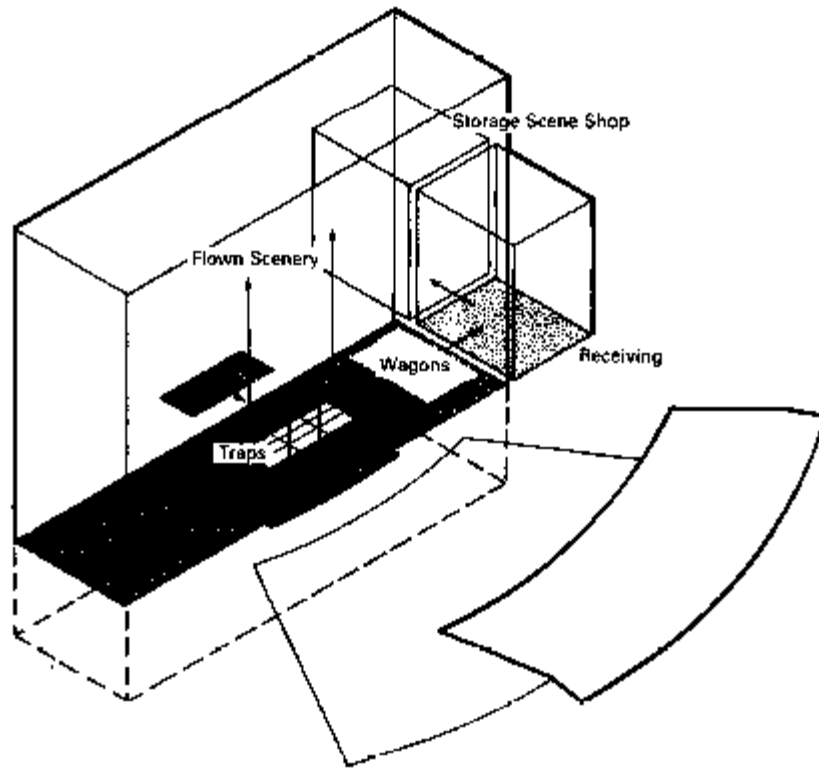


Figure 4

Access systems – scenery

**1.4.2.1 HORIZONTAL ACCESS.** The path of loading onto stage should be plotted from the receiving area (truck dock), storage area and workshop for continuous clearance in height and width and preferably on In part, this planning relates to support facilities. One level loading is usually from the side of (workshops, storage, dressing, warm-up, construction-rehearsal-performance conflicts), in part the stagehouse opposite the pinrail or counter to the intended primary use of the Room, and in part to external factors dictating the physical reweight pit, but occasionally through the backlationship of building zones, site access, facility sharing, and budget constraints. wall. Loading through the backwall needs a deep stage, careful placement of gridiron columns, scheduling of deliveries so as not to interfere with sets on stage, and maintenance of actors' crossover passage during performance. Loading from the pinrail side requires a very high pinrail and weight gallery with special line systems and

weight hoists. No loading door should be less than 8' x 8', and for theaters, 10' wide by 14' high is not exceptional. Consider the longest batten in calculating turning chords of indirect passages. Road shows or use of a remote scene shop make loading direct from trucks important. Provide a receiving vestibule or weatherhood at the dock. Allow sufficient indoor space to completely unload a truck, with clearance remaining to reload it with material already on stage-about 400, but not less than 300 square feet. Scene changes can be handled horizontally, as in open stage configurations, by a variety of means. The use of scene wagons requires ample working space surrounding the performance area for the advance and withdrawal of sets. The more space, the more varied the complement of sets can be. A considerable amount of construction work must take place on stage or in a closely related shop. Modular set design should be coordinated with wagon arrangements. Such sets are difficult to store for long periods. Variations on the scene wagon have included belts and turntables, both of which impose scene design and technical limitations that should not be first choices for new construction.

**1.4.2.2 VERTICAL ACCESS.** Where site conditions or other considerations warrant bi-level facilities, planning requirements are not unlike those for direct horizontal loading except in the matter of expense. It may be that loading can be accomplished at stage level where other facilities, such as repair shops or rehearsal rooms, are below stage. Frequent use of a trapped stage or orchestra pit can require a piano lift in the pit or stage floor. Additional substage activities will justify a freight elevator. Loading at other than stage level poses problems because of the vertical clearances needed. Truly bi-level facilities have great floor-to-floor heights and large-platform, multi-cylinder lifts. Where level changes are smaller, but too large to navigate in 10% maximum ramps, installation of cruder pneumatic or screwjack lifts may be feasible in the loading area. It is most important to define real needs; there are great differences in cost and application of motor driven cable hoists, screwjack and pneumatic piston mechanisms, geared freight elevators, and oil-hydraulic cylinder lifts. Second thoughts will usually reveal a simpler, equally satisfactory solution. Scene changes in the vertical mode refer to flyloft capabilities, although very lightweight properties may be hoisted from a

catwalk grid over an open stage, using rope lines tied off at a pinrail or at the catwalk rails. Fly systems require a stagehouse more than twice as high as the proscenium, in order that flown sets can be withdrawn from line of sight. Evaluating possible combinations of flown and/or horizontal scene handling suggests that a well-developed fly system is in order for most new theatres and concert halls. In a generous stagehouse, elements of horizontal systems can be employed to advantage, but full development of both methods entails an enormous stagehouse volume, high costs and technical wrinkles that may be self-defeating. On the other hand, conversions of existing spaces are most successfully approached as open-stage Rooms having generous offstage working area. In general flown sets have the advantage of traditional techniques.

**2. ENVIRONMENT.** Physical and psychological environmental factors are a part of the total performance experience. In a sense, Theater is the creation of special environments of light, images, sounds and symbols. The ordinary creature comforts we expect must also be furnished if the whole experience is not to be marred. Interestingly, human abilities to distinguish and delight in subtle differences of pitch, harmonics, color and brightness over a broad natural spectrum do not extend to our tolerance of temperature variations except after lengthy periods of acclimation. In terms of architecture and engineering, performance activities generate extremes of environmental control problems. Large numbers of people occupy a confined seating area while performers undertake some of the most strenuous sustained exercise in human capability. A battery of high power lights and motorized devices emit still more heat into a carefully sealed enclosure, wherein the engineer is called upon to maintain comfort conditions without attracting the notice of the occupants. At the same time, the architectural design must maintain (and periodically vary) environmental characteristics that are at best subjectively defined. The patron who was absorbed in the presentation must at some point return to the everyday world, collect wraps and go home, satisfied.

## **2.1 MECHANICAL SYSTEM FACTORS**

**2.1.1 HEAT GAIN.** During performances, mechanical systems are devoted to cooling and ventilating. Cooling loads are the product of people, power consumption, and local climate conditions. Although the major loads are internal, the required properties of building enclosure will have bearing on the contribution of external loads. Insolation (glass gain) will be small, but large surface areas are involved. The acoustic benefits of massive masonry construction for Music facilities, in particular, necessitate a concern for thermal lag contribution to the load at peak evening hours. Special characteristics associated with Drama activity include a proportionately higher contribution from extensive lighting equipment and hoist motors, as well as from strenuous effort occasioned by dancers and scene handling crews. Special characteristics for Music activity include lower lighting and effort loads, but typically a

larger total occupancy. Moreover, the duration of critical tolerances extends beyond performance hours in the interest of maintaining constant conditions for musical instruments. This includes relative humidity near 50%, which will incur additional power consumption depending on outdoor conditions.

**2.1.2 SYSTEM CHARACTERISTICS.** Drama facility systems will encounter high peak cooling loads and high peak power loads, and must be able to handle large fresh air changes. Loads peak rapidly as the audience enters and the performance begins. The logical tendency to start-up systems in advance of curtain time often results in a period of discomfort until actual loads catch up. On the other hand, many Rooms have inadequate noise reduction details built into their systems. As a result, the systems are shut down during performance, causing increasing discomfort that must be offset between the acts with high load cycling. In comparison, initial discomfort is preferable. Music facility peak cooling and power loads will be less exaggerated. Considerable sophistication of control systems is involved, and the acoustic noise control criteria applied to air distribution and mechanical devices are among the strictest practicable. Acoustic linings, sound traps and isolators, and required low velocity at supply grilles necessitates extensive ductwork and the treatment of large amounts of outside air. The latest reference ASHRAE Handbook and technical manuals should be checked to be sure the critical noise control, pressure balances and humidity criteria are correctly identified before design begins. Designers should be certain that every relevant factor is pinned down and included in the final load calculation, including all appliance loads, occupants, orientation of the building and ventilation requirements. Recommended ventilation at 30 CFM per person includes fresh air at 15 CFM per person when no air conditioning takes place. In mild weather, preperformance cycling of this kind may be sufficient, but as heat loads increase, cooling and dehumidifying become necessary. Since the stale air is being filtered, treated, and mixed with fresh air, conditioned air may be supplied at a lower rate-25CFM per person-with only 10CFM of outside air. This should provide a comfortable 8 air changes per hour and a reasonable economy in the cooling cycle.



**2.1.3 TYPICAL APPROACHES.** Because of the closed nature of performance Rooms, heat generation needs will be relatively low. Considering fuel resources nationally, it will be wise to consider convertible sources-such as interruptible gas and stored fuel oil combinations-or electricity. Since many installation community cores are relatively compact, available or proposed central steam generation should be evaluated, recognizing the relatively low carrying load for heating. Cooling is the principal demand. Absorption cooling using steam supply may be feasible if excess capacity in yearround steam generation exists at peak performance facility hours. Otherwise, central complex or individual facility chillers and centrifugal compressors are likely candidates. There are long hours during the day when the Room is occupied by only a few people without attendant lighting loads, at which time low level air conditioning is required. Heat pump applications should not be overlooked if a substantial facility with a high level of active programming is expected. Since performance hours coincide with winter heating demand in some latitudes, the excess heat of the facility can be transferred to neighboring rooms or buildings.

Effective zoning is an important consideration in system design, especially where Room use is intermittent while support facilities are occupied on a regular daily schedule. Central incremental hot and chilled water generation is often employed with separate air handling units for each zone. Where support facilities are insignificant, remote, or separately dealt with, the performance Room air distribution system will usually have its own central air handling unit, since the major supply zone is a single space. However, it is not unreasonable to consider a multizone package unit for a small facility, provided adequate modifications of standard fabrication can be obtained to account for noise reduction and control system criteria. The largest of the facilities proposed in this guide might make use of medium pressure variable volume supply in connection with support facilities, kicking in the main space system as required. The key requirement in all cases is a separate, carefully preset and balanced Room system to minimize noise, disturbing air currents and pressure differences that can cause curtains to billow. In the House, air is supplied from the ceiling, the side walls, and the edges of balconies at low velocity. In order to obtain uniform distribution,

return air is drawn from the center of the seating area through 'mushrooms" under the seats, sometimes using the wedge shaped space below the floor as a plenum (return ducts are preferred for the ability to regulate volume and control noise). For shallow balconies, the side wall supply is usually sufficient, but deep balconies require overhead soffit supply and perhaps some underseat returns. A small amount of air should be exhausted from the ceiling to prevent formation of hot pockets that can have a radiant effect. However, 40-60% of the lighting load can be removed by exhausting air around the instruments, which is especially relevant to front-of-house booms and catwalks, followspot booths and on-stage power panels. Design of the stagehouse system is most critical. To prevent billowing curtains and movement of lightweight scenery it is essential to carefully balance air pressures between Stage and House. The best practice is to pre-cool before the curtain goes up, relying on the house systems to maintain tolerable conditions during performance. Therefore, the essential ingredients are control of the stagehouse system from the stage itself, and balanced supply and return both within the stagehouse volume. There is very little room for ductwork in the stagehouse. Recommended practice is a "dumpdown" low velocity supply under the fly gallery with a wall return grill just above, obviating the need to cool the hot air of upper regions which is exhausted. For low-load, non-performance hours, fin-tube or electrical radiation may be required along exterior walls. lights, a glossy material in the wrong place can wreak havoc on a carefully crafted visual presentation. As a general rule, finishes at the stage end of the Room should have the characteristics of matte surface; black, white or neutral color; and ease of maintenance, cleaning or replacement.

**2.1.4 AMBIENCE.** The upper level exhaust out-take can serve double duty for smoke removal in emergency mode by cutting in fans activated by detectors above the gridiron and by manual throw fire alarm. Normally, heat and smoke detectors are located in return ducts serving the House.

## **2.2 ARCHITECTURAL DESIGN FACTORS**

**2.2.1 FUNCTIONAL CONSIDERATIONS.** Measurable environmental criteria are readily obtained from such standards as the ASHRAE Handbook referred to above, IES Illumination levels for various tasks, and empirically determined preferred noise criteria (PNC) for various space uses. These most often relate to equipment systems and details of construction. A more general criterion of good design relates to the organizational clarity of public assembly facilities, the ease of orientation and fulfillment of expectations. It makes little sense to arbitrarily “design” complexity into ordinary activities like finding one’s seat. Comfort involves relaxation and a sense of control. Public space design must naturally minimize questions of procedure. Inherent clarity in architectural space results in functional efficiencies, too-in operating factors like anticipated depreciation and repair, the number of directional signage devices needed, the prevention of accidental injury, and effective security control. A second functional concern involves the acoustic and visual effects of materials and finishes in performance facilities. No furnishings, fixtures, draperies, paints or wall coverings should be installed without investigation of their properties with respect to desired Room qualities. While this is especially true for acoustic criteria, a poor selection of lighting fixtures, a paint pigment that behaves oddly under performance lights, a glossy material in the wrong place can wreak havoc on a carefully crafted visual presentation. As a general rule, finishes at the stage end of the Room should have the characteristics of matte surface; black, white or neutral color; and ease of maintenance, cleaning or replacement.

**2.2.2 AMBIENCE.** Concern for environment extends beyond measurable functional needs. The need that generated the performance is not measurable, yet it must be reckoned with. Gatherings of people are social events-an opportunity to see and be seen by others in a particular context. The appearance of the Room, and of people in it, is an essential quality. This quality translates to a simple rule; the people should be seen first and best. Finish selection, lighting color, level, softness, and modeling effect should be keyed to human features and skin tones. A little glitter gives a helping hand to social dress, but it should not distract. The scale of detail and pattern against which people are seen should match human dimensions. Finishes should be considered in

their relationship to people (next to, near, and far away), and in terms of richness and warmth, contrast, and finally overall tone.

**3. PERFORMANCE SUPPORT.** This section discusses the second major component of a performance facility-backstage production support. The process of identifying priorities is made easier by the selection of stagehouse functions. The task is to match an appropriate complement of support facilities with the range of anticipated presentations. Many of the choices can be approached by asking who is to use and benefit from support facilities and in what way. Since the performance types dealt with in this Guide will consist of various blends of music and drama activity, it is useful to discuss backstage functions in terms of Music and/or Drama support. Begin by identifying basic, minimum supports for a functioning facility, and enlarge on or specialize them to answer further demands.

**3.1 GENERAL CONSIDERATIONS.** While the production needs of Drama are quite different from those of Music, within each category basic needs are similar regardless of house capacity or specific presentation types (choral vs. instrumental music, for example). With the possible exception of scene handling support (simple open stage sets vs. flyloft box sets and wagons), basic needs are also similar for various stage forms. The required quantity and quality of specific facilities are related to program objectives and operating levels. Music and drama center (MDC) planners and designers should be sure to account for the anticipated rate of production turnover, the ratio of professional touring shows to those locally produced, the relative emphasis of training, education and skill development, and the categories of use to which future budgets may pertain. Since construction resources are limited either by dollars or space allowances, some crucial facilities will be implemented at the expense of others less vital.

Type of Show	Actors		Plan Dressing Rooms For		Stage Hands	Musicians	Managers	Directors	Designers
	Principals	Extras	Principals	Extras					
<b>Pageant</b>	10-50	100-200	40	500	50	100	4-10	3	3
<b>Grand Opera</b>	4-10	20-100	10	100	50	80	2-4	3	3
<b>Presentation</b>	4-10	20-100	10	50	30	30-200	2-4	3	3
<b>Vaudeville/Revue</b>	4-10	20-50	10	50	30	10-30	2	0-3	0-3
<b>Operetta</b>									
<b>Musical Comedy</b>	4-10	20-50	10	50	30	10-30	2-4	3	3
<b>Legit. Drama</b>	2-20	10-50	20	30	3-30	8-20	1-4	1	3
<b>Motion Picture Palace</b>		None			2	0-50	0	0	0
<b>Neighborhood Cinema</b>					0	0	0	0	0

Figure 5  
Typical cast and crew sizes

**3.2 CLASSIFICATION OF PERFORMANCE SUPPORT.** Allocation of limited resources among potential support functions is aided by differentiating the activities served. Three classes can be defined:

- Performers' facilities are those that accommodate cast activity during scheduled performances (including dress rehearsals).
- Technical facilities accommodate activity accessory to scheduled performances.
- Preparatory facilities are for production and maintenance activities prior to performances, which in most cases continue year-round and day-to-day.

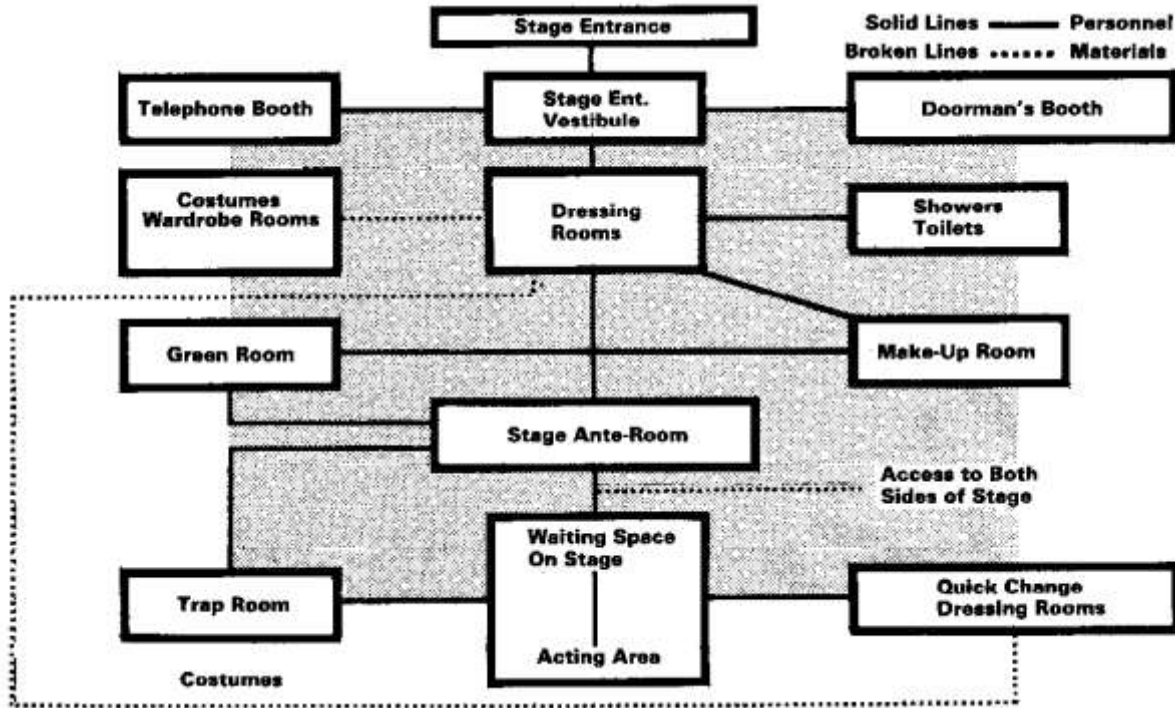


Figure 6  
Performers' traffic pattern

In general, performers' facilities for Music or Drama are similar in functional objectives while technical and preparatory facilities reflect the differences of vision and hearing criteria. Unfortunately, when ambitions are pared down to match resources, technical and preparatory facilities too often suffer undue diminishment. Selecting appropriate emphasis requires understanding the parameters that influence scope (size or quantity) of facilities. Quality has more to do with understanding of function. Both scope and quality are proportional to cost.

### 3.3 PERFORMERS' FACILITIES

**3.3.1 PARAMETERS.** The anticipated size of the most likely cast is a key factor, as well as its composition by sex and by artistic discipline. Comparative cast sizes are mentioned, but much depends on the dramatic literature and interpretive technique employed by the director. There are usually equal facilities for men and women, but the choice between group and individual dressing facilities may affect ability to vary



this ratio. The needs of musicians and actors differ and respective facilities are often separate. Finally, planners must weigh the merits of recognizing “billing” of performers (prima, star, soloist, lead) as an incentive or as an undesirable qualification. Large MDC’s anticipating exceptional professional touring programs may find guest artist suites an important consideration.

**3.3.2 FUNCTIONS.** Dressing, toilets, artists’ lounge, green room, stage door, and pre-entry assembly areas are commonly provided for all performing arts disciplines. Musicians’ dressing is typically locker room fashion. Showers are especially important for drama and dance. Choice of group or individual dressing areas depends on the parameters noted above. An artists’ lounge gains importance when group dressing facilities are provided; it is a place where performers can relax, wait for their calls and refresh themselves. The green room is slightly more formal, a place to meet invited guests and the press, and may sometimes double for small rehearsals and cast parties. It is accessible from the House or public lobby. The stage door provides controlled entry to backstage away from the public entry, often with a security post offstage. Assembly areas are discussed under stagehouse access. Drama facilities must provide makeup areas, often separate from dressing, with suitable mirrors, lighting, countertop and washbasins. A costume wardrobe is recommended, communicating with dressing rooms. Full length mirrors are needed for dressing, makeup and assembly areas. Musicians need areas for warm-up and tuning prior to performance. If none can be provided, a more generous sound proofed dressing room is essential. Instruments too large to be carried through dressing should have a locked standby area offstage.

### **3.4 TECHNICAL FACILITIES**

**3.4.1 PARAMETERS.** The relative dominance of Music or Drama content in primary presentation types will be reflected in technical needs, as will the extent and magnitude of accessory equipment. In general, no element of basic technical facility can be done without, although varying levels of development should be considered



carefully; certain additional functions may be judged important for special purposes. The nature and size of technical facilities greatly depends on the number of non-performer crewpersons and whether they are touring personnel or resident production staff.

**3.4.2 FUNCTIONS.** Basic technical facilities for both Music and Drama include lighting and sound control, manned equipment positions and accessways, and the stage manager's command post. A substantial stage crew may require a waiting lounge and locker area of its own.

### **3.5 PREPARATORY FACILITIES**

**3.5.1 PARAMETERS.** There are two sorts of basic preparatory activities corresponding to performers' and technical facilities and similarly qualified by respective parameters. The performer who prepares by repetition and practice can sometimes use the Room and its support facilities for rehearsal between actual performances. It is decidedly desirable to limit this situation to dress rehearsals only. Technical preparations, however, require a set of quite different facilities which should therefore have priority status in construction plans. In either case, the scope of these facilities is proportional to the rate of production turnover and program variety. Since the performance Room is literally a single space, conflicting use cannot be concurrent. Auditions, part-reading, dance exercise, orchestra rehearsal, set-building and lighting run-throughs are mutually exclusive. Scheduling this activity in alternate time periods sometimes results in very few productions per season and limits the occasions when touring shows can be fitted in. As voluntary leisure activity, most preparation takes place in the evening, which is also prime performance time. The ability to separate greatly conflicting activities, handle them simultaneously, and free the Room for regular performances is vital to a healthy MDC program.

**3.5.2 FUNCTIONS.** Every performing arts facility requires a loading door and receiving area with associated trunk storage (for road boxes) and general storage (for bulk

material). At least a maintenance shop with tool storage should be provided adjoining the stage crew quarters and office. Ideally, rehearsal space should be readily accessible from these areas, unless a remote rehearsal facility is provided. Drama facilities require a scene shop rather than (or in addition to) a maintenance shop. As a minimum, it should be nearly as large as the performing area of the stage and directly accessible to the stagehouse. The layout of the shop is important to the smooth flow of work from general storage to fabrication and assembly, then to the finishing area before moving the piece on stage or to temporary set storage. A separate shop is needed for costume fabrication and maintenance. Even a modest repertory theater should have generous wardrobe storage to protect its substantial investment. Long-term storage can be at a remote location if necessary. The production wardrobe work area itself adjoins the dressing areas. Space for the storage and repair of lighting instruments and electric gear should also be provided in a separate, secure room furnished with workbench, cable reels, shelving and wall mounted or overhead hooks and clamping bars for fixture storage. Music facilities tend to require fewer technical construction spaces and more for preparing the performer. These consist of several small practice rooms for individuals, at least one for piano and voice coaching, and a sectional warm-up room for rehearsing portions of the resident orchestra or chorus. The total complement of practice room uses and sizes ultimately depends on the music program. They should be accessible from the dressing areas and stage during performance hours. An MDC designed primarily for Music will have instrument storage and a repair shop in addition to general storage and maintenance, plus chair, stands, riser and lighting storage, and probably a score library. Musical drama and dance require both scene production and practice facilities according to the MDC's primary emphasis. It is most likely that the Drama preparatory facilities will dominate with the possible addition of a dance rehearsal and warm-up studio.

### **3.6 EXTENDED SUPPORT FACILITIES.**

**3.6.1 PARAMETERS.** The preceding discussion of production facilities has focused on minimum basic requirements in support of performance. While frequent actual

performance is the ultimate objective, catalyst and measure of the program, significant goals of community and skill development are also reached through collective activities that involve people and educate audiences. If the first objective-adequate performance-oriented facilities can be obtained within available resources, the extension of selected support facilities may be contemplated. These are not strictly required for performance support, but reinforce and enhance resident programs. As such, they have important application to program goals. Selection of extended facilities is based on evaluation of each installation's program, context and population characteristics. Desire for a high level of amateur participation may mean extensive skill development is needed to form a reservoir of potential cast members. If no similar cultural facility exists in the community, skill development opportunities will attract and educate an audience as well. On the other hand, the community may have an exceptionally well-educated population that demands a level of sophistication attainable only by intensive training for special skills. The combined factors of audience demand for performing arts, ready availability of professional touring companies, and the budget may make for a very full performance schedule. If not, intervals between productions can be programmed with community educational activity. Extended facilities will regularly involve more people or accommodate a broad range of participatory activities, or both. Consequently, multiuse and combined Music and Drama MDC's are likely choices.

**3.6.2 FUNCTIONS.** Any MDC may have extended support facilities in the form of a large multi-use rehearsal room with associated equipment and chair storage. This may be structurally and mechanically independent of the performance plant. In fact, the small dinner theater popular in many communities is an extension that encourages frequent small-scale entertainments and builds support for main facility programs. Other extensions may provide for classrooms, workshops, studios and instructors' offices shared by several branches of programs in the community center. These are not specifically MDC functions, and the performance facility should not attempt to serve many masters. But cooperative use of certain shared facilities can have many benefits by bringing together active, creative minds and increasing awareness of the

arts. Drama facilities may develop special uses such as a literature and script library; a permanent dance studio; a film or video studio and auditing library with facilities for recording, instruction and equipment loan. A full performance schedule can involve many non-actors in an expanded scene and costume shop or set and lighting design workshops. Music facilities may have score and record libraries that are not duplicated in unit subprogram facilities. The MDC can also provide larger, more specialized rehearsal rooms or a recording studio with professional equipment, instruction and editing facilities.