Pre-Design Analysis



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Precedents

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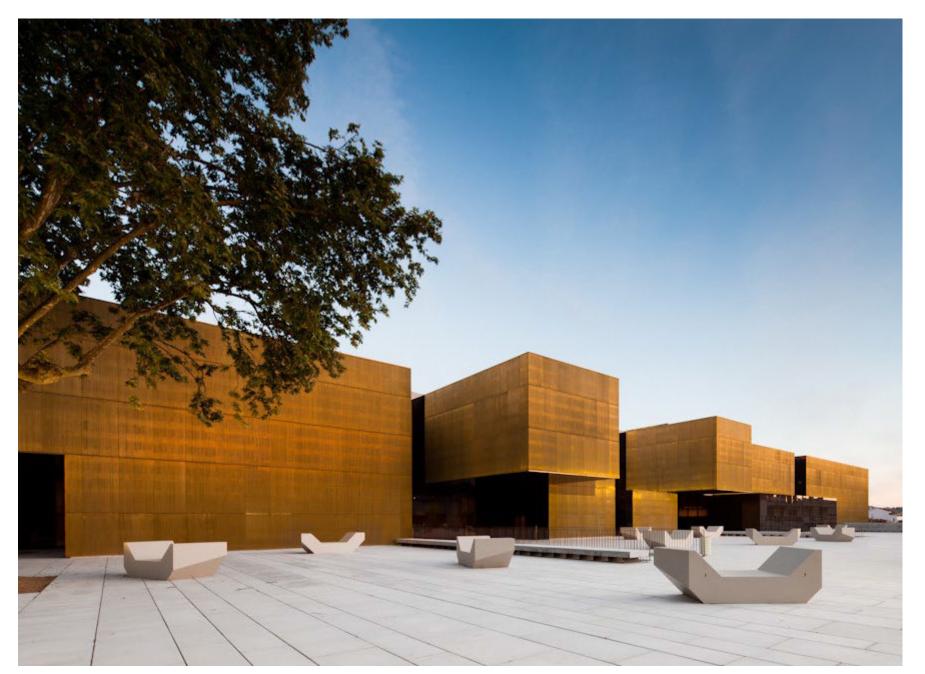
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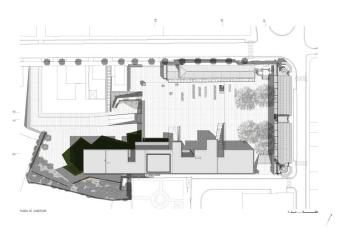
Platform of Arts and Creativity

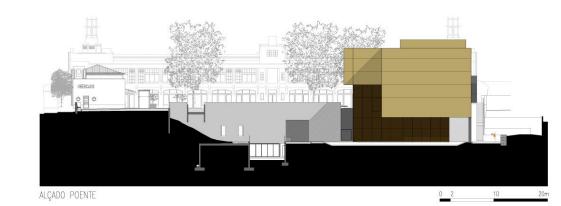
The Platform of Arts and Creativity by Pitagoras Arquitectos is great example of program organization. The project is organized into three different parts that can be used independently as well as simultaneously: the Arts Center, Creative Labs, and Workshops to Support Emerging Creativity. The Arts Center houses a gallery space and the multipurpose space for additional activities, performances and shows. The Creative Labs or the business support offices are for the reception and installation of activities related to creative industries. The Workshops contain workspaces for various types of artists to develop projects on a temporary basis. Aside from the strong organization of the program for this project, the attention to the site is very important in this project. The designers used the entire site and worked the slope of the landscape into the design of the outdoor space and the circulation in and out of the building. The shapes of the buildings are related to the name commonly associated with the surround-ing area known as "the square". The name is inherited from the market square where the buildings that make up the Municipal Market and the space that is defined by them create a square, which is a common characteristic element of the urban landscape of the city of Guimarães. The treatment of the site and the mesh between the visual and performance arts in this project can be con-nected to the NCMA.PAC project program.

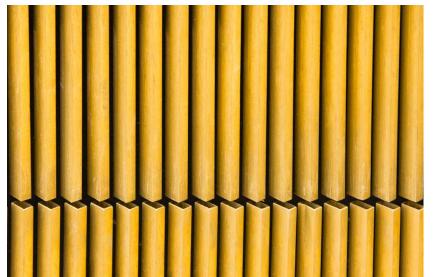


Take note on the way that the project uses the entire site. The buildings frame the central space creating a versital outdoor space that works with the sloping landscape. The layout of the site also show how the project relates to the sur-rounding district and historical characterists of urban landscape of the city of Guimarães.



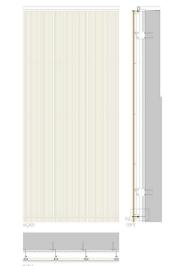


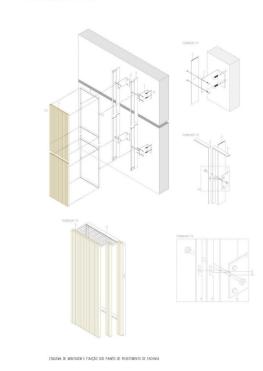


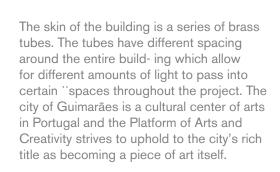




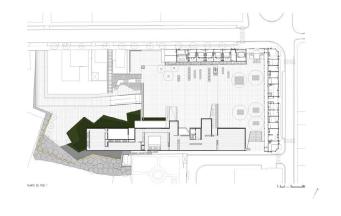


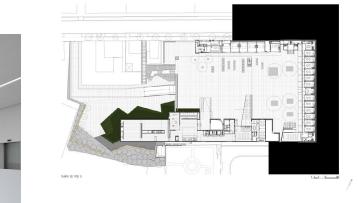


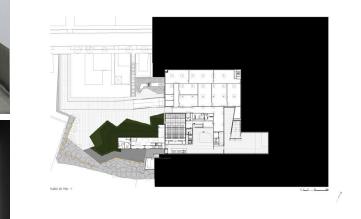




The Platform of Arts and Creativity has a strong organized plan grouping each program unit with a simple linear circu- lation. Take note on how the main entrances and the circu-lation spaces face toward the central square and how the program spaces line the edge of the site.



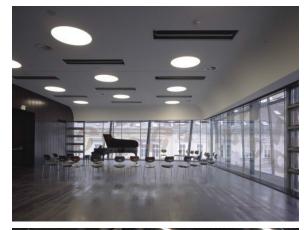






MUMUTH Theatre

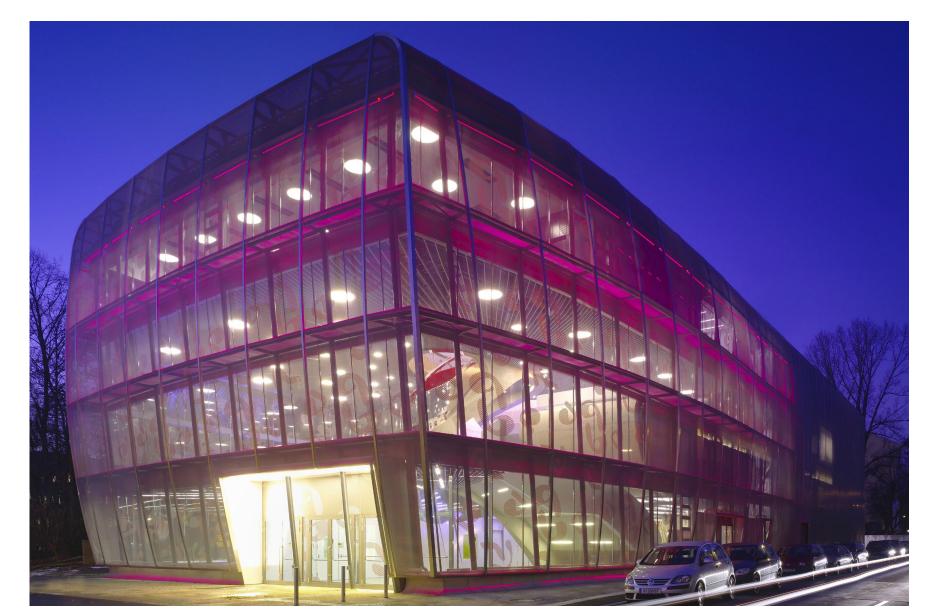
he MUMUTH Music Theatre by UNStudio was designed by combining a unit-based volume (the black box of the theatre) and a series of movement-based volumes (foyer and public circulation). The swirling of the circulation elements throughout the building represents the fluid movement and repetitive pat-terns of music. The façade is treated with a custom pattern of swirls in muted tone similar to stage make-up and then the entire building is enveloped by a glittering mesh. The multipurpose theatre can seat up to 650 and is adaptable for a variety of different performances ranging from single instrument to dance, to full orchestra. The MUMUTH is owned and operated by the University of Graz and promotes the education of young performers so the building is in constant use year round. An element of this project to take note on in relation to the NCMA.PAC is how the designers created a unique circulation system that fluidly connects all of the performance related program spaces from the audi- torium to the practice rooms. Conceptually, the vertical circulation is telling the occupant to follow the music.



Rehearsal spaces use open floor plans that allow for a variety of uses.

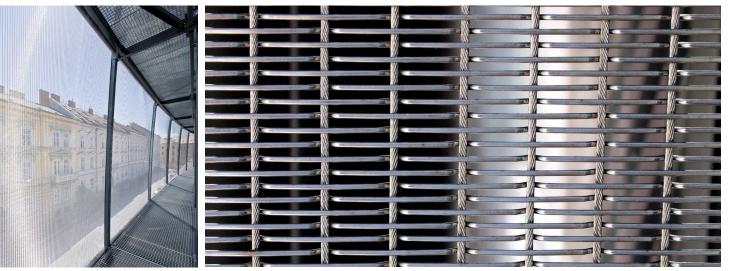


lke the rehearsal spaces, the blackoox theatre allows for a variety of uses. The theatre can seat up to 650 occupants and is used for various performances rang- ing from single instrument to full orchestras, to dance performances.

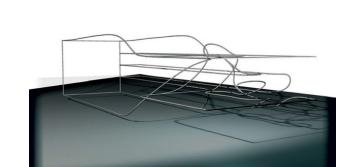


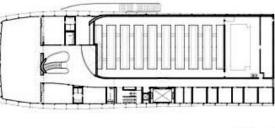


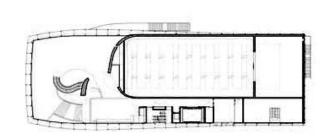




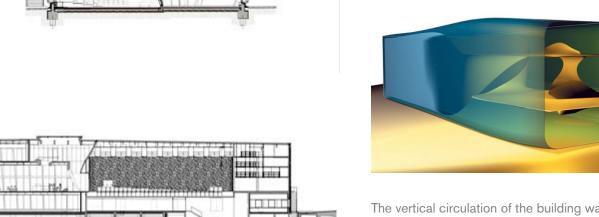
The skin of the building is covered with a glistening mesh similar to that of a microphone. The mesh has both a conceptual purpose as well as a daylight- ing purpose, reducing solar heat gain within the rehearsal and circulation spaces.

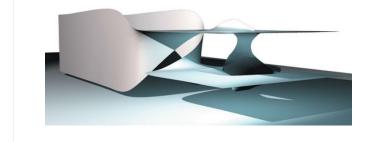


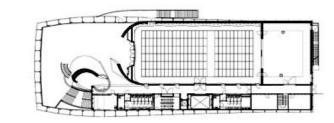


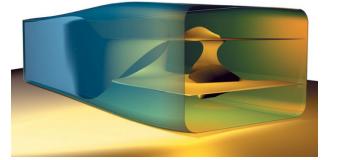




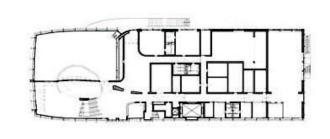








The vertical circulation of the building was cre- ated to mymic the fluid movement of music waves connecting the main foyer in front of the theatre to the rehearsal spaces. The swirling staircase acts as a sculpural element in the building inspiring the occupants to "follow the music".



Dominus Winery

The Dominus Winery, designed by Swiss Architects Jacques Herzog and Pierre De Meuron, is located in the Napa Valley fifty miles outside of San Francisco. It is situated in the landscape, amongst the rows of vines like a plain, rectilinear basket of stones. Its longest axis is oriented North/South like the majority of the vineyard's trellises. It is reminiscent of many of the existing stone barns found throughout the valley, but only reminiscent. It is a building that also acts like a threshold between the flatter, expansive vineyards and the steeper, elevated peaks to the west. The main vineyard path cuts right through the winery's volume. The outer wall is made with an ancient building material but in an unconventional way. The greenish-gray basalt was quarried nearby and loaded into wire cages or "gabions", a device often used in river engineering. Baskets were filled with different diameter stones creating varied densities to differentiate internal program spaces with varied light qualities and views out into the landscape. The gabions are anchored to a supporting metal structure and create a thick wall which keeps the internal spaces cool amidst the heat of Yountville, CA. The outer wall envelopes an inner wall of concrete which makes up for most of the structure. The winery is divided up into three main functional units each connected to a phase of wine production: the tank room for the first stage of fermentation, the Barrique cellar where the wine matures, and the storeroom where the wine is bottled, packed and shipped. The units are divided on the lower level by covered passages but united on the second floor.

Even though this isn't a winery, the poetics involved in producing wine could be a great analogy to the growth of the dancer, musician or performer. "each vine is an individual, and its youth is its formative period. The young vine has to be trained by developing its roots and ensuring the sturdiness of its stem, which, taken together, constitute the knowledge and physical resistance of the future adult vine". This could be analogous to the academy involved in the growth of young performers. The functional spaces of the Dominus Winery, divided by wine production stage, could be analogous to the functional spaces of the academy and the performance spaces. The winery was designed to show respect for the land and to be like a shell containing the essence much like a bottle contains the essence, the wine. It was designed with the climate in mind. Harsh heat during the days and cool nights were responded to with the gabions which have high thermal efficiency.

Parti







Key Ideas:

Unobtrusive human presence: integrate the winery into the landscape visually and diagramatically

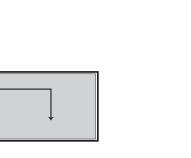
Basalt stones brought from a neighboring valley and contained in stainless steel baskets: both an aesthetic and technical choice for moderate the extreme temperatures of Napa Valley

A complex and elegant structure contained with the visible block: the glass offices provide panoramic views, to observe the activity in the vineyard

Division and integration of functional units

Reminiscent of local structures but not a copy

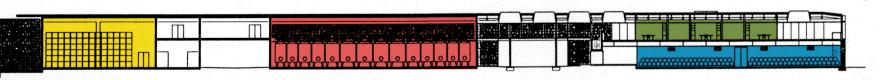
A gate like entrance sitting on a natural threshold

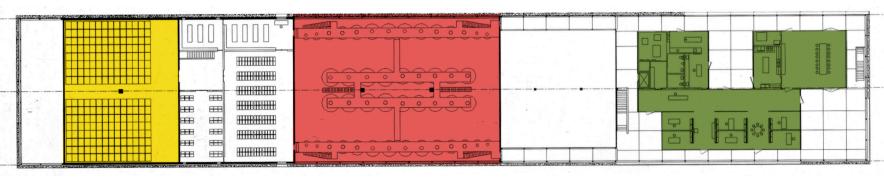


Circulation to Use

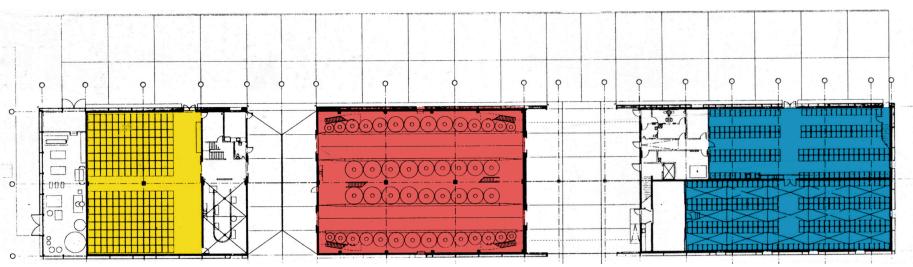


Unit to Whole





Second Floor



First Floor



EMPAC

Architects: Grimshaw

Location: Troy, New York, USA

Principals: Vincent Chang, Sir Nicholas Grimshaw, Mark Huss-

er, Andrew Whalley

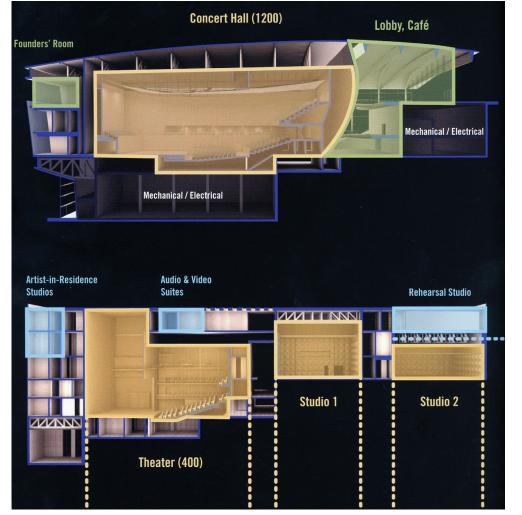
Project Team: Simon Beames, Shane Burger, David Burke, Demetrios Comodromos, Chris Crombie, Chris Duisberg, Matt Eastwood, Paulo Faria, Nikolas Dando-Haenisch, William Horgan, Barbara Kurdiovsky, Kirsten Lees, Melissa Lim, Theo Lorenz, Mariam Mojdehi, Junko Nakagawa, Michael Pawlyn,

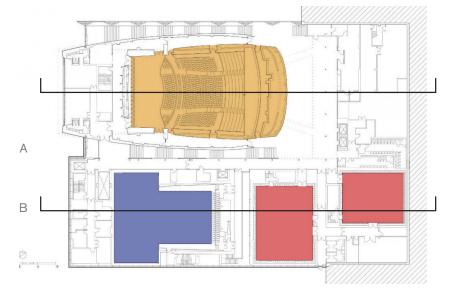
Juan Porral Project area: 221,200 sqf Project year: 2008

The Curtis R. Priem Experimental Media and Performing Arts Center (EMPAC) at Rensselaer Polytechnic Institute was designed by Grimshaw Architects to explore new technologies in the performing arts. The building is viewed as an ensemble of performance spaces. The program is well beyond our program in terms of scope and size but the arrangement of separate performance spaces is worthy of investigation. The EMPAC provides five different performance environments: a 1,200-seat concert hall, a 400-seat theater, a black box studio, a white box studio and a dance studio. It also houses audio and video editing suites, artists-in-residence studios and the campus radio station. The EMPAC is multilayered. The outer layer is simply a glass box that straddles a steep slope. Inside the envelope are the different performance environments in which performances can take place at the same time without auditory interference.



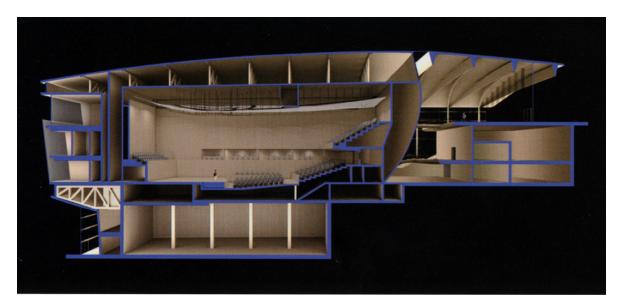




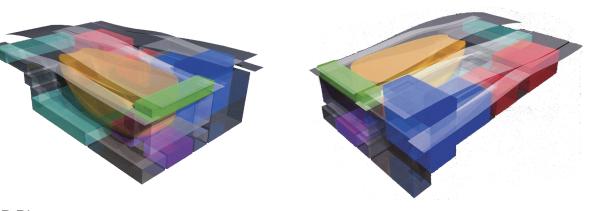


lower level

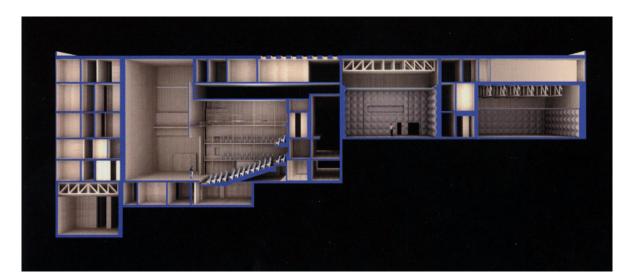




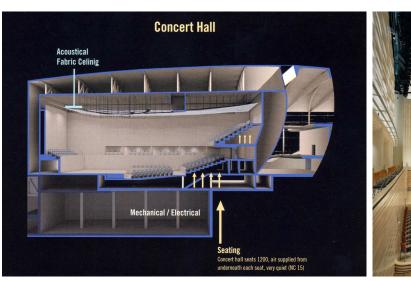
Section A



3D Diagram

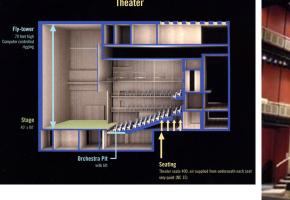


Section B



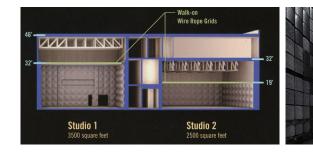


Concert





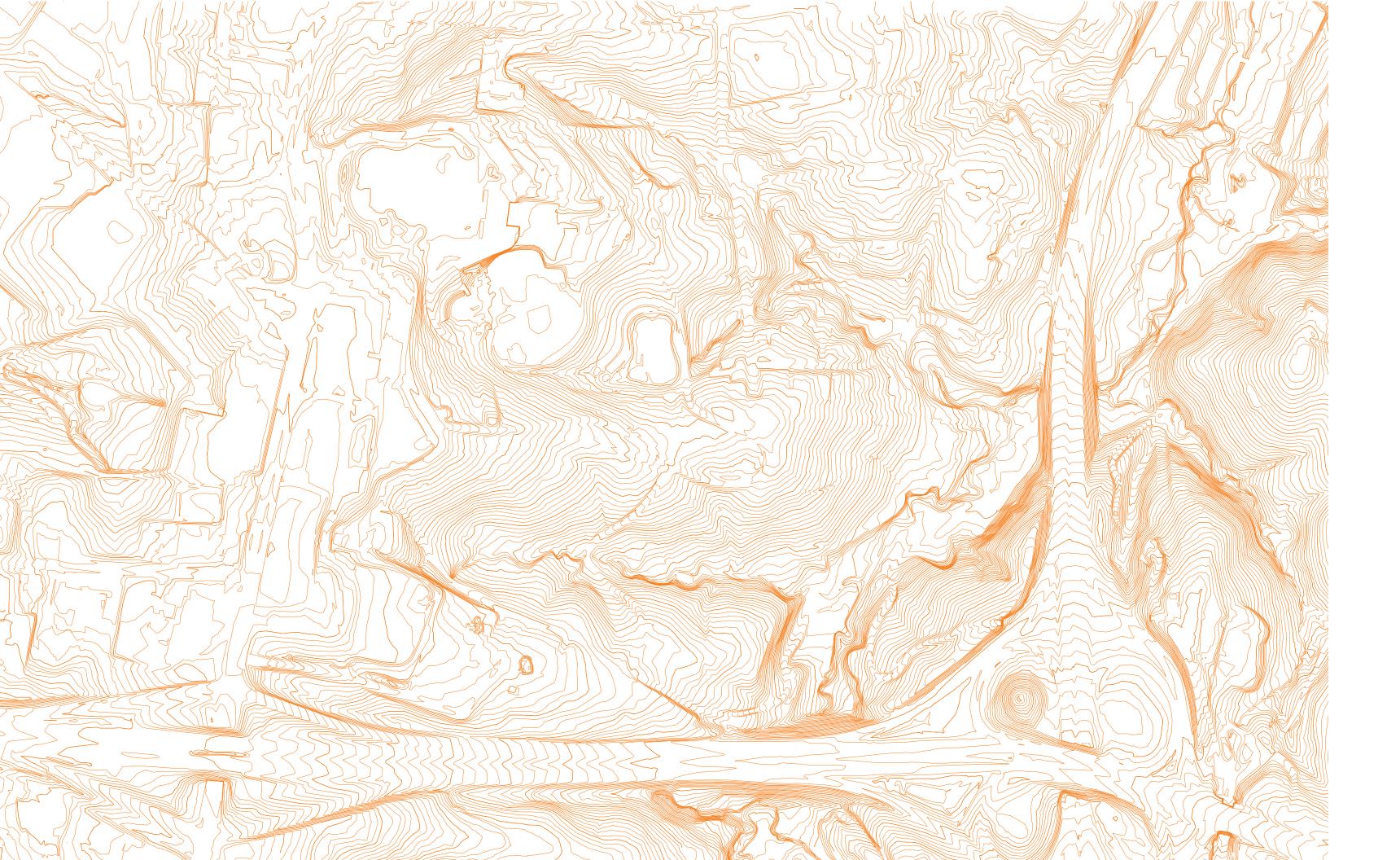
Theat







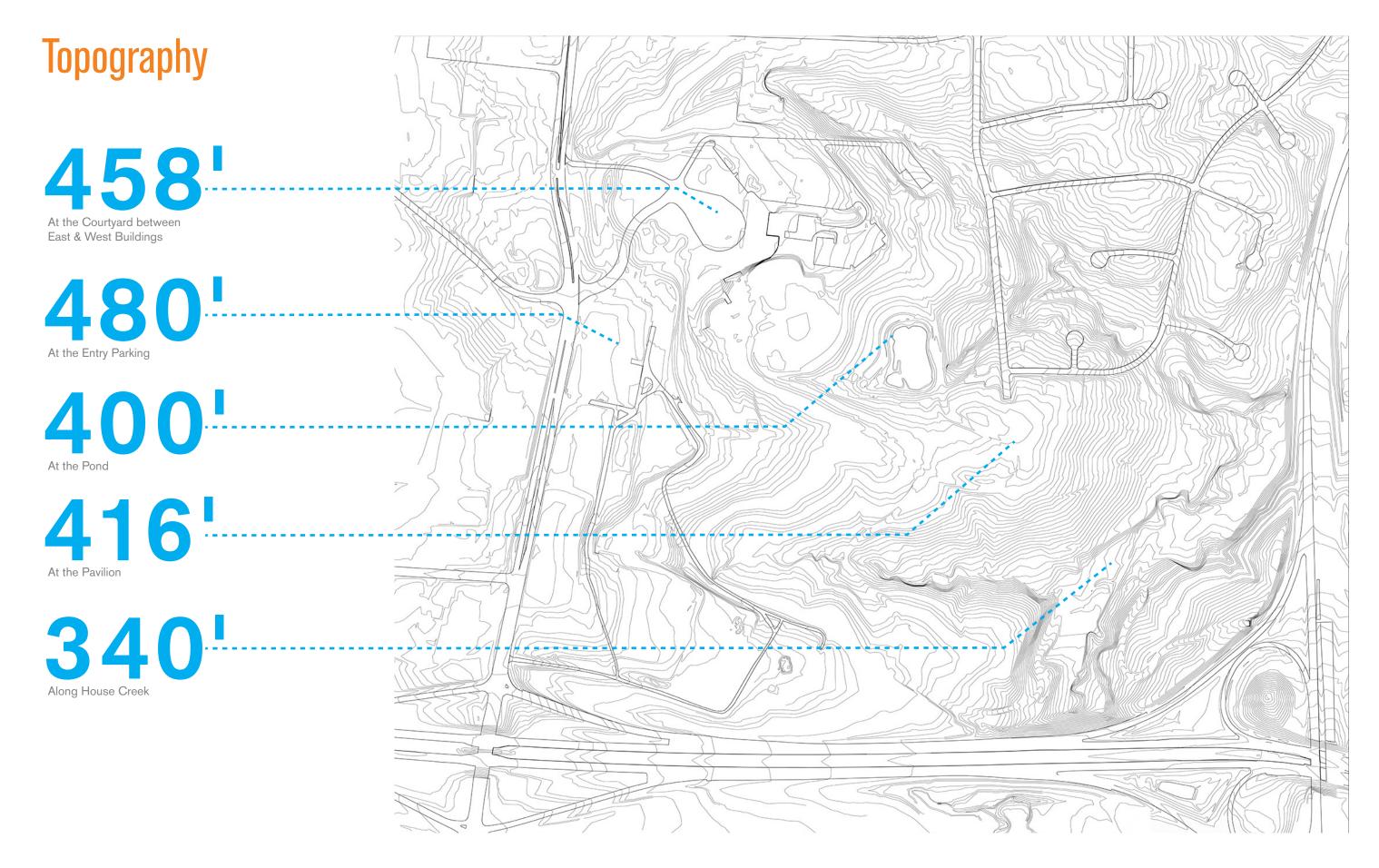
Studios



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Building Usage

- 1. West Building (Phifer Building)
- Gallery - Store
- Restaurant
- 2. East Building (Stone Building)
 Box Office
- Auditorium
- Special Exhibitions
- Staff- Deliveries
- 3. Service/Utilities
- 4. Amphitheater
- 5. Service/Storage
- 6. Storage/Maintenance
- 7. Pavilion
- 8. Private Housing



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Rainfall

43.05"





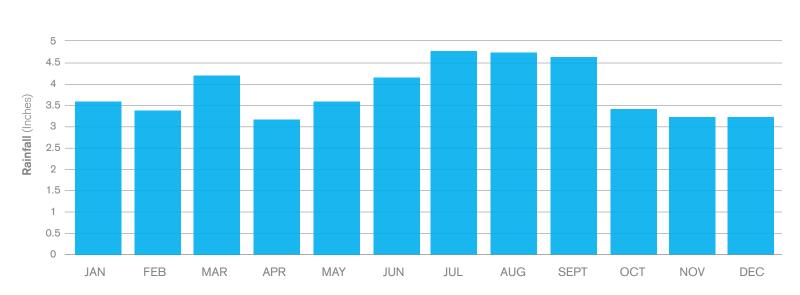


ANNUAL PRECIPITATION

RALEIGH	43.05 inches
NORTH CAROLINA	57.07 inches
ALL AVERAGE RAINFALL	37.07 inches

ANNUAL PRECIPITATION BY MONTH FOR RALIEGH, NC

RAINFALL
3.62 in
3.4 in
4.24 in
3.2 in
3.63 in
4.16 in
4.77 in
4.71 in
4.65 in
3.44 in
3.23 in
3.24 in



Views









Vegetation

- 1. Meadow Mix: Love Grass, Little Bluestem
- 2. Tall fescue, Hard fescue
- 3. Princeton American Elm
- 4. Dura Heat River Birch
- 5. Pines, Maple



Paths & Parking

PARKING LOCATIONS

- 1. Parking along Blue Ridge Road Entrance
- 2. Parking north of East Building
- 3. Handicap Accessible Parking in courtyard

NCMA PATH, DESTINATION WALKING TIMES

A - B = 723 ft or a 2.5 minute walk

A - C = 937 ft or a 3.5 minute walk

A - D = 1398 ft or a 5.0 minute walk

A - E = 1587 ft or a 6 minute walk

A - F = 2144 ft or a 7.6 minute walk

A - G = 3115 ft or a 11.4 minute walk

ote:

These times are based on a very precise mathematical formula of the average human walking speed, which is the sum of the median height, gender, and age of the entire human race: 3.1 miles per hour pr 272 feet per minute.



NCMA Artwork









































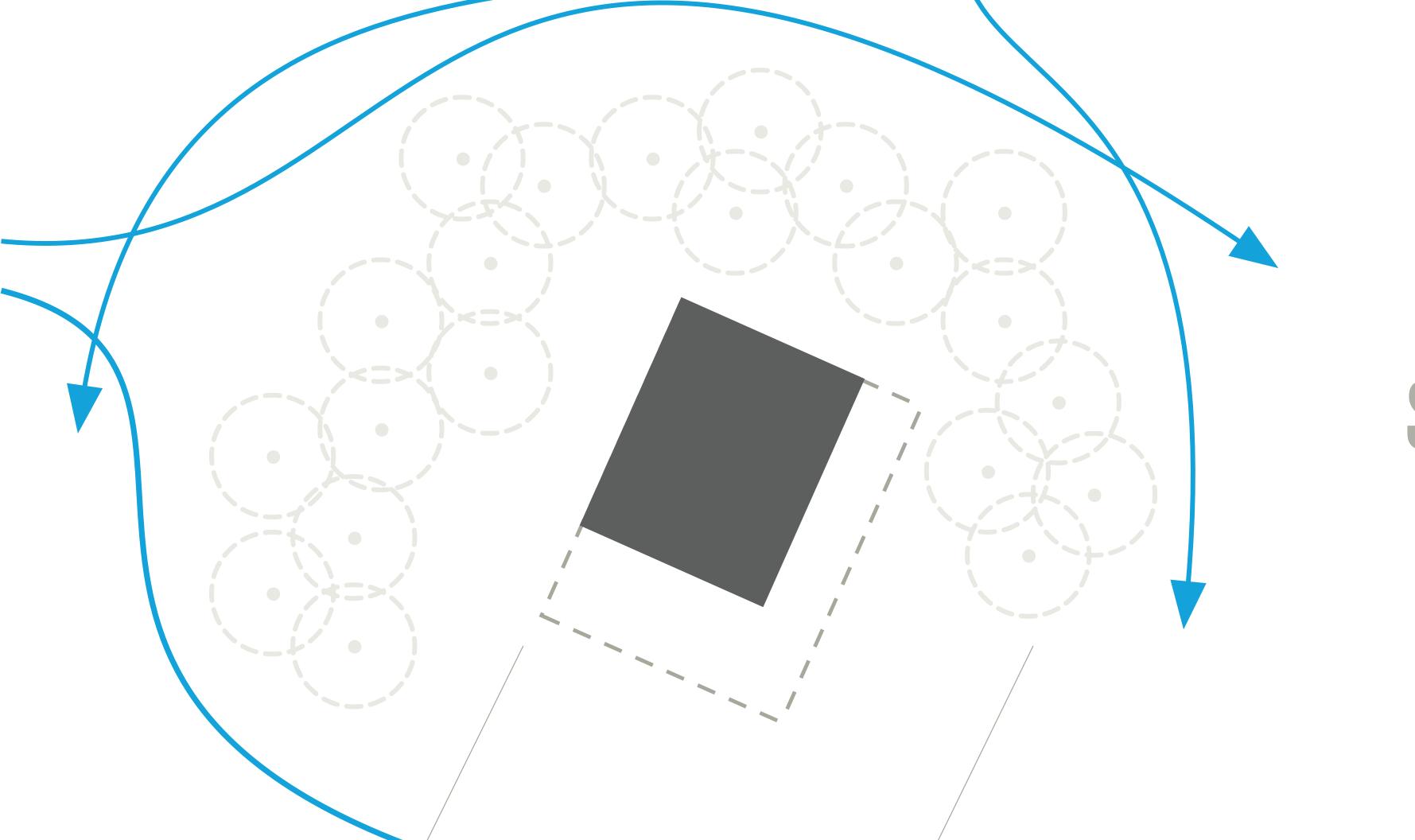


Solar Paths

- 1. Summer Solstice June 21
- 2. Equinox March 20/September 22
- 3. Winter Solstice December 21



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Sustainable Design Strategies

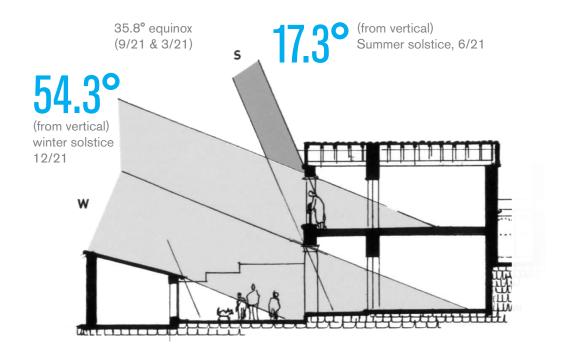
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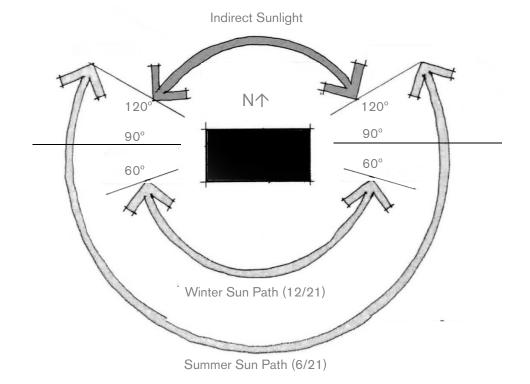
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Sun - Principles

Raleigh's location at 35.8°N latitude means that at the equinox, which falls on March 21 and September 21 each year, the sun angle at noon will be 35.8° from vertical. The change in this sun angle (in section) throughout the season is marked by the first diagram to the right. The steepest sun angle occurs in the summer, and the shallowest occurs in the winter. In order to take advantage of solar thermal benefits, architects must keep in mind these sun angles and attempt to capture sunlight in the winter while blocking sunlight in the summer. The far right diagram expounds on side-lighting techniques not for heat but for adequate worklighting in a space.

The sun also rises and sets at different points on the horizon; in the summer, the sun rises in the northeast and sets in the northwest, giving it a longer path in the sky. The opposite is true in the winter. The diagram directly to the right documents the angles on the horizon (in plan) that the sun rises and sets at the summer and winter solstices. In order to effectively take advantage of southern sun, a building may be skewed 15° either way from flush north-south orientation.





Photovoltaic flat-plate collector panel

36° TILT

To capture adequate rays on a photovoltaic panel like the one show above, the most efficient tilt in 36° average for Raleigh, NC. In the summer, however, 21° is optimal, and winter, 51° is optimal.

Photovoltaics come in all shapes and sizes, not just in rigid panels. For more information, reference:

Green Studio Handbook, Kwok & Grondzik, Ch. 4

Mechanical and Electrical Equipment for Buildings, Kwok & Grondzik, Ch. 29

Sun - Principles

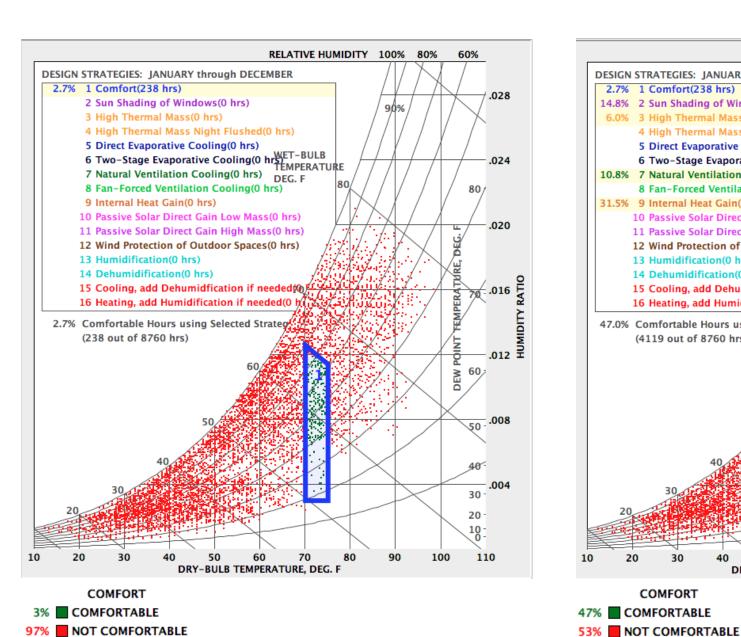
This psychometric chart, obtained by software program Climate Consultant, is a useful barometer of how sustainable design strategies can allow a building to inter a tolerable comfort zone for the user. For example, without any design strategies, the occupants are comfortable only 3% of the time annually (either uncomfortably hot or uncomfortably cold 97% of the time).

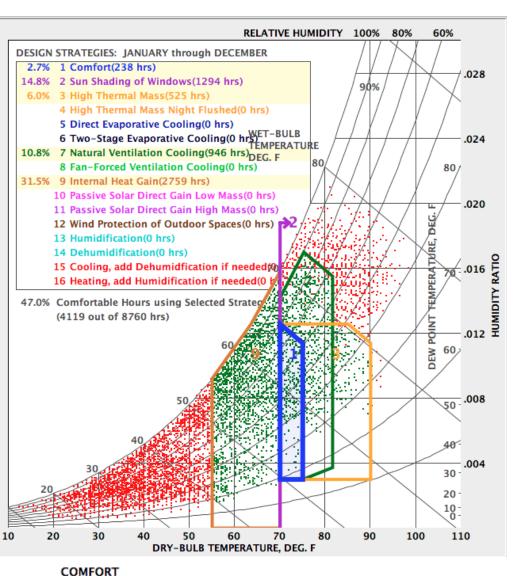
The right-most chart shows how different passive sustainable strategies affect user comfort without mechanical conditioning. According to this chart:

INTERNAL HEAT GAIN

is the sustainable design strategy that has the greatest impact on occupant comfort; it will make 31% of uncomfortable temperatures (between 55° and 70° comfortable for users). To utilize this strategy, ensure adequate sunlight enters the building from the southern side, especially in the fall, winter, and spring when these temperatures are most likely to occur.

The strategy "sun shading of windows" helps make warmer days more comfortable, converting 14% of annual uncomfortable temperatures into comfortable ones. In the summer, attempt to block direct sunlight.



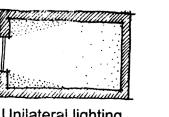


Sun - Principles

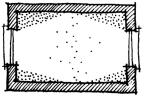
Wind Turbines are machines for generating electrical energy by capturing the movement of natural winds. These machines use shaped surfaces capture the force of natural winds to drive a mechanical generator, converting the spinning mechanical energy into electrical energy. Ideal wind speeds for these machines are between 5-7 mph.

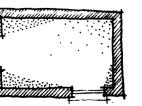
One family of wind turbines are those that create rotation in the horizontal axis. These utilize blades or sails to capture wind energy and convert it into rotary motion. This group of turbines must always be facing the predominant wind, called 'tracking', which is a deficit of this design.

The other family of wind turbines are those that create rotation in the vertical axis. These use foils to capture wind and cause rotation in-line with the stem of the system. These machines have a more complicated energy transfer system, as they generate less rotational velocity but higher torque, where it is the former that is most useful for electrical energy generation. These machines do not, however, need to track to the direction of the wind.



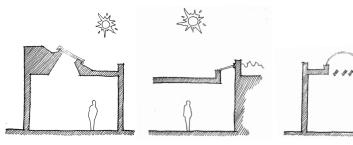
Unilateral lighting





Bilateral lighting

Plan: side-lighting strategies to consider in a room. Consider orientation.



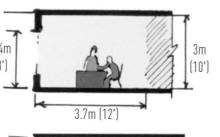
Rooftop lighting techniques: sawtooth, wallwash, and louvered skylight. Use in place of or in addition to sidelighting.

white	00-90%
pale nellow, rose	50%
pale beige, lilac	70%
pale blue, green	10 - 75%
mustard nellow	36%
medium brown	16%
medium blue, green	20 - 50%
black	10%

	00-90%	ceilings	70-80%
W, rose	50%	WALLS	40-00%
, lilac	70%	+100rG	20-40%
green	10 - 75%	10-75% Recommended Reflectances	
nellow	36%		100 111111 015
PYOWN	16%		
lue, green	10-50%		

Wall colors affect reflectance of light. All figures to the right use a white wall color, but different colovrs would change the figures.

40 feet Maximum daylight penetration into a room or building from only sidelighting.

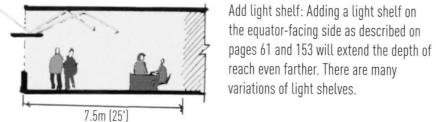


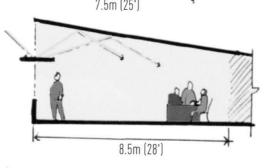
Standard reach: Daylight depth of reach with a standard window configuration. The effective depth of penetration of light into a room is about one and a half times the head height of the window.

Increase height: Daylight depth of reach can be increased by raising the ceiling and window height.

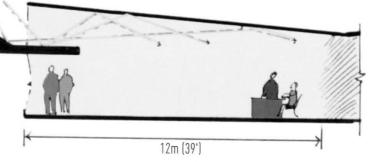
Add light shelf: Adding a light shelf on

variations of light shelves.





loped ceiling: Sloping the ceiling so that it becomes lower farther away from the windows can reflect more light and increase the reach.



The upper limit of side-lighting includes the following strategies:

High ceiling: 15 feet

Slope ceiling to rear: 13 feet

Deep light shelf: 13 feet with reflective sloped edge

Rule-of-thumb diagram for typical side-lighting strategies and their limits.

Water - Principles

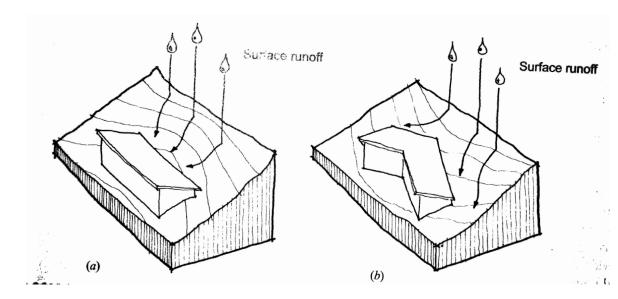
The relationship between water and building envelope is often very tense, with the architect as a nervous mediator between the two. However, water is an increasingly valuable resource, and there are many ways to harvest and use rainwater or water used by building processes.

Water must be dealt with first on-site. Proper drainage is necessary to keep water away from the foundation of the building and into useful locations, such as cisterns, retention ponds or natural drainage areas. Gutters on roofs are not always necessary if the surfaces surrounding the building are pervious or have a trough drain system to guide the water away from the building.

The right-most diagram (water cycles) notes a few different ways to reuse and recycle water in a building. Greywater is a term for water expelled from sinks and showers: water that has been used but is void of food and/or fecal matter. This water has potential to be used in toilets and for watering plants, among other uses. For more information on greywater usage, please reference:

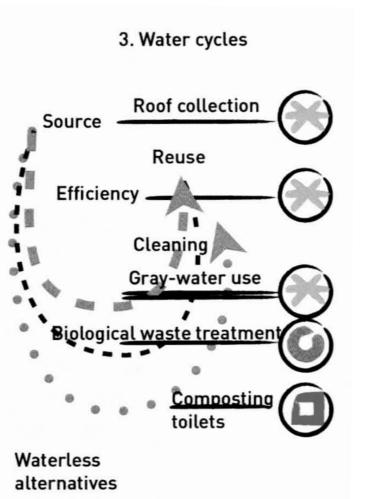
Green Studio Handbook, Kwok & Grondzik, Ch. 4

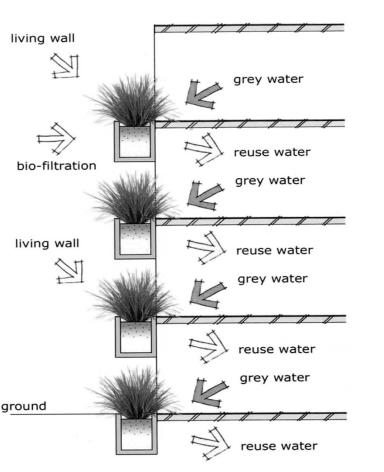
Mechanical and Electrical Equipment for Buildings, Kwok & Grondzik, Ch. 22



Site strategies: designers must be aware of how a building addresses a sloping site condition to avoid severe water infiltration.

of a building's waste water is greywater. Some of this can be reused in toilets, and all can be used for irrigation.





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Water - Technology

Green roofs provide a viable use for harvested rainwater, and a valuable combatant to urban heat island effect (see first diagram). These elements require more structural support due to heavier roof loads but can provide an insulating thermal barrier and create usable green space above the building for the users' benefit.

Green walls (living walls) are an alternative option to rooftop gardens, and require essentially the same amount of soil. For more information on green roofs and specifications, please see:

Green Studio Handbook, Kwok & Grondzik, Ch. 4

Green Roof Cross Section

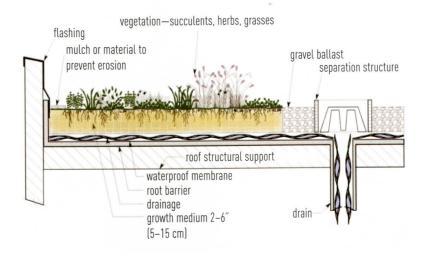
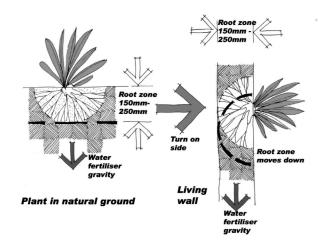
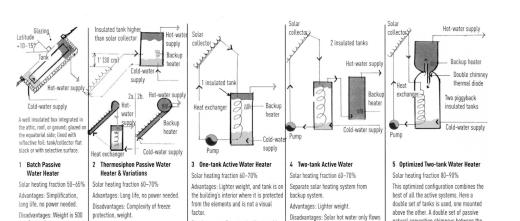


Figure identifying the room necessary in the soil for each plant, and the modifications to this behavior when cultivating living walls.





Variation 2b: Integral collection-tan

tank is hotter than the backup tan

set of chimneys act as a thermal diode where heat can flow up but not down.

50 lb/ft³

Minimum added dead load of structure due to green roof.

TABLE 4.3 Approximate weights of green roof materials. TIME-SAVER STANDARDS FOR LANDSCAPE ARCHITECTURE, 2ND ED.

MATERIAL	DRY lb/ft³ [kg/m³]	WET lb/ft³ [kg/m³]
Sand or gravel	90 [1440]	120 [1929]
Cedar shavings with fertilizer	0.3 [149]	13 [209]
Peat moss	9.6 [154]	10 [166]
Redwood compost and shavings	15 [2387]	22 [357]
Fir and pine bark humus	22 [357]	33 [535]
Perlite	6.5 [104]	32 [521]
Topsoil	76 [1216]	78 [1248]
Concrete		
Lightweight	90 [1400]	
Precast	130 [2080]	
Reinforced	150 [2400]	_
Steel	490 [7840]	_

Minimum depth of soil needed for green roof.

TABLE 4.2 Minimum soil depths for green roof planting. TIME-SAVER STANDARDS FOR LANDSCAPE ARCHITECTURE, 2ND ED.

PLANTING	MINIMUM SOIL DEPTH
Lawns	8—12 in. [200—300 mm]
Flowers and ground covers	10—12 in. [250—300 mm]
Shrubs	24—30 in. [600—750 mm] ^b
Small trees	30—42 in. [750—1050 mm] ^b
Large trees	5-6 ft [1.5-1.8 m] ^b

Maximum building energy savings from using solar hot water heaters. Water heating makes up 10-20% of a typical building's energy consumption.

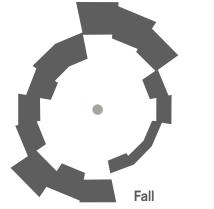
dependent upon ultimate plant size

Wind - Seasonal Wind Roses

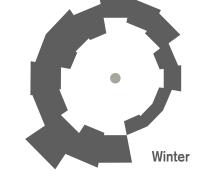
These Wind Rose diagrams describe the direction, magnitude, and frequency of natural winds in a location over a span of time. The distance of a mark from the center describes the frequency of wind from that direction, and the size of the mark indicates the magnitude of those winds.

For Raleigh, summertime winds are relatively subdued and predominantly South and North-Eastern winds, whereas wintertime winds are rather extreme and predominantly Western winds.

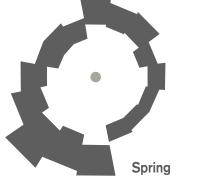
6.65 mph



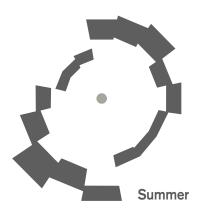
7.95 mph



7.67 mph



6.19 mph



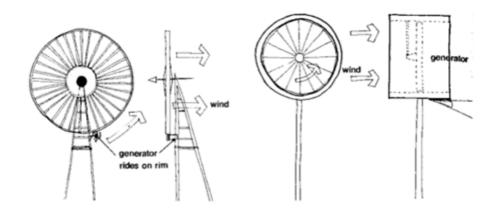
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Wind - Renewable Energy Technologies

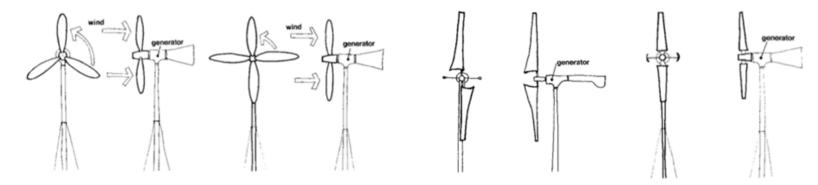
Wind Turbines are machines for generating electrical energy by capturing the movement of natural winds. These machines use shaped surfaces capture the force of natural winds to drive a mechanical generator, converting the spinning mechanical energy into electrical energy.

One family of wind turbines are those that create rotation in the horizontal axis. These utilize blades or sails to capture wind energy and convert it into rotary motion. This group of turbines must always be facing the predominant wind, called 'tracking', which is a deficit of this design.

The other family of wind turbines are those that create rotation in the vertical axis. These use foils to capture wind and cause rotation in-line with the stem of the system. These machines have a more complicated energy transfer system, as they generate less rotational velocity but higher torque, where it is the former that is most useful for electrical energy generation. These machines do not, however, need to track to the direction of the wind.

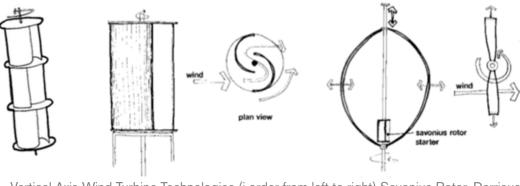


Horizontal Axis Wind Turbine Technologies (in order from left to right) Bicycle Wheel Turbine, Gillette



Horizontal Axis Wind Turbine Technologies (in order from left to right) 3 Propellor, 4 Propellor, Sailwing Rotor, 2-Blade Roto





Vertical Axis Wind Turbine Technologies (i order from left to right) Savonius Rotor, Darrieus







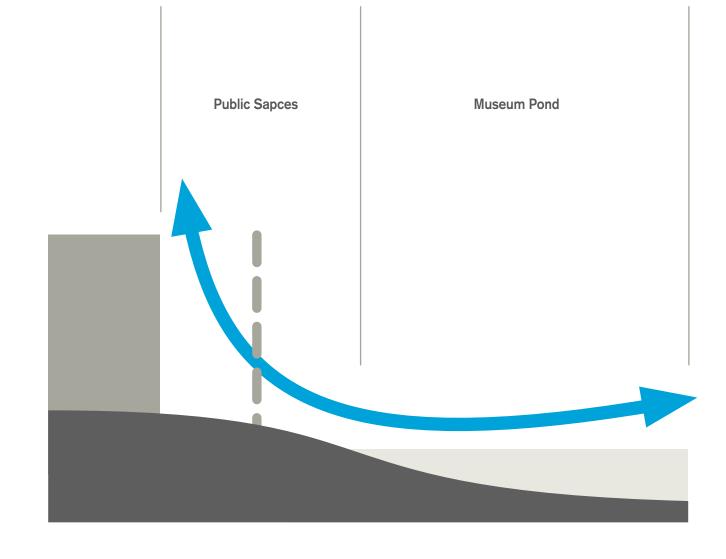


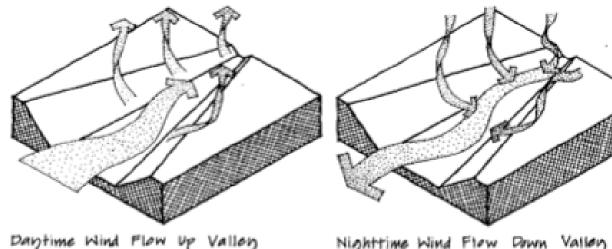
Wind - Site Microclimate

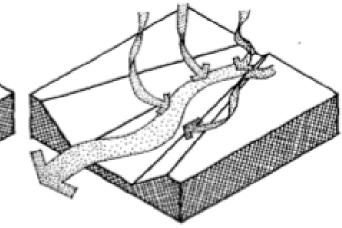
Local site conditions can create a microclimate that affects the behavior of air across the site. Convection cycles in the atmosphere of microclimates can be used to cool spaces in the proper conditions. Convection occurs when some body of air is heated in context to cooler surrounding air; the hot air evacuates the space it previously occupied as it rises and cooler air is drawn in from the surroundings to replace it.

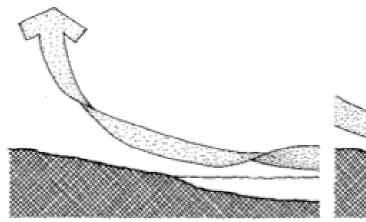
Two particular conditions that can encourage the convective movement of air across a site are valleys created in the land and air over land adjacent to a body of water. Due to the shading provided within a valley or the cooling or air thermal lag of a body of water, some mass of air is heated at a different rate by the sun than the surrounding air. As the hotter air rises, cooler air from these site conditions replaces it.

This air movement can be harnessed to create cooler local breezes for natural ventilation for the public spaces that are a part of this program.

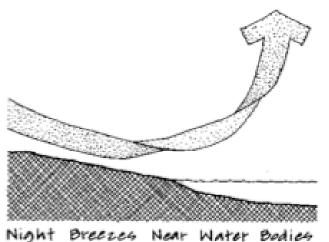








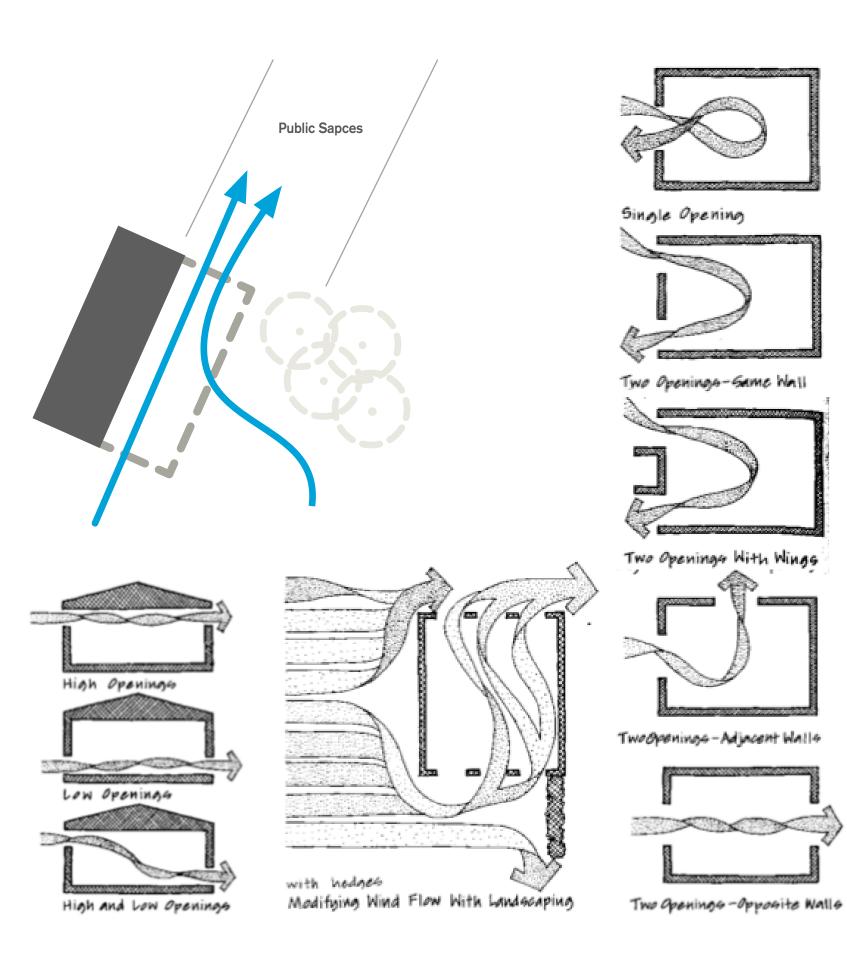
Dan Breezes Near Water Bodies



Wind - Envelope Openings

Spaces in the built environment can capture natural winds to generate natural ventilation for spaces. The effectiveness of these systems is driven by openings in walls that wind travels across. Least effective strategies utilize openings on the same wall and facing the predominant winds, whereas the most effective strategies utilize openings on surfaces parallel to wind flow and on opposite faces of the building.

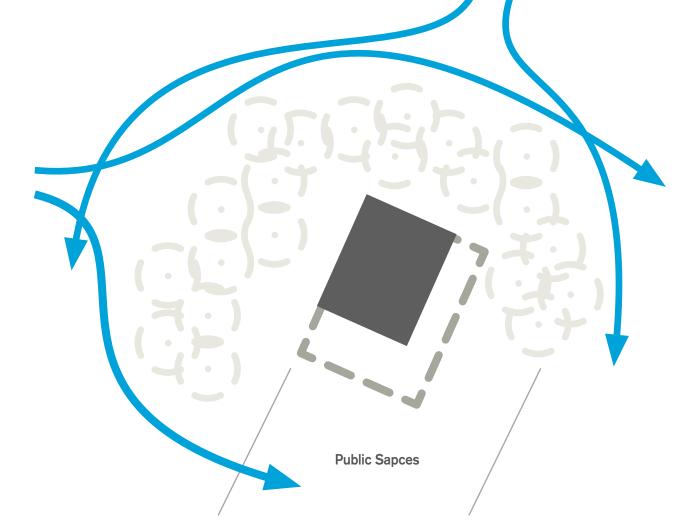
Public spaces for this program that could most take advantage of this natural ventilation could be oriented along the axis of the predominant winds during the warmer seasons (From the South-West). To positively modify the natural ventilation along these spaces, vegetation could be planted to face the predominant winds.

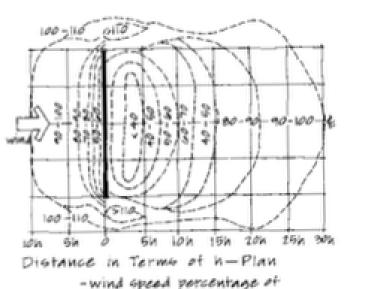


Wind - Shedding

It is important to consider the adverse conditions on a site that natural winds can create. During the colder months of the year, exposure to winds can can create uncomfortable environments for human occupation and can decrease the energy efficiency of a building.

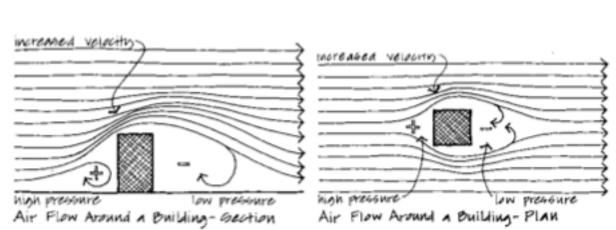
As such, protecting a site and building from un wanted winds may be an important task for building designers. Masses of vegetation and other buildings will interact with the natural wind on a site, disrupting air flow and shedding wind around their mass. These processes can be used to shield a spaces from unwanted Winter winds from the West and North.





unelestrusted wind

-h is height of windbrook



Earth - Renewable Energy Techonologies

Ground-source Heat Pumps (GHP) use the stable temperatures of the earth as a heat exchanger for a conditioning system. The most common practice of establishing this heat exchange is laying polyethylene pipe in the ground and pumping a heat exchange fluid through the pipe. In the winter, the fluid extracts heat from the earth and is used to heat air being delivered to internal space. In the summer, the system inverts, collecting heat from the air in internal space and dumping it into the cooler earth.

Though there are two types of GHP systems (closed-loop and open-loop), one is used in vast majority of situations, the closed-loop system. The horizontal loop system is the most cost-effective, requiring minimal trench depth and construction complexity, but requires a significant amount of land on the site. The vertical loop system is often used when available site space is limited, or where simple trenching is complex (i.e. hard soils). Bore holes are drilled deep into the land and loops are run through those holes. The last closed-loop system to consider is the pond or lake system, in which loop coils use the thermal stability of a body of water as the heat sink or source for the system. Though all of these are feasible on this site, this is perhaps the least so, as the pond is both of questionable size and of significant visual value.

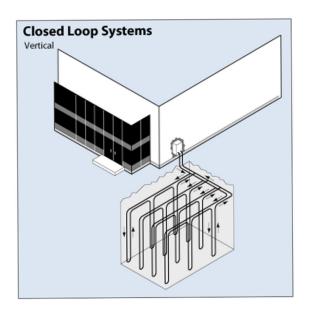


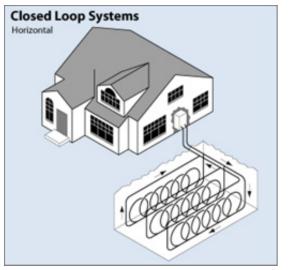


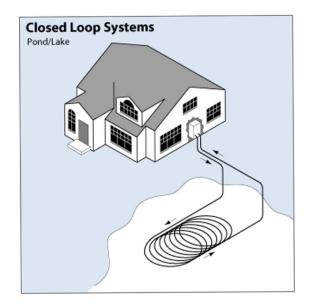








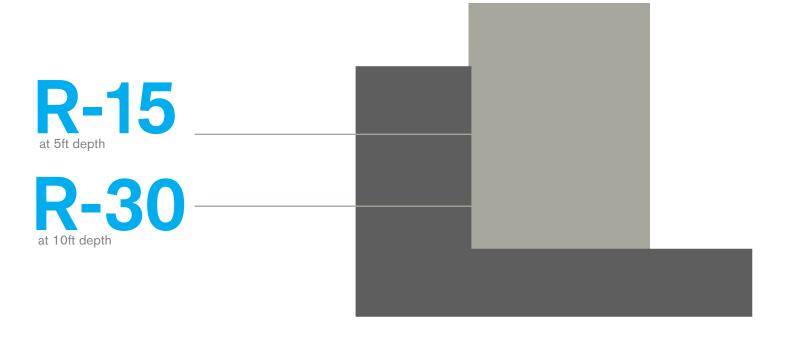


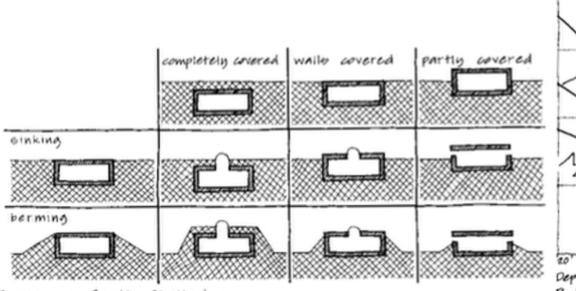


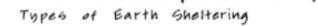
Earth - Earthen Thermal Insulation

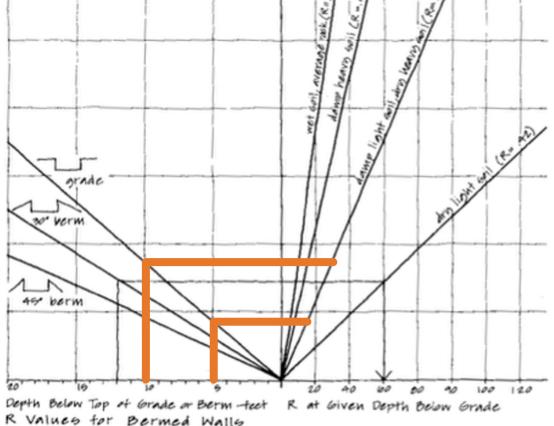
The earth itself has thermal properties that can be leveraged to achieve high-performance in a building from an energy efficiency perspective. The earth insulates itself from the outside environment as soil depth increases. As exposure to extreme temperatures and rain water decreases in depth, so does the ability of the earth to act as a thermal insulator to the environmental temperature.

Different earth berming techniques have varied effectiveness in providing thermal insulation, though the effectiveness of the techniques are fairly simply tied to increasing the radius of minimum distance from any point on the building exterior to the outside air.











Program Requirements

Contents

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- 43 Performance & Service Blocking of Spaces
- 44 Academy Blocking of Spaces

Academy

REHEARSAL SPACES - 12,000 NSF

Rehearsal Rooms 5800sf

- Other uses: Recital room or drama studio theatre with public access
- Temporary or permanent seating
- Performance lighting
- Sound their control
- Rehearsal spaces should be at the same level as the platform/stage and workshop

Practice Rooms 2000sf

- Sound-proof and air conditioned
- Equipment: Piano, music stands, gramophone and tape recorder
- Other uses

Changing or dressing rooms, sound recording room

Applied teaching studios 3200sf

- Equipment: Piano, sound systems and projectors for presentation

Equipment Storage 500sf

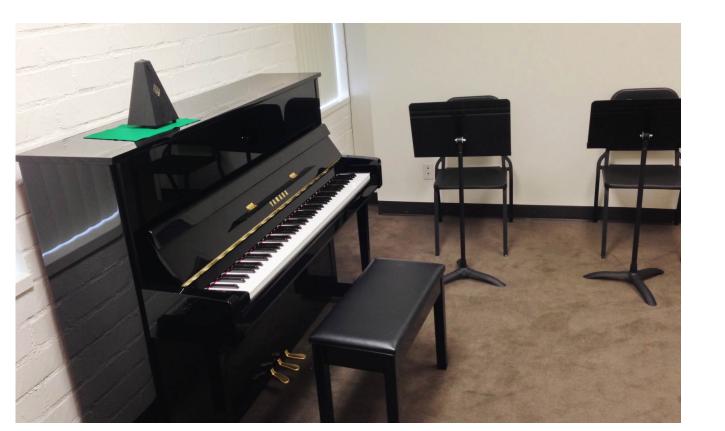
- Storage facilities are needed for scenery and properties, including armoury, for re-use

Music Library 500sf

- Shelves for music books, scores, CDs and DVDs.
- Check out counter
- Listening and viewing stations

OFFICE/ADMINISTRATION/SEMINAR SPACES 2900SF

Visiting musician/Faculty office (2)250sf Faculty office (2)150sf Seminar Room (2)650 Administrative Suite 800sf



Practice Room



Rehearsal Room

Service

CORE/MECHANICAL SPACES (APPROXIMATELY 10% TOTAL SF)

Restrooms
General Mechanical
Tech office 150ft
Janitors closet 100sf
Loading Dock
General storage 175sf
Main mechanical spaces 4000sf Exterior Mechanical yard



Loading Docks



Mechanical Room Chiller

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Performance

PUBLIC SPACES ~4800NSF

Public entrance

- Access and parking
- External display Canopy

Lobby(foyer) 2000sf

- Circulation and waiting area
- Seating
- Directional signage directing the public to the various facilities
- Exhibition and display
- Access to box office, creche, cloakrooms, toilets and seats
- Provide exit ways from the building
- Utilize daylighting to reduce electric lighting needs

Gallery 500sf

- Paintings, prints, drawings, photographs, installations, sculpture and crafts.
- Security system
- Fire protection
- Storage for the depositing and packing of temporary exhibitions.

Gift/Concession 700sf Shop 200sf

- Method of display: Display cases, shelves, free standing display
- Method of selling: A cash point with a cash register at the entrance

Concession 500sf

- Form of service: table or counter self-service
- Ancillary facilities: Kitchen and/or other food preparation facilities, wash-up area, food storage
- Delivery of goods and refuse disposal
- Space for tables and chairs

Ticket Office 1600sf

Box office window 600sf

Operations office 500sf Storage 500sf

Outdoor Courtyard-Gathering Space

Performers Support 2500sf

- Orientation towards sun, shading, protection from wind
- External funiture: Fixed or removable, storage of funiture when not in use
- Landscaping: Hard surfaces, planting, surface water, drainage



Entrance



obby



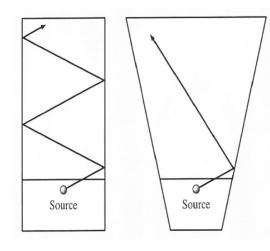
lery



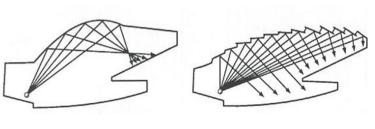
TIcket Office

Acoutic Controls

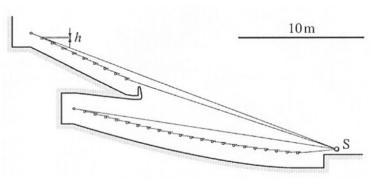
ROOM SHAPE



Directions of side-wall reflections depending on room shape



Reshaping of ceiling profile to avoid focusing and provide more even sound distribution



Section of a hall with a rear balcony and constant clearance The result is an increased slope for the elevated balcony For safety the slope should not exceed about 35degree

Acoustic panelling

Avoid reverberant or unsuitably small spaces. Install specially designed acoustic panelling, wall-linings and floor coverings in frequently used rehearsal and performance spaces. Low and medium frequency acoustic absorption in pits or rehearsal rooms reduces exposures and improves clarity too.

Acoustic treatments

Install curtains, drapes and carpeting to achieve lower noise levels. Make sure, however, that the materials used do not create a fire hazard.

Acoustic ceiling

Make use of existing acoustic panels, e.g. adjustable roof panels which may not be apparent.

Acoustic screens

These may be small screens on stands or continuous absorbent screens. They can protect people from noisy sections in orchestras and bands and in amplified environments offer significant protection. Extreme care is needed in their positioning to avoid making things worse for other performers.

otes:

- Hard reflective surfaces cause sound waves to bounce or reverberate, adding to the direct path of the sound waves. It is generally a good thing to reduce reverberant noise since this can affect the exposure of those some distance from the source.
- Absorptive materials like wood, soft absorbent screens, acoustically absorbent foam, mineral fibre with foil and a decorative finish, and fabrics can be added to a building or placed strategically to reduce reverberant noise.
- Venue managers and designers also need to consider the choice of materials in seating so that audiences hear the same sound whether the auditorium is full or not.



Concert Hall focusing room shape



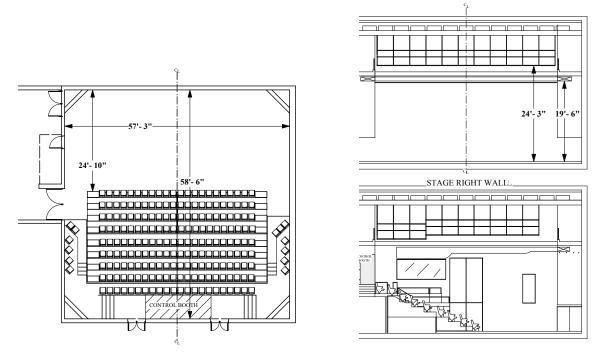
Concert Hall focusing on acoustic panels in ceiling

Black Box Theater

EXAMPLES



Harold Prince Theater, Anneberg Center for the Arts, University of Pennsylvania

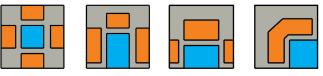


Harold Prince Theater, Plan & Section



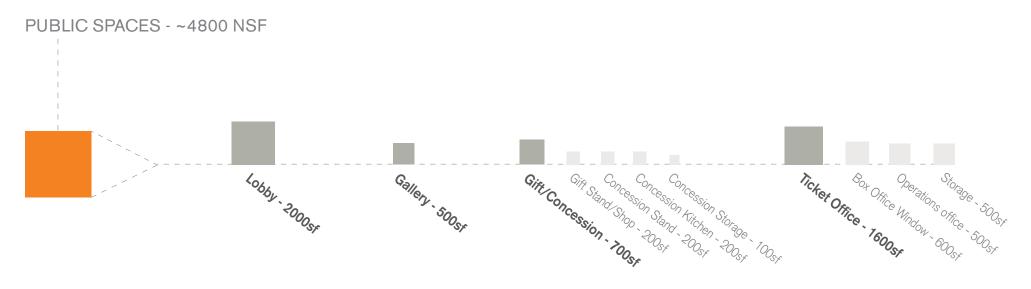
Belmont University, Black Box Theater

BLACK BOX THEATER CONFIGURATION VARIATIONS AT 1"=100' SCALE





Performance & Service Blocking of Spaces



PUBLIC SPACES: OUTDOOR COURTYARD-GATHERING SPACE - 2500 NSF



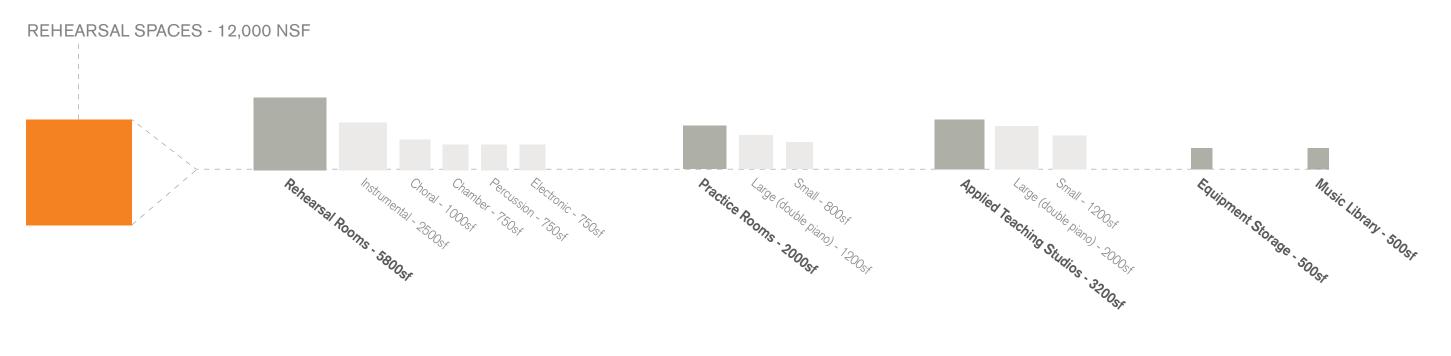
CORE/MECHANICAL SPACES (APPROXIMATELY 10% TOTAL SF)

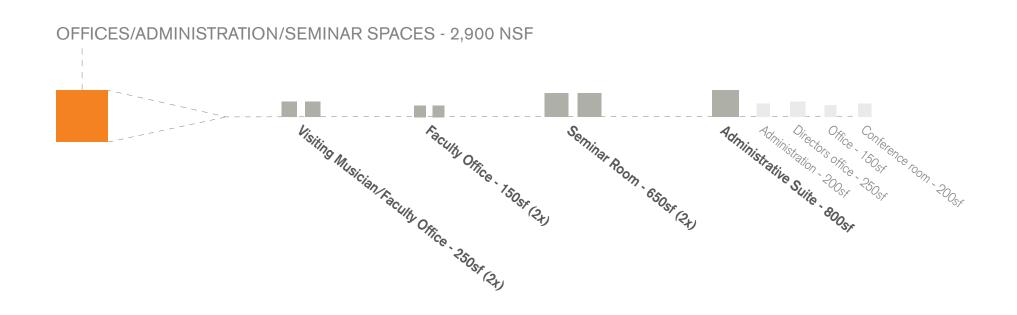


Scale 1"=100'

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Academy Blocking of Spaces





Scale 1"=100'