OK SP

Encompassing a semester's worth of intense design work, this thesis is a comprehensive design proposal for a contemporary Shakespearean theatre for Oklahoma City. The thesis demonstrates the validity of the final product after much examination, from the first steps of initial theatre research, conceptual investigation, and site analysis, through the last steps of detailing, structural and HVAC calculations, and construction documentation.

This proposal firmly grounds itself in the unique idea of a park as a place of curiousity, energy, and variety as the inspiration for the theatre. Issues of community impact and contextual acceptance, cultural accommodation and welcoming, and the diverse multiplicity of programmatic requirements are thoroughly explored and ultimately answered through this central concept.

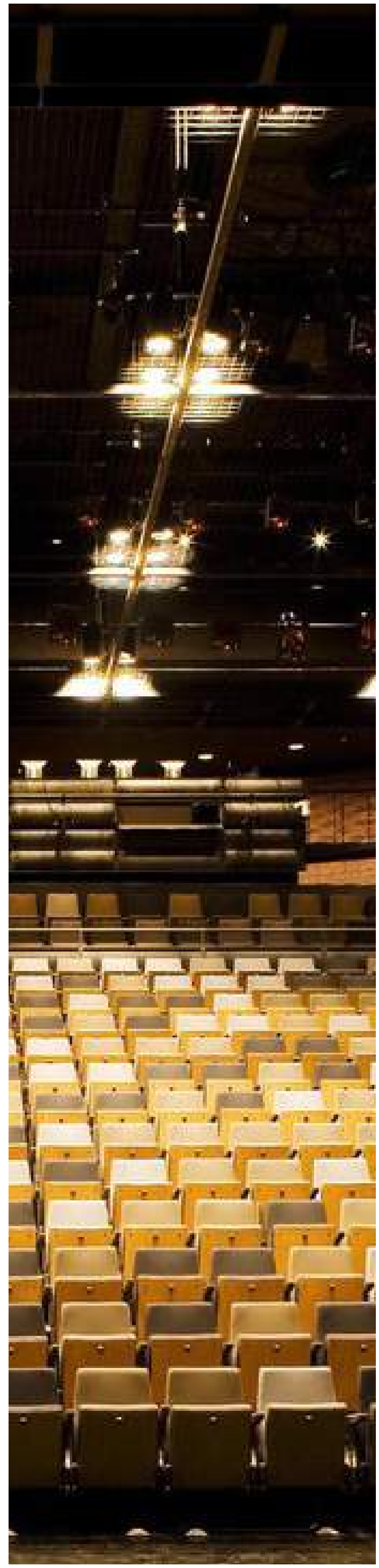
HONORS THESIS

A SHAKESPEAREAN THEATER FOR OKLAHOMA

CAMERON PATTERSON

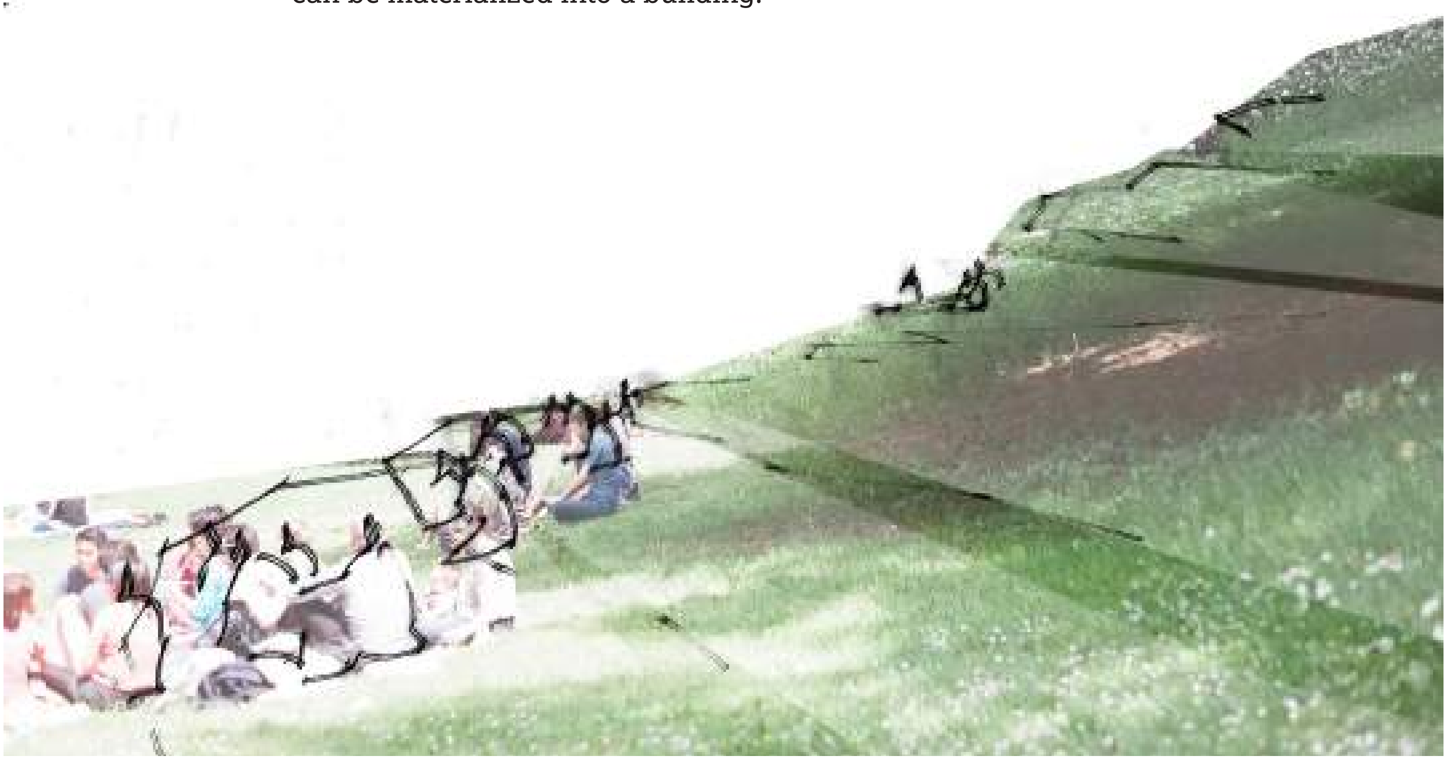
The Oklahoma Shakespeare in the Park Theatre Company seeks a new home in the quirky Paseo Arts District neighborhood of Oklahoma City. The company's history has seen them grow from a humble summer program in the park, to a prominent, award-winning company in downtown Oklahoma City's heralded Stage Center, to their most recent home in the Paseo Arts District. While this new home meets their needs for the time being, they seek a new facility that will provide them a future in the city, a presence as a theater company on a national scale, and an impact in the community.

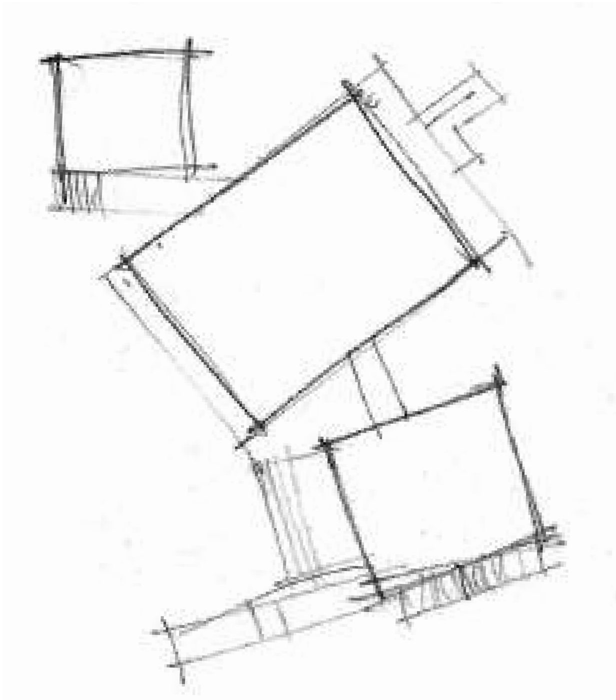
Much of the company’s needs begin with more space for necessary functions like set production and costume design, but also include features unique to theatres, like the fly loft, coat check, box office, theatre box, and so on. Of particular concern in the design of a theatre are the large spaces and crowds of people in them, which call for wide-spanning structural systems, special lighting and sound systems, varied heating and cooling systems, and multiple options for egress. The Shakespearean focus of the company fosters theatre needs that are specific to the long-running tradition of Shakespearean plays and extremely different from other more contemporary theatre designs. The theatre box in this case requires immediacy and intimacy with the audience that calls for a thrust theatre arrangement for actors’ faces to be seen clearly and voices to be heard without amplification. Additionally, while the focus is on Shakespearean productions, the theatre must be flexible in its layout and technical equipment to accommodate other production types and better serve the community and other artistic endeavors. The client sees this theatre accomplishing all this and more with a very contemporary aesthetic rather than a recreation of historic Shakespearean theatres, thus creating a space for Shakespeare in the twenty first century. Located at the corner of North Walker Avenue and Paseo Street, this new facility anchors the corner of the lively Paseo Arts District, creating the opportunity to become the heart of the cultural vibrancy found there.

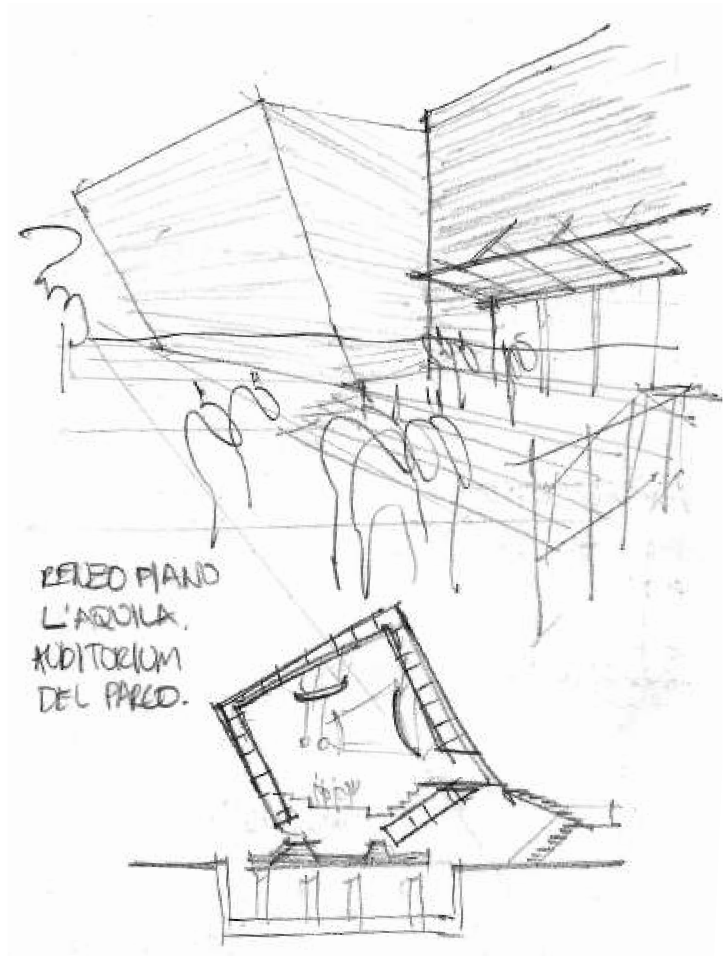


The conceptual direction for this project arises as a solution to issues on multiple disparate fronts. There lies immense pressure on this facility to become a beacon for the arts and the Paseo neighborhood throughout the city, the nation, and the world, while simultaneously presenting itself as an approachable, unimposing cultural facility for all sectors of the community. How then can this facility both broadcast itself on a world scale and smoothly integrate itself into the small, quaint arts community? The next issue is that Shakespearean works, or even the name Shakespeare in and of itself, are often perceived as lofty and highbrow and do not invite the casual arts enjoyer. Beginning with groans in middle school and continuing as disdain in adulthood, Shakespeare and his works remain inaccessible or distasteful to many, especially in a state and city that are not particularly known for their support of the arts. How then can this facility for primarily Shakespearean productions welcome and attract those of all cultural and artistic backgrounds and preferences? Lastly, the many spaces and specifications that the program for this facility calls for are vastly diverse in functionality, scale, acoustic properties, their public access, and more. How then can this facility account for these dissimilar spaces and maintain a sense of continuity throughout the user experience? The breadth of these issues creates specific constraints that are dealt with simply and succinctly. As with all great architecture, the answer comes in the form of a singular, powerful idea that then informs all aspects of the design.

This idea came about after much exploration and investigation, when a conceptual thread led out of the ideas of informality and openness. In order for Shakespeare to be taken up by the cultural audience of Oklahoma, it must be recast as the informal, shared human experience that it is rather than as the highbrow, snobbish art that it is taken to be. The theatre must welcome all with an air of acceptance and accommodation to seat itself in the active community. This is not a place of red curtains, wood trim, and traditional formal elegance, as that is already too off-putting. The origins, interests, and character of this Shakespearean company are anything but formal and elegant. In fact, this company, as well as many others, began as a company that performed in the park. The park facilitated a literal open field as a figurative open invitation to anyone who approached the performances. The park existed as the common denominator for all present, whether performer, avid arts fan, curious couple meandering through the park, or bored child dragged along to the experience. In the park there exists no formality, merely a space for performances to be held and experiences to be had. Outside this performance space exists all the spaces of the park, some exciting, some dense, some for gathering, some for quiet contemplation, and so on. The idea of the park as the conceptual seed for the theatre began here and provided a logical solution on multiple fronts. A park and its openness greatly benefit the community and provide an optimal heart to street festivals, arts events, student gatherings and so on. A park exists as, again, a common denominator for all walks of life, and is no different here. A park stays true to the history and culture of Shakespearean plays, with this company and traditions held worldwide. A park inherently lends itself to a broad diversity of spaces and functions that naturally flow into and out of one another. The park is a place of curiosity, of play, of energy, of spontaneity, of variety. Thus, the park presents itself as a powerful and compelling conceptual idea for this theatre. The question then becomes how the park and its abstract aspects can be materialized into a building.





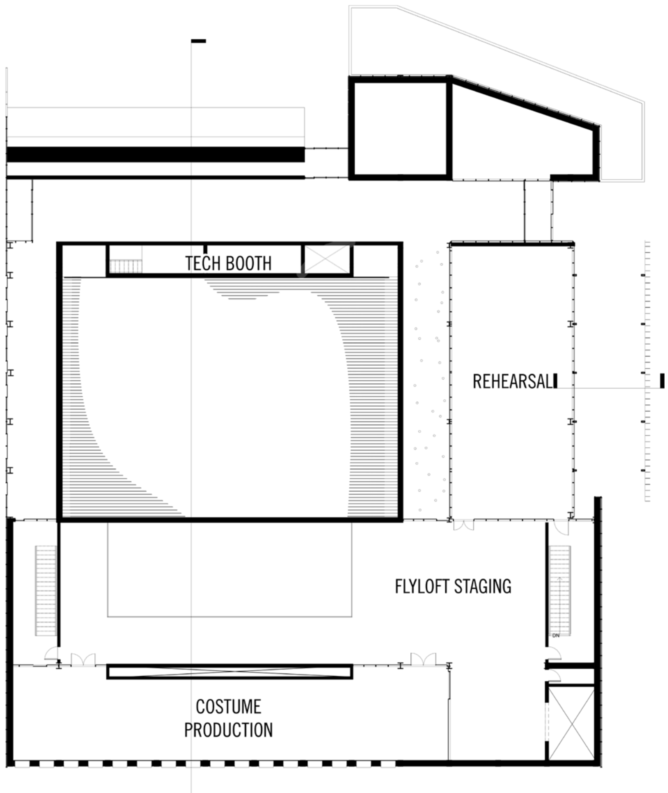


Research leads to contemporary examples of successful parks and playful, unique theatres that are conceptually similar to Oklahoma Shakespeare in the Park to draw reference from. The first of these is Renzo Piano's L'Aquila Auditorium del Parco, which is a simple, intimate arrangement of three cubic volumes nestled quietly in a large community park. The largest block contains the theatre, with the other two blocks programmed separately for public functions and theatre functions. To separate this small complex from the surrounding park and nearby castle, the density of trees is lessened and the ground covering switches to hardscape paths with gravel neatly surrounding the facility. Another example is ASSEMBLE's Theatre on the Fly, which existed as a temporary theatre installation for a theatre festival in a park. The stage and seating are intimate, bare, simple, and arguably uncomfortable, as they are merely oriented strand board benches with an optional padded seat provided. Large barn doors on both short ends of the theater provide entry, loading access, and immediate connection to the sprawling park outside. Much of the technical aspects of both of these theatres are on display,

with the fly loft mechanics, light systems, and the like hanging freely and visibly. Two award-winning park examples of powerful influence in this project are the High Line in New York City, and the Guthrie Green in nearby Tulsa, Oklahoma. The High Line most eloquently demonstrates the park as a place of a multiplicity of experiences. As a community catalyst too, it accommodates a great many people with a great many desires and interests. The Guthrie Green most prominently features as a performance space, but contains aspects of other park features as well. The large field at its center can be both a regular park field for casual frisbee games, yoga classes, or lounging, or a space for the audience to gather for a performance. Fountains and benches and paths exist to the sides to isolate the park from the city streets and create small, more botanical sorts of spaces. Lastly, the elevated pavilion anchors the site, providing a more intimate and formal space to look across the lawn and host gatherings. These precedents reinforced the park idea and led to compelling methods of generating built space out of the park idea.

Most immediately, this idea creates a park out of the exterior. On the north side of the facility, a green lawn spills from the roof and cascades down to the sidewalk along Paseo. This sloping green mass provides a comfortable relief from the street where passersby can withdraw and watch street activities, where children can roll and climb and play, and audiences can gather for performances at the street edge. This hill climbs the building, burying many of its functions quietly beneath its surface, culminating to a broad field that sits atop much of theatre. This broad field itself can hold many large functions or exist as a quiet, removed space for escape. Much of the remaining building mass and its aesthetic are informed by a contextual blend of the Paseo's solid cubic massing and Automobile Row's industrial features. Thus, the entrance and corner café block exist as solid, blocky features that anchor the corner. The north entrance lies recessed under an erupting canopy mass with OKSP in raised block letters on its east and west sides, creating the marquee out of these letters and their strong shadows throughout the day. The café block turns the corner to the east side directly along Walker Avenue. Right off of the café block another recessed entrance is found that transitions from solidity to that of an extremely public street-side concrete deck alongside a transparent glass curtainwall exterior. The functions inside this portion of the building are meant to spatially communicate and share themselves publicly with Walker Avenue and this street-side deck, as they are the rehearsal/community room, the lobby, and a large, flexible pre-performance lobby/rehearsal/display space. This street deck is more distinctly spatially contained with an overhead and side system of glass louvers on a steel structure to continue an industrial aesthetic, lower the heat gain of the east side without overly intense shade, and all around make this a particularly enjoyable social space. The louver system and structure cascade from the deck over and atop the roof deck to shade a portion of it. At the end of the deck, the solidity of the corner block returns as the interior functions transition to egress and the back of house spaces. These spaces inform the southern block to be solid and tall, with framed openings on the south face for the costume production space. The solidity of the southern block continues along the west side, only finding relief with scattered framed windows that look into the theater circulation spaces and the west entry to the lobby. The south and west faces are much quieter and restrained, as they are of limited visibility and host much of the systems features like the transformer, dumpster, loading dock, and so on. The park idea pushes for the exterior to exist as these playfully, loosely woven together, disparate spaces so that it appeases and invites all walks of life.

Moving to the interior, the spaces must be organized both through this idea and more specific programmatic concerns. This begins with functions being delineated as front of house or back of house with the theater space in the middle. Front of house spaces like the lobby and box office push to the north of the site along with the café, to maintain and take advantage of street presence along Paseo. Administrative spaces and bathroom spaces exist directly under the sloping portion of the hill, and directly access the lobby. The lobby is linear in nature, as it bridges the east and west entries with the north intersecting perpendicularly on axis with the elevator. Right off the lobby at the northeast corner is the café and kitchen, with their awning and outdoor space that spills out onto the continuous deck. Electrical and mechanical space is hidden in this block behind the kitchen. The spaces that can be most public, like the rehearsal/community room and flex lobby are placed along the east side for maximum street visibility along Walker and the created street deck space. The theater sits at the center of the facility, with immediate access off of the lobby and side entrances of vertical circulation elements. The entire southern solid block contains a spacious and flexible back of house with a freight elevator and loading dock at the southeast corner of the ground floor. Most mechanical equipment exists in a large singular space at the south end of the ground floor. The basement of the back of house contains the dressing rooms, rest rooms, and green room, as well as the stage and immediate access to the entries of the theater for quick surprise entries during performances. Upstairs of the back of house contains space for managing fly loft equipment and assembly, with access to the costume production space on the south wall and the rehearsal/community space on the east wall. Set production exists in the insulated, extremely removed space beneath the theater seating to be extremely removed from spaces where noise and commotion may interrupt functions. The common theme throughout these spaces and their arrangement is the loose, simple way in which they reveal themselves to each other while answering to strict functional requirements.


TECH BOOTH
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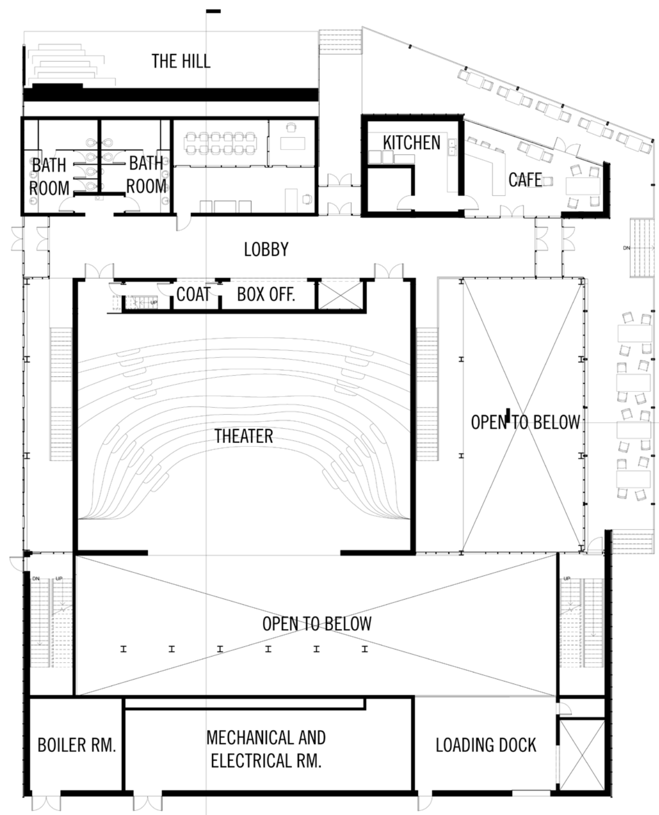
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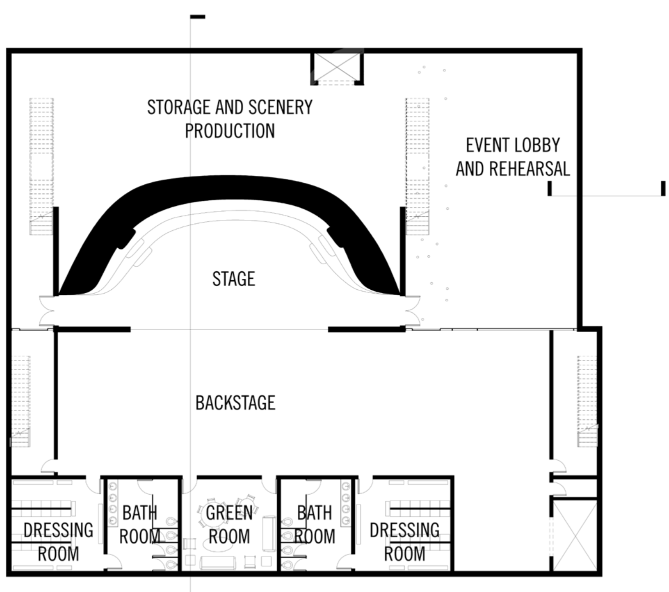
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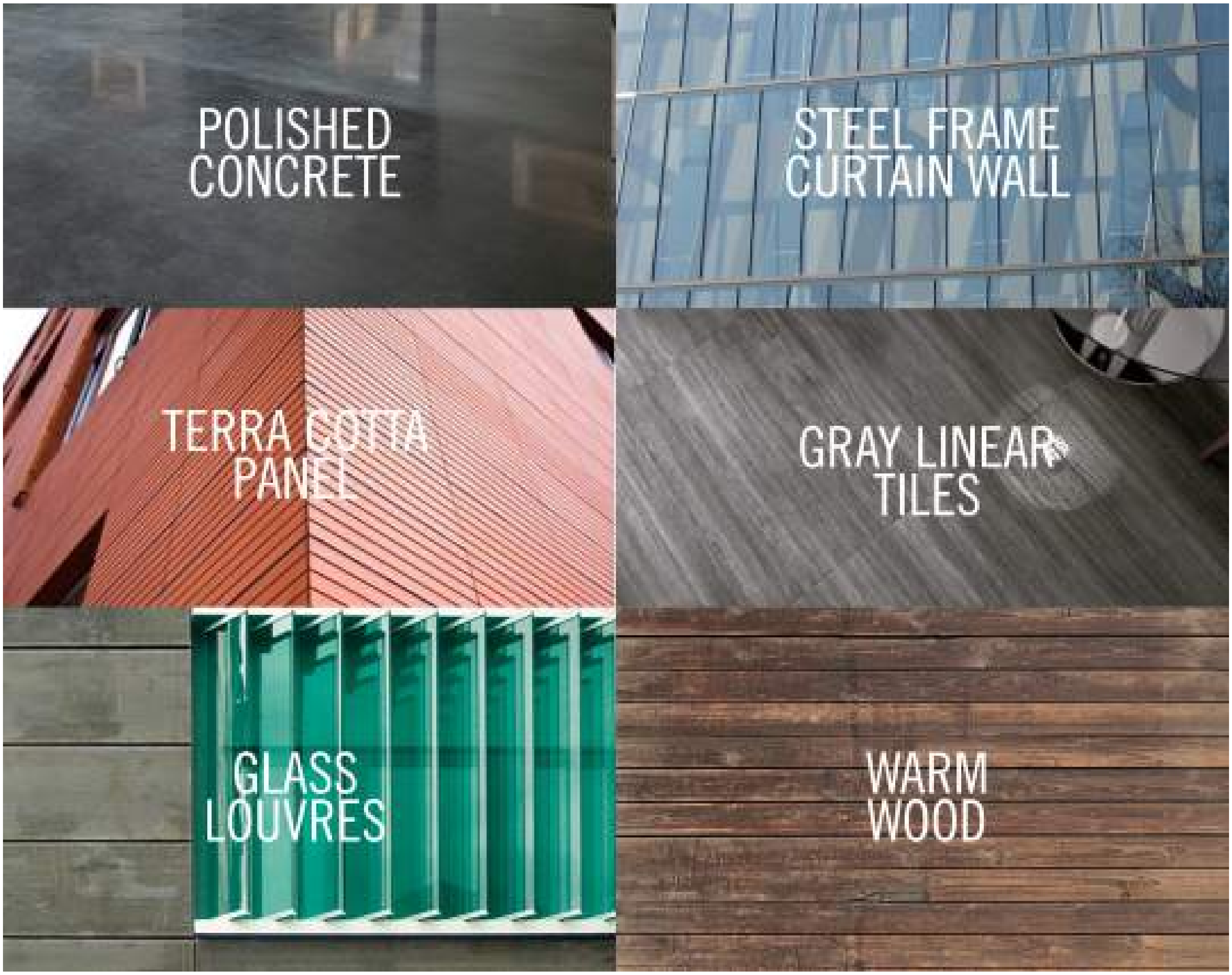
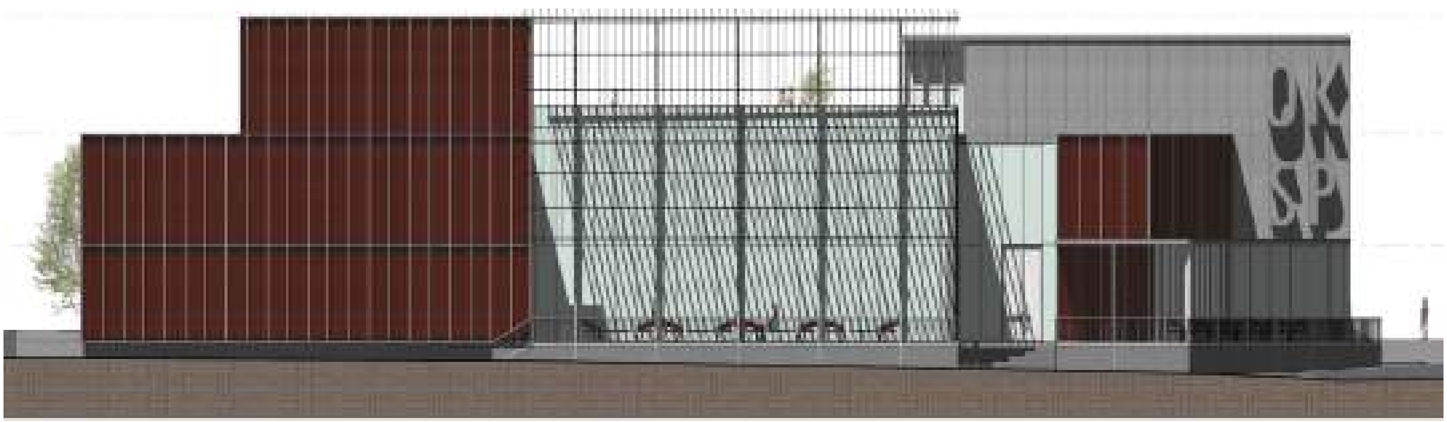
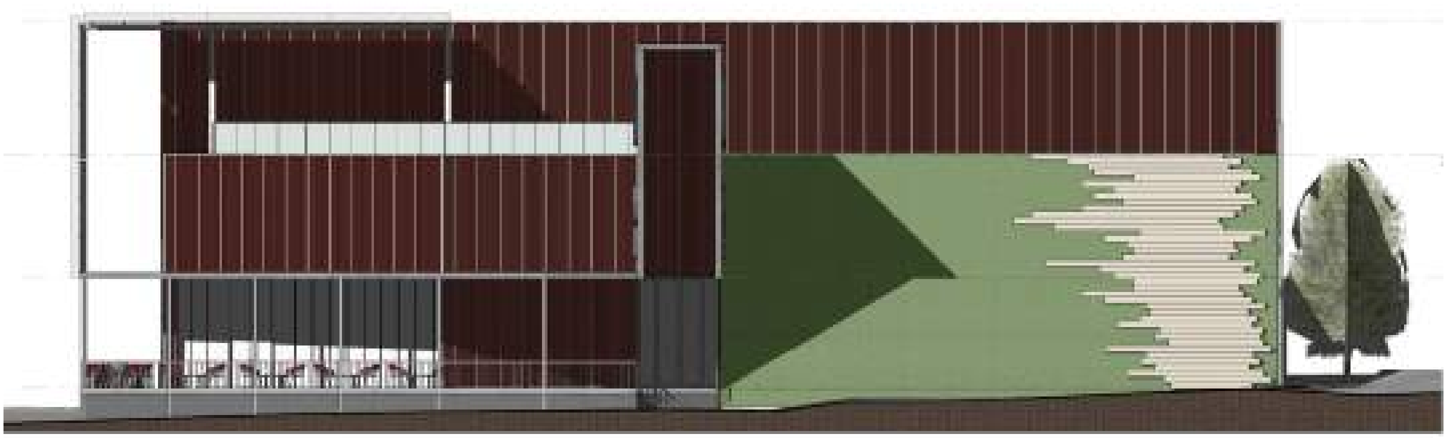
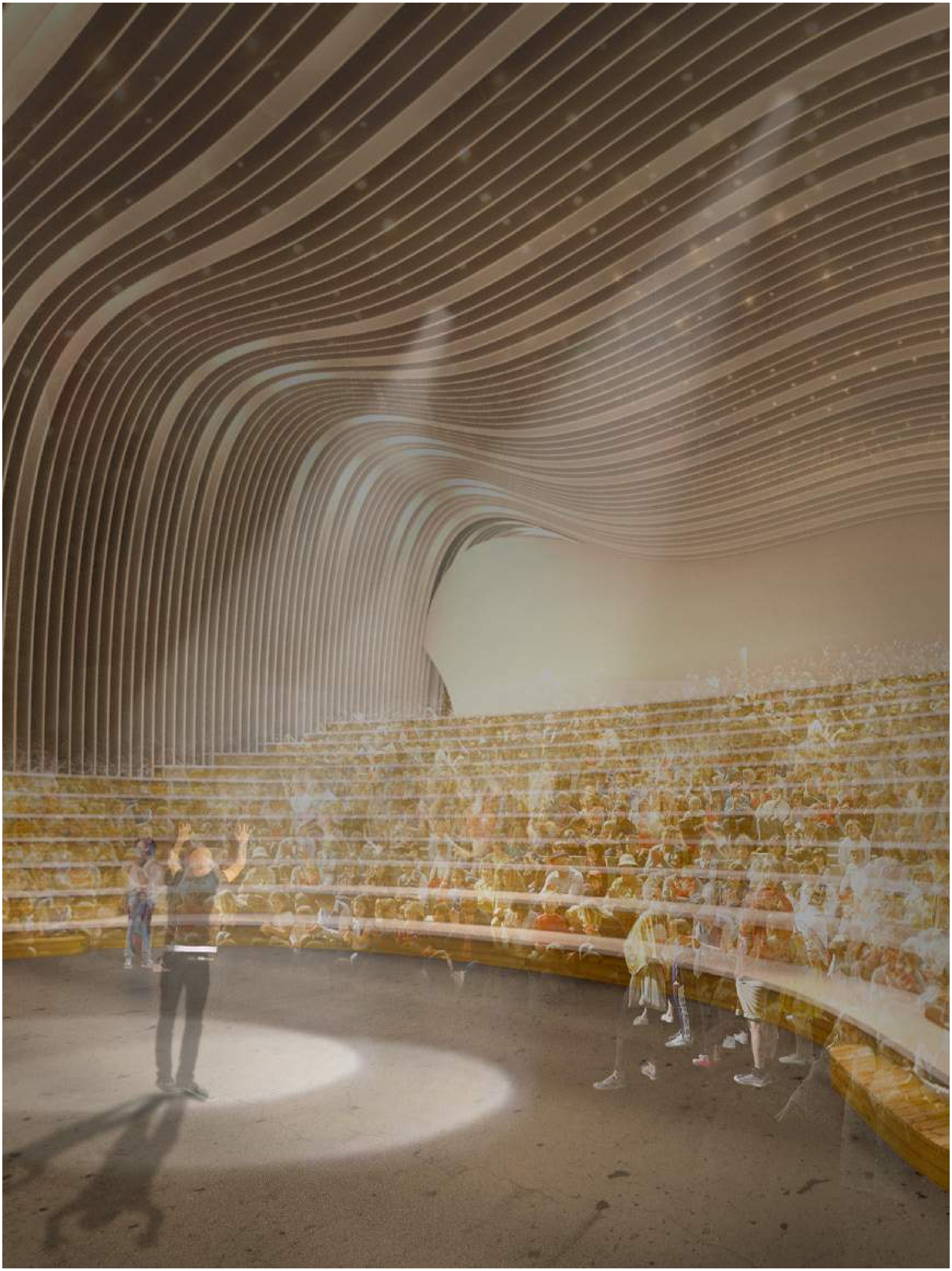


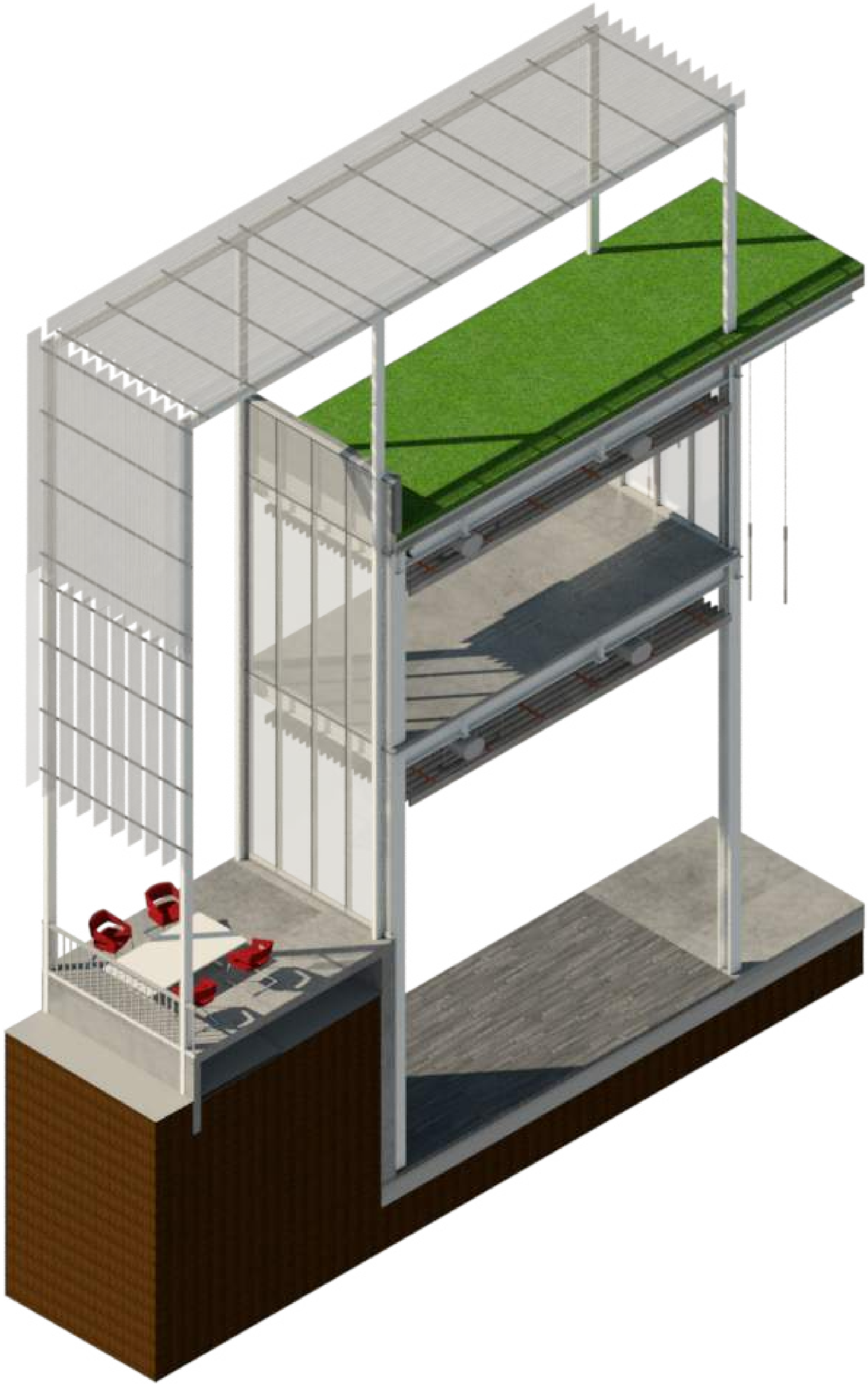
In order to capture the playful quality of the park in material form, a palette was selected of a certain busy energy with a consistent vocabulary of lines. The variety of material qualities allows for balanced contrast between cool and warm materials, textures, and scales. The solid elements of the exterior host 2.5’x12’ frames of terra cotta panels. This arrangement seeks to break the large walls of the back of house into something approachable and stimulating. From a distance the wall may appear solid, with the divisions of the frames apparent, and upon closer inspection, the frames are of a relatable size, with busy linear terra cotta panels held in them. Thus, three scales are encountered in the humanizing sequence of the approach to these large walls. Curtain wall elements are specified to be steel frame curtain walls in order to reduce the visual impact of thicker mullions. The curtain wall thus registers as a plane of lines that is meant to be looked into and out of, blurring the line between interior and exterior, especially at the east patio. The language of this curtain wall continues in the vertical glass louvers on the east patio that contain and shade the space in a light, airy, and lively way. Most interior floors are of polished concrete for durability, the continued industrial aesthetic, and flexibility through coverings for temporary performances or displays. Gray linear tiles demarcate spatial changes and more specific functionality from the concrete as in the lower flex lobby space. Lastly, the exterior and interior of the theatre box are primarily clad in wood for acoustic properties, as well as to bring warmth through the interior, straight from the heart of the building. These elements combine with the exposed white painted steel structure and linear ceiling aluminum baffle systems for a truly appreciable aesthetic. The palette comes together to especially answer to the contemporary desires of the client, but keep an informal and playful energy throughout the facility.





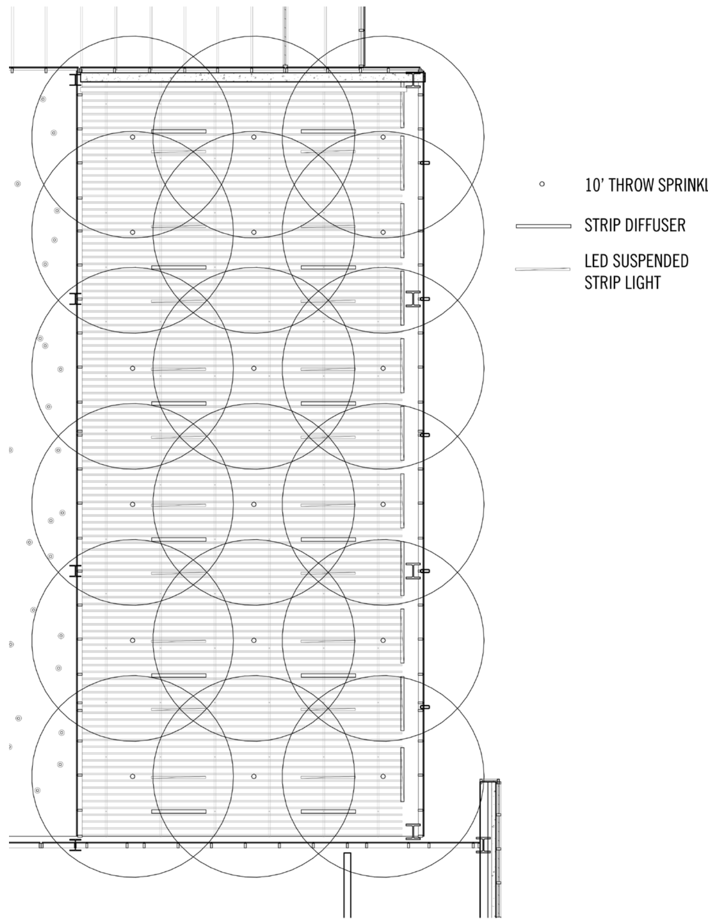
The spaces most thoroughly investigated were the theater, lower flex lobby, eastern patio, and rehearsal/community space. The theater is the overwhelming and stunning surprise to all theatergoers, as the fluid and organic lines of the floor, ceiling, and theater envelop and welcome all who enter. It is of a simple gesture: an amorphous volume that generates a void out of white painted wood panels suspended from the ceiling and secured to the walls. Sections of these panels can be raised or lowered for acoustical alterations, specific set installations and the like. Lighting and sound systems fit within the gaps between the panels, and can be lowered and raised independently for maximum control and flexibility throughout the long life of the theatre. The tech booth peaks into the theatre through a window reveal right underneath the panels as they end at the rear wall. Two entrances exist at the top and bottom each with one per side for egress and surprise performance entries. The top rear entries are simply the rearmost panel pulling itself aside like a curtain, keeping consistent with the fluid, revealing nature of the space, and unveiling itself like the well-kept secret of the park. The seating of the space is one of its most unique aspects, as it is an abstraction of the hill theater that exists outside, physically manifesting itself as extrusions of the contour lines of a cozy concave hill cascading through the space. These lines form seating as long bench seats, so that people may informally locate themselves in naturally developing, sporadic groups, as they would if they seated themselves outside for a performance in the park. The contours continue all the way to the floor, immediately against the thrust stage with no difference in height. This combined with the steep nature of the hill slope results in a profoundly intimate and exhilarating theatre space.





The lower flex lobby, rehearsal/community space, and eastern patio were designed as a triad of interrelated spaces and functions. Each space features prominently into the next space with obvious visual and lighting connections. The lower flex lobby is meant to be extremely accommodating for a wide variety of events and functions. Its primary purpose is for pre-performance gathering, but it easily hosts informal public rehearsals, large banquets, and lively night events. The ground level of the eastern curtain wall connects this space to the eastern patio, and the tall theater circulation space between the theatre and the flex lobby loosely connect the rehearsal space right above. The east patio serves as an enjoyable, casual public gathering space shaded in day by the glass louver system and the building itself, illuminated at night by the lights of the theater and the soft illumination of the louvers themselves. The rehearsal/community space remains quiet and simple, so as to accommodate the many possible functions that it may contain. It overlooks the east patio and enjoys the full height of the curtain wall there for plenty of daylight if desired. Its other glass curtain wall sees it overlooking the tall theater circulation space beside it.

The space investigated for its technical aspects and systems coordination was the rehearsal space. Most necessary for the space to be successful is adaptability within its ceiling system for lighting and sound. The system employed is a suspended frame that holds 2” wide by 4” deep rectilinear aluminum ceiling baffles spaced with 6” between them. The lights selected are hyper-efficient LED suspended strip lights that hang comfortably between the baffles every 10’ on center. The fire sprinkler system also fits easily with the heads situated between the baffles in a defined grid every 10’ on center. Strip air diffusers also follow the same logic and hang flush with the ceiling grid though at every 5’ on center. The suspended frame that supports the ceiling allows for



additional flexibility as well, as more light and systems, art displays, temporary barriers, and so on can all be suspended with ease and minimal effort. This creates a simple, minimally invasive aesthetic for a very accommodating and extremely functional space that thoroughly meets the client's desires for contemporaneity. Much work was done to also sculpt the daylighting of the space, with a specific frit pattern and glass to limit the extreme exposure the floor to ceiling curtain wall can bring into the space. The frit pattern consisted of lines that began at a reasonable 20% screening at the bottom of the space, transitioning to an almost complete frosting of 80% screening. Also coordinated were the glass and fabric louvers located 10' away from the exterior of this curtain wall on the opposite side of the east porch. These louvers are 1' deep and typically spaced 1' apart and vertically oriented east to west, providing great amounts of shading from morning sun. The glass selected for this curtain wall is of a lower visibility coefficient too, so this provides much more daylighting control and an extreme savings in cooling load of 50%.

The structural system utilized is predominantly a composite steel beam and decking system for a simple and clean aesthetic. The exception for this is the concrete bearing walls of the theater space. The structural system coordinates nicely with the linear nature of the materials and the industrial materiality already established. Moreover, exposing and featuring it and other systems demonstrates an honesty otherwise lost if hidden and a permanent state of alterability, as future contracting can suspend elements from the decking or add components on to exposed columns and beams with little to no complications.

The design of the Oklahoma Shakespeare in the Park Theatre is a surprising, dynamic conglomeration of a wondrous variety of spaces. Its execution stems directly from the powerful idea that the theatre should perform as a park and be a catalyst for the community, an open, inviting plain for all walks of life, and a place of many diverse experiences. From the fluid and organic nature of the theatre, to the extensive functionality of the rehearsal space, the strong conceptual direction was followed through the spaces, forms, materials, and details. After a semester of tireless work and dedication, the design is one of enormous potential and exciting conclusions.

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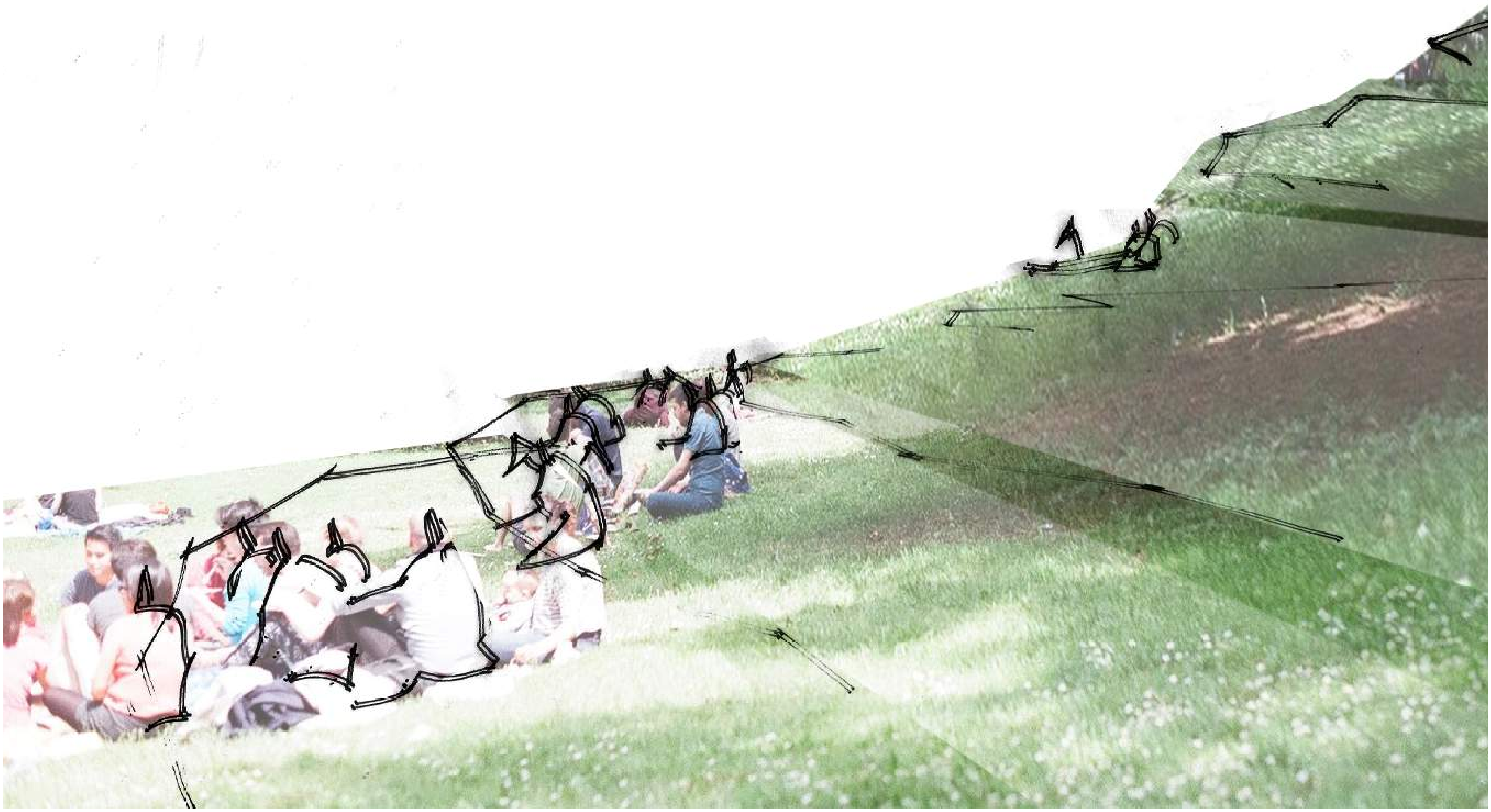
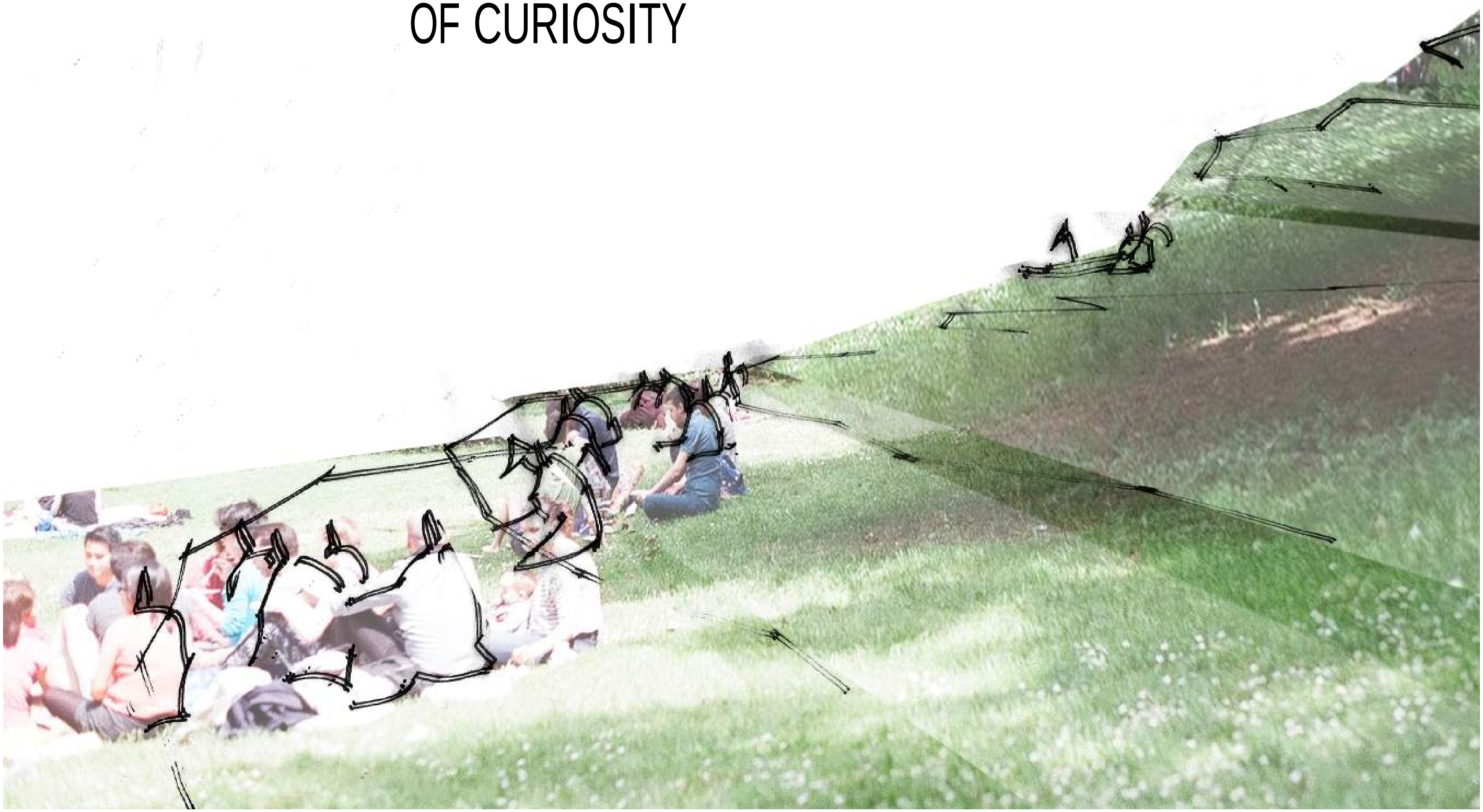
OKLAHOMA
SHAKESPEARE
in the

PARK!

THE PARK AS A PLACE



THE PARK AS A PLACE
OF CURIOSITY



THE PARK AS A PLACE
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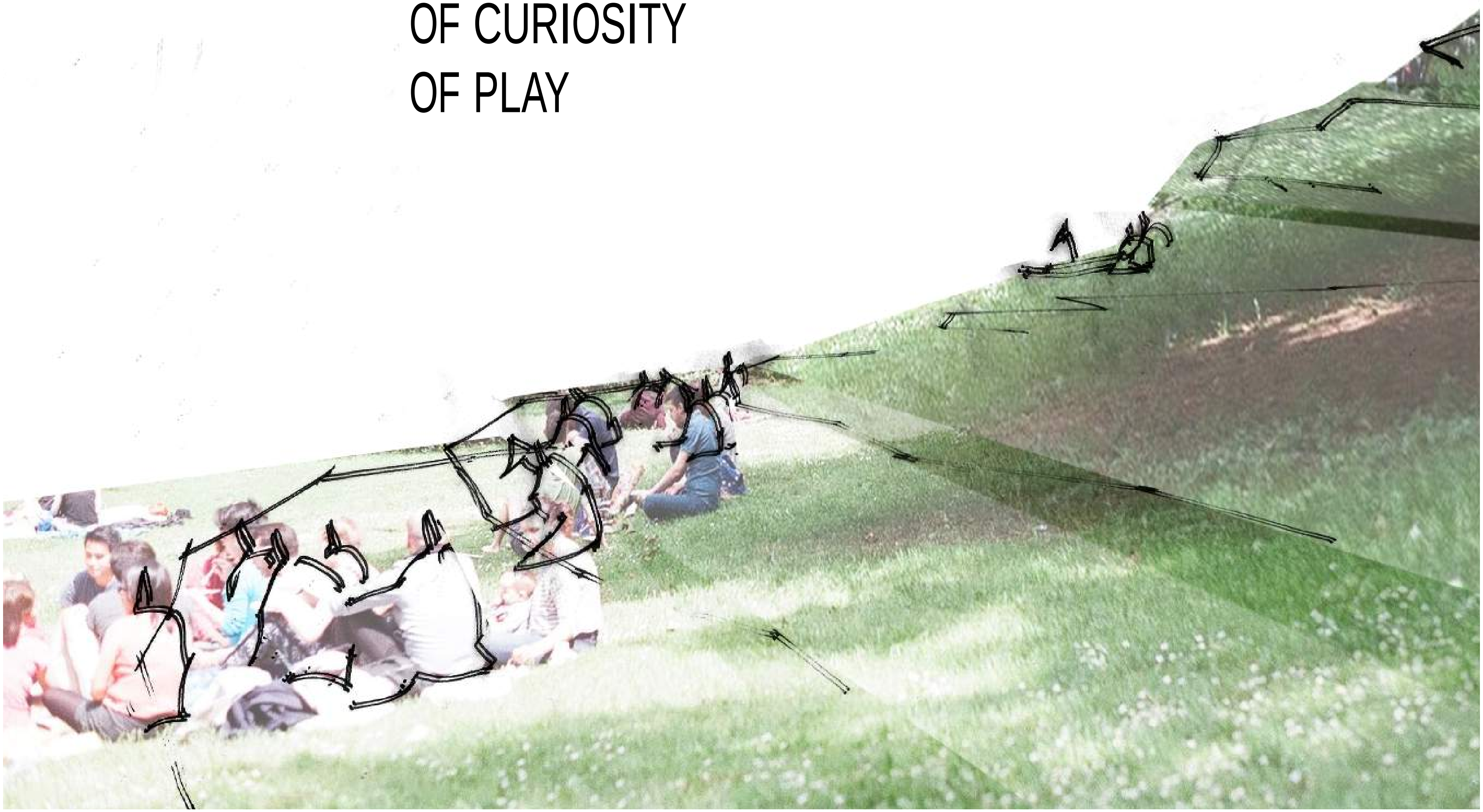

THE PARK AS A PLACE
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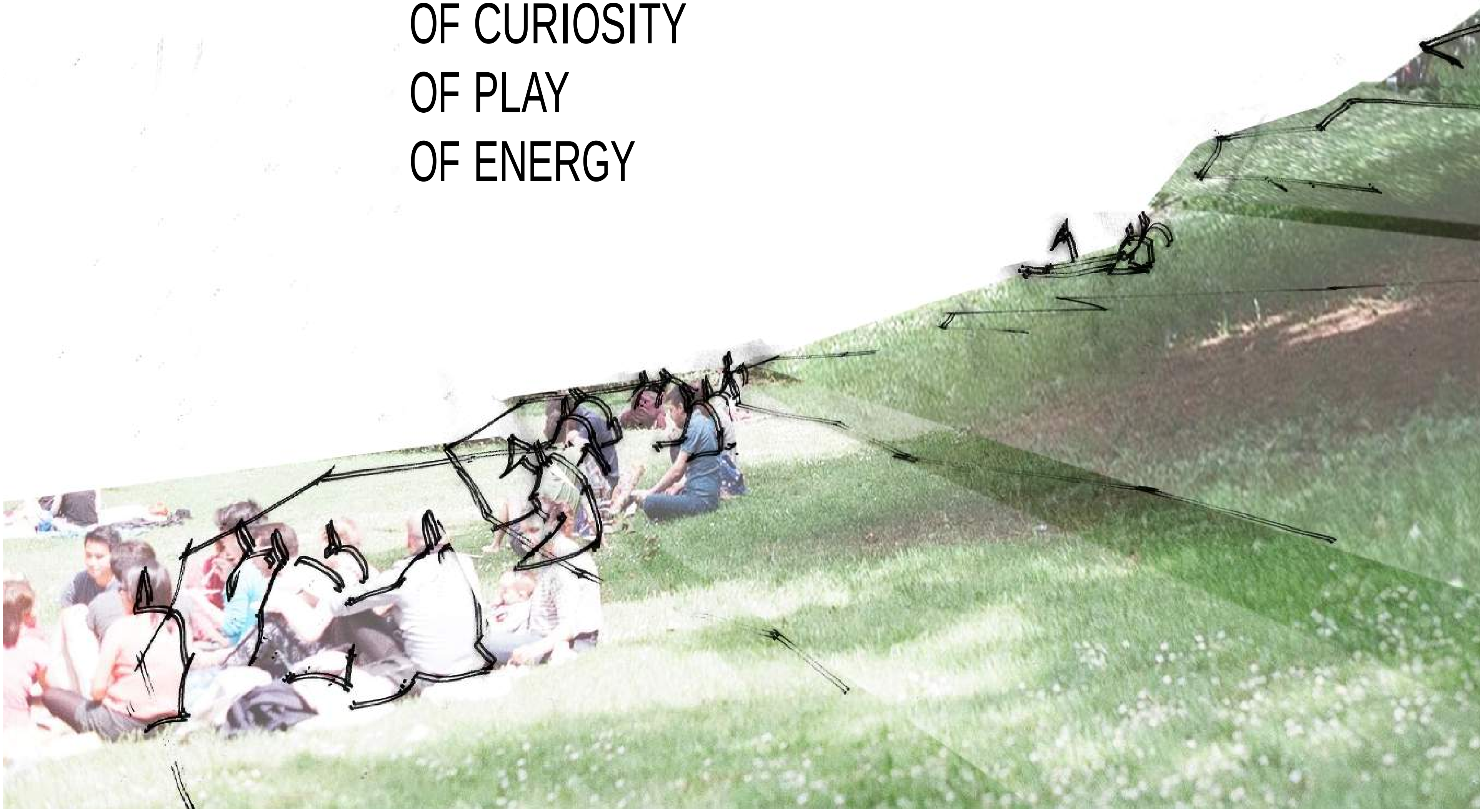

THE PARK AS A PLACE
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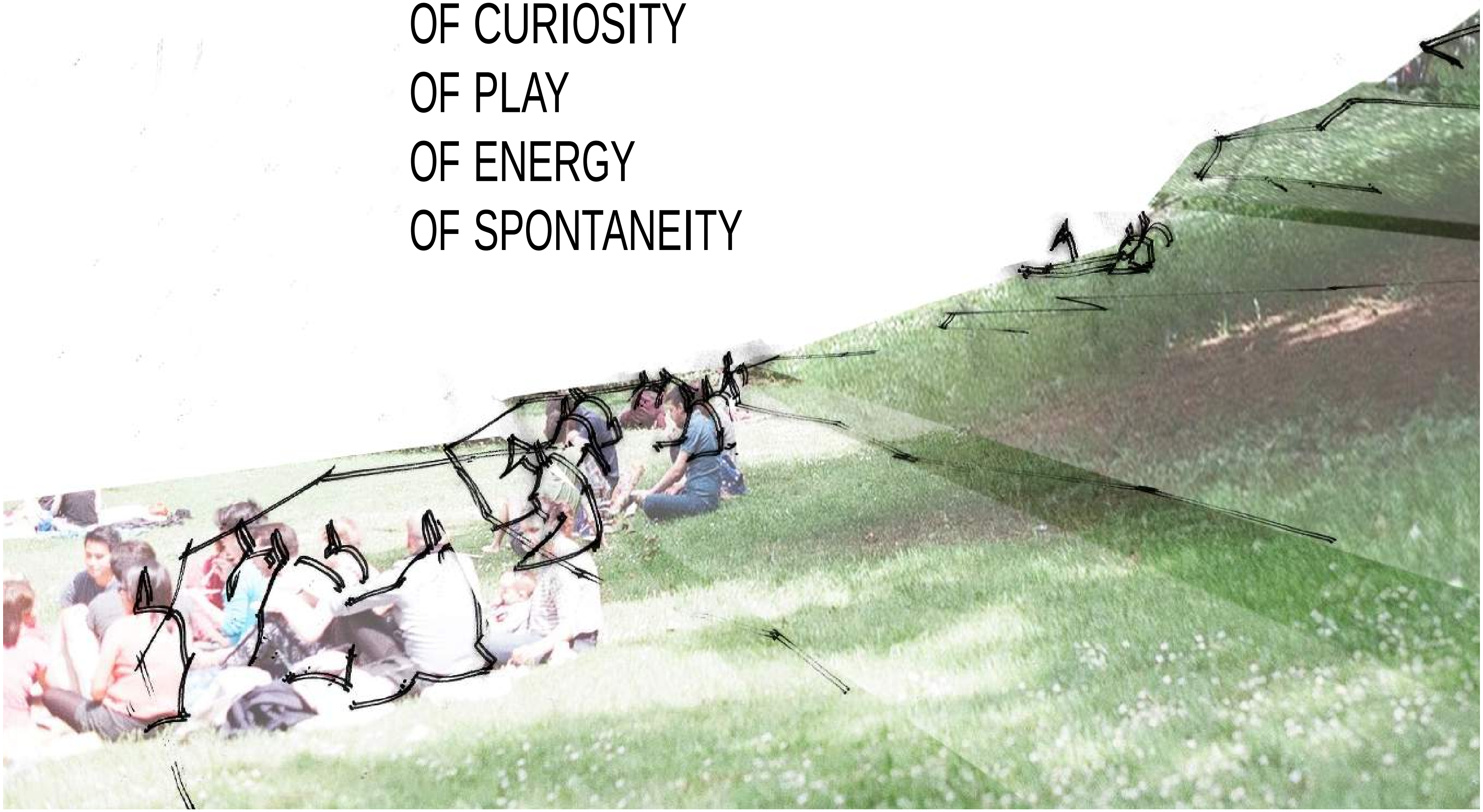

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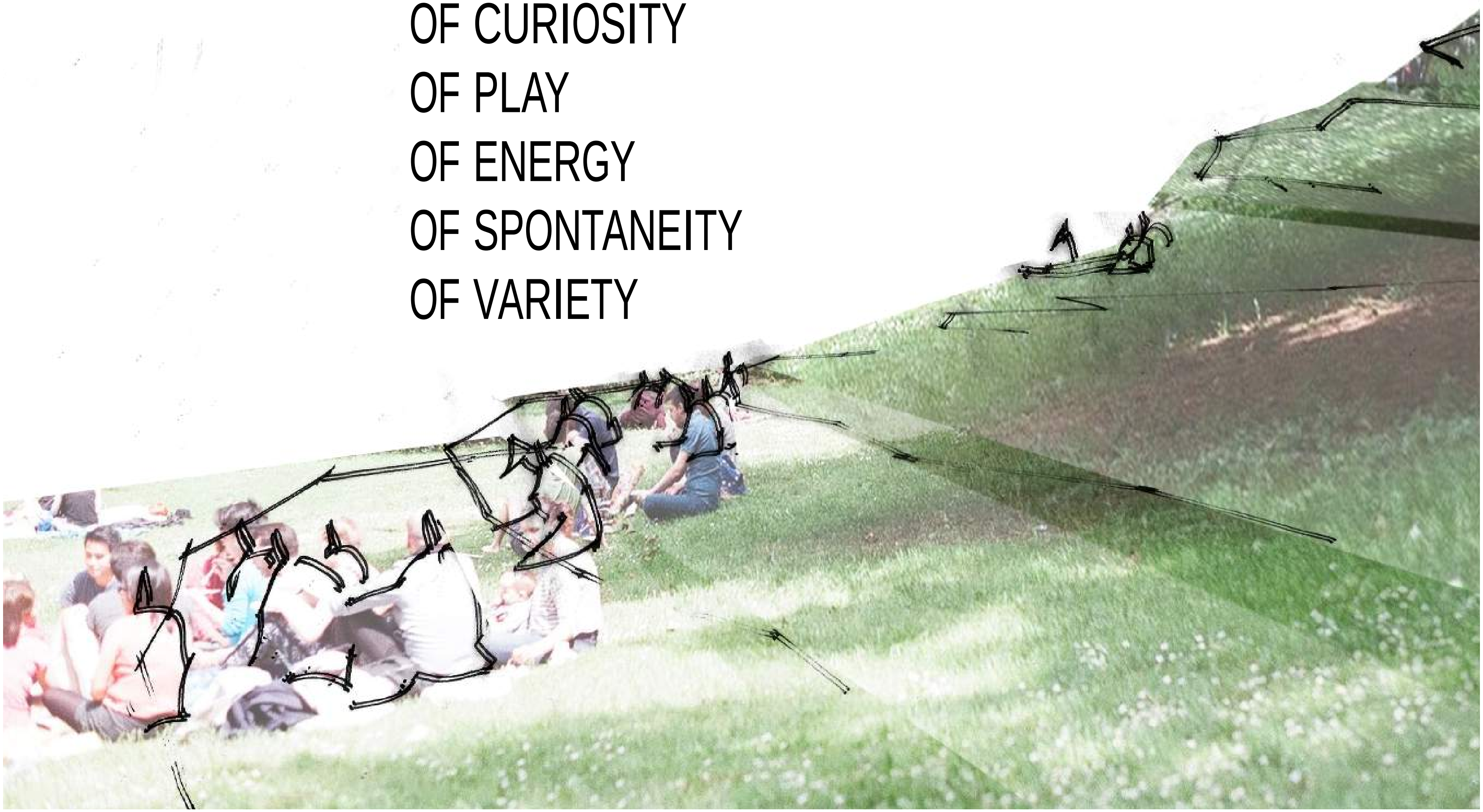

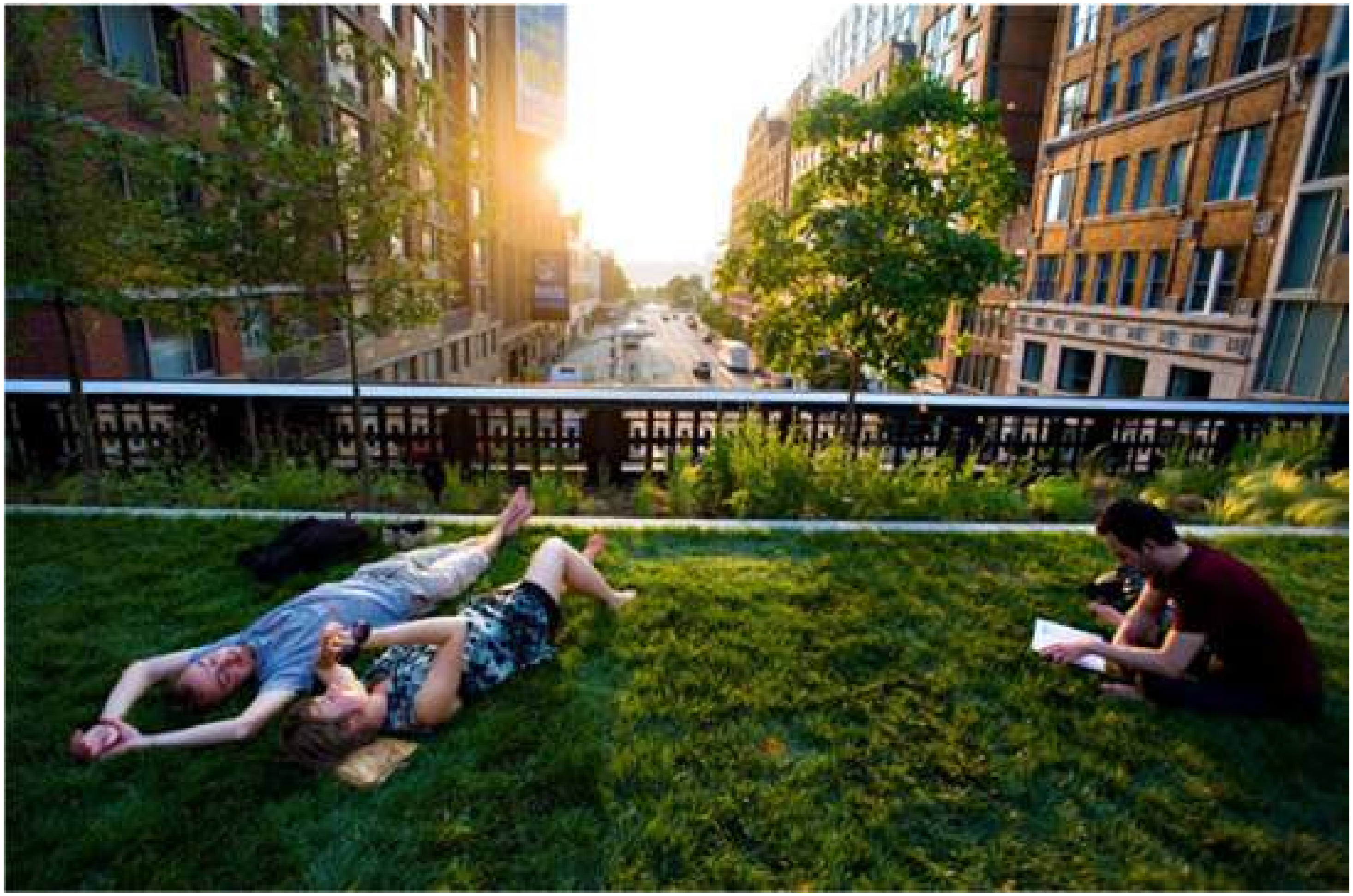

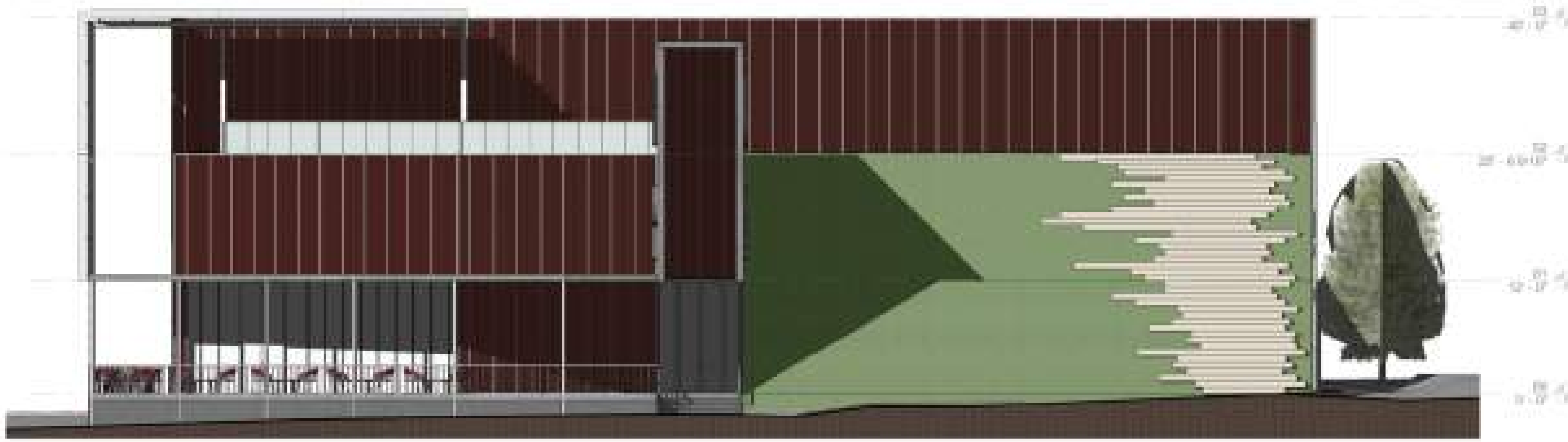

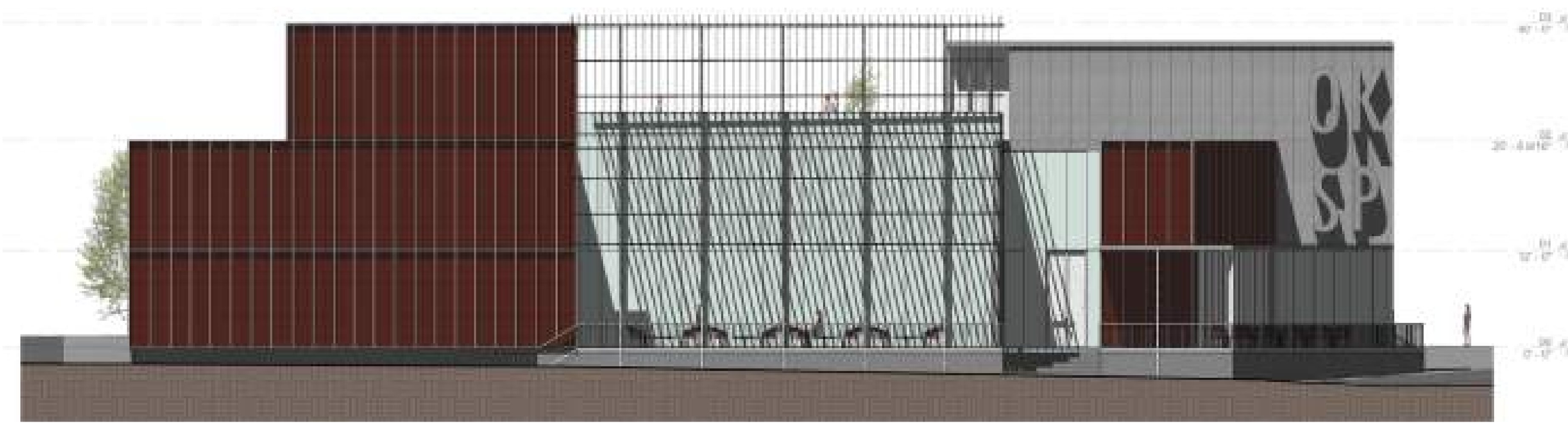

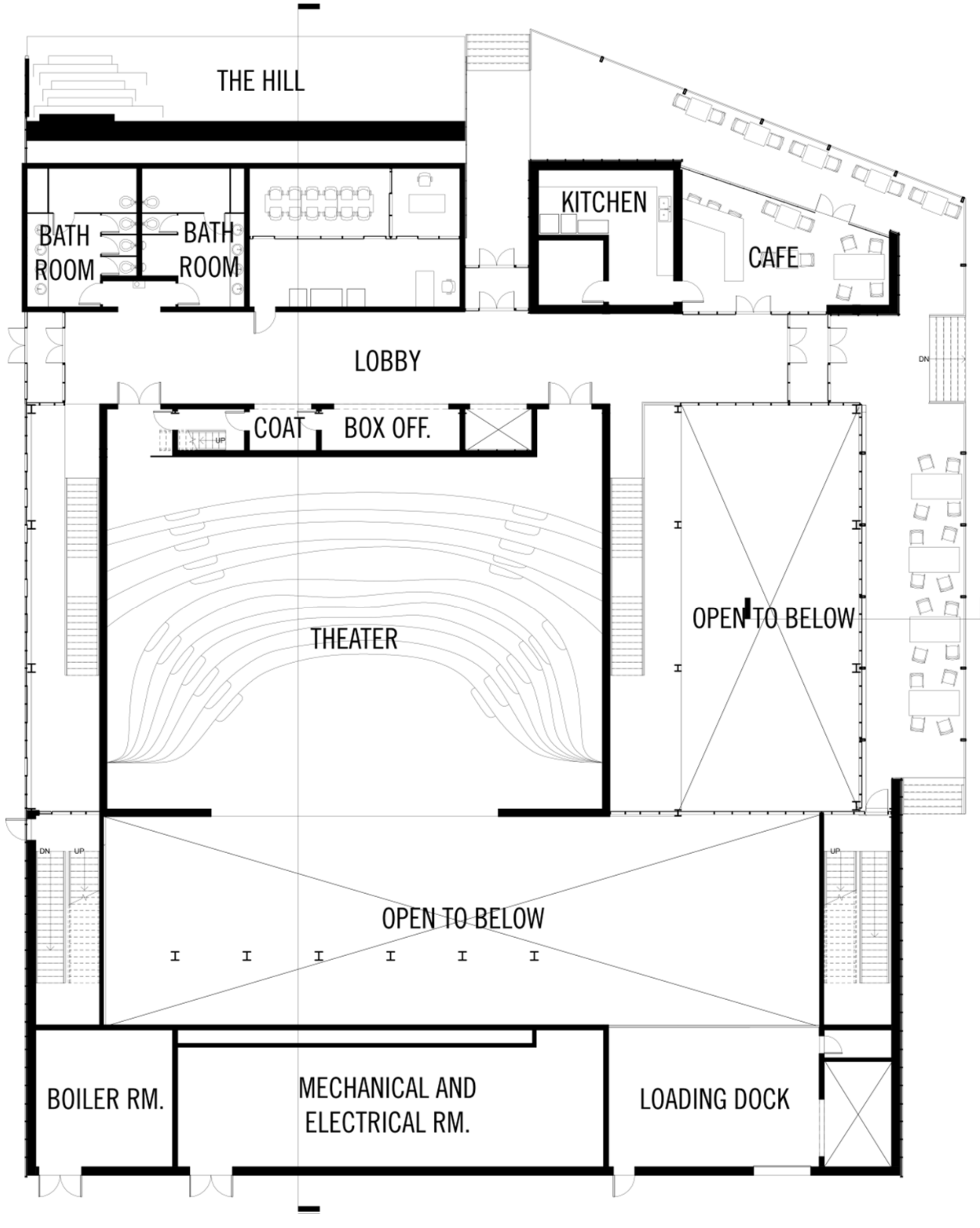
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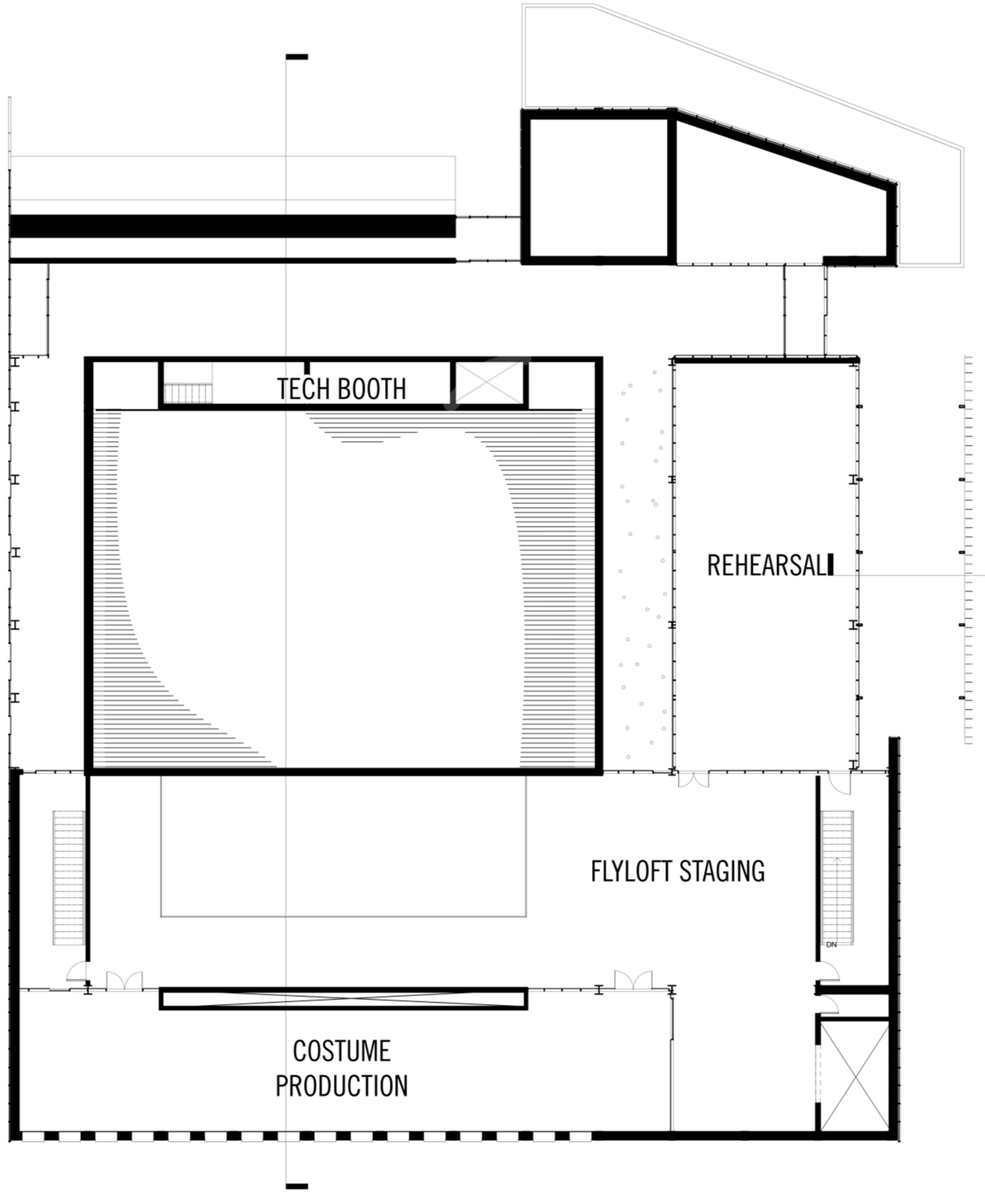

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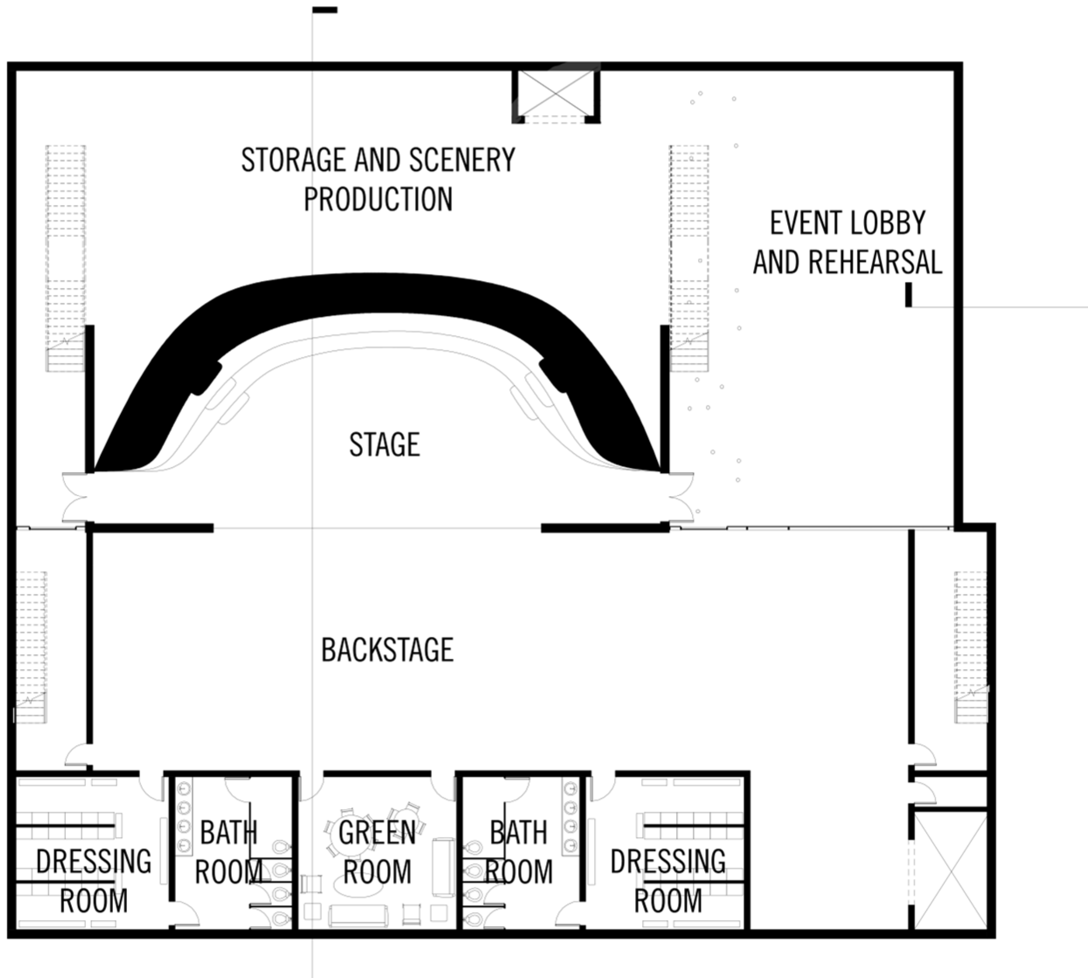
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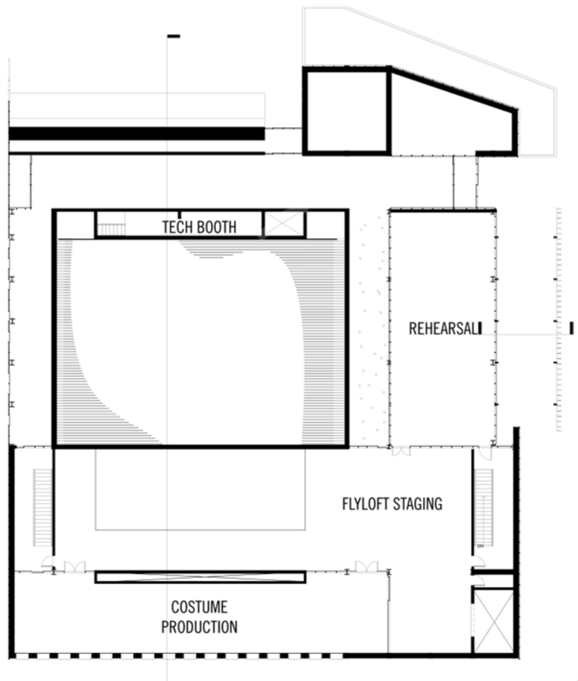
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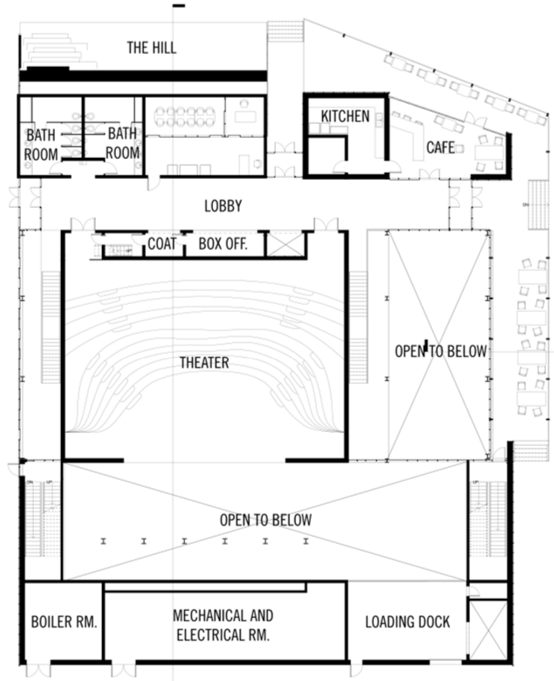
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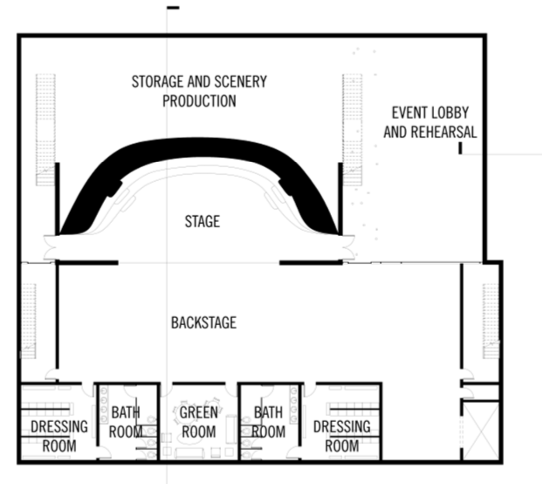
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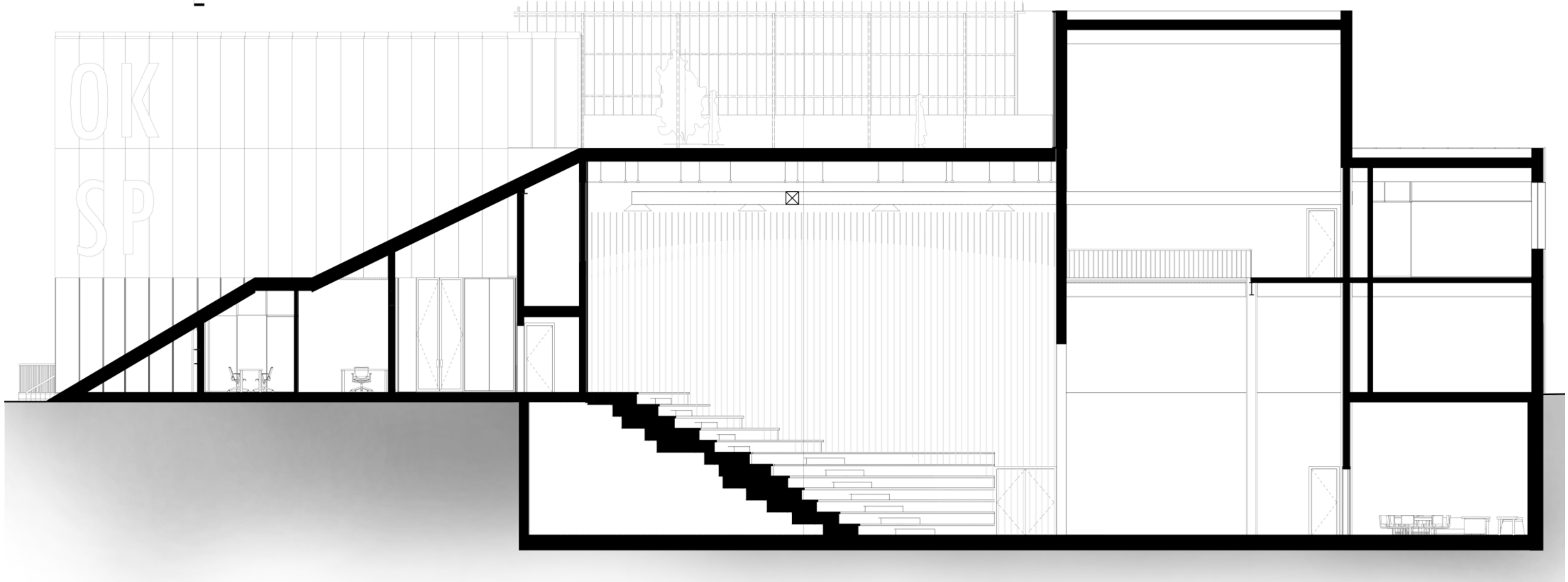
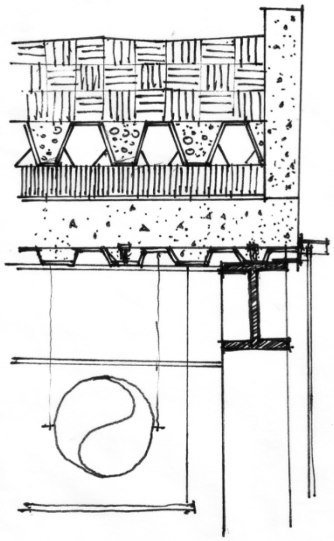

OK
SP

DESIGN LOADS

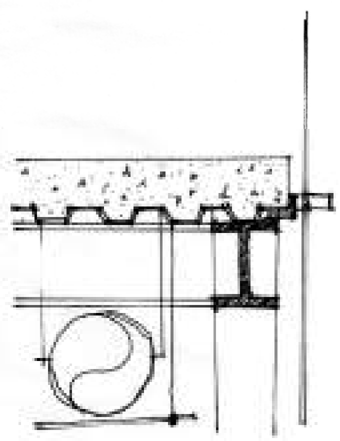


LIVE LOAD

ROOF GARDEN LIVE LOAD	100 PSF
ASSEMBLY AREA (REHEARSAL)	100 PSF
	200 PSF

ROOF DEAD LOAD

GREEN ROOF SOIL (2' SATURATED)	150 PSF
DRAINAGE PLATE W/ GRAVEL FILL	6 PSF
3" INSULATION (.75 LB/IN)	2.25 PSF
5" CONC. ON 2" DECK	80 PSF
FINISH CEILING	2 PSF
MEP	4 PSF
SPRINKLERS	3 PSF
COLLATERAL	1 PSF
STRUCTURE	7 PSF
DEAD LOAD	250 PSF



FLOOR DEAD LOAD

4" CONC. ON 2" DECK	70 PSF
STRUCTURE	7 PSF
FINISH CEILING	3 PSF
MEP	4 PSF
SPRINKLERS	3 PSF
COLLATERAL	3 PSF
DEAD LOAD	90 PSF

WORKING LOADS

ROOF

$W_{ws} = DL + LL = 250 + 100 = 350$ PSF

$W_u = 1.2D + 1.6L = 460$ PSF

FLOOR

$W_{ws} = DL + LL = 90 + 100 = 190$ PSF

$W_u = 1.2D + 1.6L = 268$ PSF

COMPOSITE BEAM SYSTEM SELECTED

STRUCTURAL MEMBER SIZES

COLUMNS

W10X112	INTERIOR
W12X152	EDGE
W12X152	CORNER

FLOOR SYSTEM

W10X12	20’ EDGE BEAM
W16X26	30‘ INTERIOR BEAM
W18X60	30’ INTERIOR GIRDER

4” NWC SLAB ON 2” STEEL DECKING

ROOF SYSTEM

W14X22	20’ INTERIOR BEAM
W27X84	50‘ THEATER SPAN BEAM
W18X60	30’ INTERIOR GIRDER

4” NWC SLAB ON 3” STEEL DECKING

DETAILED U AND R VALUE CALCULATIONS

1-3/4" (44mm) Triple Insulating (Double Coating) VE1-42

PERFORMANCE DATA

Transmittance	
Visible Light	32%
Solar Energy	17%
U-V*	8%
Reflectance	
Visible Light-Exterior	20%
Visible Light-Interior	17%
Solar Energy	22%
NFRC U-Value	
Winter	0.17 Btu/(hr x sqft x °F)
Summer	0.17 Btu/(hr x sqft x °F)
Shading Coefficient (SC)	0.28
Relative Heat Gain	59 Btu/(hr x sqft)
Solar Heat Gain Coefficient (SHGC)	0.25
LSG	1.28

Makeup

1/4" (6mm) clear VE-42 #2
1/2" (13.2mm) airspace
1/4" (6mm) clear VE-85 #4
1/2" (13.2mm) airspace
1/4" (6mm) clear

Compare Products

Use the following product selection tool to compare specific glass product performance statistics

Product Code	Glass Construction	Silk-Screening	Argon	Transmittance			Reflectance			U-Value		SC	SHGC	RHG	LSG
				Visible	Solar	U-V	Exterior	Interior	Solar	Winter	Summer				
VE1-85	1" (25mm) Insulating	No Silk-Screening	No	76%	47%	26%	12%	13%	21%	0.31	0.29	0.63	0.54	129	1.41
VE1-85	1" (25mm) Insulating	20% V933	No	62%	39%	21%	12%	15%	19%	0.31	0.29	0.54	0.46	111	1.35
VE1-85	1" (25mm) Insulating	40% V933	No	49%	31%	16%	12%	17%	17%	0.31	0.29	0.45	0.39	93	1.26
VE1-85	1" (25mm) Insulating	60% V933	No	35%	23%	11%	13%	19%	15%	0.31	0.29	0.35	0.31	75	1.13
VE1-42	1-3/4" (44mm) Triple Insulating (Double Coating)	No Silk-Screening	No	32%	17%	8%	20%	17%	22%	0.17	0.17	0.28	0.25	59	1.28

GLASS CALCULATIONS

GLASS IS SCREENED IN A VARIABLE PATTERN SUCH THAT THE HIGHER IT IS, THE MORE OPAQUE IT IS, + THE LOWER IT IS, THE MORE TRANSPARENT IT IS. THIS IS FOR AESTHETIC + PERFORMATIVE CONCERNS.

TO FACTOR IN THE EFFECTS OF THIS SCREENING PATTERN, ITS EFFECTS ARE ANALYZED ON THE VE1-85 TYPE GLASS BY VIRACON. THE RESULTS ARE AVERAGED AND ADDED ONTO THE DESIRED VE1-42 GLASS TYPE. THIS IS OUT OF NECESSITY AS THE MANUFACTURER'S INFORMATION DOES NOT PROVIDE FOR VE1-42 WITH SCREENING.

ATTACHED IS THE INFO OF VE1-42 AND A LIST COMPARING VE1-42 TO THE VARIOUS SCREENING PERCENTAGES OF VE1-85.

SCREENING EFFECTS PER VE1-85:

% SCREENED	VT	SC	SHGC	UV	
60%	35%	.35	.31	.11	
40%	49%	.45	.39	.16	
20%	62%	.54	.46	.21	
0%	76%	.63	.54	.26	(ORIGINAL VE1-85)
30%	55.5%	.49	.43	.19	AVERAGES.
	-20.5%	-.14	-.11	-5%	EFFECT OF SCREENING.

THEN APPLY TO VE1-42...

	VT	SC	SHGC	UV	
	32%	.28	.25	8%	(ORIGINAL VE1-42)
	-20.5%	-.14	-.11	-5%	
.17 U	11.5% VT	.14 SC	.14 SHGC	3% UV	FINAL GLASS PROPERTIES.

ROOF CALCULATIONS

		R
POLYSTYRENE BOARD	(3")	15.
EARTH	(6")	12.
CONCRETE SLAB	(7")	.49
MOISTURE MEMBRANE		-
ROOT BARRIER		-
AIR FILM (EXTERIOR)		.17
AIR FILM (INTERIOR)		.68
		27.5 R TOTAL W/ FILMS
		.035 U VALUE

Designer: Cameron Patterson
Building: Shakespear in the Park Theatre
Space: Rehearsal

Daylighting lab test results

Sky Condition: Standard CIE Overcast Sky

Light Sensor #	Multiplier	Meter's Reading	illumination level under artificial sky dome: lux	fc	sensor's serial number
1	2.921	32.0	93 lux	8.7 fc	PH 8355
2	2.827	27.6	78 lux	7.3 fc	PH 8356
3	2.820	23.6	67 lux	6.2 fc	PH 8357
4	2.934	18.1	53 lux	4.9 fc	PH 8358
5	2.997	15.4	46 lux	4.3 fc	PH 8359
6	2.822	14.5	41 lux	3.8 fc	PH 8360
7	3.006	12.7	38 lux	3.5 fc	PH 8361
8	2.964	12.5	37 lux	3.5 fc	PH 8362
(single sensor) 9	2.840	248.5	706 lux	65.6 fc	PH 8363
Outside (under dome)	2.840	227.4	646 lux	60.0 fc	PH 8364

Measured outside illuminance = 60.0 fc

[NOTE]: This is the outside horizontal illuminance under the artificial sky dome in the lab, and not the standard illuminance at the location of your

Daylight Factor for VT= 1.00

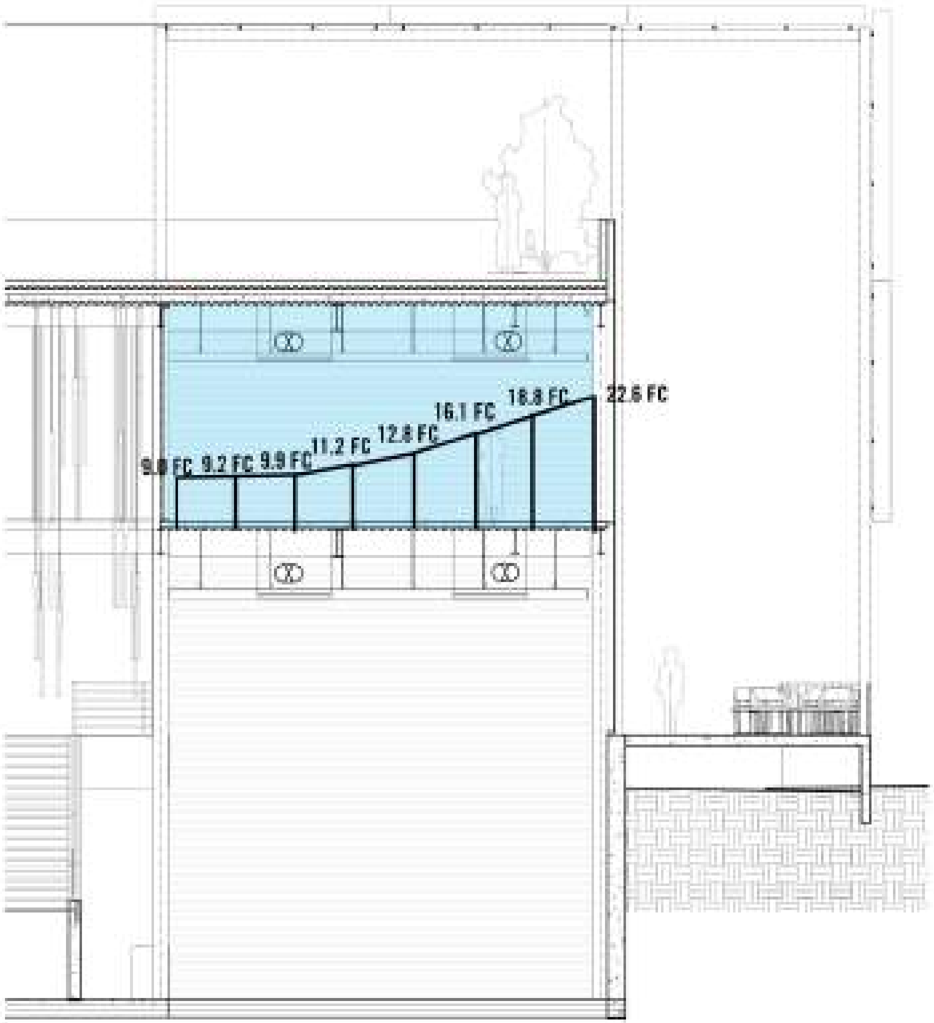
For models tested with glass or trace paper

Sensor	Daylight Factor for VT=1.00	Daylight Factor excluding effect of glass VT
1	14.47%	14.47%
2	12.08%	12.08%
3	10.31%	10.31%
4	8.22%	8.22%
5	7.15%	7.15%
6	6.34%	6.34%
7	5.91%	5.91%
8	5.78%	5.78%
(single sensor) # 9		

*use VT of clear glass only

Average 1 to 8
8.78%

DF distribution



(Focus Space)

PLEASE, *use this worksheet to document the environmental performance of your envelope design during the DD phase (First due for review on March 8th, 2016, 1:30 p.m.)*

CURRENT MODEL.

1. Description of the Envelope Design

- Wall type and materials (according to IECC code) GLASS & STEEL CURTAIN WALL, FIXED FENESTRATION
- Floor-to-floor height 13'
- Glass Ratio (% of glass to overall area of wall) "100%"
- Thermal conductance (U-factor) of the opaque wall .064
- Thermal conductance (U-factor) of roof .035
- Thermal conductance (U-factor) of slab on grade .73.
- Glass type (model number and manufacturer) VIRACON VE1-42 w/ ADDITIONAL SCREENING.
- Glass thermal conductance (U-factor) .17
- Glass Shading Coefficient (SC) .14 & SHGC = .12
- Glass Visible Transmittance (VT) 11.5% & UV Transmittance = 3%
- External shading for glass (describe, if any) GLASS + STEEL VERTICAL LOUVERS.

[Note 1] Initial U-values in the computer model are the maximum allowed by IECC 2012. After your first run of energy simulation (baseline), you should create and use your selection of glass. Performance data of glass is typically provided by the glass manufacturer. [Note 2] SHGC = 0.87 x SC

2. Orientation

According to your selected focus space, this space is facing: (North), (East), (South), (West)

3. Results of Energy Simulation

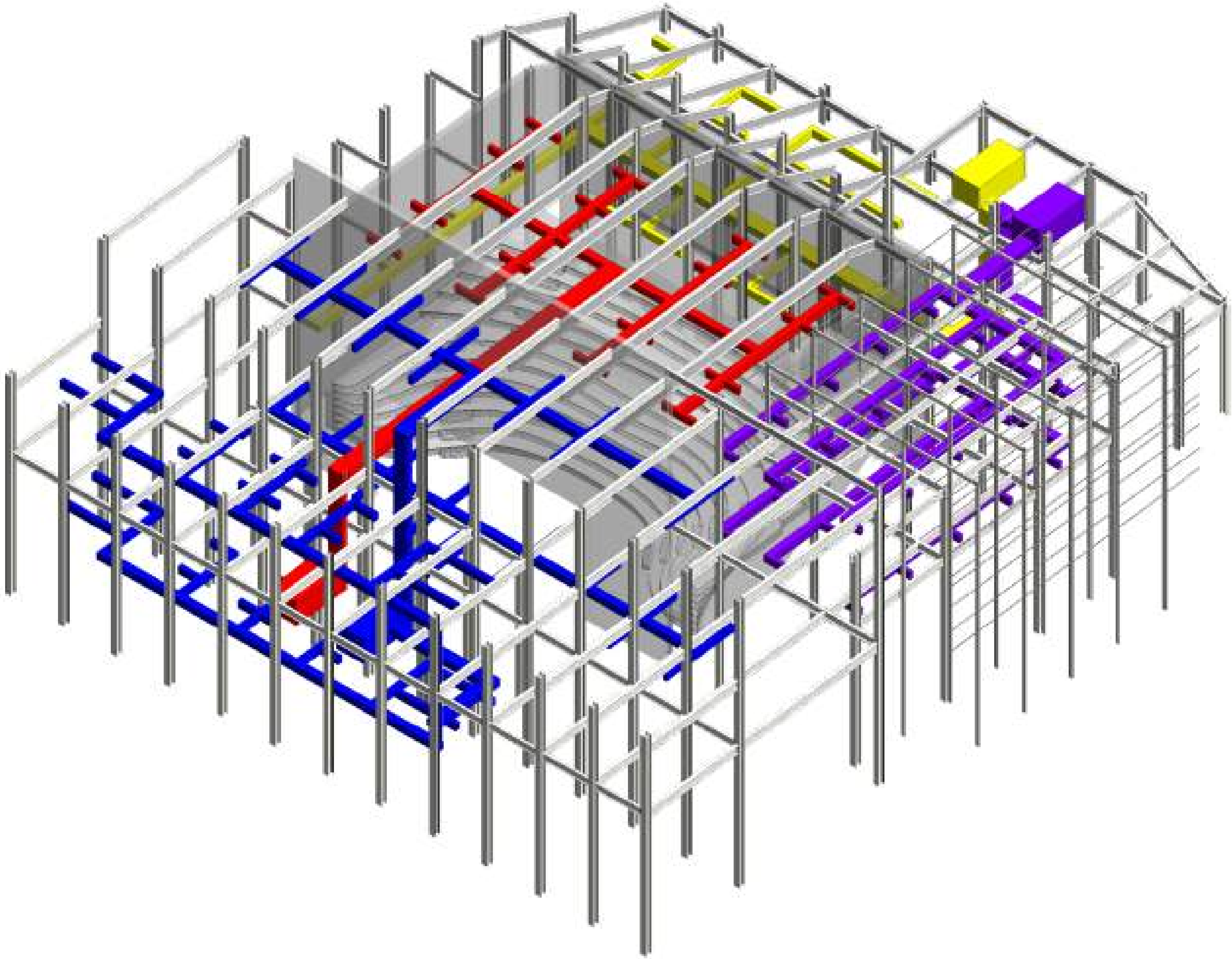
Perimeter Thermal Zone:

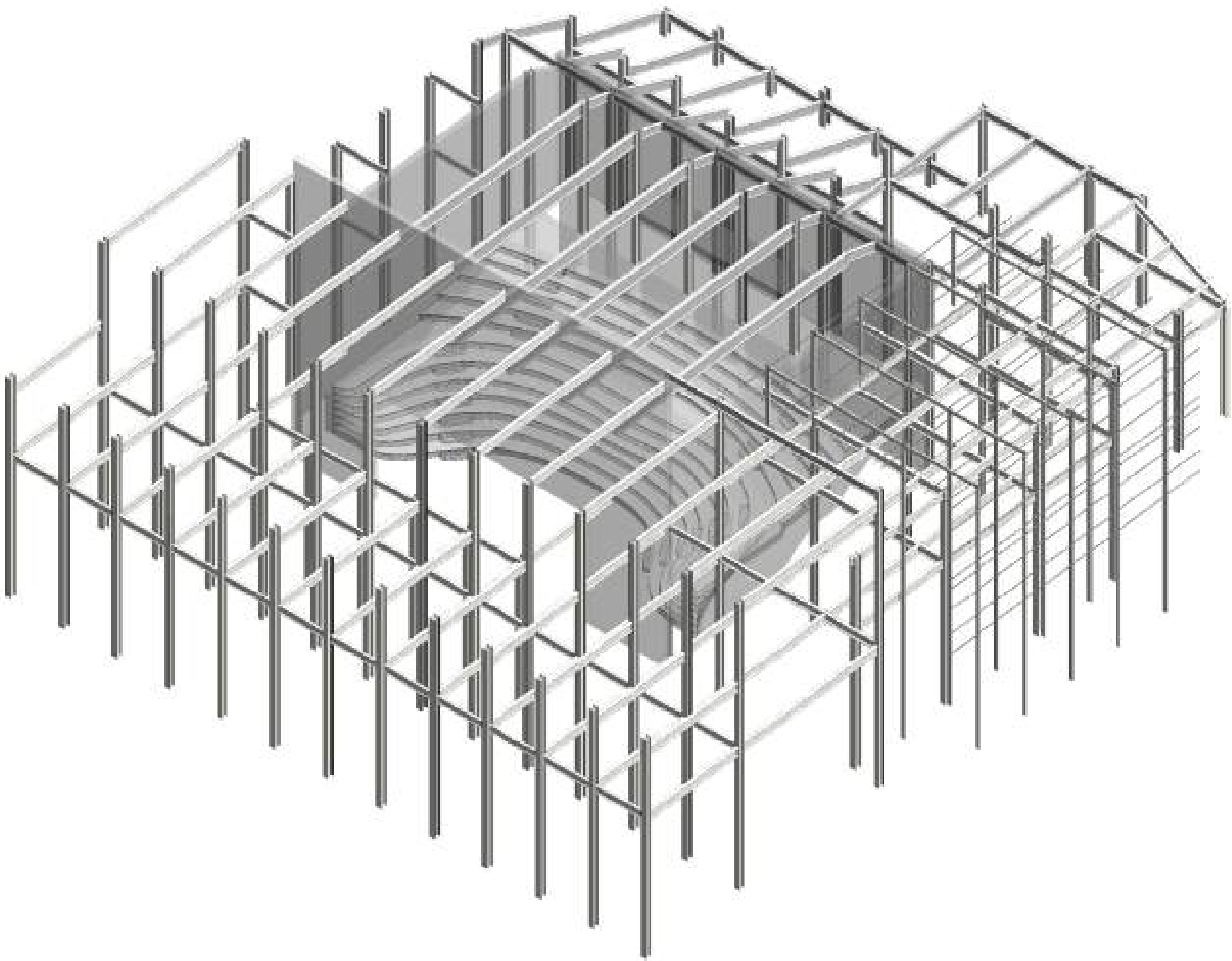
- Time of the maximum cooling load (day and hour) AUGUST 2 @ NOON.
- Maximum Cooling Load in the perimeter space (thermal zone) = (5.250) KBtuh
- Maximum Cooling load per Square Foot = (5.25)*1000 / 300 = ((17.5)) Btuh/sq.ft.
- Required air supply per square foot = ((17.5)) / 21.6[a] = .81 CFM/sq.ft.
- Compare the cooling load (CFM/sq.ft) to your reference design (baseline) : 1.61 VS .81
- What is the energy saving (%), compared to baseline: 50% SAVINGS! %

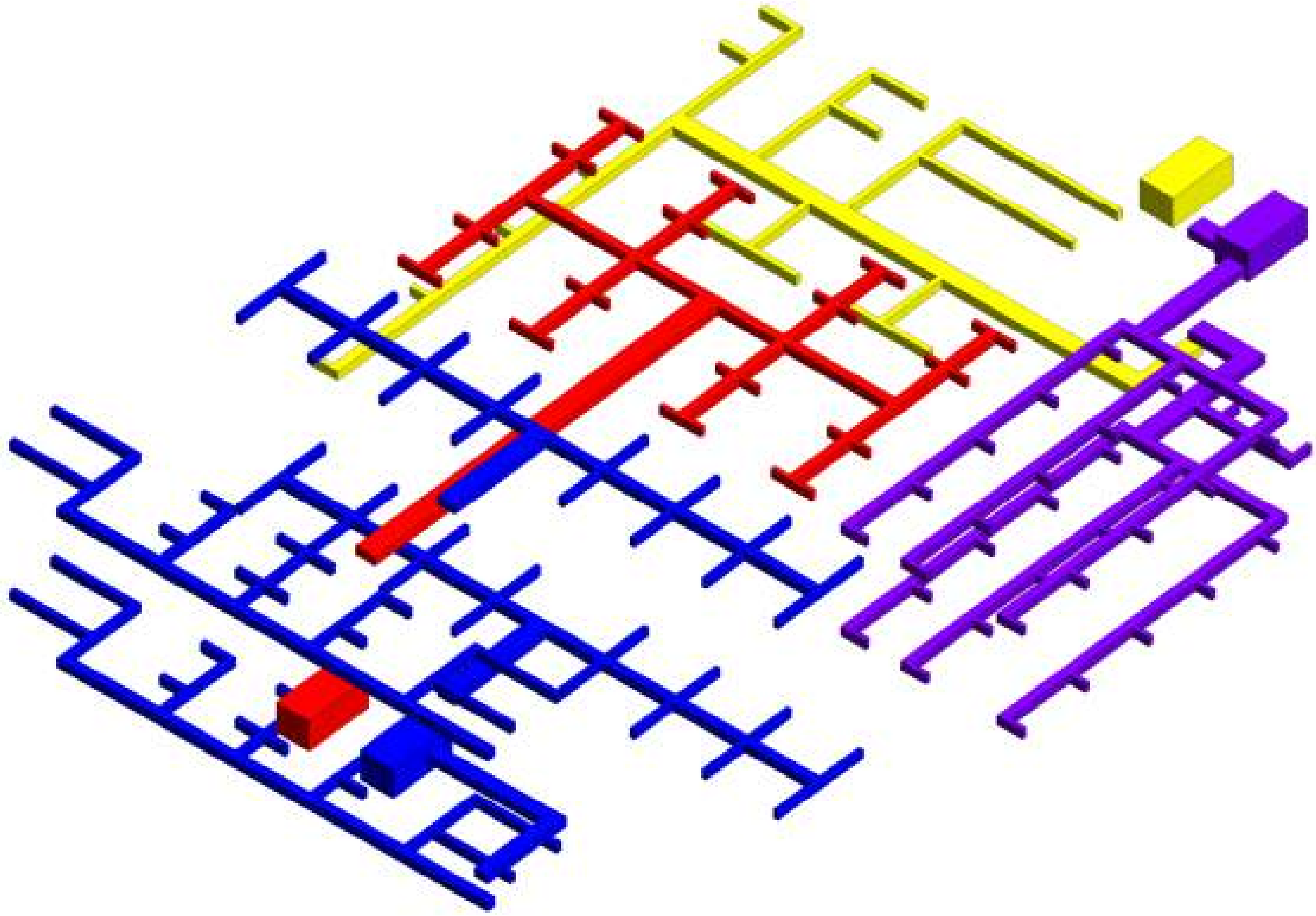
Interior Thermal Zone:

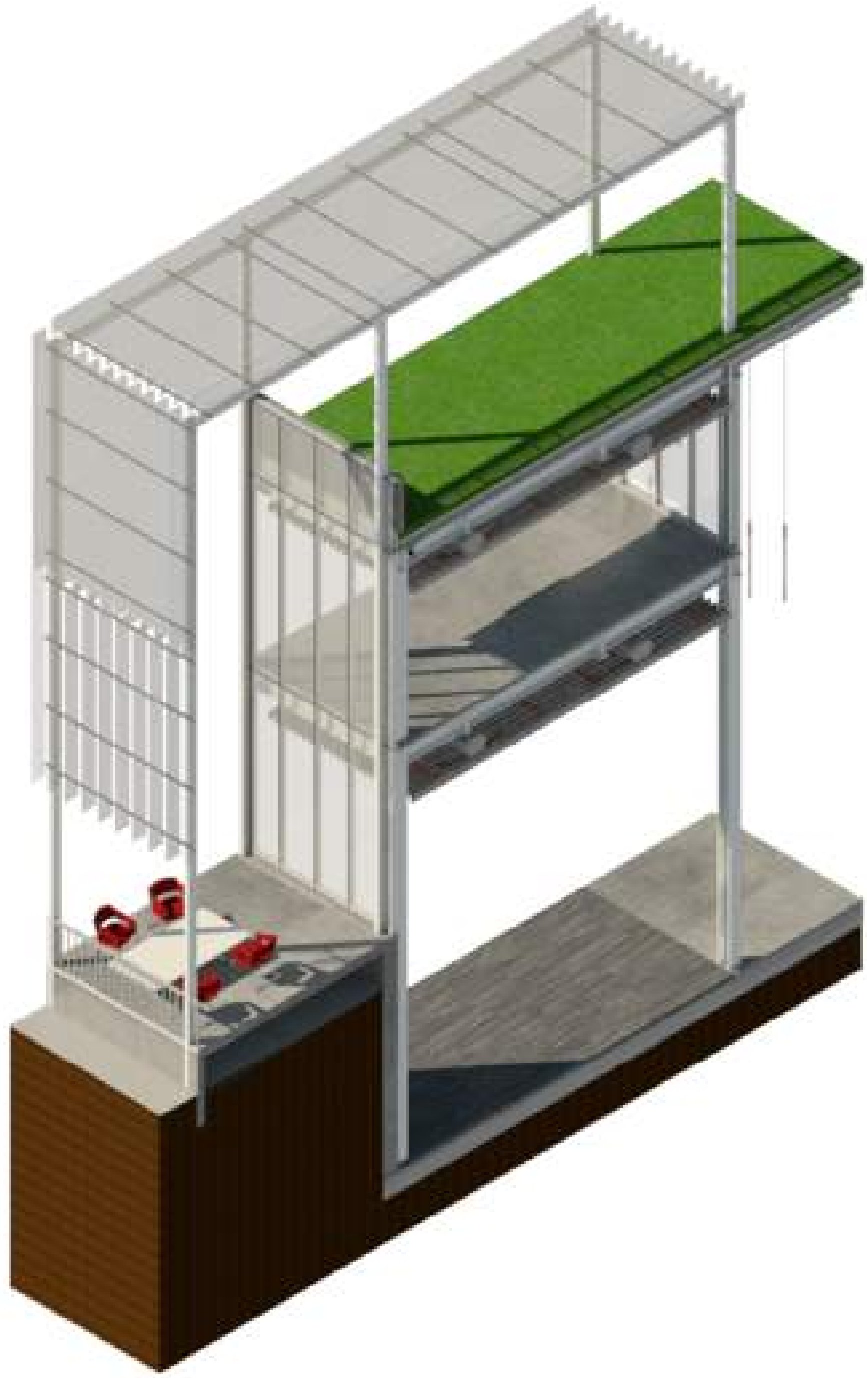
- Time of the maximum cooling load (day and hour) JULY 16 @ 3 PM.
- Maximum Cooling Load in the interior space (thermal zone) = (3.333) KBtuh
- Maximum Cooling load per Square Foot = (3.333)*1000 / 300 = ((11.11)) Btuh/sq.ft.
- Required air supply per square foot = ((11.11)) / 21.6[a] = .514 CFM/sq.ft.

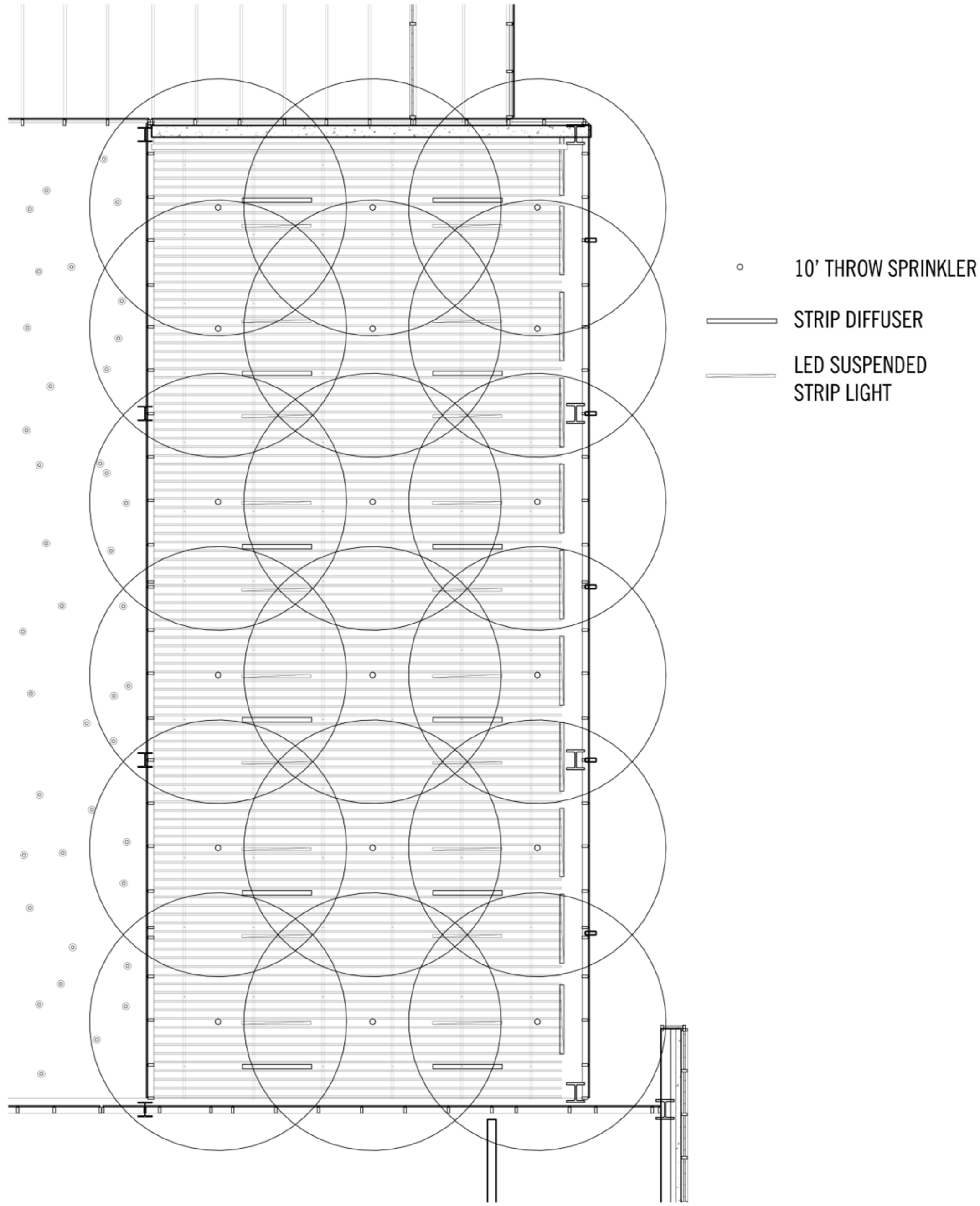
[a] *Assuming Supply Air temperature equals 55°F to room temperature of 75°F*

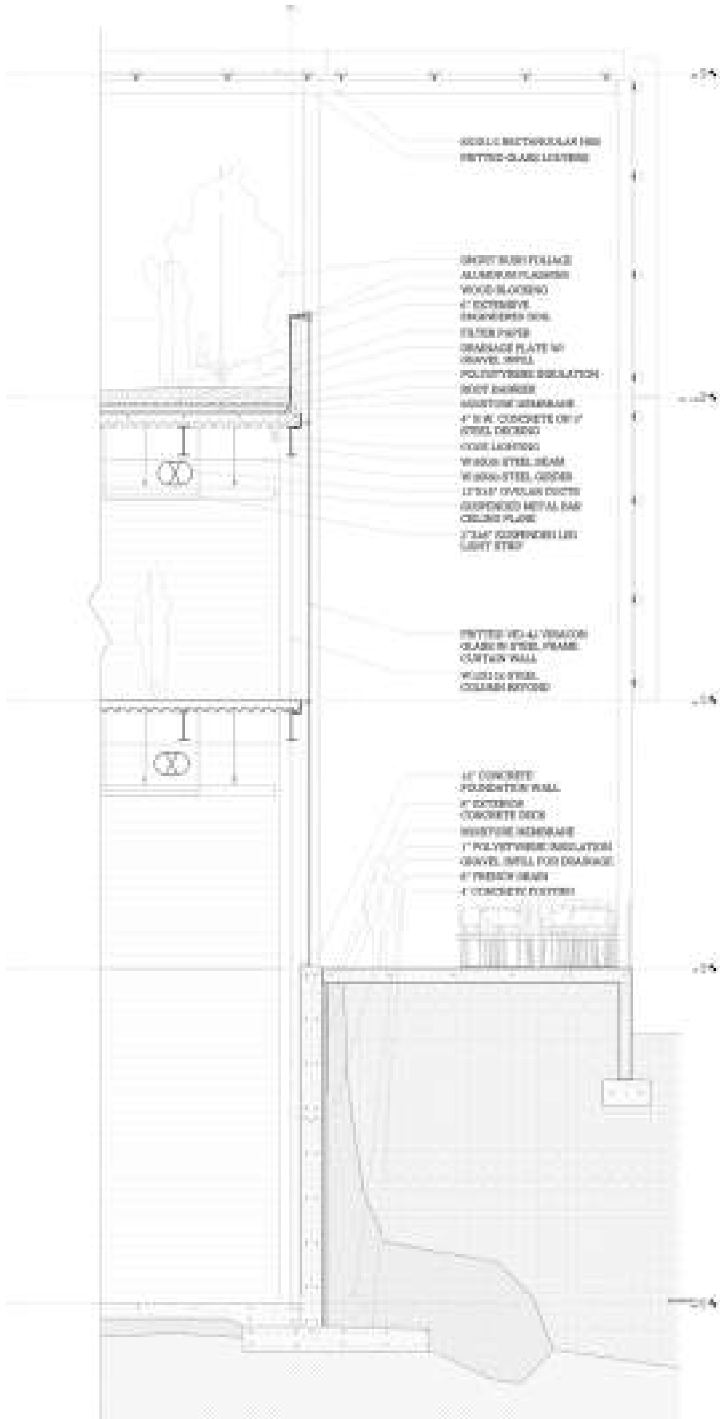




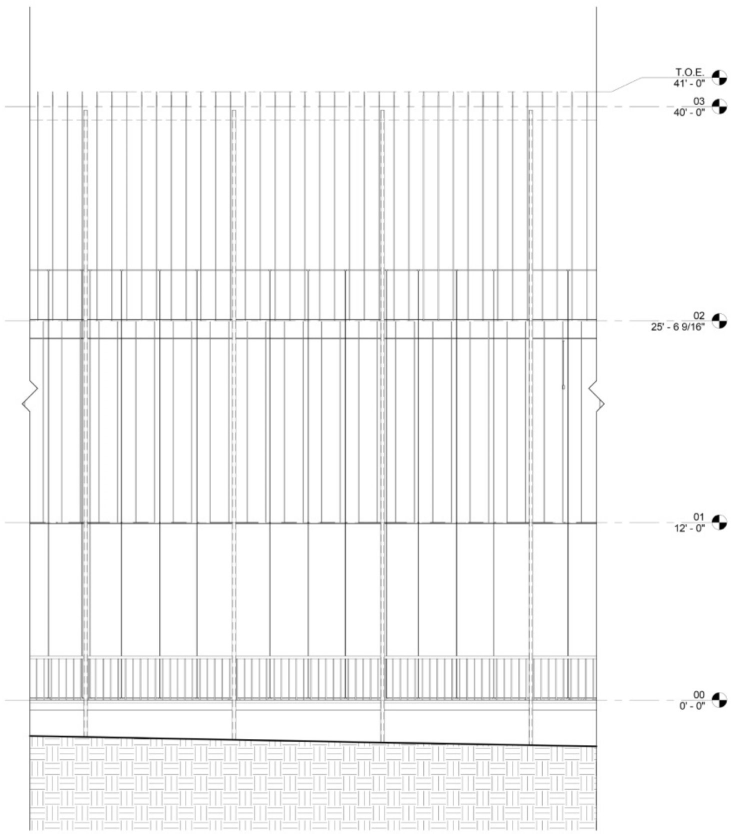




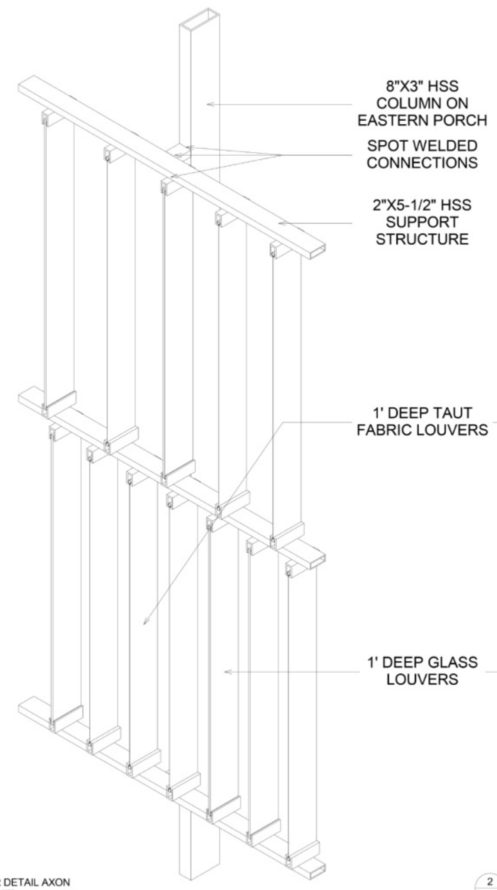

10’ THROW SPRINKLER
STRIP DIFFUSER
LED SUSPENDED
STRIP LIGHT



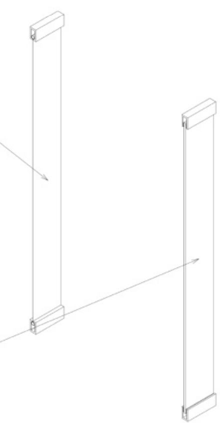
FRITTED GLASS LOUVERS
ALUMINUM FLASHING
WOOD BLOCKING
FILTER PAPER
DRAINAGE PLATE W/
GRAVEL INFILL
POLYSTYRENE INSULATION
ROOT BARRIER
MOISTURE MEMBRANE
STEEL DECKING
COVE LIGHTING
SUSPENDED METAL BAR
CEILING PLANE
LIGHT STRIP
GLASS IN STEEL FRAME
CURTAIN WALL
COLUMN BEYOND
FOUNDATION WALL
CONCRETE DECK
MOISTURE MEMBRANE
GRAVEL INFILL FOR DRAINAGE
CONCRETE FOOTING



3
A - 8.0
EAST ELEVATION PORCH AND LOUVERS
1/4" = 1'-0"

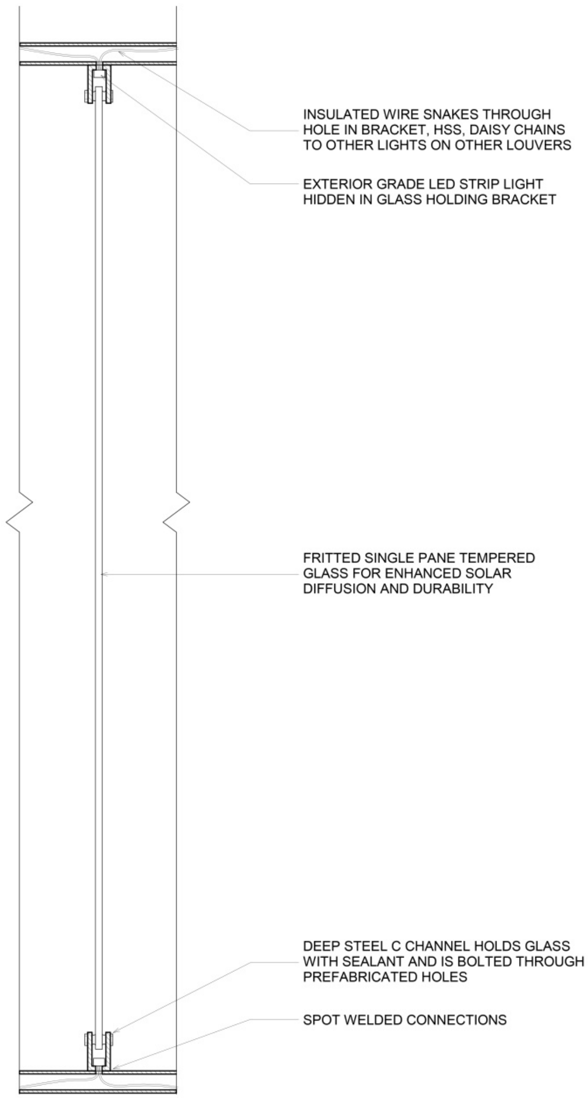


1
A - 8.0
LOUVER DETAIL AXON
SCALE: 1"=1'0"

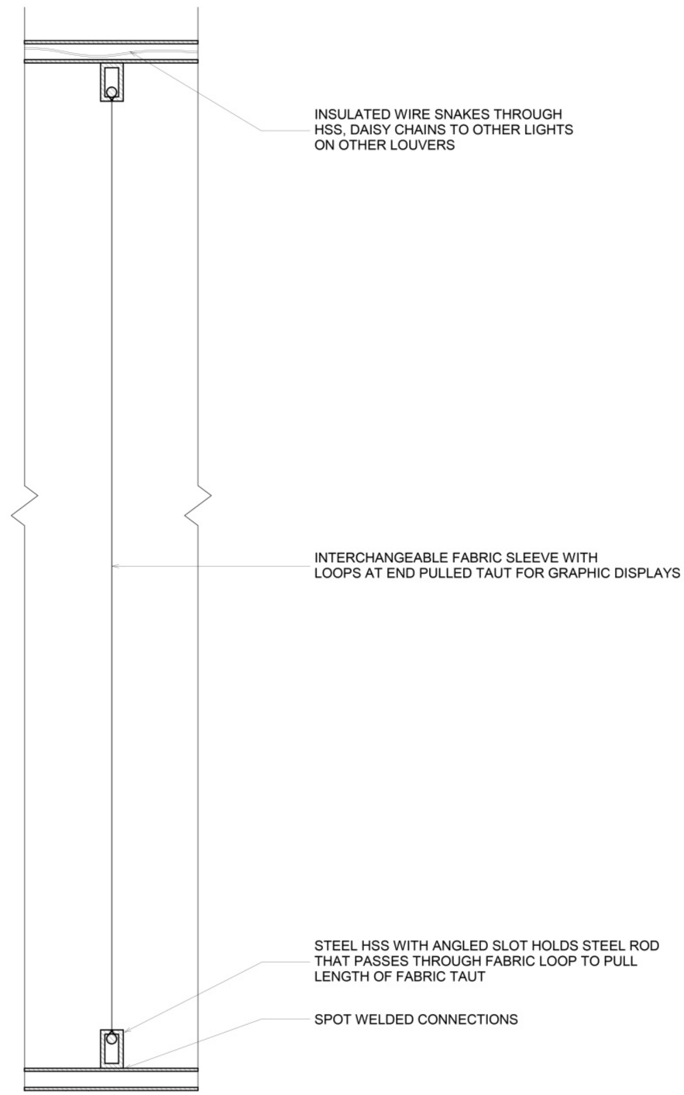


2
A - 8.0
PANEL OPTIONS
SCALE: 1"=1'0"

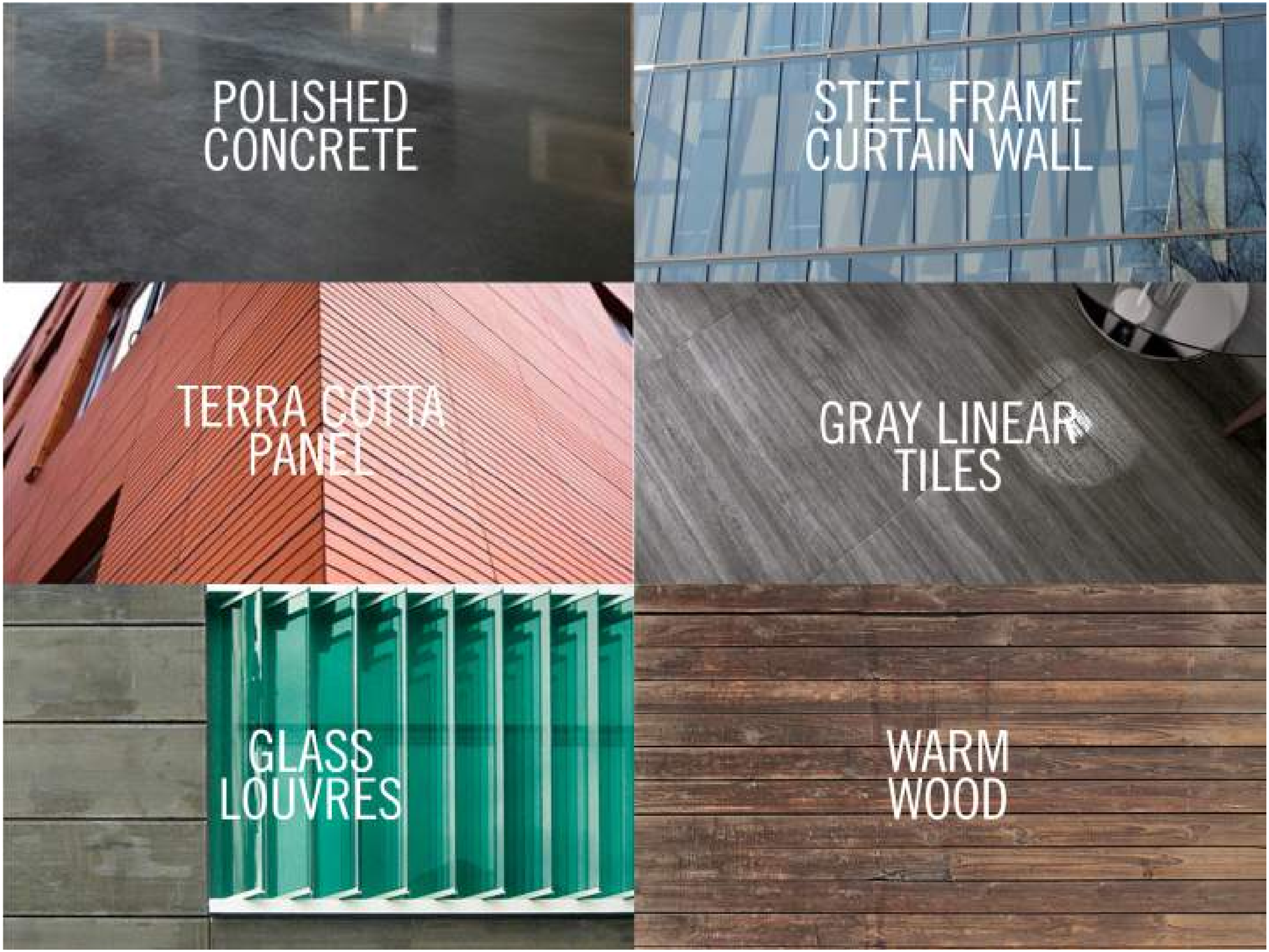
NOTES:
1. GLASS LOUVERS CONTAIN FRITTED GLASS.
2. FABRIC LOUVERS REMOVABLE FOR INTERCHANGEABLE GRAPHICS. HELD TIGHT BY ROD DEMONSTRATED.
SEE PAGE A - 8.1



1 A - 8.1 GLASS LOUVER SECTION
3" = 1'-0"



2 A - 8.1 FABRIC LOUVER SECTION
3" = 1'-0"


POLISHED CONCRETE
STEEL FRAME CURTAIN WALL
TERRA COTTA PANEL
GRAY LINEAR TILES
GLASS LOUVRES
WARM WOOD


OK


OK
SP