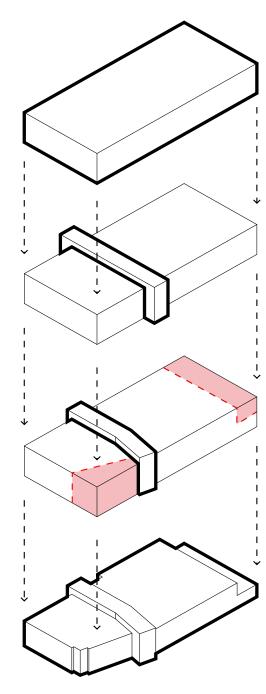
design development



concept

Most buildings are considered successful if they encourage people to remain in them; businesses seeking repeat customers, theaters anticipating return patrons, and offices pursuing recurring clients all desire architecture that makes people comfortable enough to stay. The organization Pivot, however, possesses a mission with a different pursuit, for it finds the most satisfaction when its youth clients feel capable enough to leave its space.

Pivot provides clients with tools they need to be successful, so this center functions as a tool to enable easy access to the services they may need along the way. The Pivot Community Center serves as a space to learn from others, communicate trauma, and ultimately become equipped to progress onward.



schematic design



teen lounge render

schematic design



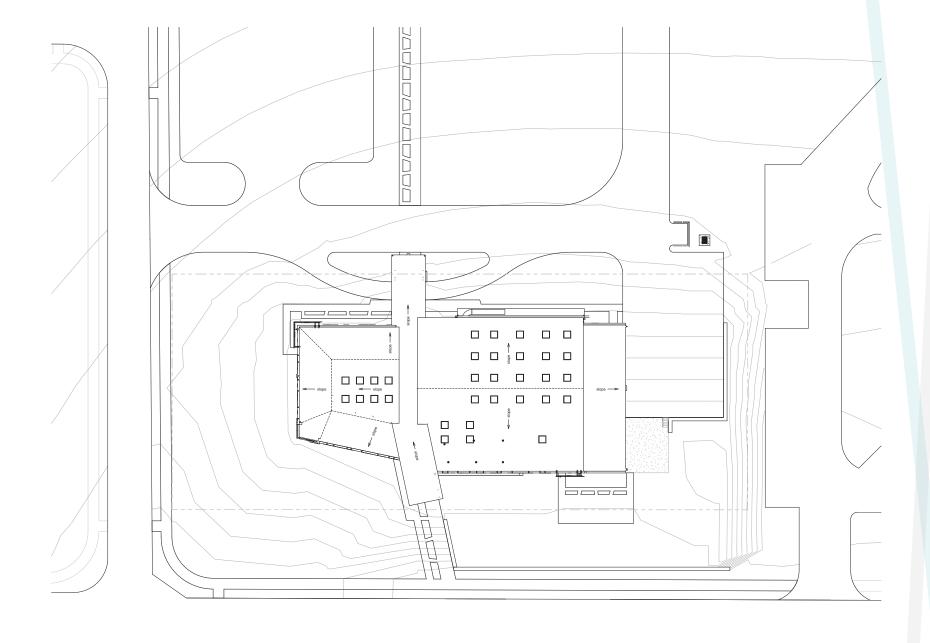
store hallway render

site



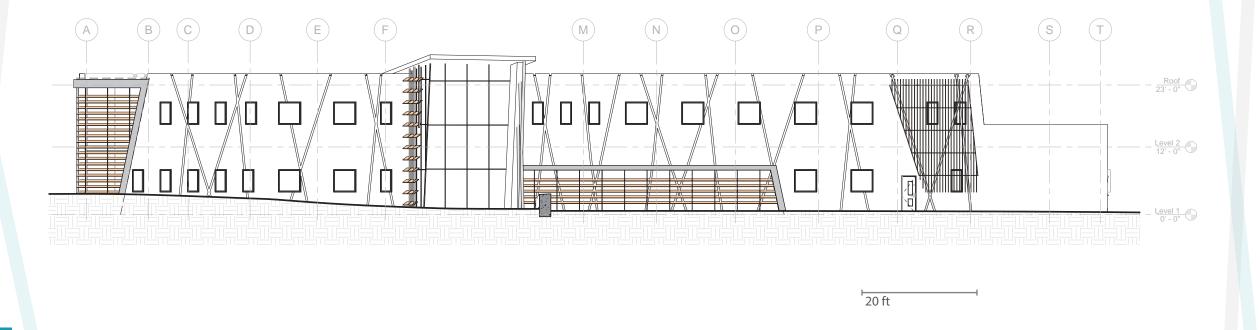
exterior birds eye

site



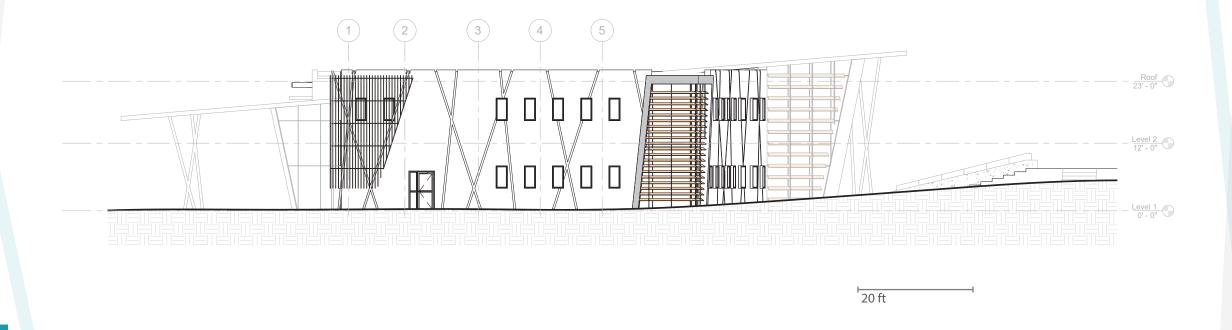
site plan

exterior



south elevation

exterior



standing seam overhang

exterior



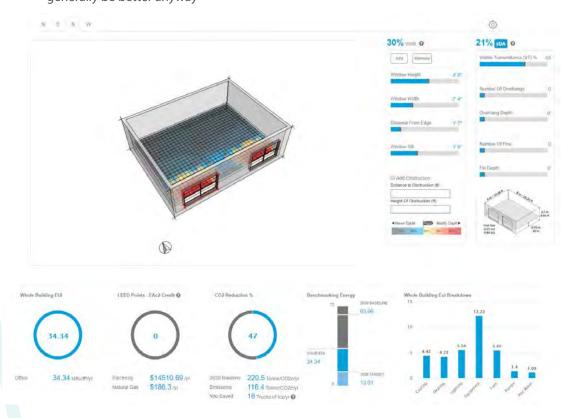
exterior perspective

building performance

standard reference design

building analysis from Cove tool software

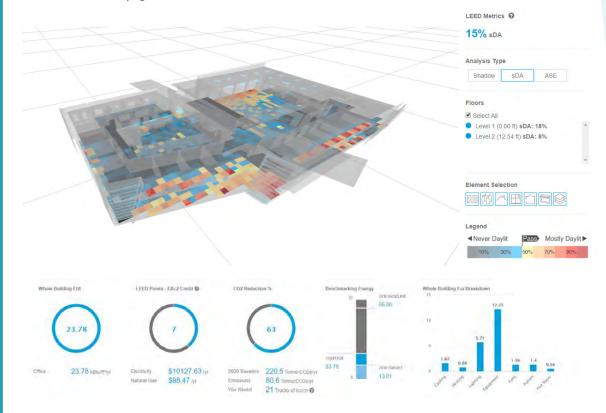
- similar requitrements to baseline design for eQuest
- End Use Index (EUI) is 34
- much better than an typical existing building in the US (EUI of 65), but new construction will generally be better anyway



optimized performance design

building analysis from Cove tool software similar optimization strategies to eQuest design EUI is 24

nearly 30% more efficient than standard reference design, based on the EUI metric utilization of daylight (sDa) not favorable



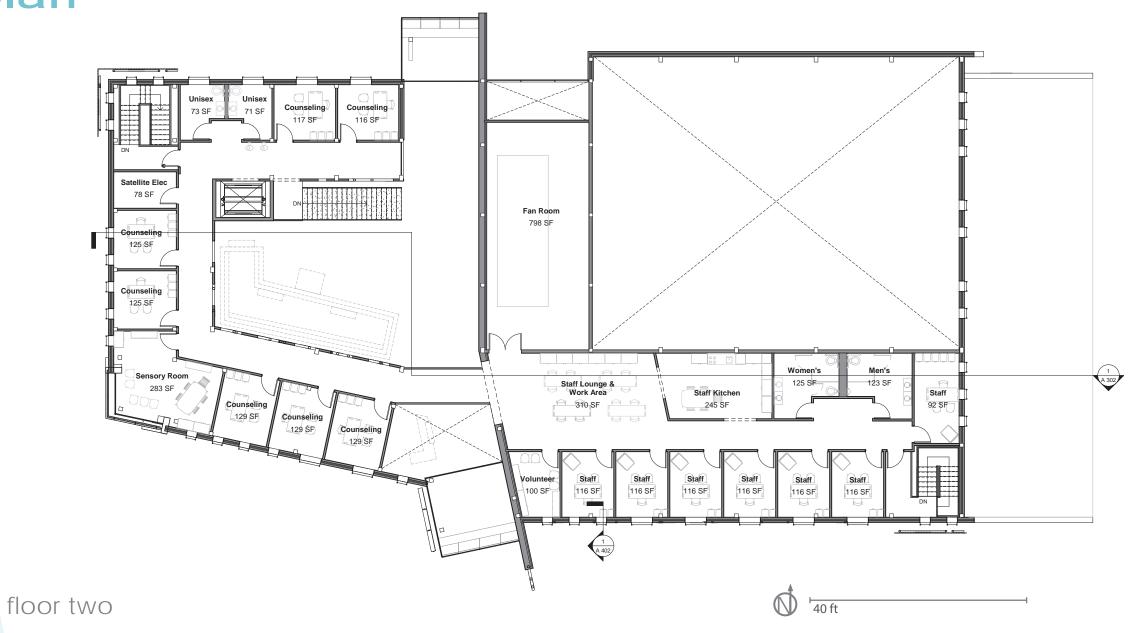
further development

I did not achieve my goal of improving useable daylight in the building; I would like to revisit it.

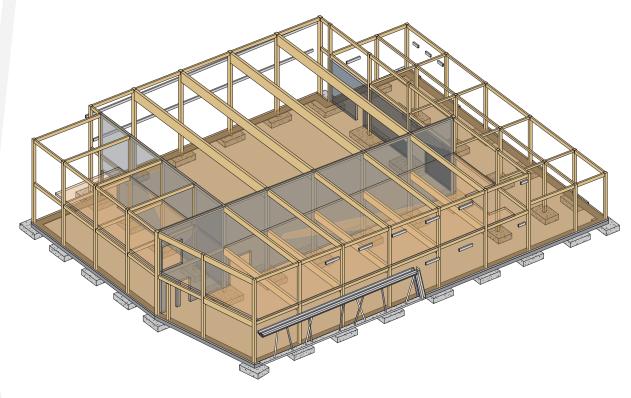
plan



plan

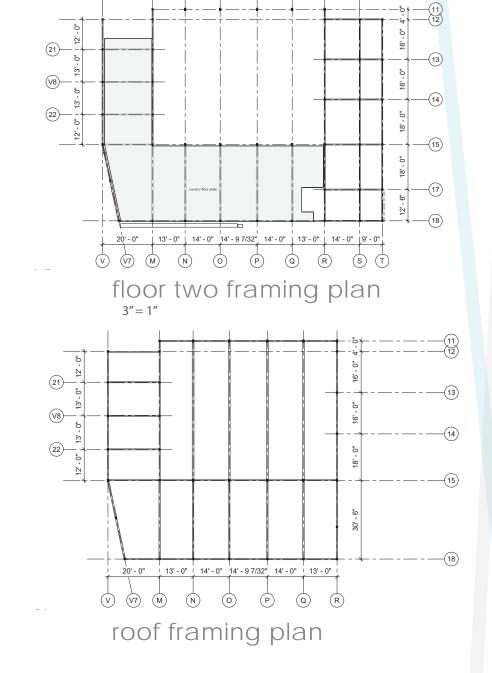


structural integration

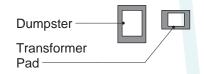


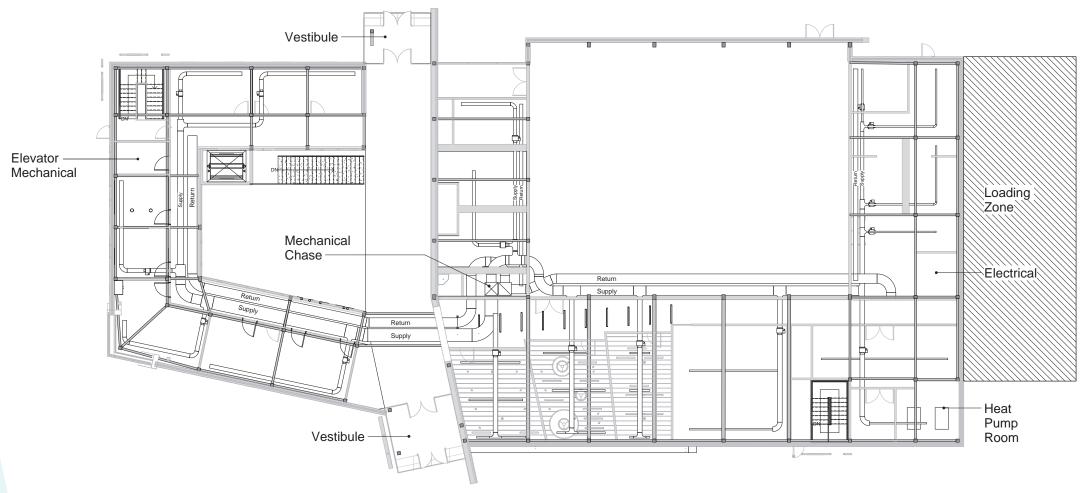
structural axonometric

continued development and enhancement of portion of building with focus space



system integration



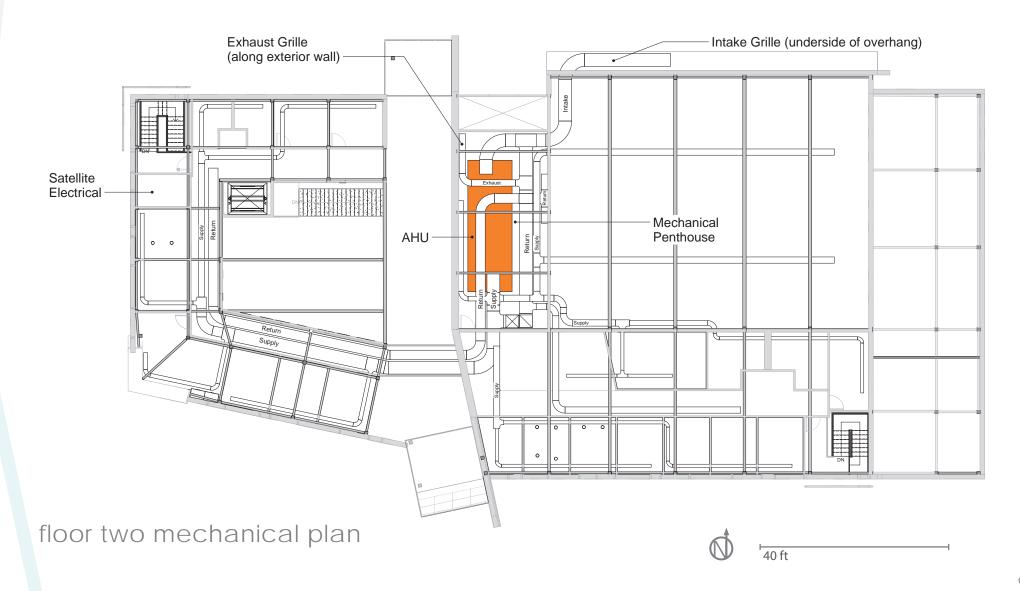


floor one mechanical plan
3"=1"

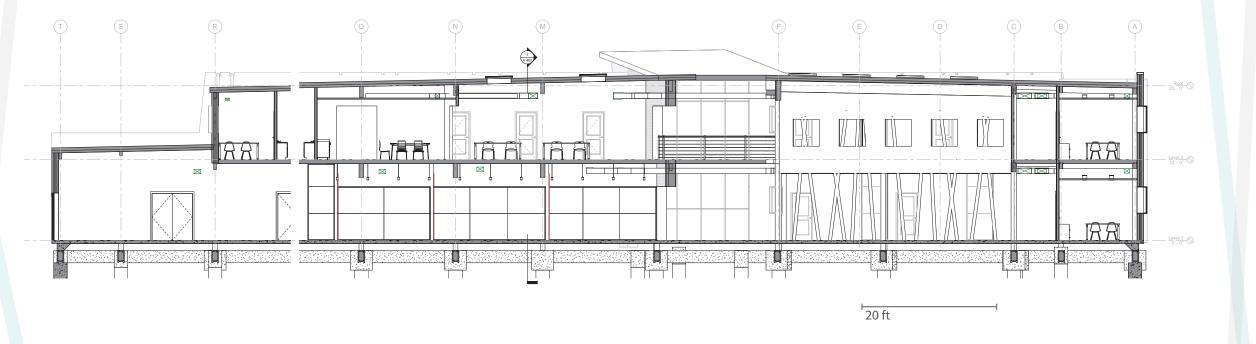


40 ft

system integration

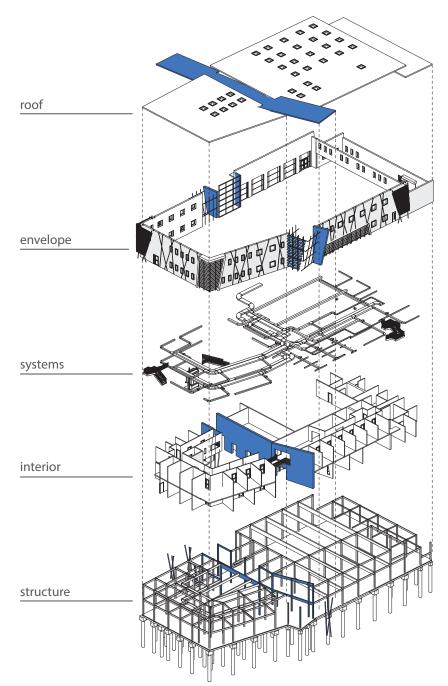


section

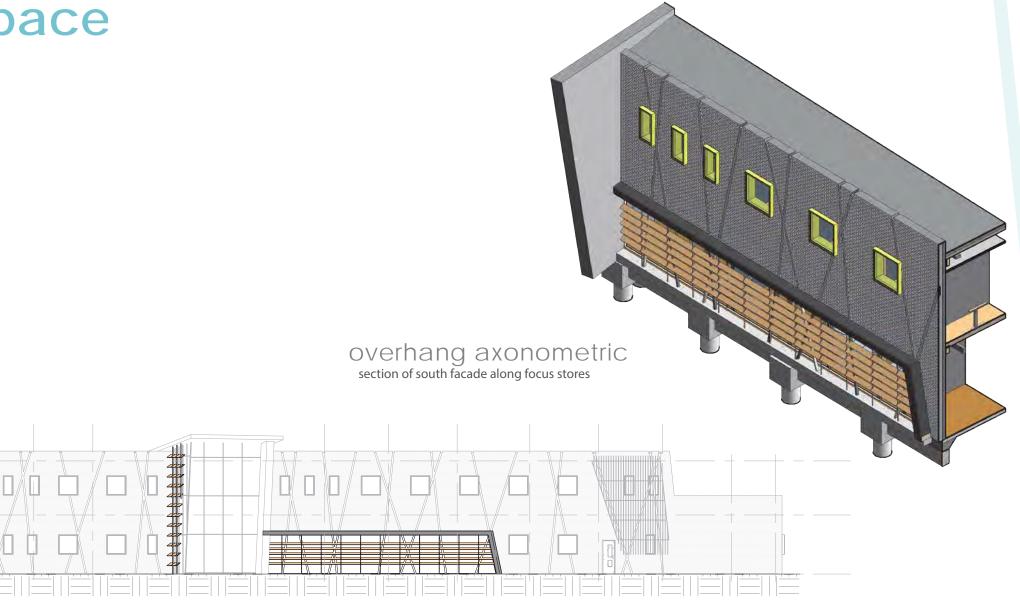


longitudinal building section

system integration



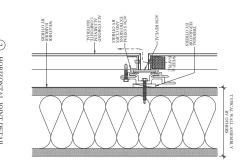
exploded axonometric



south elevation

louver extents emphasized





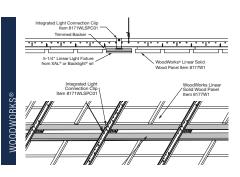
exterior metal panels



CATEGORY		AESS C	AESS-E	A655-3	AESS 2	AESS 1	555			
LD.	CHARACTERISTICS	CLISTOM	SHOWCASE ELEMENTS	HEATURE HEMENTLOV ELDSE VEW	PEATLES MEDICINE NOT INCLOSE VEW	BASIC EXEMPLES	STANSIARO CIRUCTURAL STEEL			
1.3	Surface programming to SSP1, SP 6		100	- 8	- X	- 8				
	Shiep adger (round enout)		- 30	.8	×					
13	Continuous well appearance		- 1	- 12	- ×					
14	Standard structural ficits		- ×			- 8]			
15	West gusters removed		30.		- X	76				
2:1	Visual Surgress		×.	10	optonal					
12	One-half standard febrichton: solutances		- × -	8	- ×					
	Februarion marks not apparent		- W.	- X	×					
24	Wolds uniform and smooth			×.	×	1				
2.1	Mill marks raintoyed		- 4	- ×						
12	from and plug exists ground - smooth and filled		1.00	8	 A matter is provided in Section 10 at the ARS' Code, natiming which februaries provided in septiment earlier seed, carteging And for septimed vision goals filled duri for first cartegings and filled duri for first cartegings at ASS 1 through 4, a Continu category (2) and false matter appear on acceleration of false matter appear on acceleration. 					
13	155 and starr counted for radigaed visibility		- 80	. A.						
14	Cross-sectional aberting surface aligned		4	- ×						
	Joint gap tolorances minimized			×						
34	All weigled connections		optimi	operani	for taken to discuss and course their					
4.1	HEE man het apparent		*		Note: Descriptions of that (2) characteristics can be loand on the last page of this PDF, in the light of the ACSC Calebony Matrix.					
42.	Weight contoured and blinded		- X							
43	Syrticis Wildard sended		×.							
££	Wild street brough promosed									

architecturally exposed structural steel (AESS)

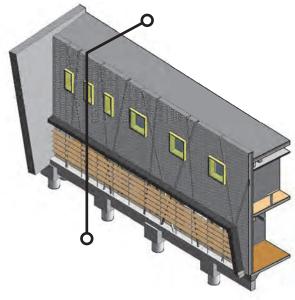




exterior wood soffit system

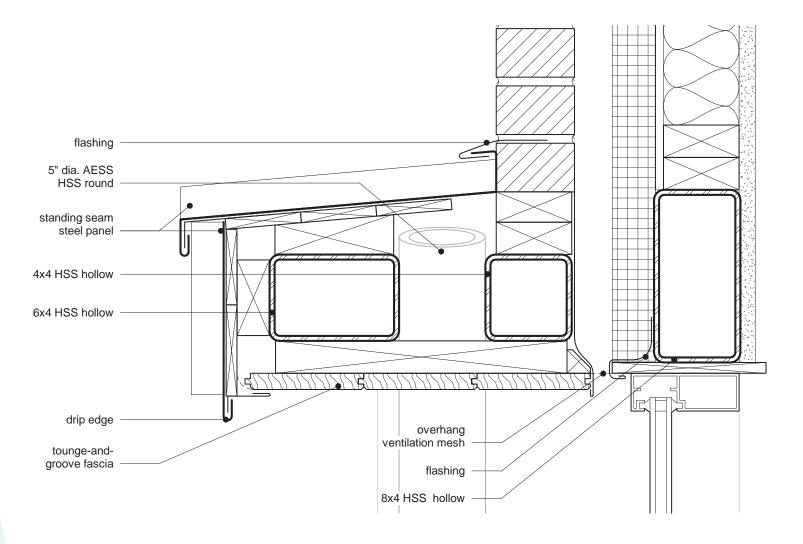
focus space bay model Crawford_PivotYouthCenter_sp2020

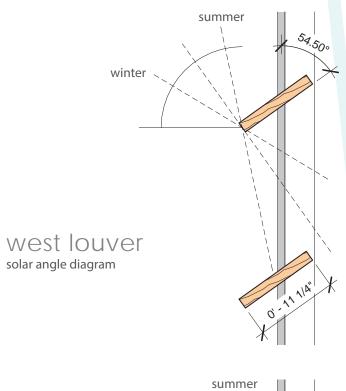
section

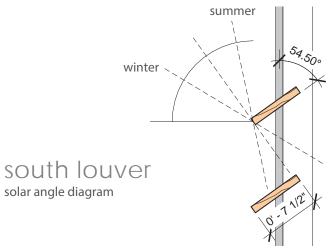


wood shading louver storefront system with aluminum multions 5" AESS HSS round

4" gravel layer grade beam 5" drain tile with gravel fill drilled pier







standing seam overhang

building performance

code compliance

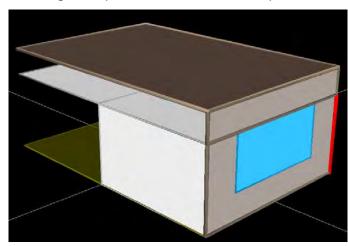
thermal performance as designed tested against perscriptive R- and U-values given by IECC 2018

R-val	ue & U-factor Calculations				Will	iam Crawford
						3/30/20
Roof	layer	R-value/in	thickness (in)	R-value	Code Compliance	
	exterior air film (summer)			0.25		
	vapor membrane: seal			0.12		
	XPS rigid foam insulation	5.00	6.00	30.00		
	3-ply CLT decking	1.25	4.13	5.16		
	interior ceiling air film (summer)			0.92	Minimum R-value	Complies?
			insulation	30.00	R 25 ci	yes
			total	36.45		
					Maximum U-value	Complies?
			U-value = 1/R	0.027	0.039	yes
Wall	layer	R-value/in	thickness (in)	R-value	Code Compliance	
	exterior air film (summer)			0.25		
	brick		3.63	0.44		
	air laver		1.75	1.00		
	vapor membrane: permeable		2.75	0.06		
	XPS rigid foam insulation	5.00	2.00	10.00		
	plywood sheathing	3.00	0.50	0.79		
	wood joist w/ insulation		3.50	15.00		
	vapor membrane: seal			0.12		
	gypsum wall board		0.75	0.56		
	interior wall air film			0.68	Minimum R-value	Complies?
			insulation	25.00	R 13 + R 3.8 ci	yes
			total	28.90		•
					Maximum U-value	Complies?
			U-value = 1/R	0.035	0.064	yes
Slab	layer	R-value/in	thickness (in)	W	Code Compliance	
	interior floor air film			0.92		
	wood flooring	0.91	0.50	0.46		
	concrete	0.08	5.00	0.40	Minimum R-value	Complies?
			insulation	0.00	Not Required	yes
			total	1.78	Maximum II valuo	Complies
			U-value = 1/R	0.563	Maximum U-value 0.730	Complies? yes
Glazing		U-value (summ	er)		Maximum U-value	Complies?
		0.2			0.46 fixed	yes
		SHGC			Maximum SHGC	Complies?
		0.22			0.3	yes
Skylig	ghts	U-value 0.33			Maximum U-value 0.55	Complies?
		U.33			0.55	yes
		SHGC			Maximum SHGC	Complies?
		0.31			0.35	yes

performance optimization

Performing better than the code minimum not only saves energy, but money. If Pivot operates facilities on a low maintenance cost, that allows more resources to be invested into programs for the youth!

Use of eQuest, Cove tool, and feedback from professionals [namely, Professor Mansy] enabled the optimization of the building envelope in terms of environmental performance.

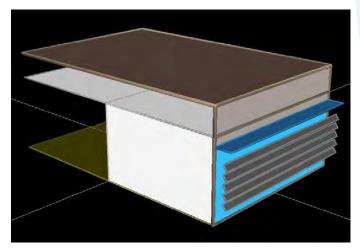


baseline design

minimum thermal resistance of wall assembly by code maximim thermal transmittance of glazing by code no overhangs or shading devices 30% glazing

baseline result

simulated in eQuest software 0.96 CFM/sf peak cooling load not bad, but plenty of room for more efficiency or more glass



optimized louver design

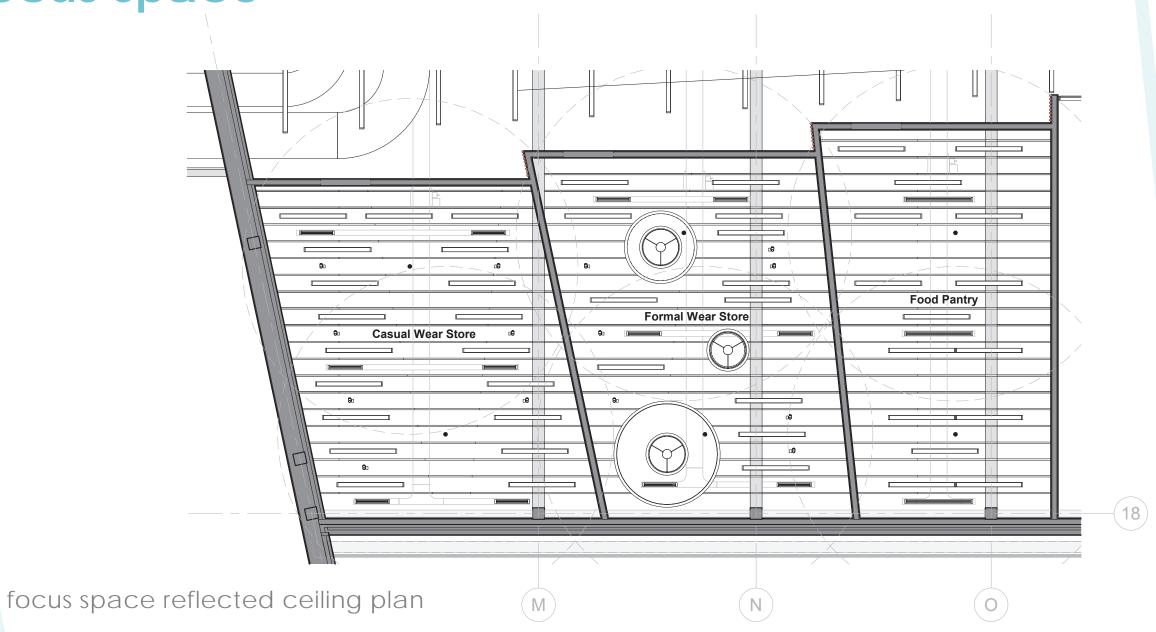
favorable thermal resistance of wall [details to the left] thermally efficient glazing selected overhangs and louvers optimized to reduce heating load 66% glazing

design result

simulated in eQuest software 0.96 CFM/SF peak cooling load doubled glazing without taxing cooling load save energy and money!



interior render



thank you

