

NATIVE AMERICAN CULTURAL CENTER
SENIOR CAPSTONE PROJECT

LINDSAY FREDERICK
LIGHTING + ELECTRICAL
APRIL 10, 2013





Located in **Arizona**

48,600 SF

One story, with partial lower level

Houses a **museum**, gift shop, auditorium, **classrooms**, offices, and art rooms

Architecture & Engineering by **SmithGroupJJR**



The Tribe has established the **education** of tribal members as its **highest priority**.

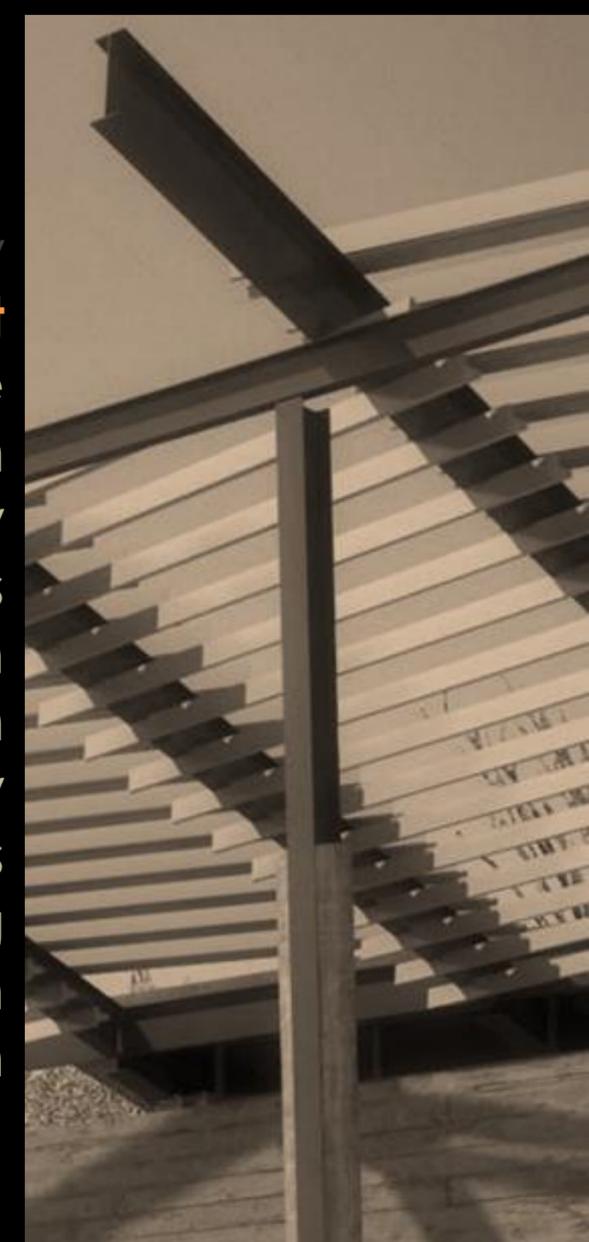
The Cultural Center facilities will **provide means** through which the **history, culture and language** can be **transferred to the tribe's youth** and **interpreted for visitors**.



The original designers goals were to “**create an emotional connection,**” to “**offer a life-changing experience,**” and to “**make the guest part of the story.**”

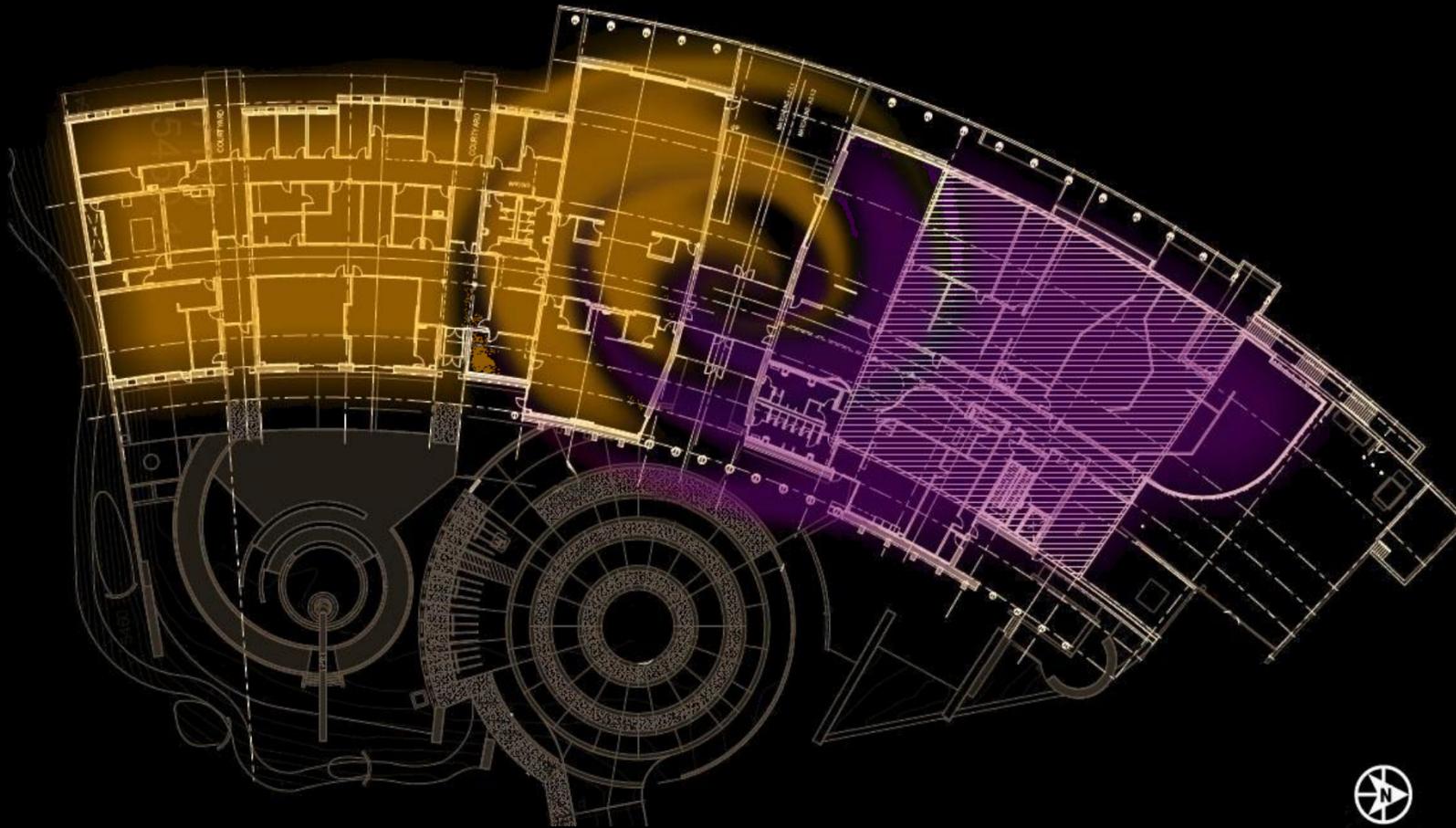


- Project Overview
- Concept Development**
- Project Scope
- Classroom
- Overview
- Ceiling modifications
- Lighting design
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- Track lighting
- Electrical coordination
- Conclusion

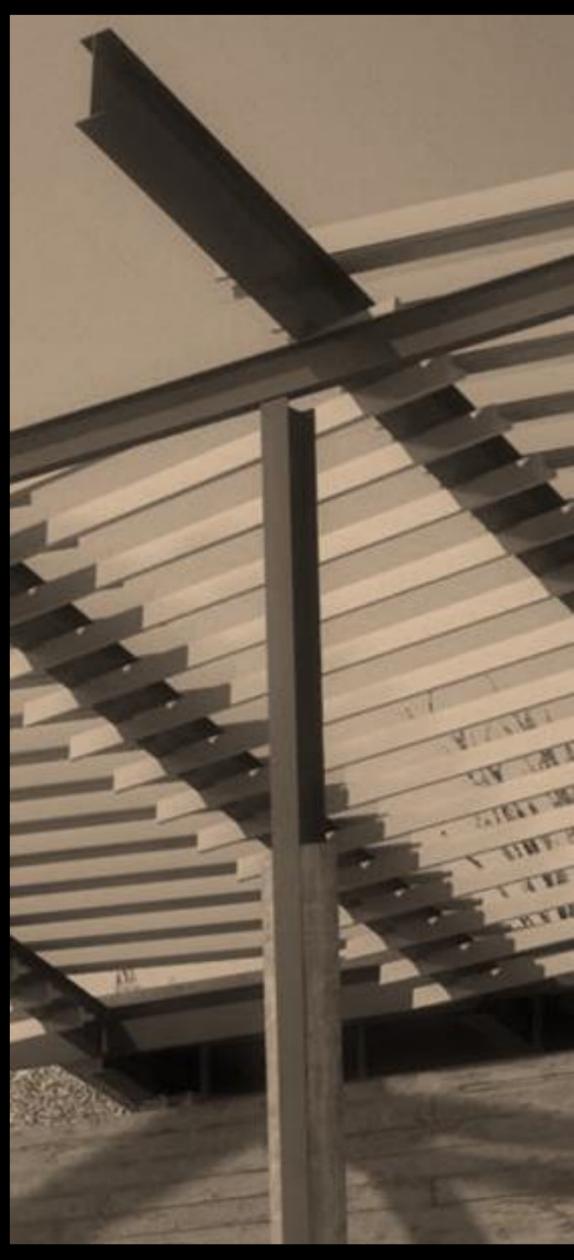


Create **harmony** between the education and public sides of the cultural center

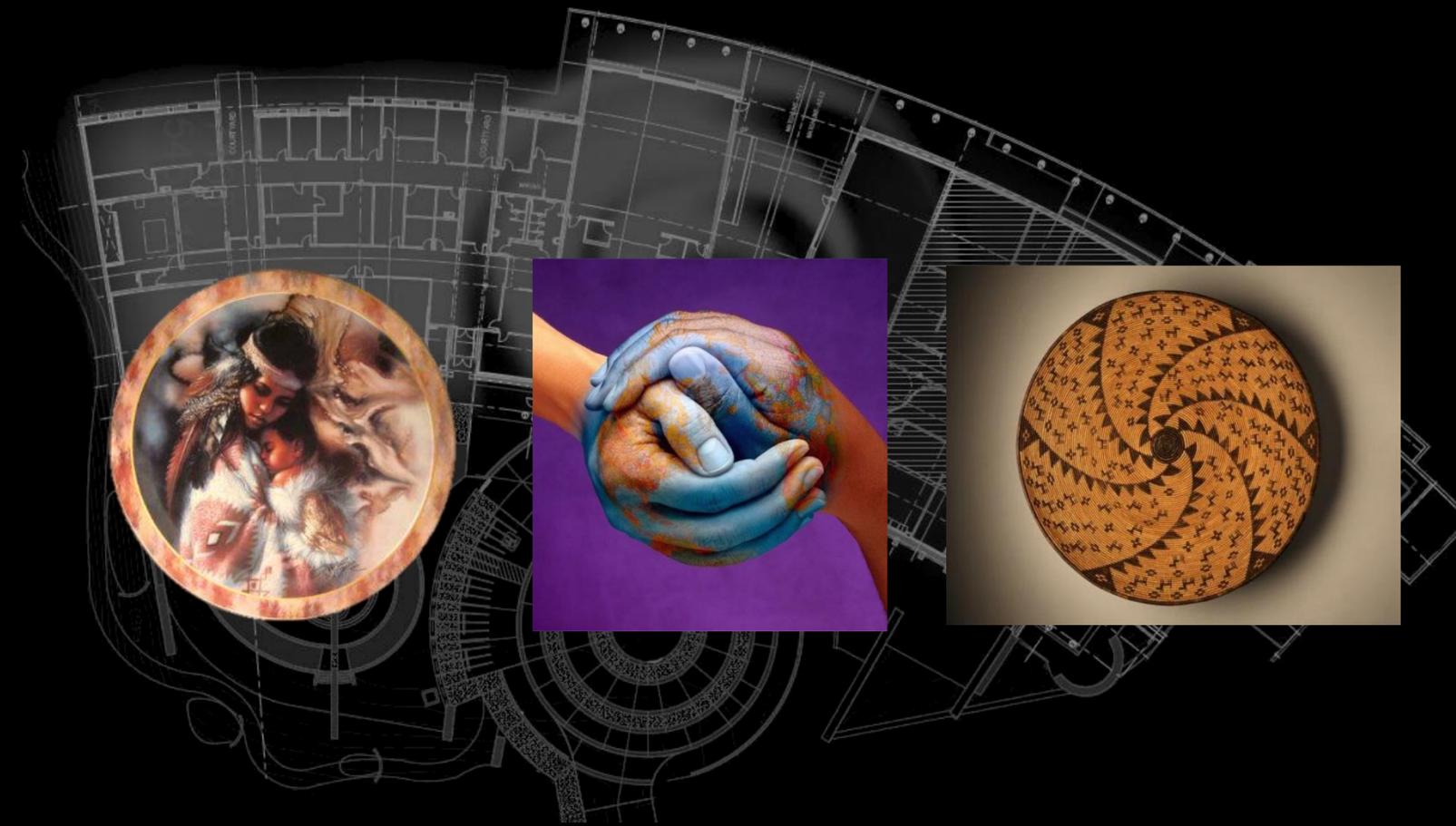
Provide and **interactive** and **immersive** learning environment for visitors and tribe members alike



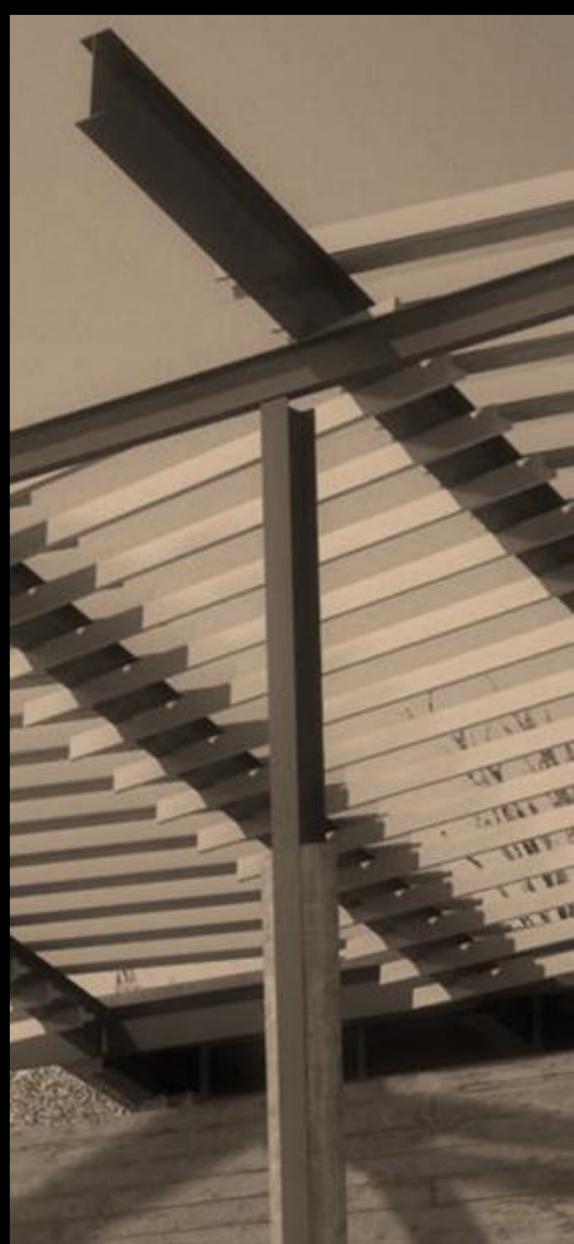
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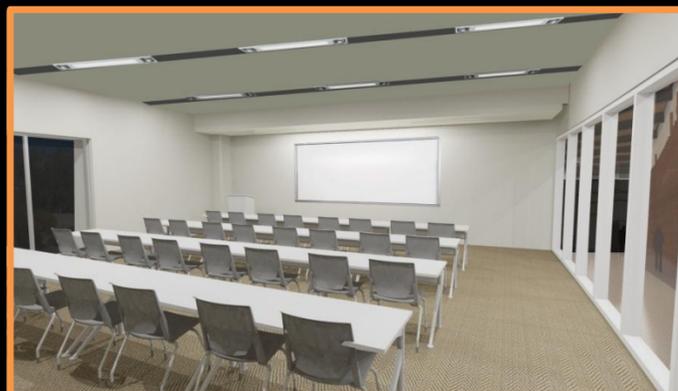
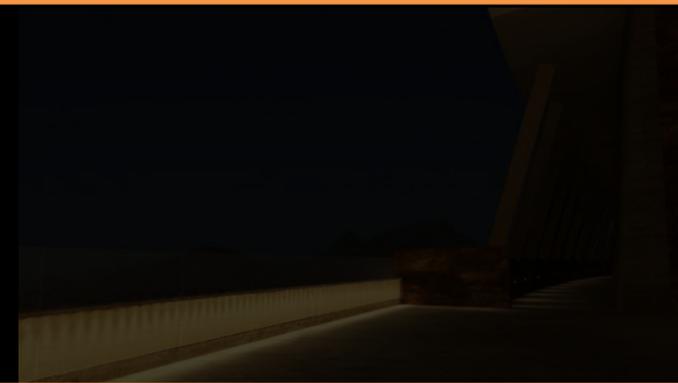


community
genuine connection nature
life-changing harmony connections
culture means tribe environment values love immersive lighting
youth embrace concept neighbors experience
heart learning heritage respect people interactive
emotional design understanding



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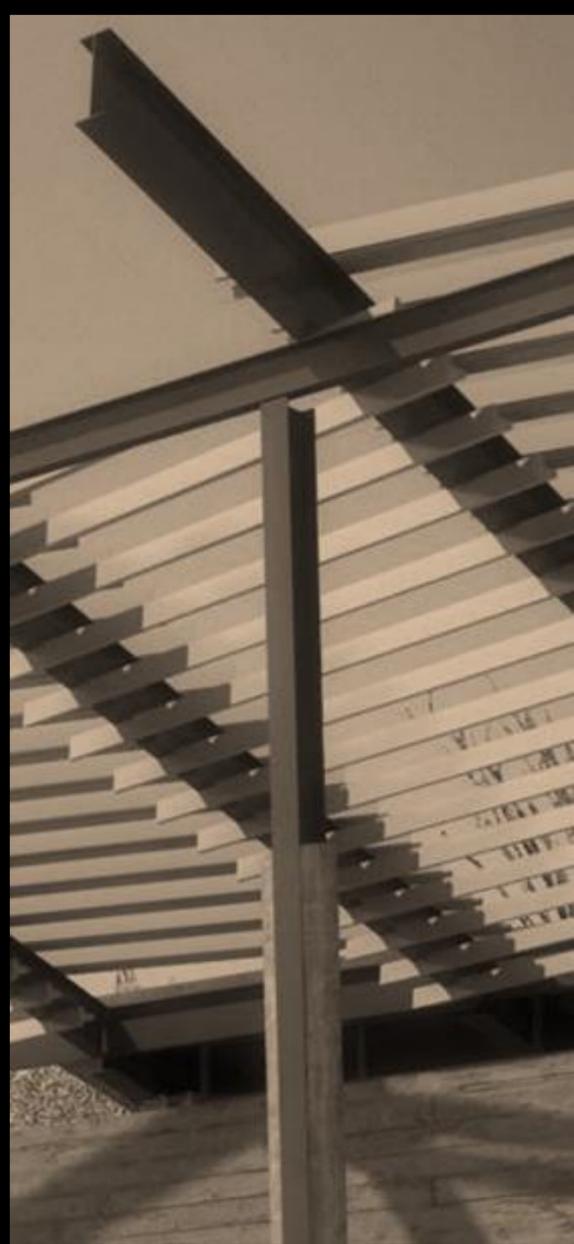


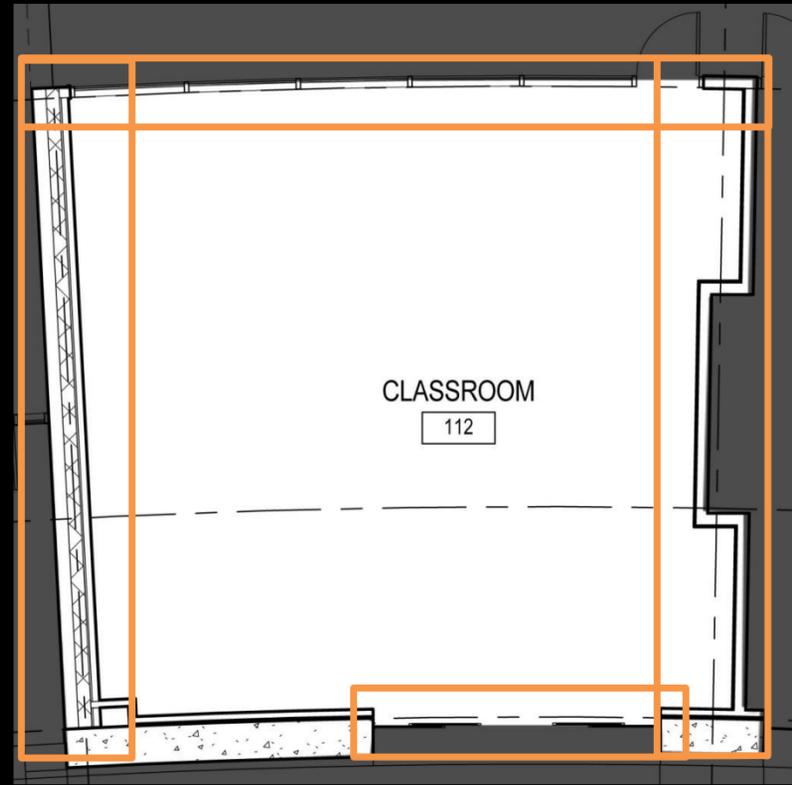


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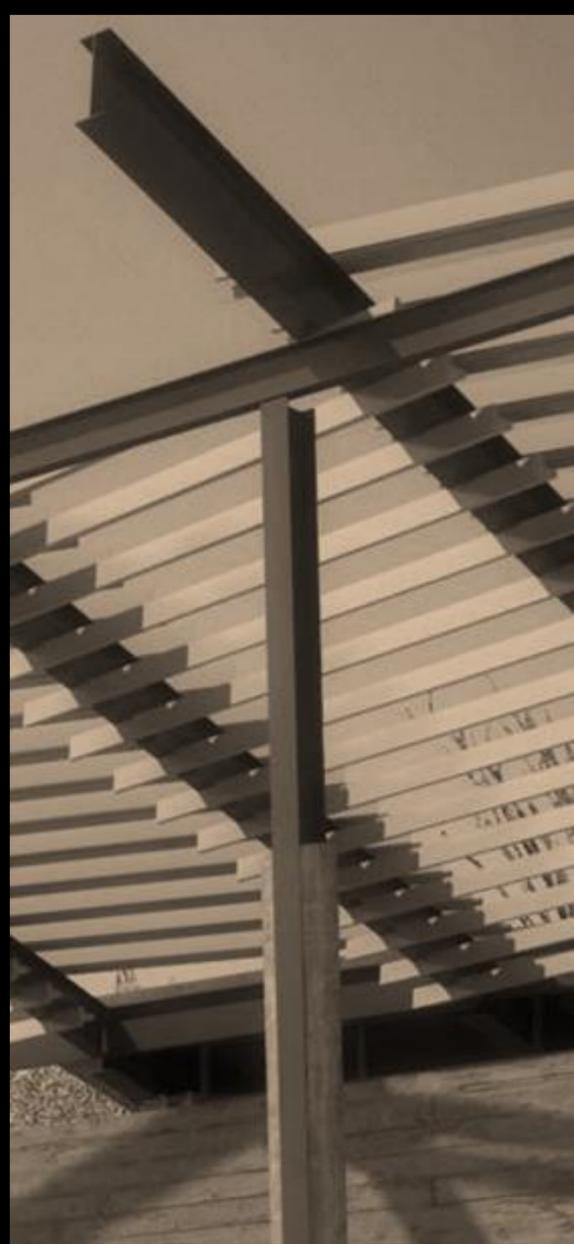
Project Scope

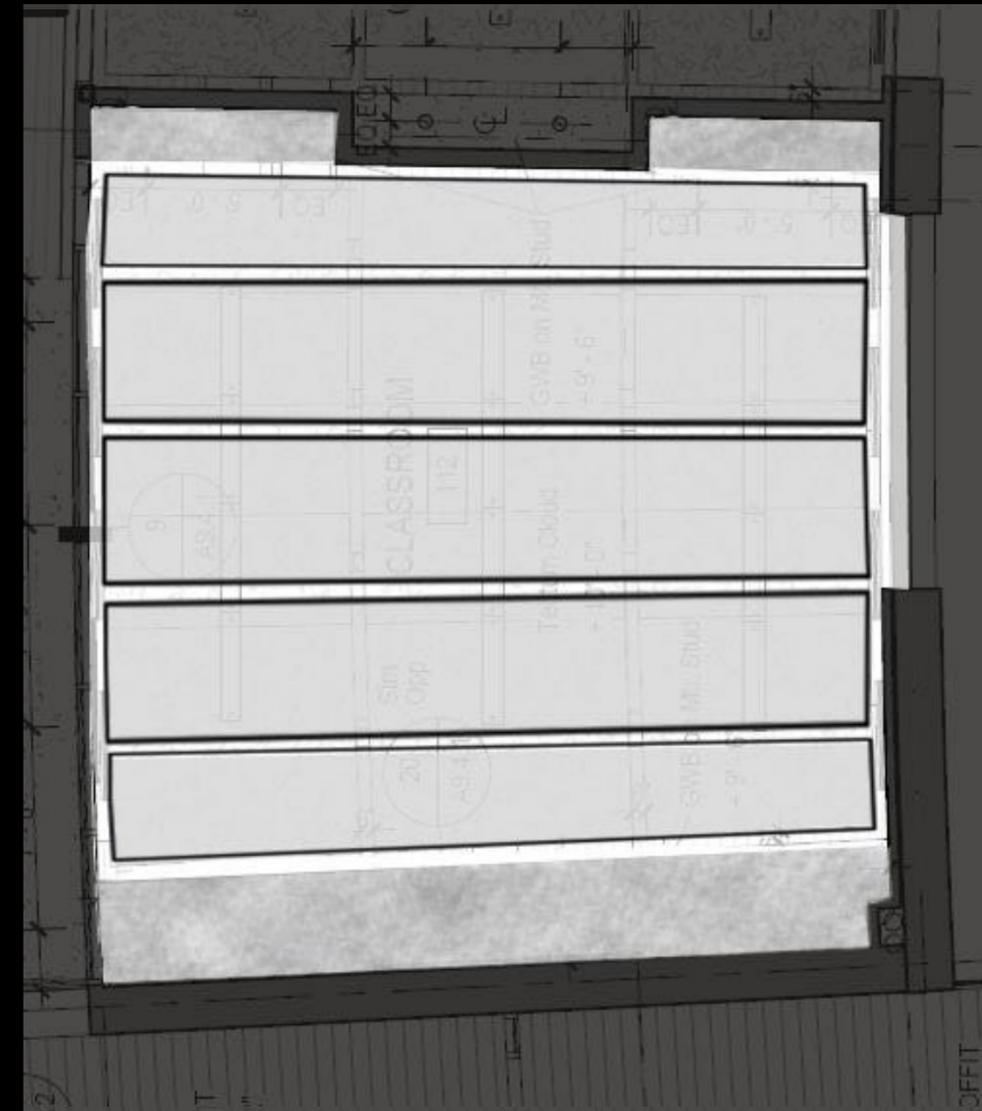
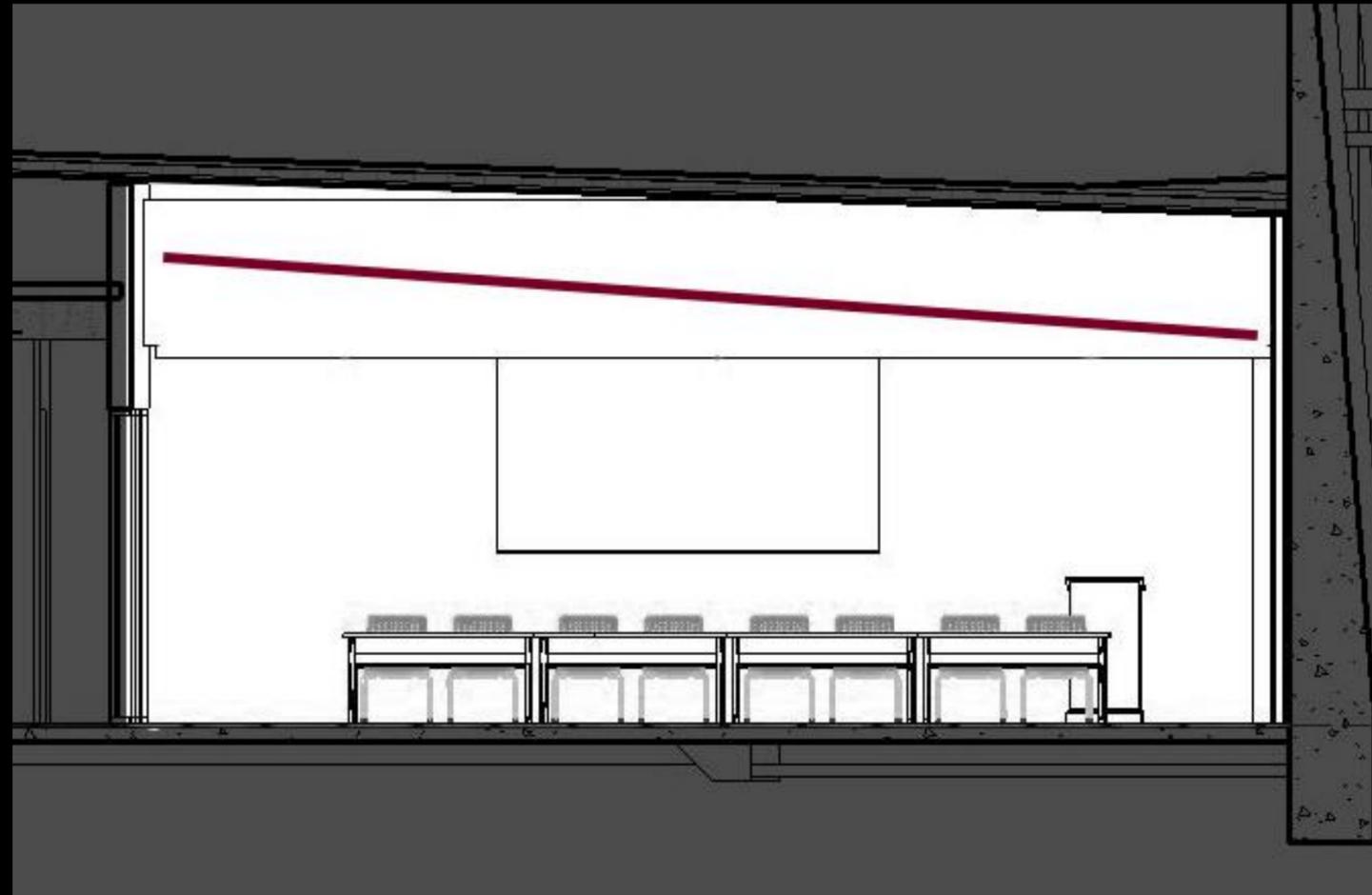
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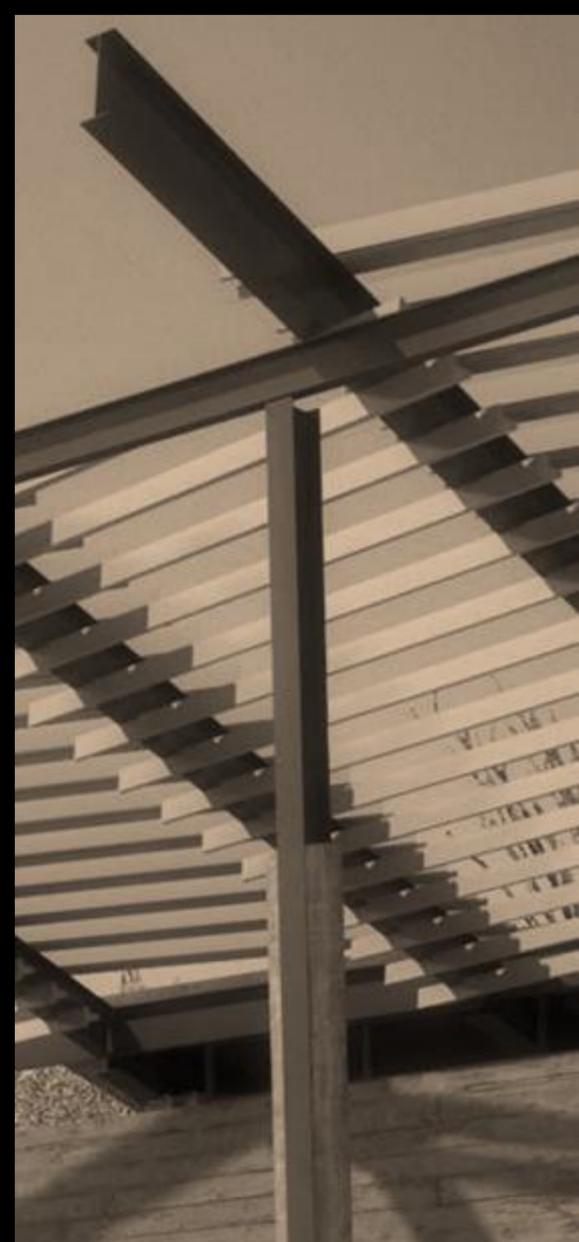


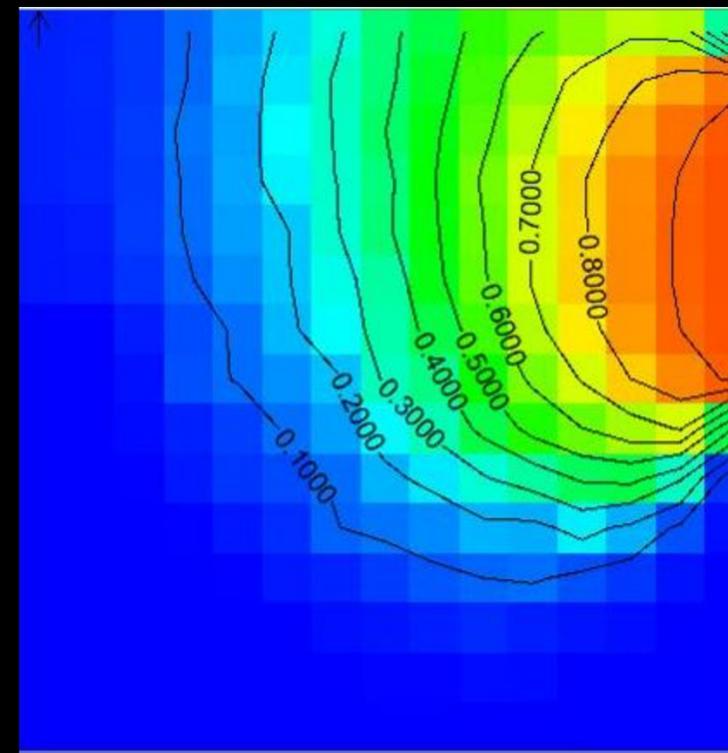
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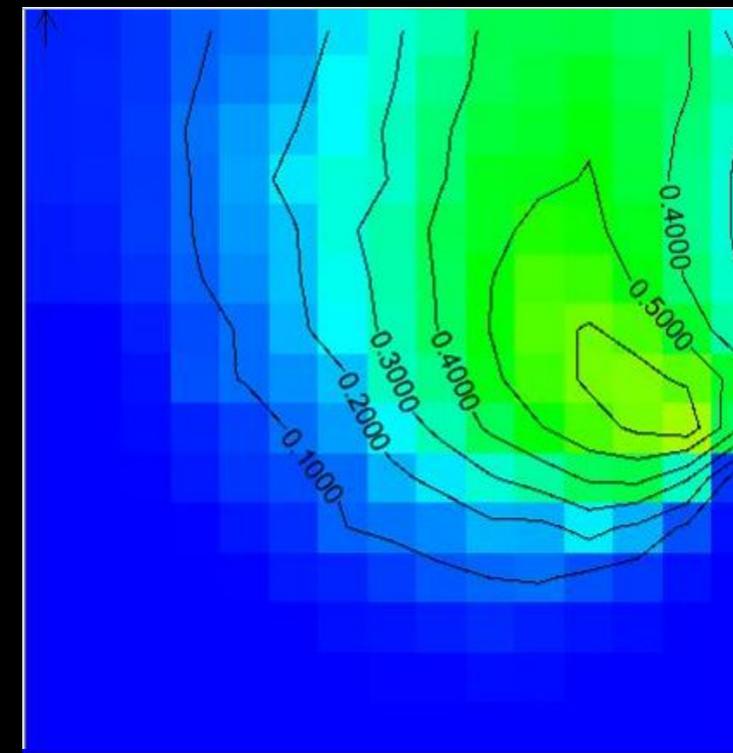


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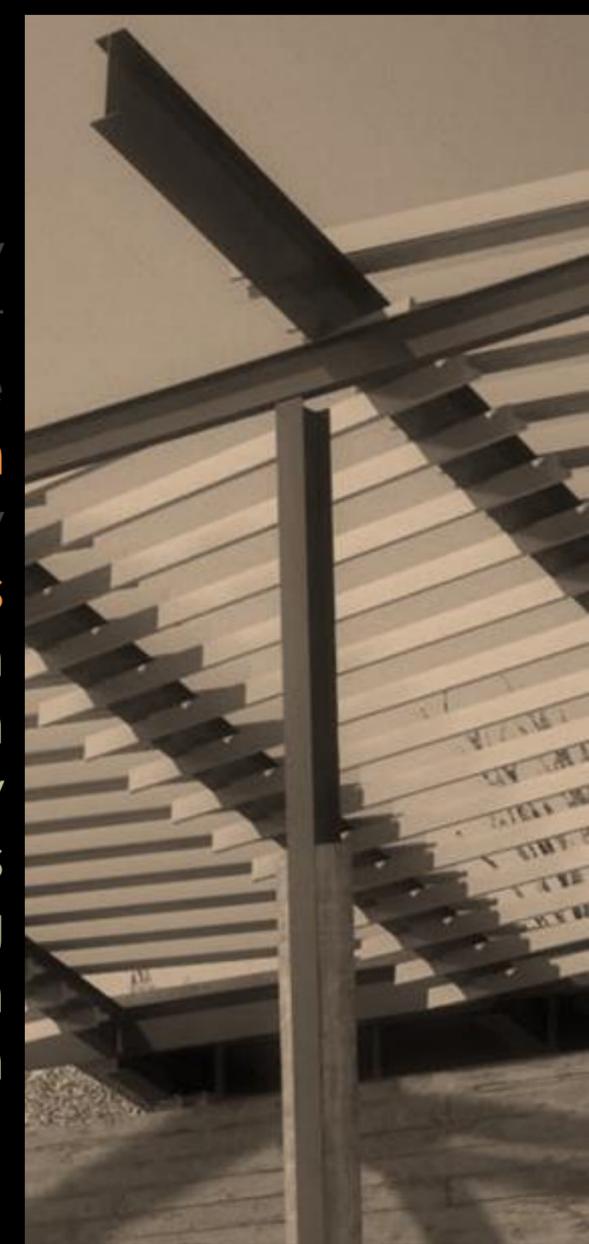


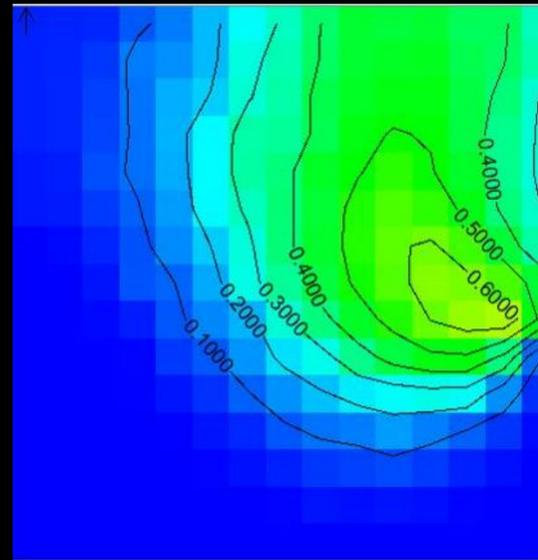
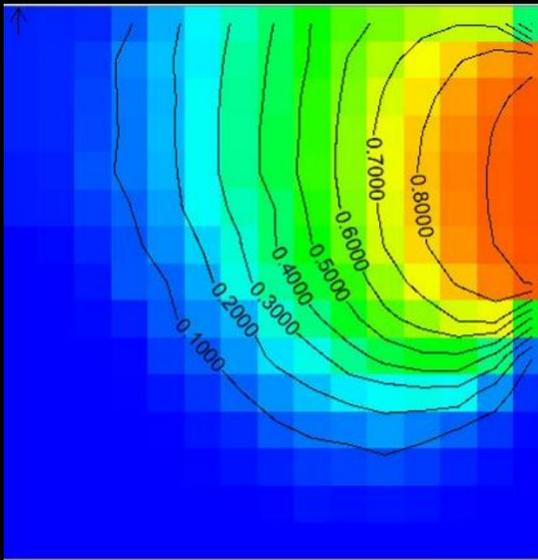
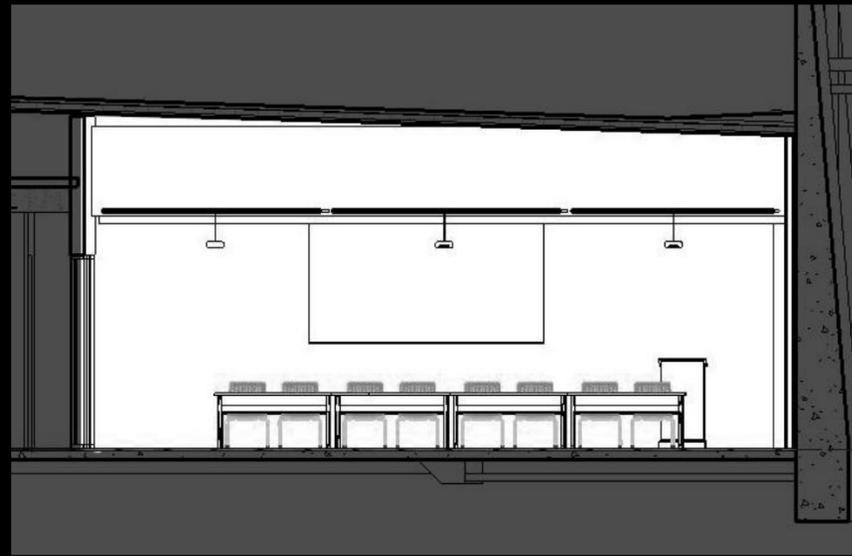
Daylight Autonomy: 22.33
300 lux between 8AM-5PM



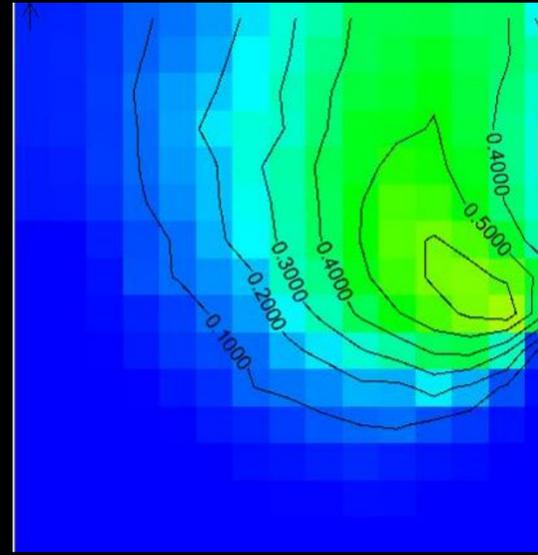
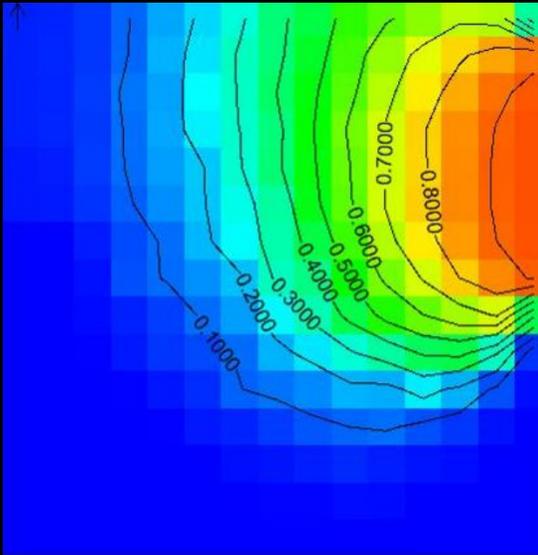
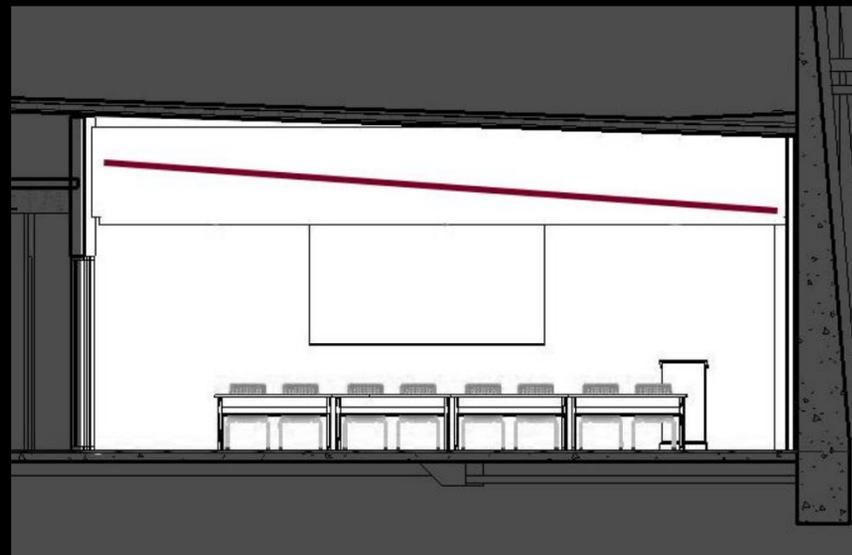
Useful Daylight Illuminance
300-1000 lux

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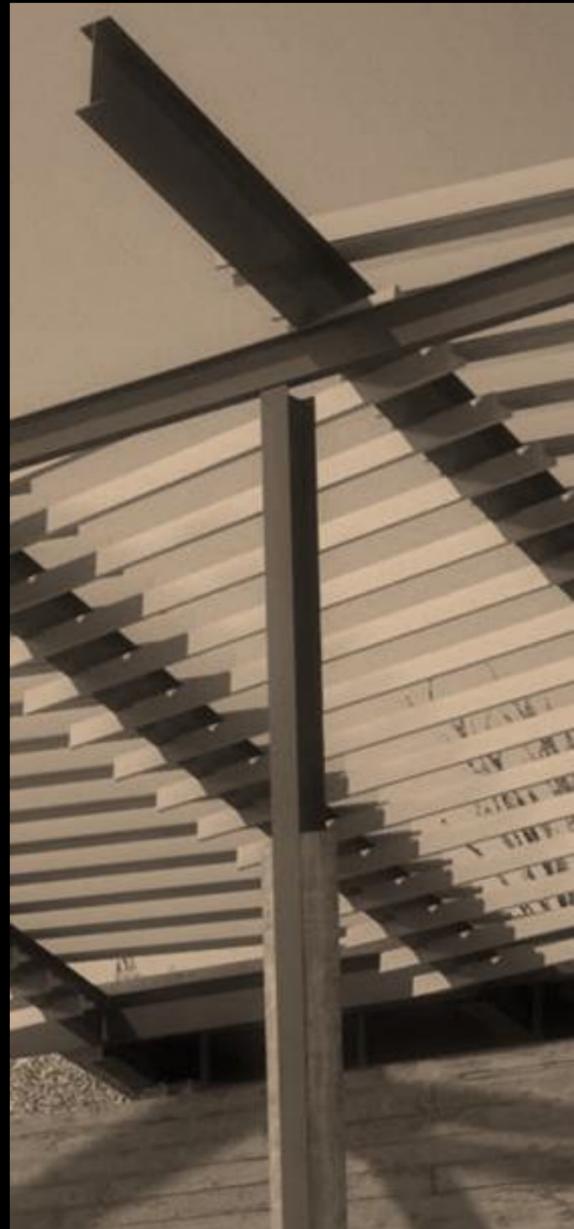


DA₃₀₀: 25.33



DA₃₀₀: 22.67

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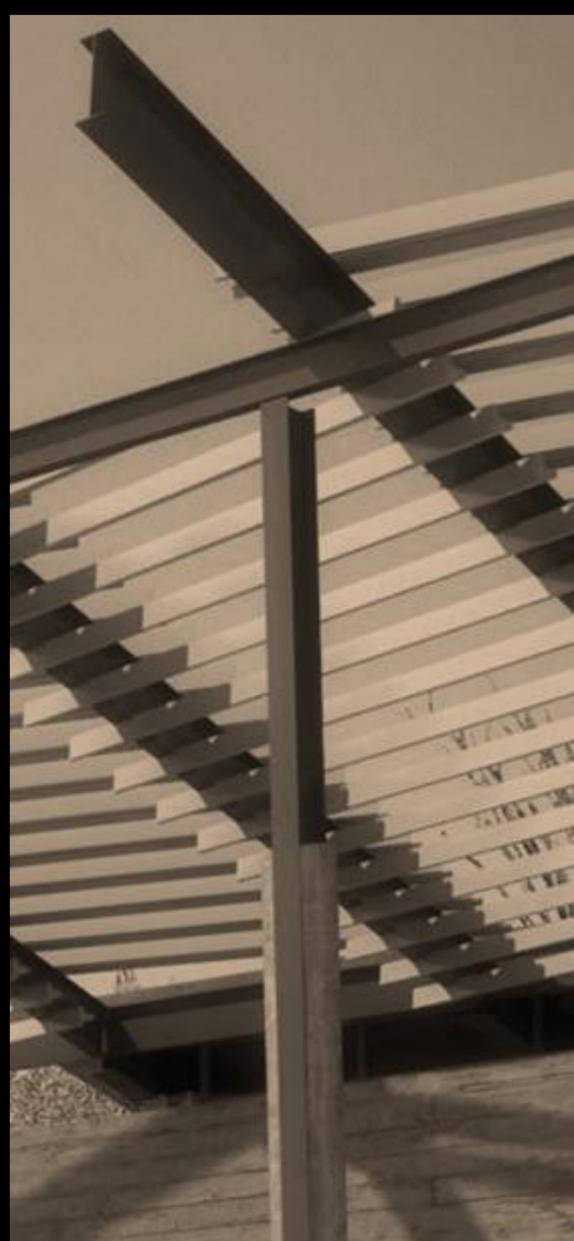
10' AFF

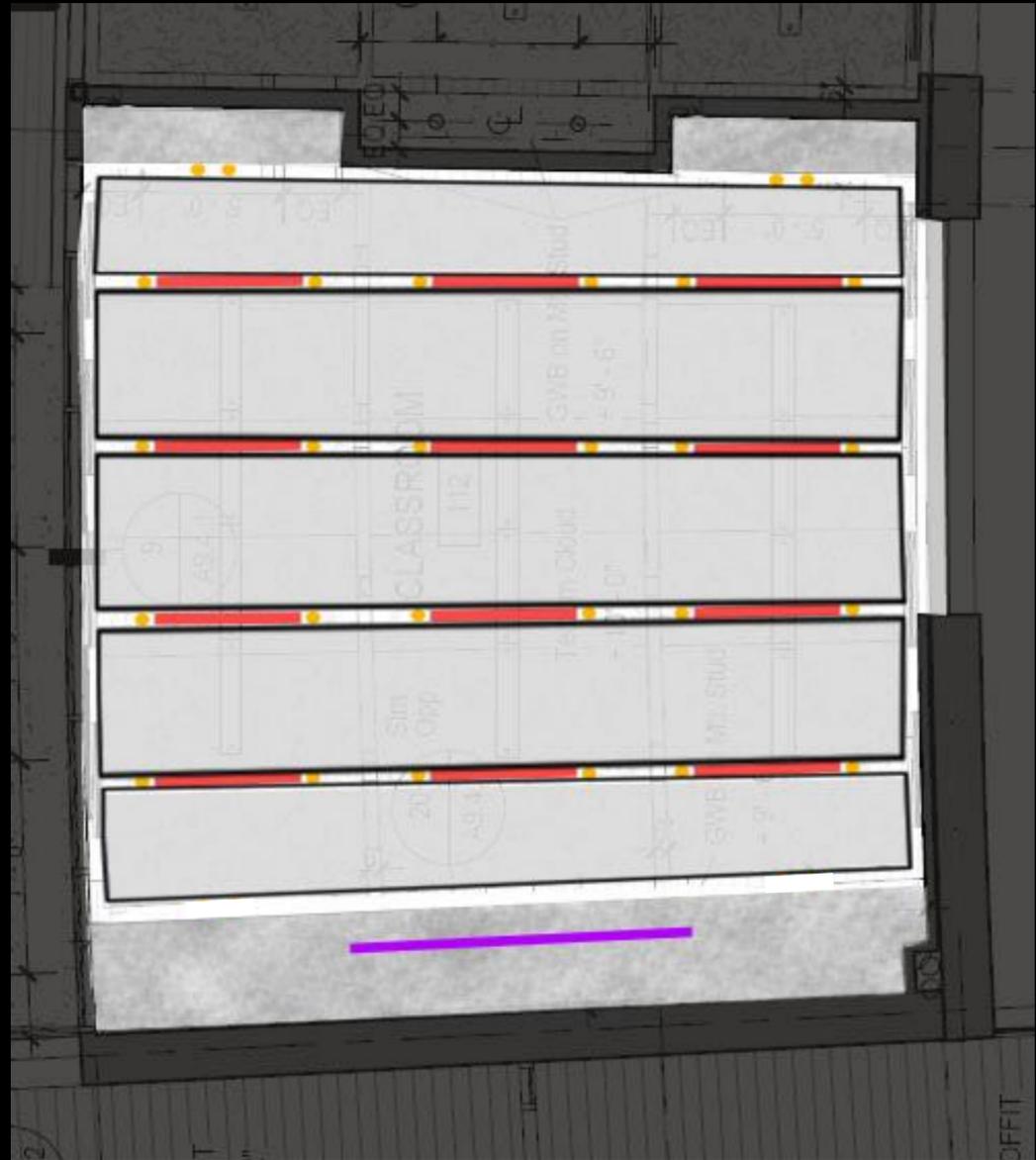
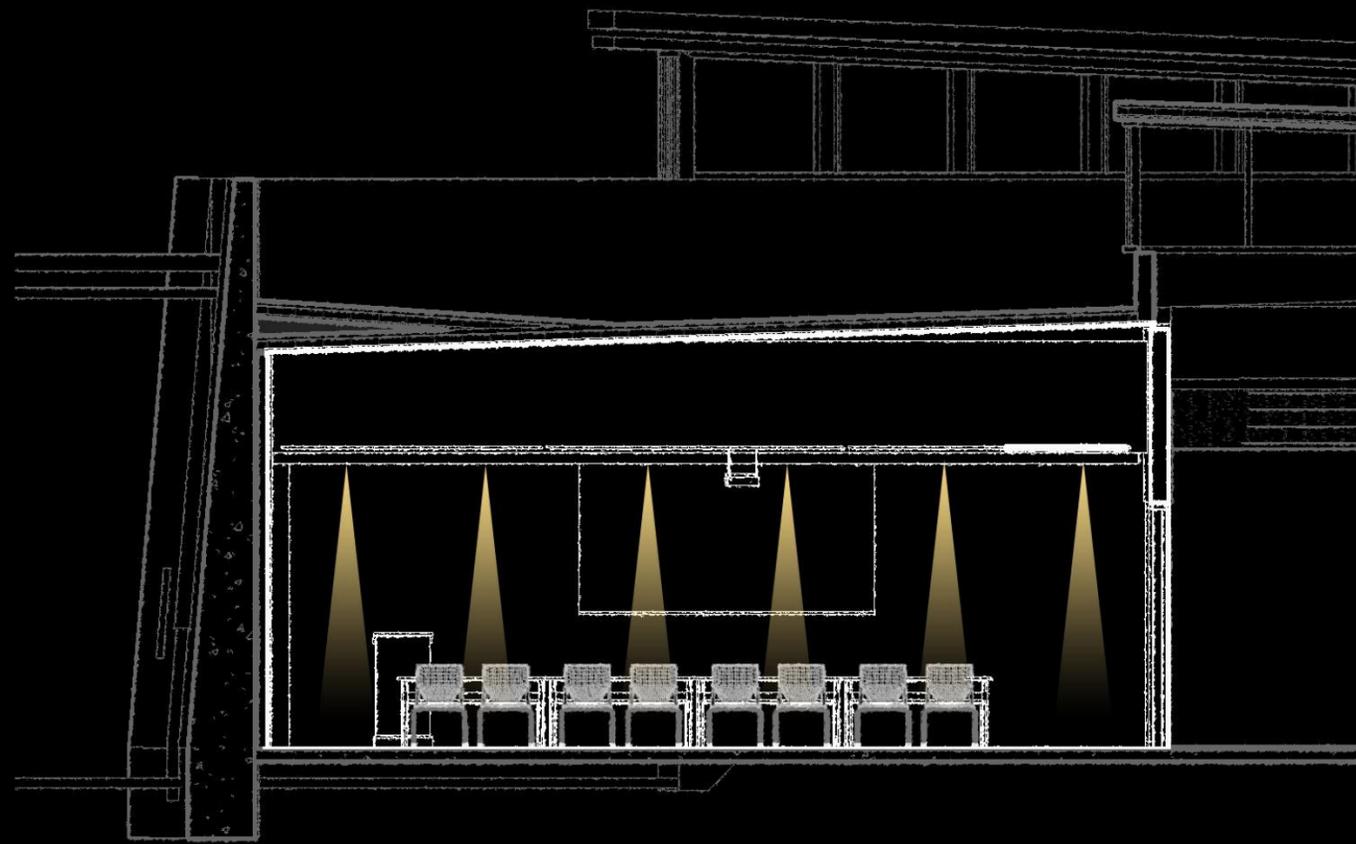


8' AFF

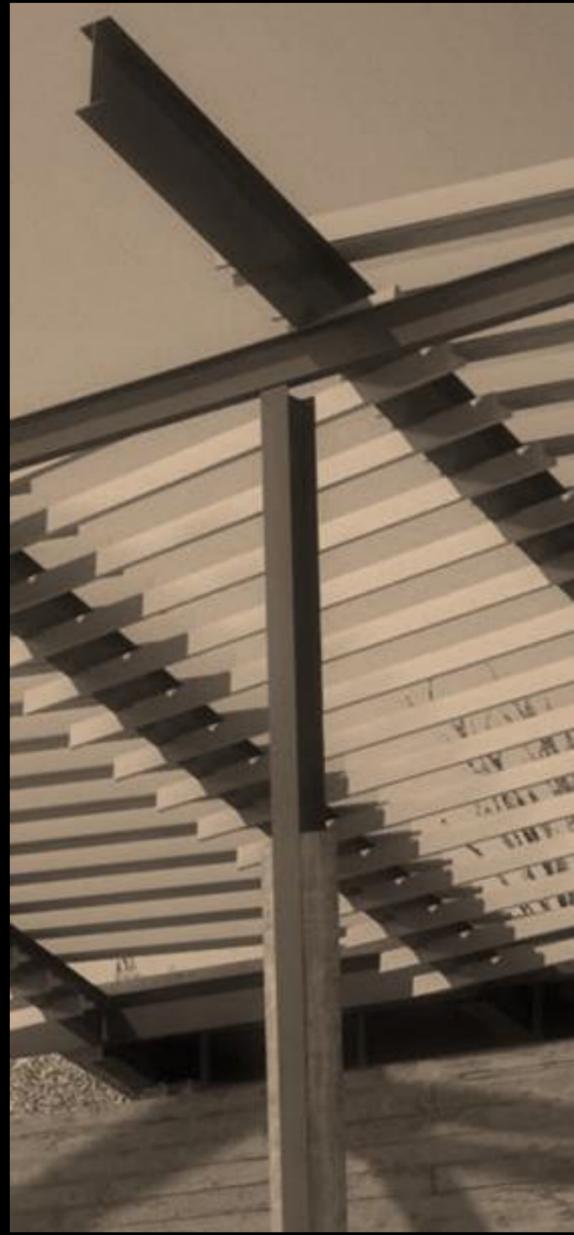


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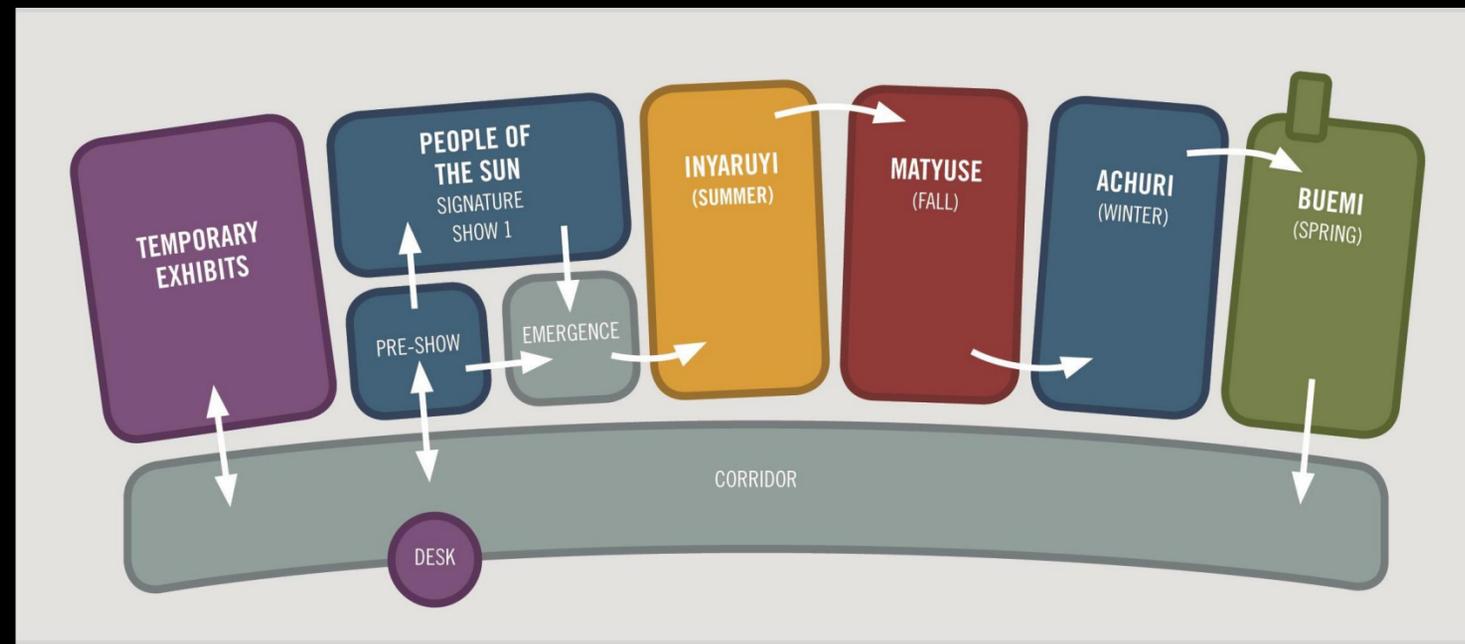
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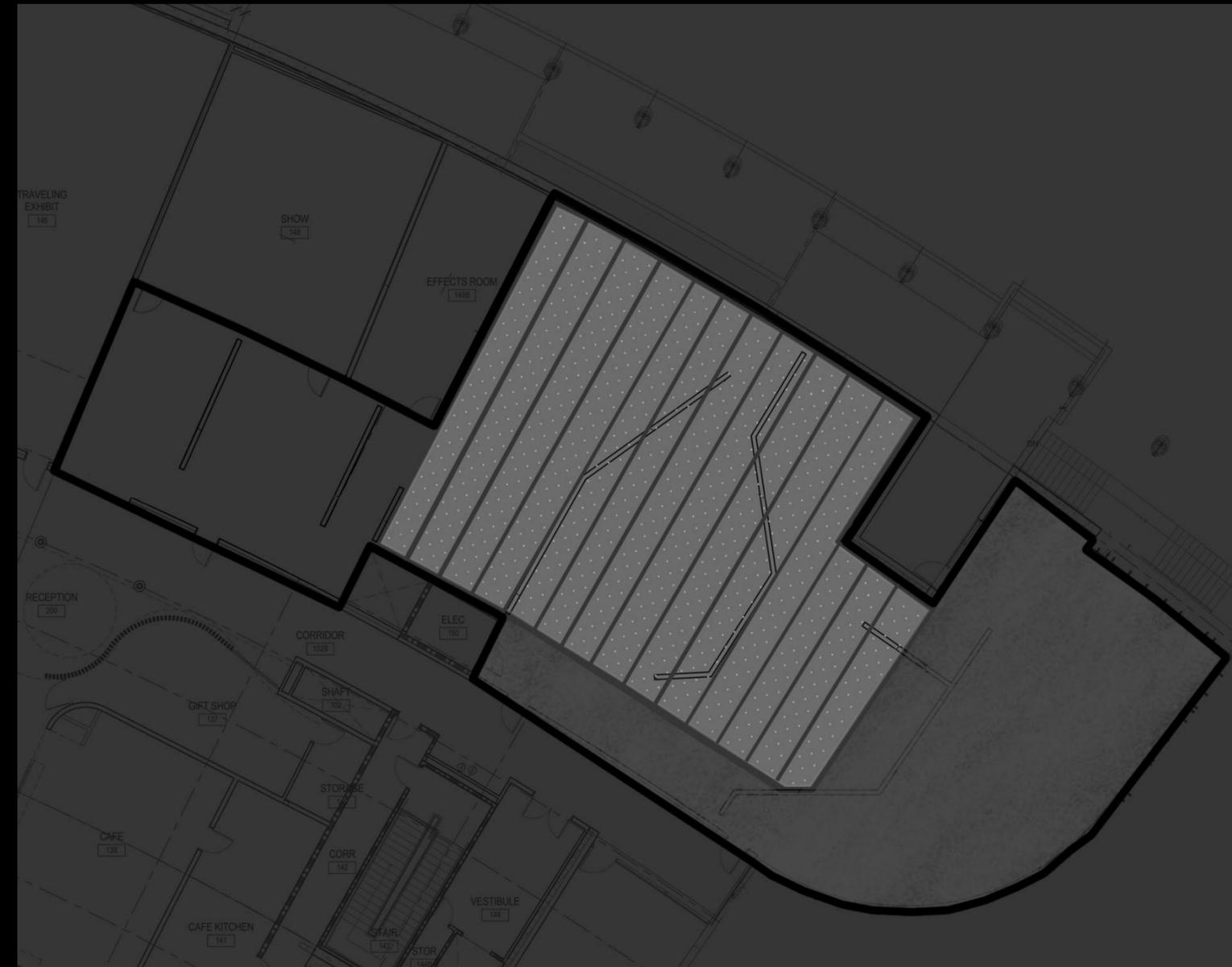
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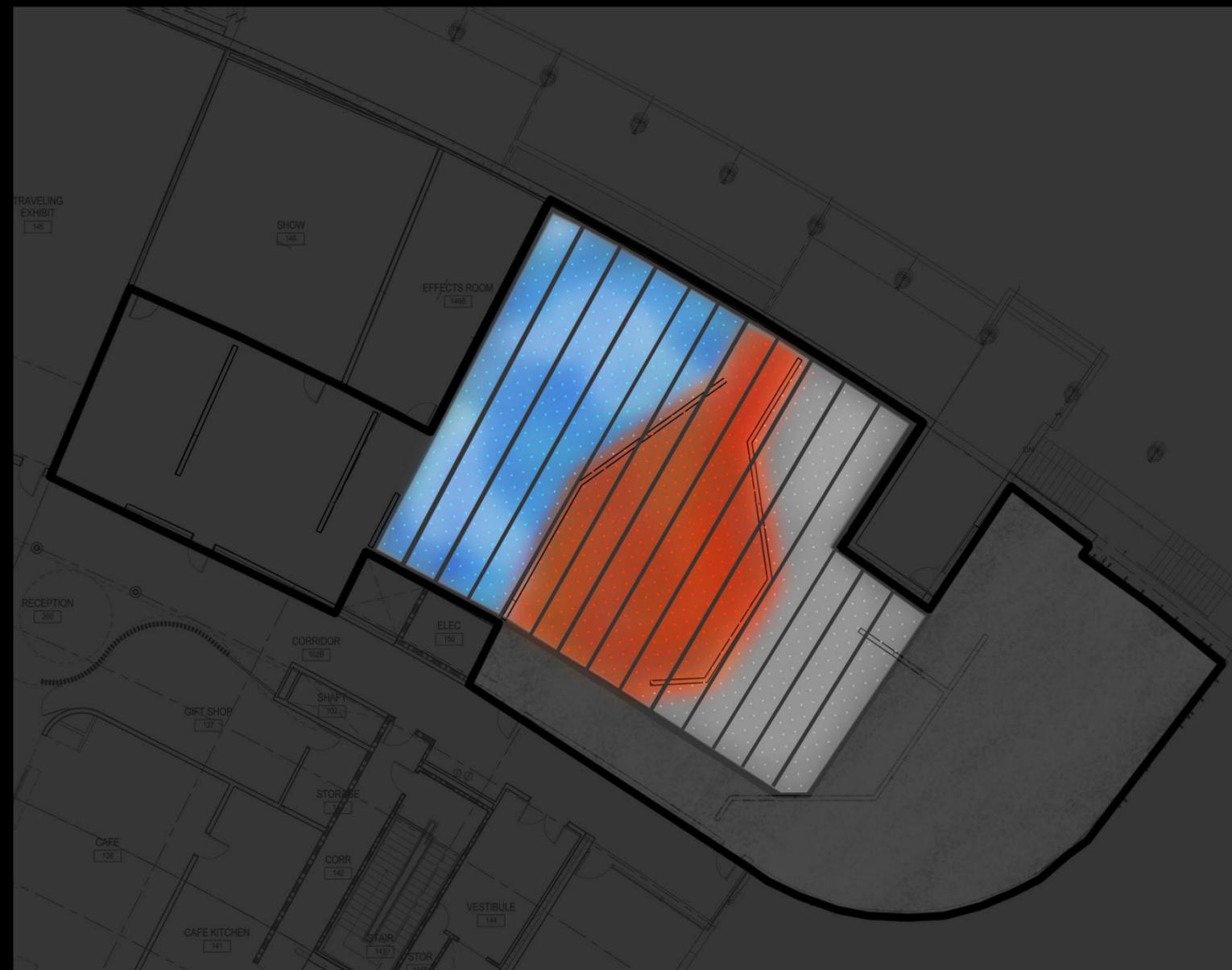


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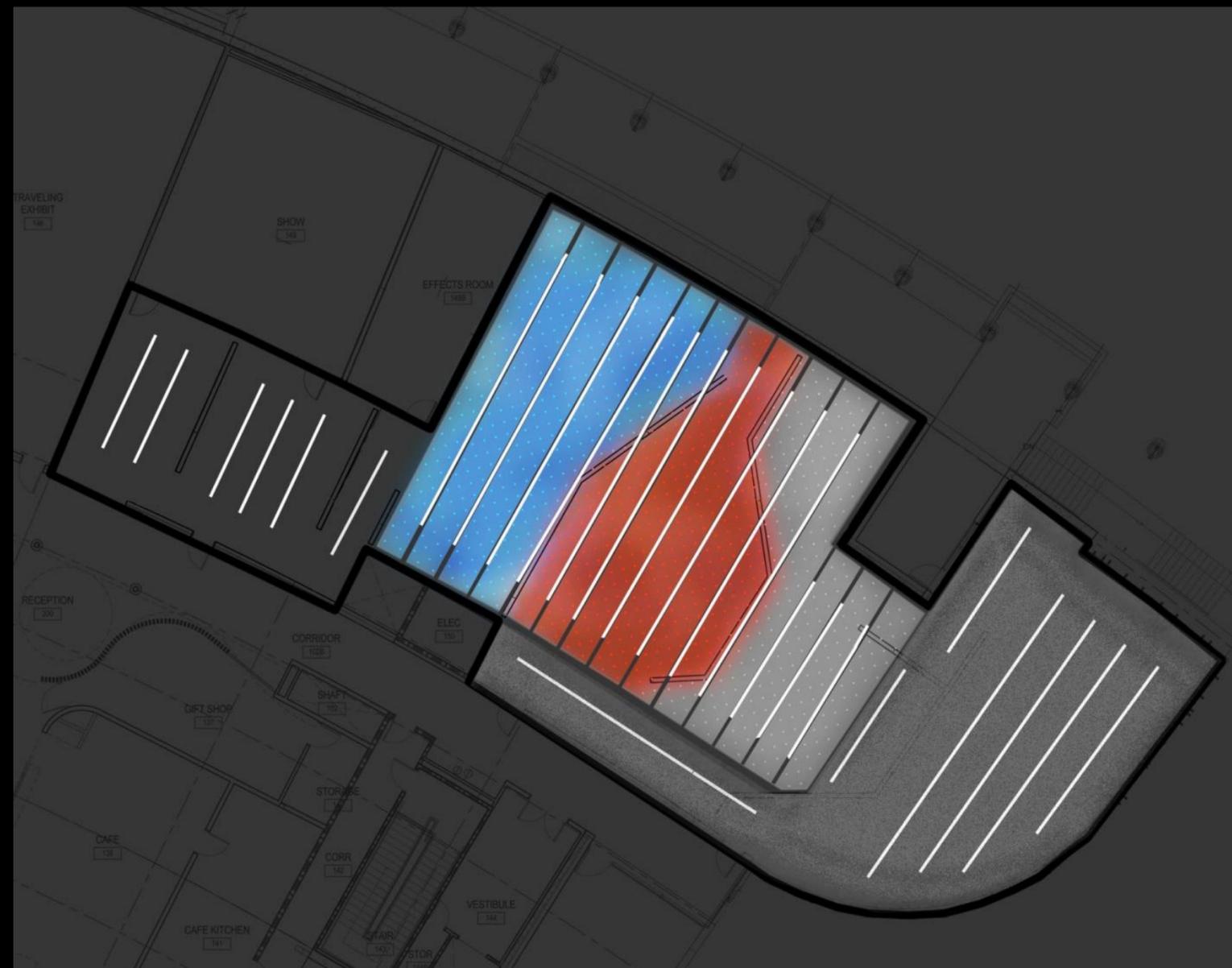
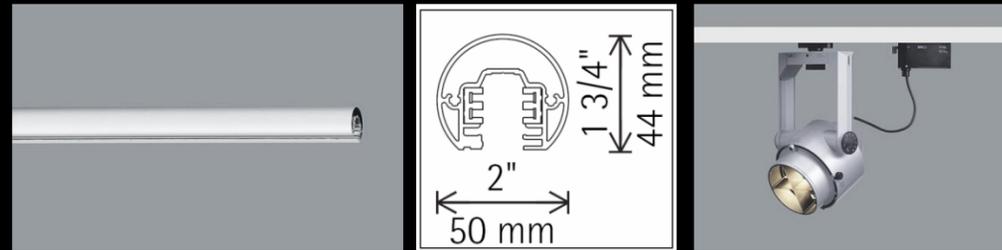
System Equipment

Flexible LED nodes with RGB channels
Translucent stretch fabric ceiling panels
DMX controls

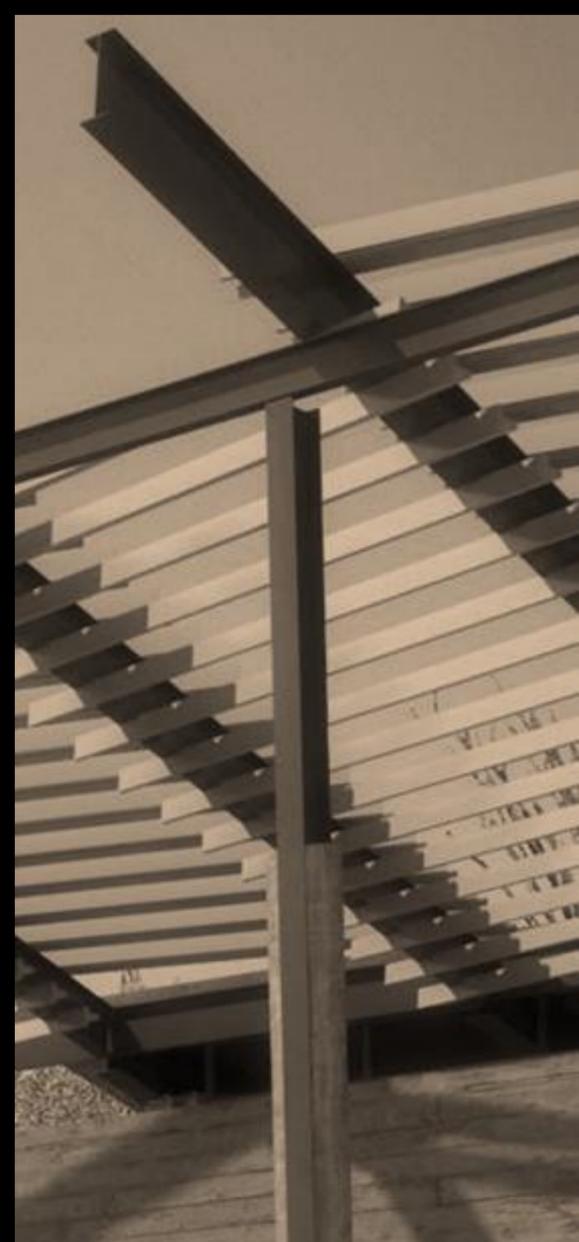


System Equipment

Two-circuit track
Low voltage halogen track heads
UV/IR filters
Cross baffle



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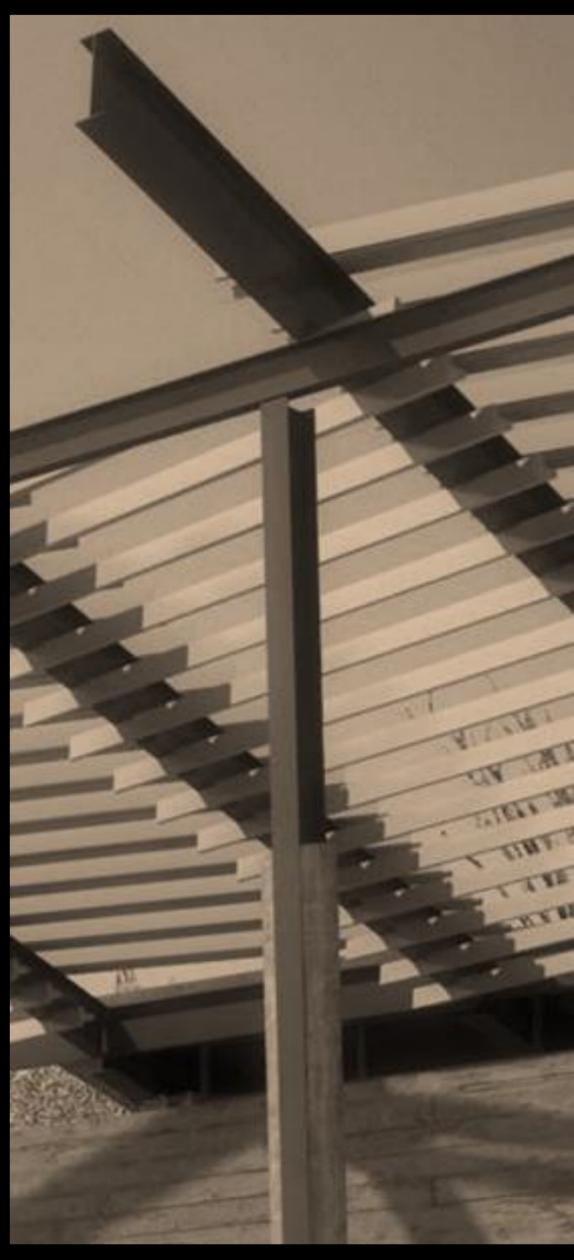


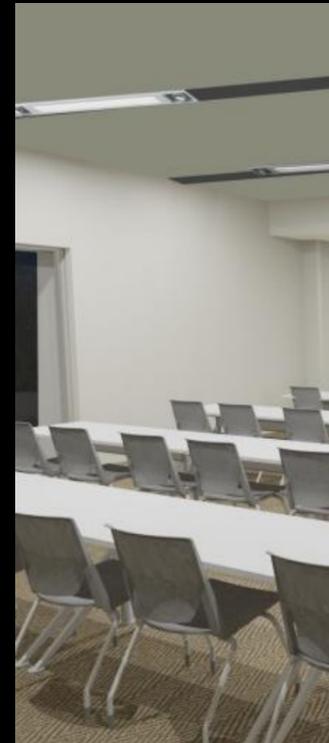
Voltage: <u>208Y/120</u>		Main Breaker: <u>400</u> A		Feeder: 4-500kcmil, #3g, 3.5 cond (#, size wire & conduit)									
Description	LOAD (VA)			Brk. Trip (A)	LP			LOAD (VA)			Brk. Trip (A)	Description	
	A	B	C		Cond. Size		Cond. Size	A	B	C			
Museum Track Lighting	1920			20	#12	1	2	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	3	4	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	5	6	#12			1920	20	Museum Track Lighting
Museum Track Lighting	1920			20	#12	7	8	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	9	10	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	11	12	#12			1920	20	Museum Track Lighting
Museum Track Lighting	1920			20	#12	13	14	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	15	16	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	17	18	#12			1920	20	Museum Track Lighting
Museum Track Lighting	1920			20	#12	19	20	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	21	22	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	23	24	#12			1920	20	Museum Track Lighting
Museum Track Lighting	1920			20	#12	25	26	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	27	28	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	29	30	#12			1920	20	Museum Track Lighting
Museum Track Lighting	1920			20	#12	31	32	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	33	34	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	35	36	#12			1920	20	Museum Track Lighting
Museum Track Lighting	1920			20	#12	37	38	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	39	40	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	41	42	#12			1920	20	Museum Track Lighting
Museum Track Lighting	1920			20	#12	43	44	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	45	46	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	47	48	#12			1920	20	Museum Track Lighting
Museum Track Lighting	1920			20	#12	49	50	#12	1920			20	Museum Track Lighting
Museum Track Lighting		1920		20	#12	51	52	#12		1920		20	Museum Track Lighting
Museum Track Lighting			1920	20	#12	53	54	#12			1920	20	Museum Track Lighting
	17280	17280	17280						17280	17280	17280		

Total Load on Phase A:	<u>34,560</u>	VA		
Total Load on Phase B:	<u>34,560</u>	VA	Total Load on Panel:	<u>130</u> kVA Demand
Total Load on Phase C:	<u>34,560</u>	VA		<u>359.7336293</u> A



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Thank you!

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