Designers Light Forum

IPD Process and Perspectives

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Learning Objectives

At the end of the this course, participants will be able to:

1. Better understand the potential benefits and challenges of IPD as a delivery process.
2. Understand how Lighting Designers work within an IPD team in an immersive project environment.
3. Evaluate the merits of alternate approaches to lighting design, specification and procurement processes and apply “lessons learned.”

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Discussion Outline

IPD Overview

- The Project: The Pavilion at PennMedicine

Process: Lighting Design in IPD

- Managing Goals, Expectations, and Executing Design Intent
- Working with a Multidisciplinary Team
- Enhancing the Delivery Process

Perspectives: IPD in Action

- 3 Case Studies

CONTINUING EDUCATION AIA

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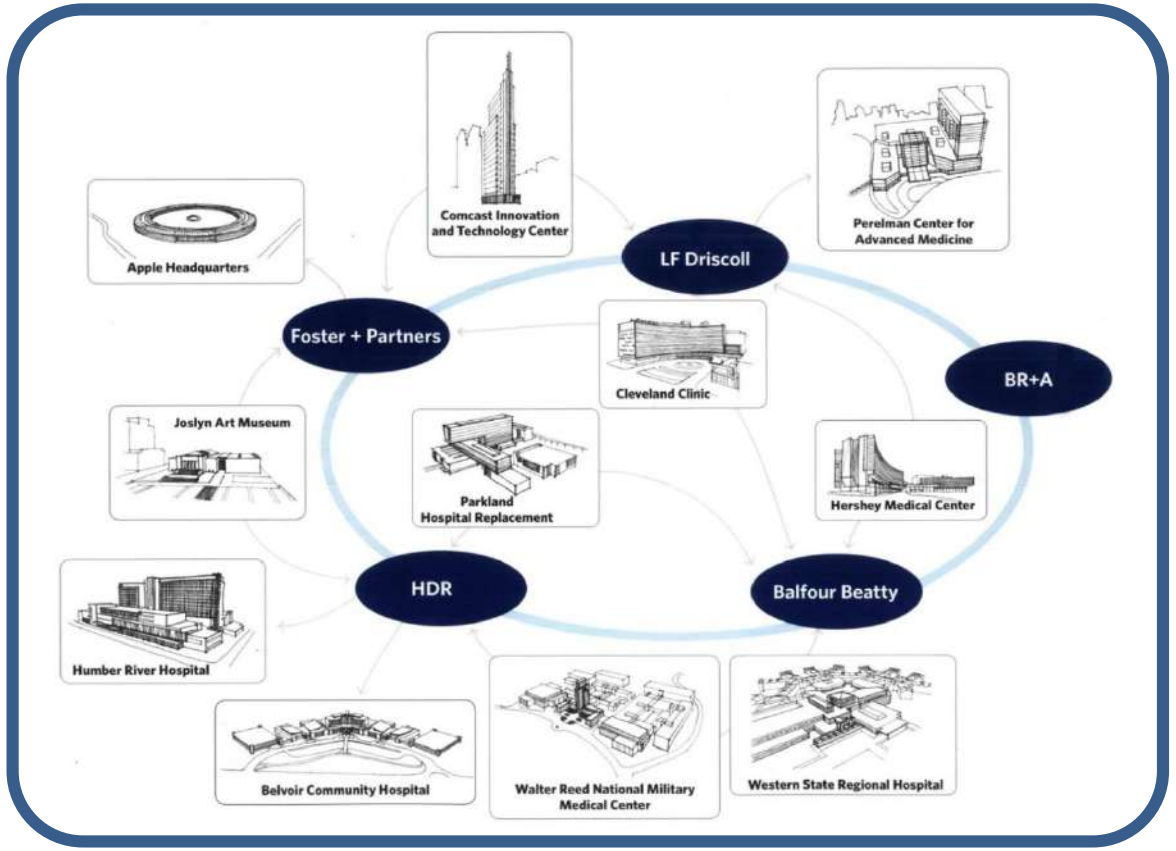
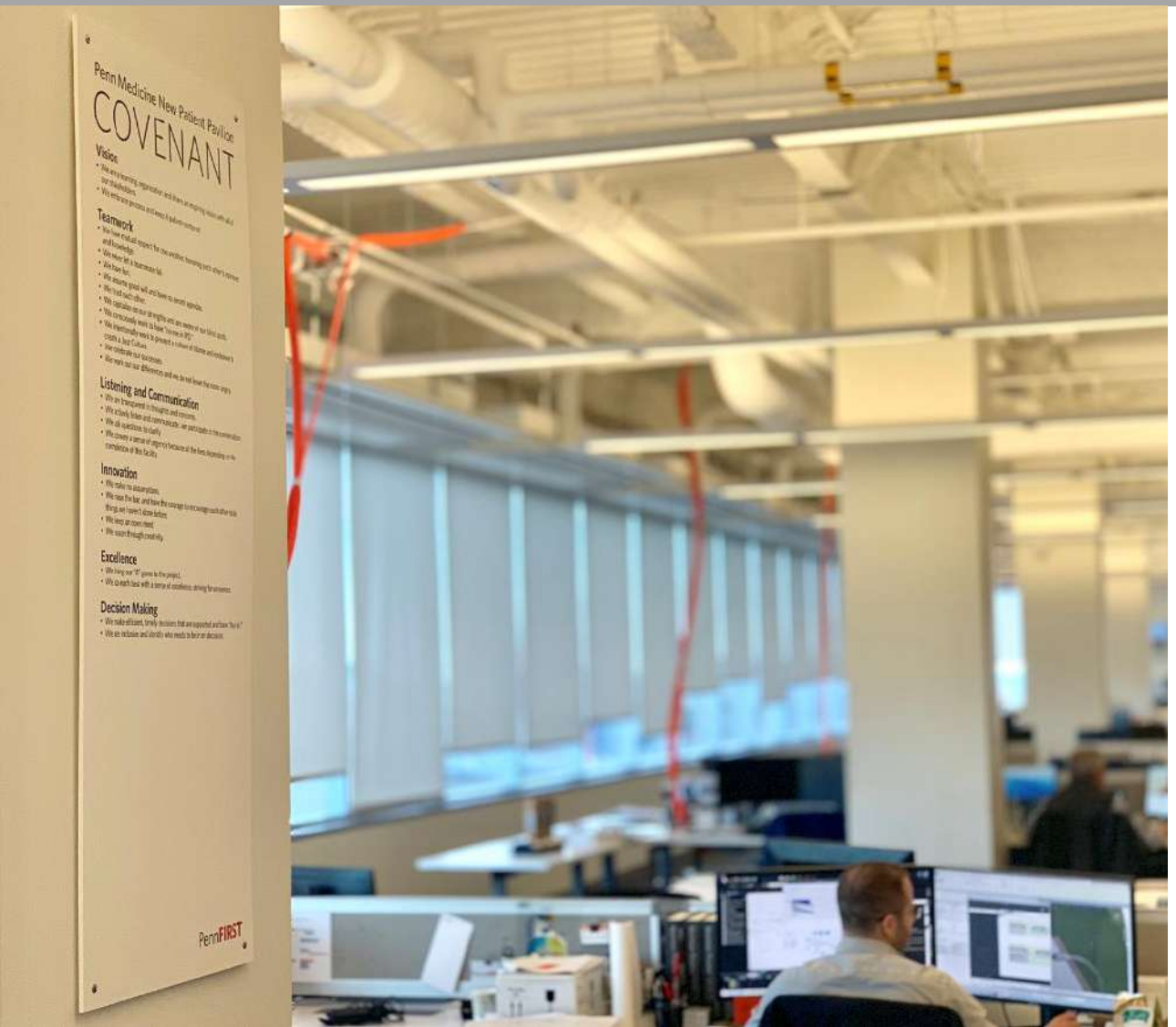
What is **IPD?**



AIA Definition

"Integrated Project Delivery (IPD) is a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to **optimize project results, increase value to the owner, reduce waste, and maximize efficiency** through all phases of design, fabrication, and construction."

Implementing **IPD**



Single Multi-Party Agreement

Shared Risk & Reward

Highly-engaged Owner

Governance

Cooperation + Collaboration

- Co-located team (“*the Colo*”)
- Cooperative behaviors
- Innovative collaboration tools
- Jointly developed Project Target Cost
- Real-time cost & constructability feedback

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Guiding Principles

Design for Change

We measure the usable life of healthcare facilities in centuries, not decades. Medicine, care delivery, and technology are constantly evolving; spaces must flex to incorporate these new developments. Environments that are modular and adaptable are a necessity for success, not only upon delivery, but for generations to come.

Patient Experience

Patients are the reason for our existence and our motivation for excellence. They deserve care that transcends expectations. Spaces, operations, and technology are enablers for superior clinical outcomes. By focusing on fundamental human needs, we can enhance the experience for our patients, while satisfying our families, physicians, staff, researchers, faculty, and students.

Unrivaled Care

We hold ourselves accountable to the highest standards of professionalism, efficiency, and compassion. People, quality, and experience are the drivers for delivering superior levels of care. We attract the best and brightest minds to research and treat medicine's most complex challenges from around the world.

Innovation

Innovation is in our DNA. We strive to uphold our legacy as the first and the best, continually developing new solutions. Solutions must push beyond today's "cutting edge" to imagine bold new opportunities—knowing that today's possibilities become tomorrow's realities at an astonishing rate.

Investment in Community

We have been part of the Philadelphia landscape for hundreds of years. All of our efforts are investments in the health, wellness, and well-being of this community. As our community grows and changes, we must grow and change with them, anticipating their needs and desires.

Life at the **Colo**

Colo Dynamic

Leadership structure

- *Executive Committee*
- *Implementation Team*

Need for mutual trust and respect

Intensive meetings

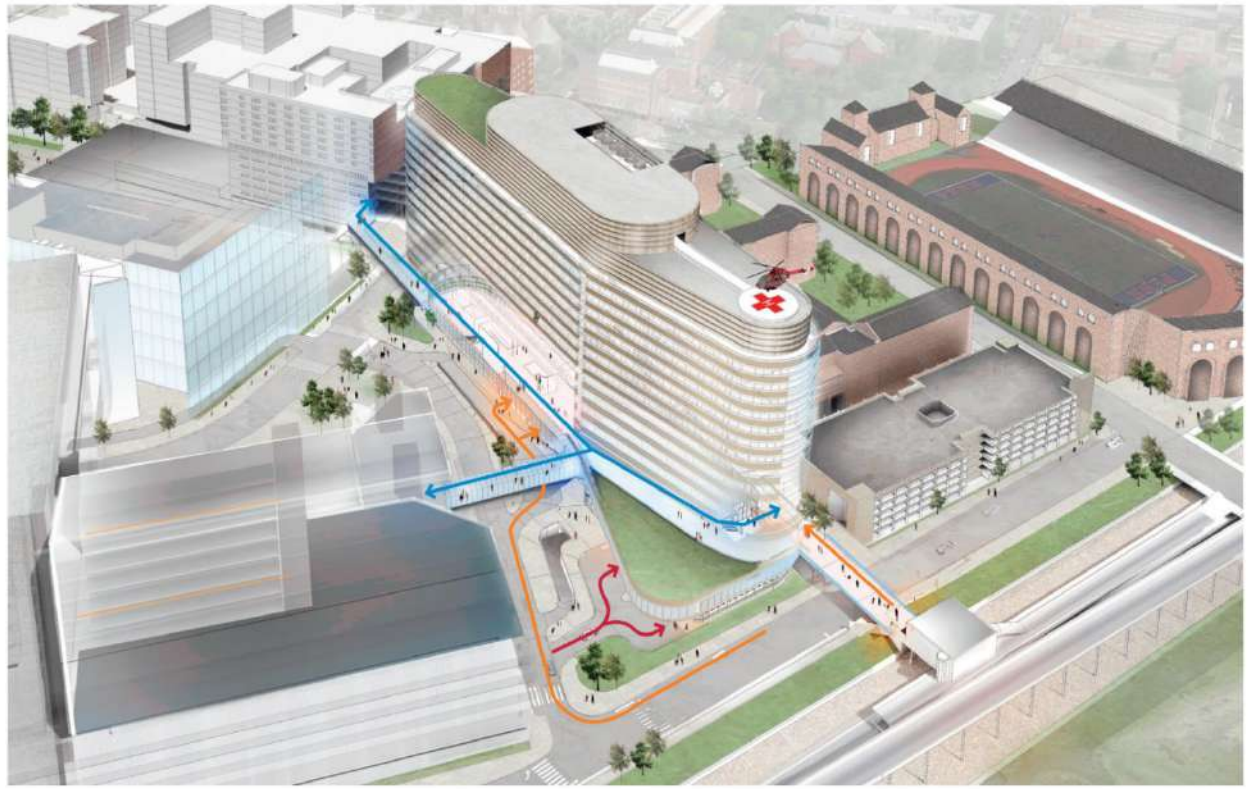
Horizontal communication

Real-time process integration

Some mantras for our work:

- *"Gotta be there to be in it."*
- *"Go Slow to Go Fast"*
- *"No Regret Decisions"*

About the Pavilion



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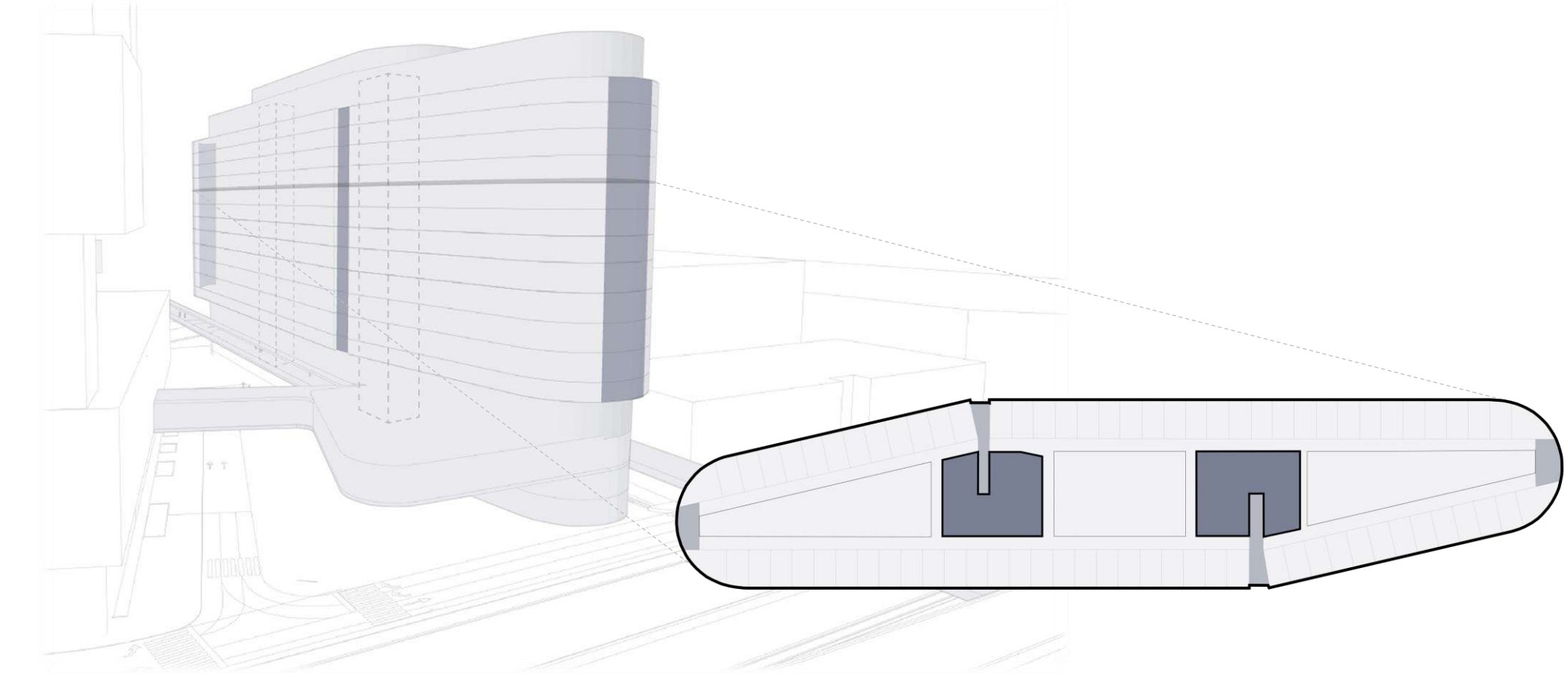
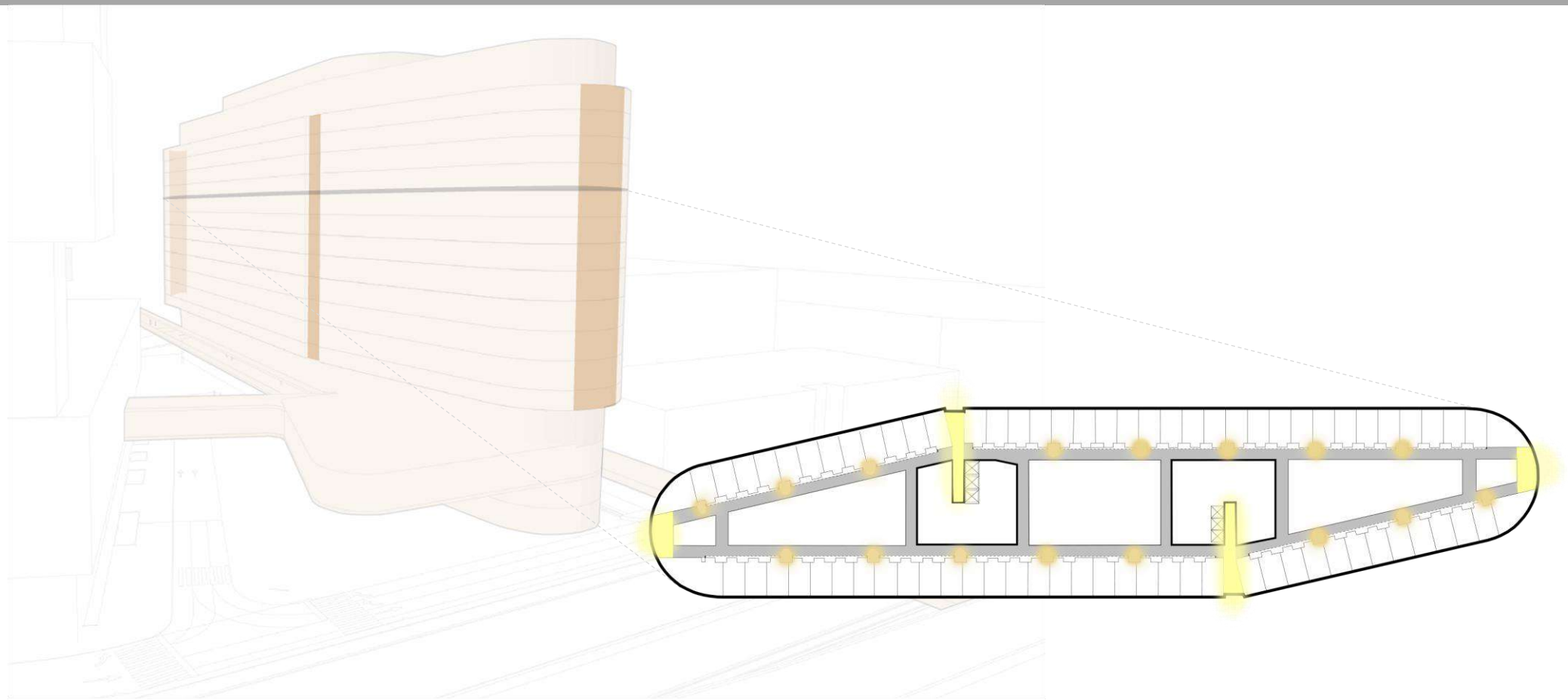
Design Concepts



embracing the **inherent** elements

enhancing users' understanding of the building through its life

Design Concepts



applying a hospitality approach

using light to break down the scale of the user's journey

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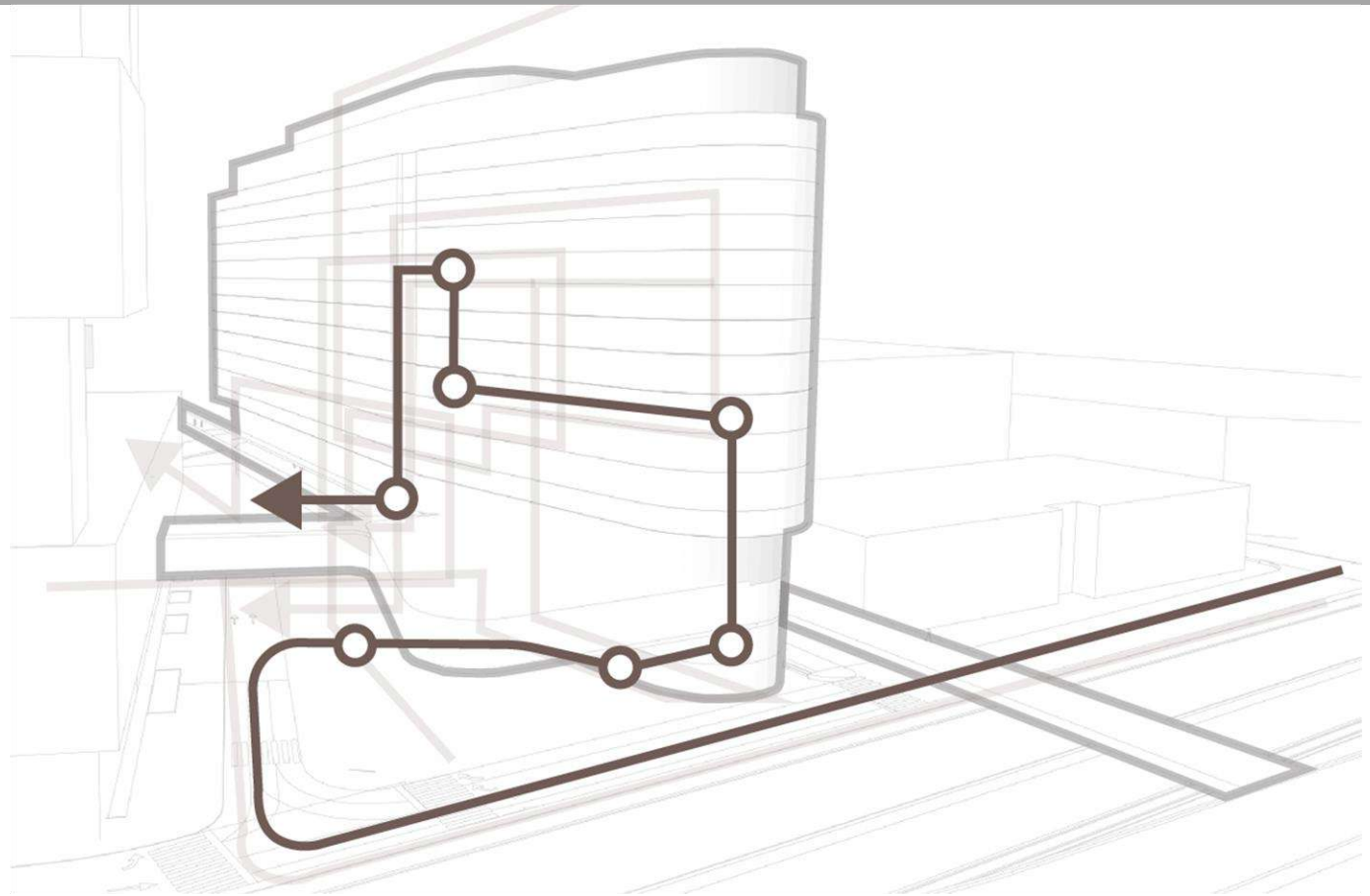
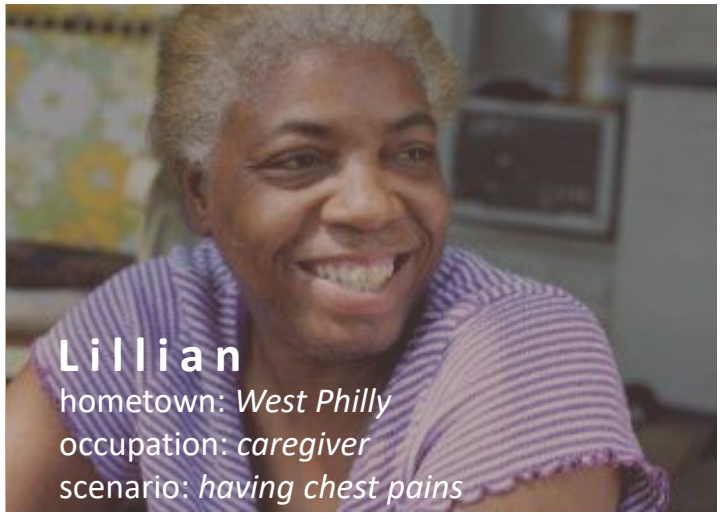
Design Concepts





considering the **human experience**

empathizing with individual users at each point in their journey

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Design Concepts






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Design Concepts | Public Space

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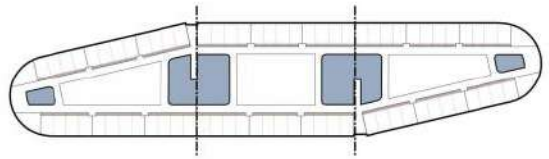
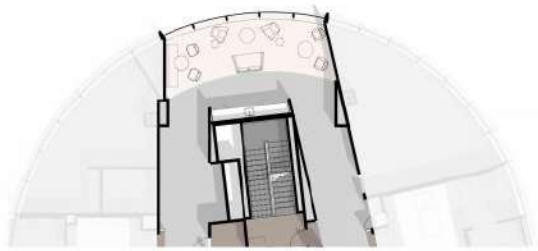
Design Concepts | Clinical Space

Design Concepts | Clinical Space



Design Concepts | Clinical Space

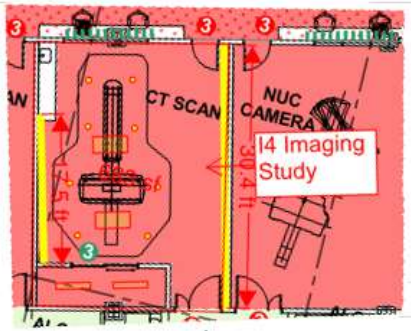


Design Concepts | Clinical Space

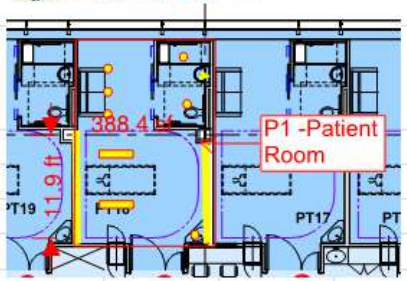
Lighting Design | Setting the Budget

Lighting Design | Setting the Budget

I4	downlights & recessed scene lights, recessed slot	685	L3	50	LF	$85	$4,250	$14.12
			R9	2	ea	$1,500	$3,000	
			D4	8	ea	$250	$2,000	
			R1	2	ea	$210	$420	



P1	downlights & recessed patient room light, recessed slot, vanity sconce	390	L3	24	LF	$85	$2,040	$14.26
			R8	2	ea	$800	$1,600	
			D2	4	ea	$205	$820	
			D4	2	ea	$250	$500	
			W5	1	ea	$600	$600	



P2 (P3 & P4)	recessed 1x4, recessed linear slot, recessed downlights	150	R1	2	ea	$210	$420	$8.20
			L2	9	LF	$70	$630	
			D1	1	ea	$180	$180	

Lighting Design | Setting the Budget

	TYPE	DESCRIPTION	CEILING	WALL	BASE	FLOOR	MILLWORK	LIGHTING	OTHER
ADMINISTRATIVE	A1	**TYPICAL ADMINISTRATIVE SPACE:**	ARMSTRONG HEALTHZONE ULTIMA, 24"x24"	PAINT	4" HIGH RESILIENT BASE	CARPET TILE		$5.07	ASSUME STC RATING OF 35 FOR FLOORS, WALLS, AND
	A2	**ADMINISTRATIVE SPACE:** CONFERENCE ROOMS, COLLABORATION / TEAMING SPACES, ETC.	ARMSTRONG HEALTHZONE ULTIMA, 24"x24"; ALLOW FOR 50% GWB CEILING	PAINT	4" HIGH RESILIENT BASE	CARPET TILE	CORIAN DESKTOP	$8.30	ASSUME STC RATING OF 35 FOR FLOORS, WALLS, & CEILINGS
	A3	**ADMINISTRATIVE SPACE:** CONFERENCE ROOMS, COLLABORATION / TEAMING SPACES, ETC.	ARMSTRONG HEALTHZONE ULTIMA, 24"x24"; ALLOW FOR 50% GWB CEILING	PAINT	4" HIGH RESILIENT BASE	RESILIENT TILE (LINOLEUM OR RUBBER)	CORIAN DESKTOP	$8.30	ALLOW FOR ALUMINUM STOREFRONT GLAZING WHEREINDICATED ON ASSUME STC RATING OF FOR FLOORS, WALLS, &
	A4	**ADMINISTRATIVE SPACE:** TEAM SPACE	PAINTED GWB	PAINT; DECORATIVE PANEL MATERIALAND ACCENT	6" INTEGRAL BASE	CARPET TILE	CORIAN DESKTOP	$9.10	
BUILDING SUPPORT	BS1	**BUILDING SUPPORT:** STAIRS	PAINTED GWB	PAINT	4" HIGH RESILIENT BASE	INTEGRATED RUBBER STAIR TREAD AND RISER, PROVIDE RESILENT TILE		$3.20	
	BS2	**BUILDING SUPPORT:** IDF ROOMS	NONE	PAINT	4" HIGH RESILIENT BASE	STATIC DISSAPTIVE RUBBER		$3.75	
	BS3	**BUILDING SUPPORT:** ELECTRICAL / MECHANICAL ROOMS	NONE	PAINT	4" HIGH RESILIENT BASE	SEALED CONCRETE		$3.00	
CORRIDOR	C1	**TYPICAL INPATIENT CORRIDOR**	ARMSTRONG LYRA CEILING PANELS, 48"x48" WITH SUPRAFINE GRID; ALLOW 25% GWB ACCENT	PAINT; DECORATIVE PANEL MATERIAL @ PATIENT ROOM ENTRANCE; HANDRAIL AND SOLID	4" HIGH RESILIENT BASE	RESILIENT TILE (RUBBER OR LINOLEUM)	CORIAN COUNTERTOPS WITH P-LAM CABINETRY (WHERE APPLICABLE)	$16.06	
	C2	**TYPICAL CLINICAL CORRIDOR**	ARMSTRONG HEALTHZONE ULTIMA, 24"x24"	PAINT; 36"H ACROVYN WAINSCOT W/ 8"H BUMPERGUARD	4" HIGH RESILIENT BASE	RESILIENT TILE (RUBBER OR LINOLEUM)		$13.83	
	C3	**TYPICAL RESTRICTED CORRIDOR**	ARMSTRONG HEALTHZONE ULTIMA, 24"x24",	PAINT; 36"H ACROVYN WAINSCOT W/ 8"H BUMPERGUARD	4" HIGH RESILIENT BASE	RESILIENT TILE (LINOLEUM OR RUBBER)		$7.07	
	C4	**TYPICAL PUBLIC / LOBBY CORRIDOR**	ARMSTRONG VECTOR OPTIMA 48" x 48" CEILING TILE	PAINT; PROVIDE FULL HEIGHT STAINLESS STEEL GUARDS AND GUARDS	INTEGRAL TERRAZZO BASE	3/4" TERRAZZO WITH CUSTOM COLOR / PATTERN		$21.15	
	D1	**DINING - PUBLIC**	LINEAR WOOD SLATTED CEILING 50%, HIGH GLOSS ACRYLIC PANEL 50%	HIGH GLOSS ACRYLIC WALL PANELS, PROVIDE FULL HEIGHT STAINLESS STEEL CORNER GUARDS AND STAINLESS STEEL	INTEGRAL TERRAZZO BASE	3/4" THICK TERRAZZO WITH CUSTOM COLOR/PATTERN	CUSTOM WOOD AND CORIAN FIXTURES, BUILT IN RECEPTION AND DESK ELEMENTS, WITH INTEGRAL LIGHTING (SEE	$10.97	

Lighting Design | Tracking the Budget

PennFIRST

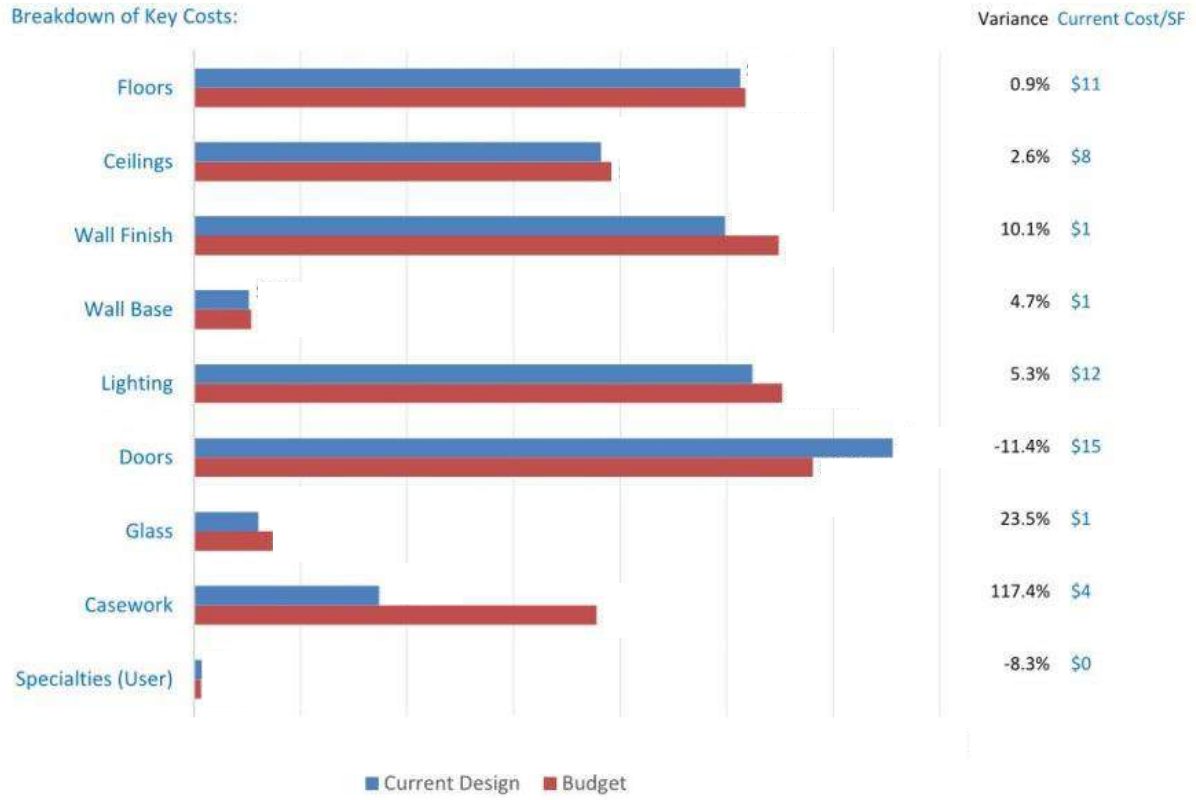
PROJECT:	PennFIRST Concept / Model Estimate - Inpatient Fitout Cost Model FULL BUILD OUT
Prepared for:	PennFIRST Team
Location:	Philadelphia, PA
Design:	HDR Architects, Foster + Partners, BR+A

Estimate Type	Estimate #	Estimate Date
Concept	4	5/27/2016
Drawing Date	**Estimator**	**Previous Estimate**
3/25/2016	MD, SM	5/18/2016
HDR Update		

Cost Model : Inpatient Fitout

S:\ESTIMATE\CURRENT PROJECTS\PennFirst\1000 - Concept Estimates\20 - IDP Final 2016_5_31\2016_05_27 PennFirst IDP Est Final rev.xlsm]Estimate

	GROSS BUILDING AREA ---------->		521,241 SF	521,241 SF	521,241 SF	521,241 SF	521,241 SF
	DESCRIPTION		**GEN. CONST.**	**FINISHES**	**MEP**	**LIGHTING**	**TOTAL**
1	MISCELLANEOUS METAL FABRICATIONS						
2	PREFABRICATED HEADWALLS						
3	MILLWORK & FINISH CARPENTRY						
4	SPRAY FIREPROOFING						
5	JOINT SEALANTS						
6	DOORS, FRAMES, AND HARDWARE						
7	INTERIOR GLASS AND GLAZING						
8	DRYWALL, ROUGH CARPENTRY, & ACT						
9	TILE, TERRAZZO						
10	CARPET & RESILIENT FLOORING						
11	PAINTING AND SPECIAL COATINGS						
12	WALL COVERINGS						
13	SPECIALTIES						
14	FIRE EXTINGUISHERS & CABINETS						
15	WINDOW TREATMENTS						
16	FURNISHINGS						
17	FIRE PROTECTION						
18	PLUMBING						
19	HVAC & ATC SYSTEMS						
20	ELECTRICAL						
21	LOW VOLTAGE SYSTEMS						
22	MATERIAL & MAN HOIST						
23	MOCKUPS						
24	OVERTIME / PREMIUM TIME						
25	PROJECT LABOR						
	SUBTOTAL CONSTRUCTION COST (PART OF IPD ESTIMATE)						
	Cost Per Square Foot of Gross Building Area ---------->						



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Lighting Design | Target Value Design

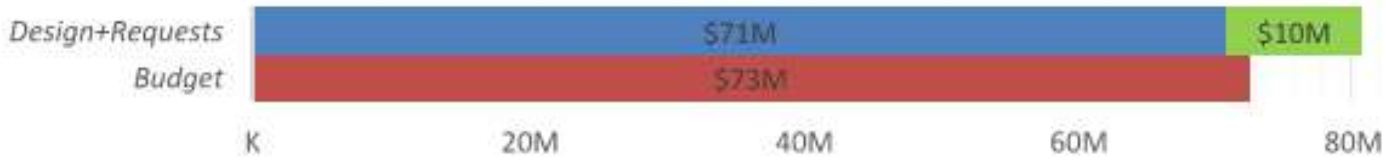
Target Value Design - Creating Value

Project Team Benefits

- Eliminate traditional and disruptive “value engineering”
- Real-time cost feedback integrated into the process (SF, Quantities)
- Understand cost implications of design decisions
- Empower informed discussions on creating “value”

Owner Benefits

- Users make informed decision through real-time information
- Eliminates low priority “wants” and focuses on high priority “must-haves”
- Empowers users to take ownership of what they want to spend money on



Lighting Design | Streamlined Delivery Process

TRADITIONAL METHOD

Subs/Consultants

- Sequential Design Process without input
- Pricing is bid at the end which cause unneeded VE efforts
- Prepare equals and hope that we get the design intent
- Constructability issues arise during CA

IPD METHOD

Key Trade Subcontractor (KTS)

- Constant input and Review from KTS
- Accurate pricing and pricing review readily available
- Design intent can be kept and negotiated throughout the process
- Constructability issues resolved before CA

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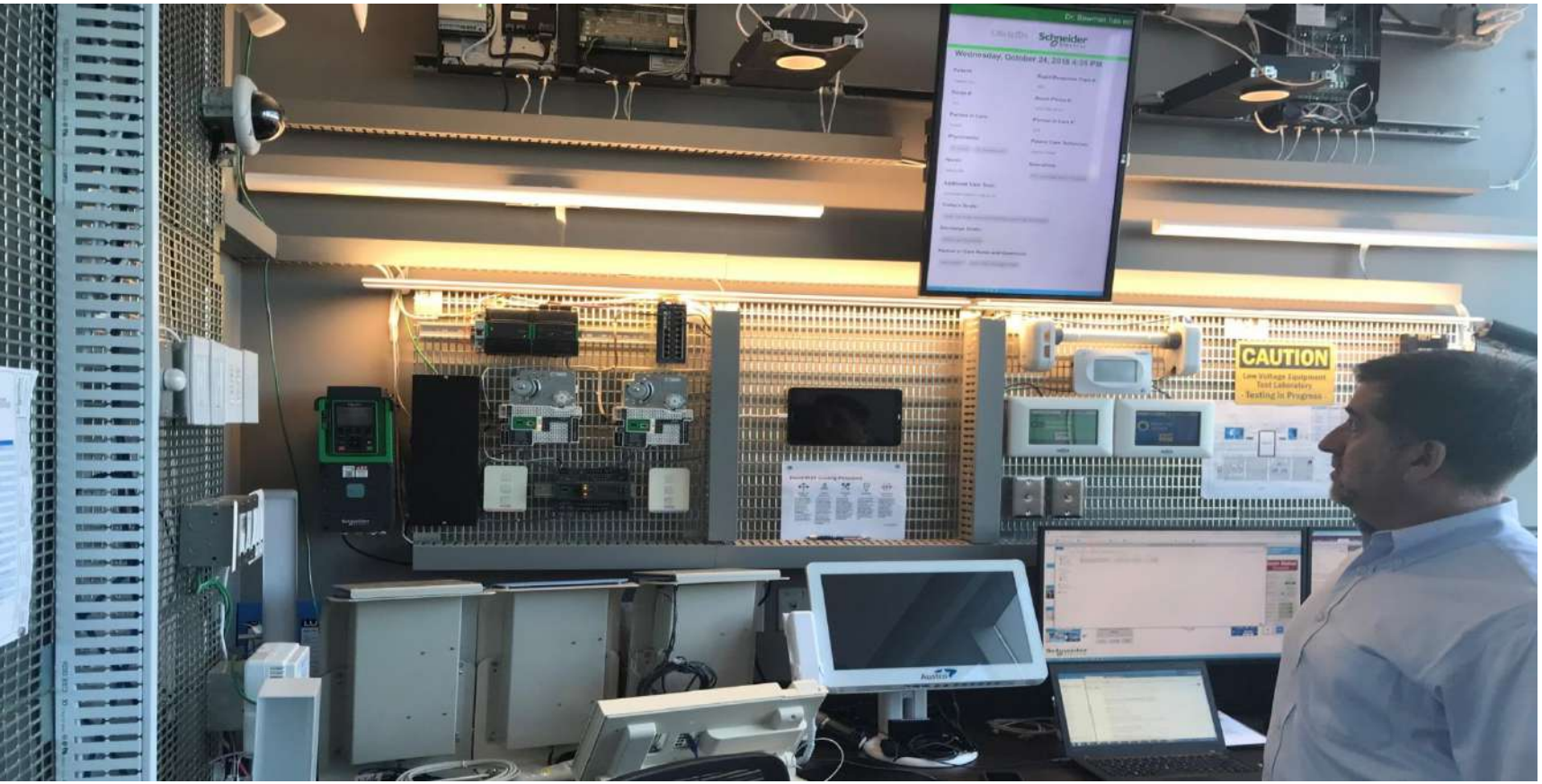
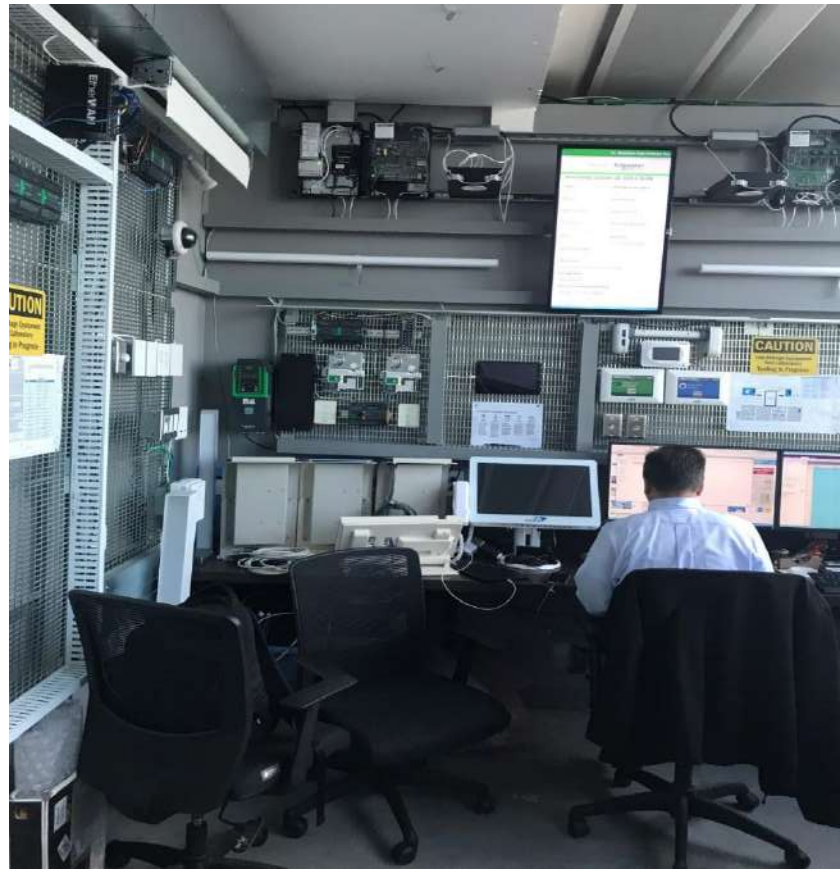
Solution-Driven Design vs Spec + Selection





Solution-Driven Design vs Spec + Selection

Involving vendors in early stages

- Reduces cost with early pricing information
- Achieve the design goals by understanding the project goals
- Get early submittal packages for review and comment

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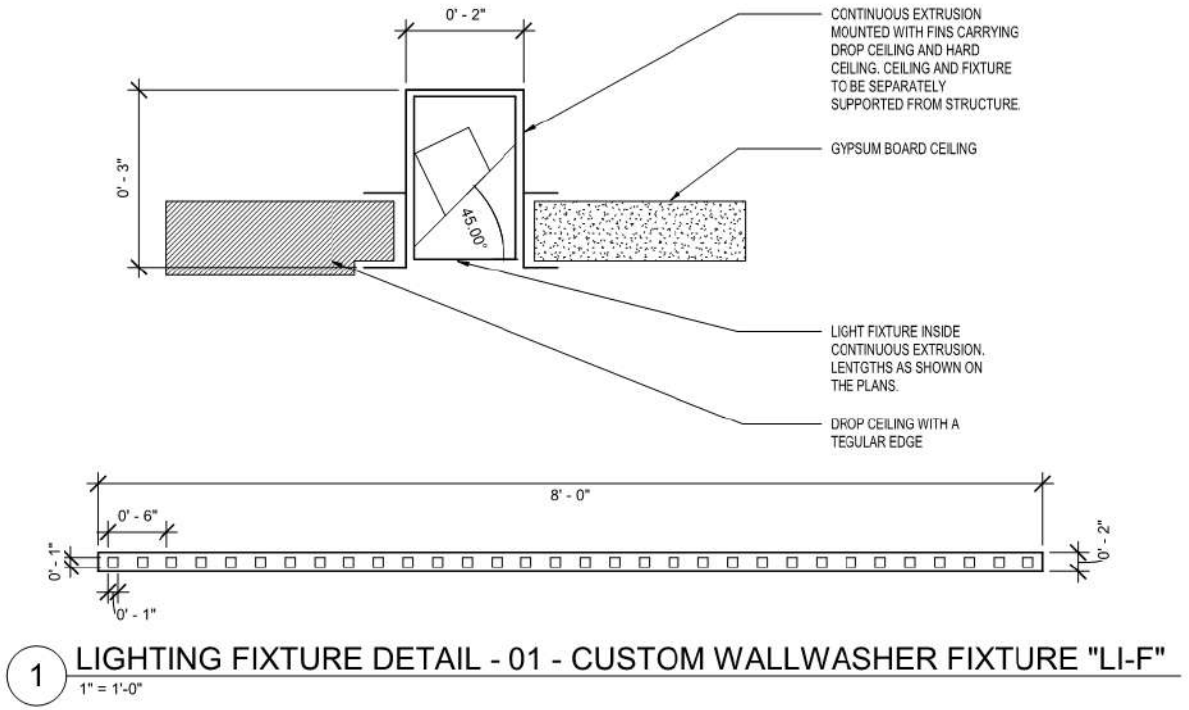
Solution-Driven Design vs Spec + Selection



1 LIGHTING FIXTURE DETAIL - 01 - CUSTOM WALLWASHER FIXTURE "LI-F"
1" = 1'-0"

Solution-Driven Design vs Spec + Selection

Designation	Cost	COMPUTATION TYPE	Description	Manufacturer	Model	Lamp Quantity	Lamp	Type Comments	allast Quanti	Ballast Type	Acceptable Manufacturers	Watts 1	Voltage
F-CL	Cost 1	BY UNIT	4"-aperture, wide-angle (60), LED downlight for recessing in plaster ceiling with minimum trim.	Manufacturer 1	XXXX	1	REPLACEABLE LED MODULE, 3000K, 80 CRI, 1500 DELIVERED LUMENS	MAX MERCURY CRITERIA: N/A ACTUAL MODULE MERCURY CONTENT: 0 mg RATED LIFE CRITERIA (HOURS): N/A ACTUAL MODULE RATED	1	INTEGRAL ADDRESSABLE LUTRON ECOSYSTEM DIMMING DRIVER (0.1%) - #PEQ0	EQUAL 1 - MODEL 1 EQUAL 2 - MODEL 2 EQUAL 3 - MODEL 3	17	277
F-DCL	Cost 2	BY UNIT	4"-aperture, wide-angle, LED downlight/wallwasher for recessing in plaster ceiling with minimum trim corner wallwash optics	Manufacturer 2	XXXX	1	REPLACEABLE LED MODULE, 3000K, 80 CRI, 2000 DELIVERED LUMENS	MAX MERCURY CRITERIA: N/A ACTUAL MODULE MERCURY CONTENT: 0 mg RATED LIFE CRITERIA (HOURS): N/A ACTUAL MODULE RATED	1	INTEGRAL ADDRESSABLE LUTRON ECOSYSTEM DIMMING DRIVER (1%) - #LDE1	EQUAL 1 - MODEL 1 EQUAL 2 - MODEL 2 EQUAL 3 - MODEL 3	35	277
F-DDL	Cost 3	BY UNIT	4"-aperture, wide-angle, LED downlight/wallwasher for recessing in plaster ceiling with minimum trim reflector configured for wallwashing opposing walls	Manufacturer 3	XXXX	1	REPLACEABLE LED MODULE, 3000K, 80 CRI, 2500 DELIVERED LUMENS	MAX MERCURY CRITERIA: N/A ACTUAL MODULE MERCURY CONTENT: 0 mg RATED LIFE CRITERIA (HOURS): N/A ACTUAL MODULE RATED	1	INTEGRAL ADDRESSABLE LUTRON ECOSYSTEM DIMMING DRIVER (1%) - #LDE1	EQUAL 1 - MODEL 1 EQUAL 2 - MODEL 2 EQUAL 3 - MODEL 3	35	277
F-DL	Cost 4	BY UNIT	4"-aperture, wide-angle, LED downlight/wallwasher for recessing in plaster ceiling with minimum trim.	Manufacturer 4	XXXX	1	REPLACEABLE LED MODULE, 3000K, 80 CRI, 2500 DELIVERED LUMENS	MAX MERCURY CRITERIA: N/A ACTUAL MODULE MERCURY CONTENT: 0 mg RATED LIFE CRITERIA (HOURS): N/A ACTUAL MODULE RATED	1	INTEGRAL ADDRESSABLE LUTRON ECOSYSTEM DIMMING DRIVER (1%) - #LDE1	EQUAL 1 - MODEL 1 EQUAL 2 - MODEL 2 EQUAL 3 - MODEL 3	35	277
F-FW	Cost 5	BY LENGTH	Nominal 1"x1"x 4', minimal profile LED grazer for integration into architectural coves for lighting single-height walls. 10° x 35° optics	Manufacturer 5	XXXX	1	REPLACEABLE LED MODULE, 3000K, 80 CRI, 530 DELIVERED LUMENS/FT	MAX MERCURY CRITERIA: N/A ACTUAL MODULE MERCURY CONTENT: 0 mg RATED LIFE CRITERIA (HOURS): N/A ACTUAL MODULE RATED	1	INTEGRAL ADDRESSABLE LUTRON ECOSYSTEM DIMMING DRIVER (0.1%) - #PEQ0	EQUAL 1 - MODEL 1 EQUAL 2 - MODEL 2 EQUAL 3 - MODEL 3	7	277
F-FW2	Cost 6	BY LENGTH	Nominal 1"x1"x 4', minimal profile led grazer for integration into architectural coves for lighting double-height walls. 15° x 35° optics	Manufacturer 5	XXXX	1	REPLACEABLE LED MODULE, 3000K, 80 CRI, 1230 DELIVERED LUMENS/FT	MAX MERCURY CRITERIA: N/A ACTUAL MODULE MERCURY CONTENT: 0 mg RATED LIFE CRITERIA (HOURS): N/A ACTUAL MODULE RATED	1	INTEGRAL ADDRESSABLE LUTRON ECOSYSTEM DIMMING DRIVER (0.1%) - #PEQ0	EQUAL 1 - MODEL 1 EQUAL 2 - MODEL 2 EQUAL 3 - MODEL 3	12	277

Procurement | Awarding Packages

FIXTURE TYPE	MANUFACTURER	MODEL	ACCEPTABLE	COMMENTS	INTERNAL STATUS	FINAL DECISION AS PER SHAEFFER AND HDR MEETING ON 2019/01/25
F-CL	MANUFACTURER 1	XXXX				OK
F-DCL	MANUFACTURER 1	XXXX				OK
F-DCL	MANUFACTURER 1	XXXX				OK
F-DL	MANUFACTURER 1	XXXX				OK
F-FW	MANUFACTURER 4	XXXX	WITH COMMENTS	NEEDS TO BE PROVIDED WITH HOUSING AND ADJUSTABLE ARM AS SHOWN ON DRAWING EL-503	AWAITING F+P BRACKET AND COVE DETAIL	HOLD
F-FW-2	MANUFACTURER 4	XXXX	WITH COMMENTS	NEEDS TO BE PROVIDED WITH HOUSING AND ADJUSTABLE ARM AS SHOWN ON DRAWING EL-503	AWAITING F+P BRACKET AND COVE DETAIL	HOLD
F-HWL	MANUFACTURER 1	XXXX				OK
F-JJL	MANUFACTURER 1	XXXX				OK
F-JJL-2	MANUFACTURER 1	XXXX	WITH COMMENTS	CAN LUTRON PROVIDE THE DRIVER FOR A 22 WATT VERSION?		OK
F-JL	MANUFACTURER 1	XXXX				OK
F-JL-2	MANUFACTURER 1	XXXX				OK
F-KCL	MANUFACTURER 1	XXXX	WITH COMMENTS	. I talked to manufacturer and you are correct that they only offer the corner and wallwash versions in the 2" xxxx family and not the incito family. We will have to go with the 2" xxxx since the original fixture specified cannot accommodate that optic.		negotiate the manufacturer then order later as a deviation
F-KL	MANUFACTURER 1	XXXX	WITH COMMENTS	. I talked to manufacturer and you are correct that they only offer the corner and wallwash versions in the 2" xxxx family and not the incito family. We will have to go with the 2" xxxx since the original fixture specified cannot accommodate that optic.		negotiate the manufacturer then order later as a deviation
F-LC	MANUFACTURER 2	XXXX	NO		HOLD AS PER F+P	HOLD
F-LC-2	MANUFACTURER 2	XXXX	NO		HOLD AS PER F+P	HOLD
F-LCD	MANUFACTURER 3	XXXX	NO	PROVIDE WITH KNIFE EDGE HOUSING AS SHOWN ON DRAWING EL-504	AWAITING CONFIRMATION ON CONSTRUCTION IF IT WILL BE LIKE THE CLINICAL SIDE COVES OR AN ACTUAL FIXTURE	HOLD
F-LL-1	MANUFACTURER 1	4" INCITO				OK

IPD In Action | Case Studies

1. **Exam Light**
2. **Knife-edge Cove**
3. **Backlit Headwall**

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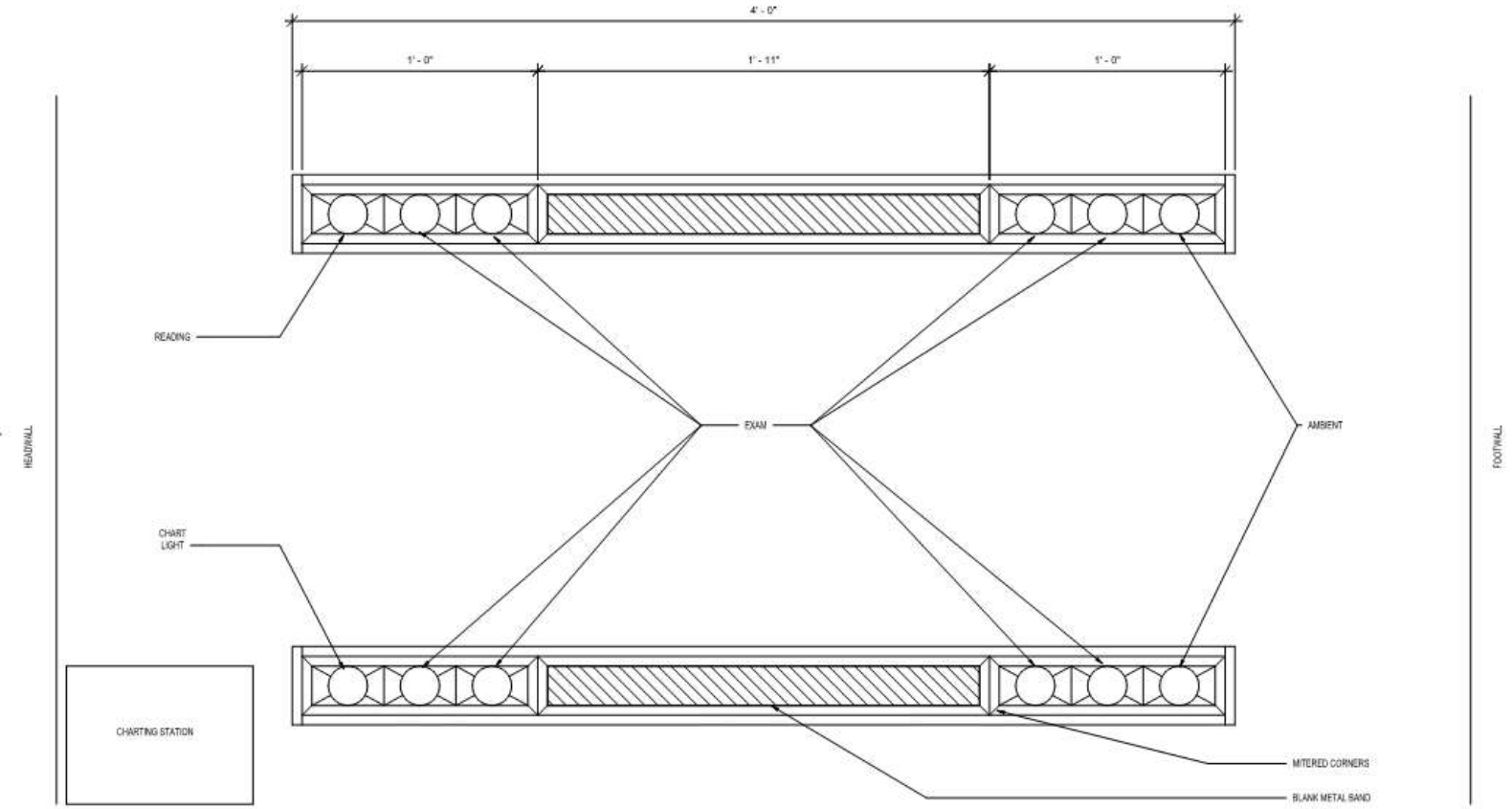
Case Study 1 | Exam Light

Highlights

- Challenging “Norms” of Institutional Lighting while Meeting Performance Criteria
- Prototyping: Learning, Evolving and Exceeding Expectations

Challenging Norms | Initial Concept



3 LIGHTING FIXTURE DETAIL - 03 - CUSTOM PATIENT EXAM FIXTURE "LE"
3" = 1'-0"

Challenging Norms | Initial Concept

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Challenging Norms | Initial Concept

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Challenging Norms | Initial Concept

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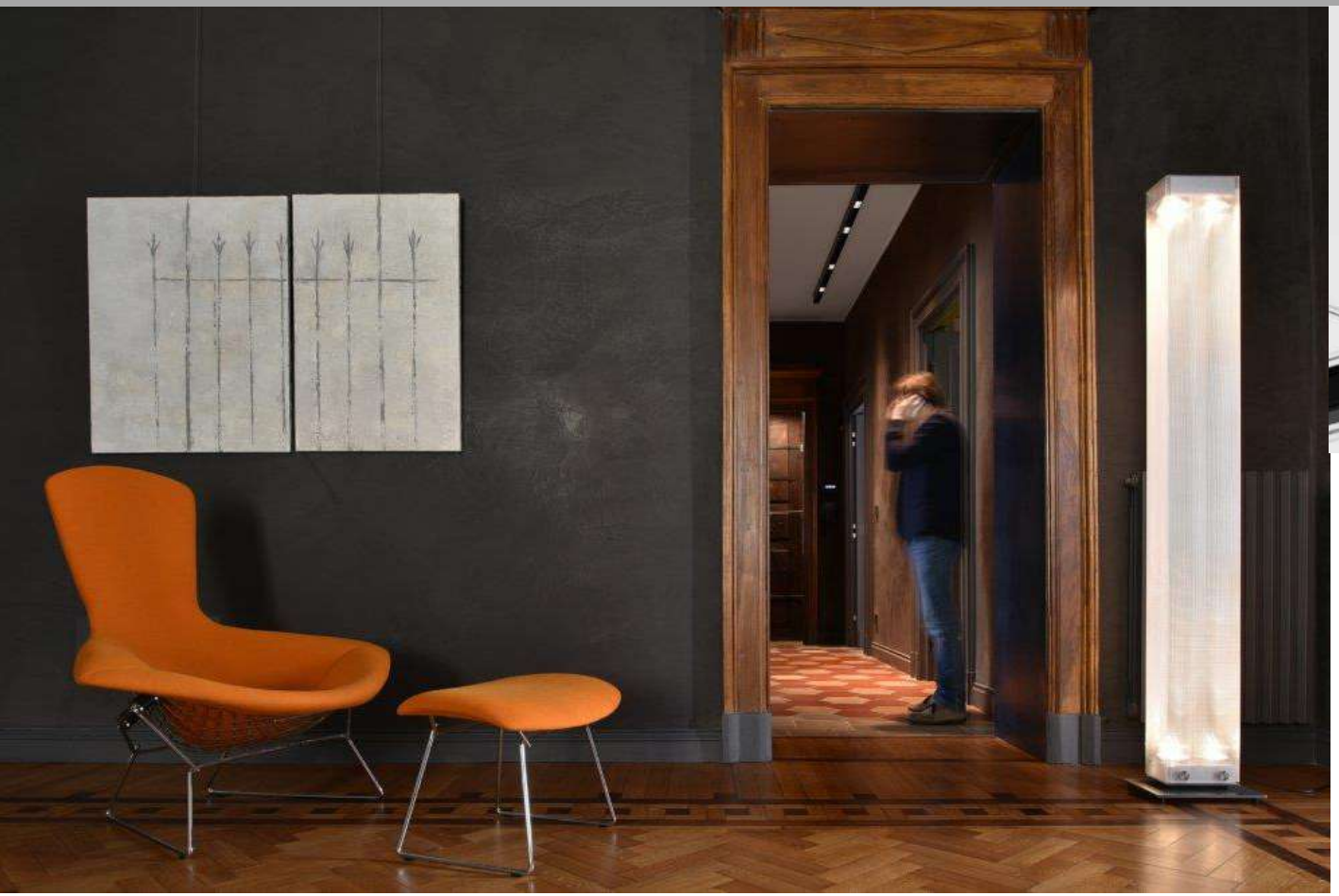
Challenging Norms | Meeting Performance Criteria



Healthcare and Functional Needs

- Cleanliness
- High Exam Lighting levels
- Aimability
- Multi-functionality

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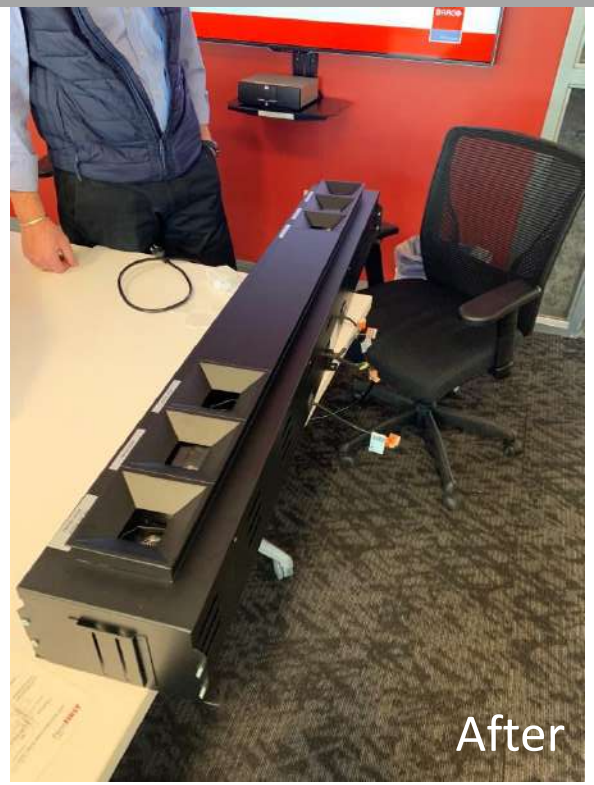
Prototyping | Learning + Evolving



Manufacturer 1

Manufacturer 2

CONTINUING EDUCATION AIA

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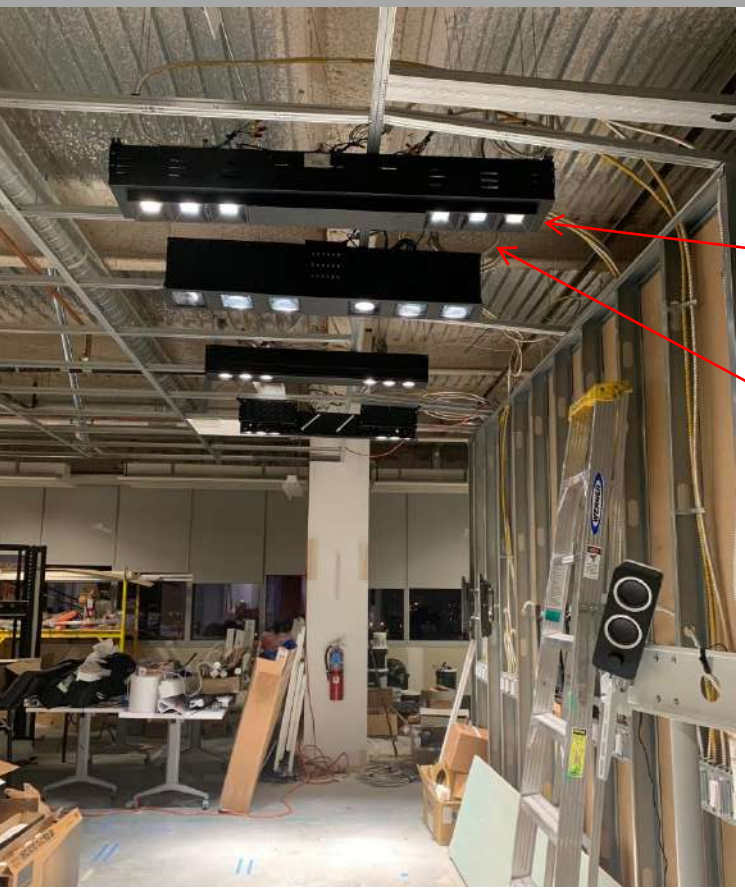
Prototyping | Learning + Evolving

Manufacturer 3

Manufacturer 4

Prototyping | Exceeding Expectations



Glare control from the side

Baffles help with lens brightness

Medium aperture helps with visual comfort

View West

View East

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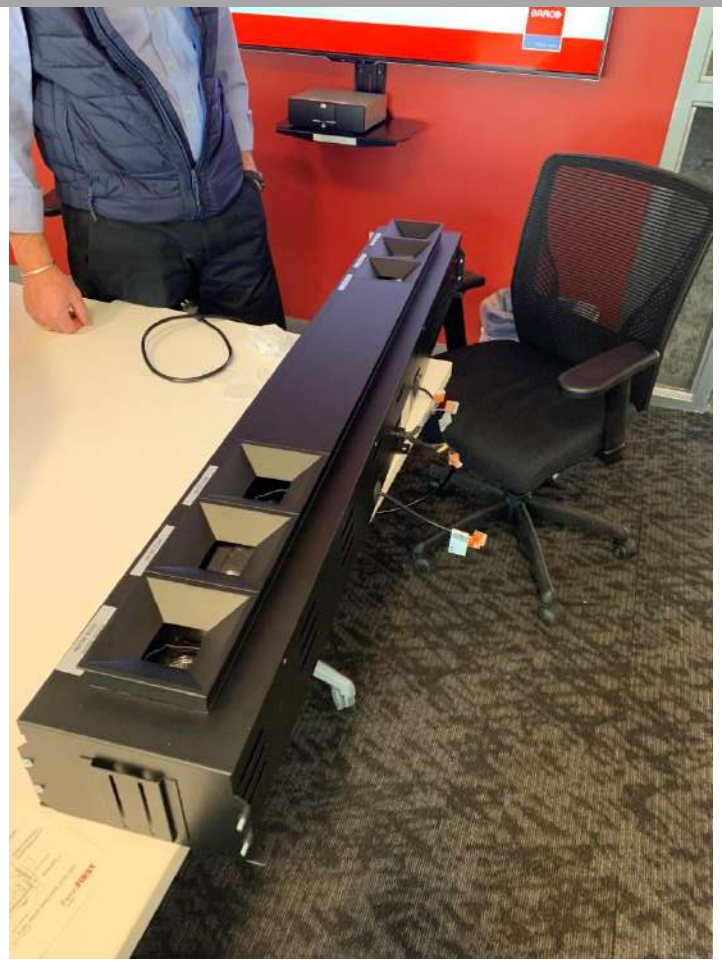
Prototyping | Customizing Performance

Original



Final

- **Modify Optics:** Use Deep reflector instead of collimating lens for glare control
- **Modify Trim:** create baffle and separate compartments for glare control and light leaks
- **Modify Aperture:** Wider aperture for Aiming control
- **Modify Housing:** for ease of wiring

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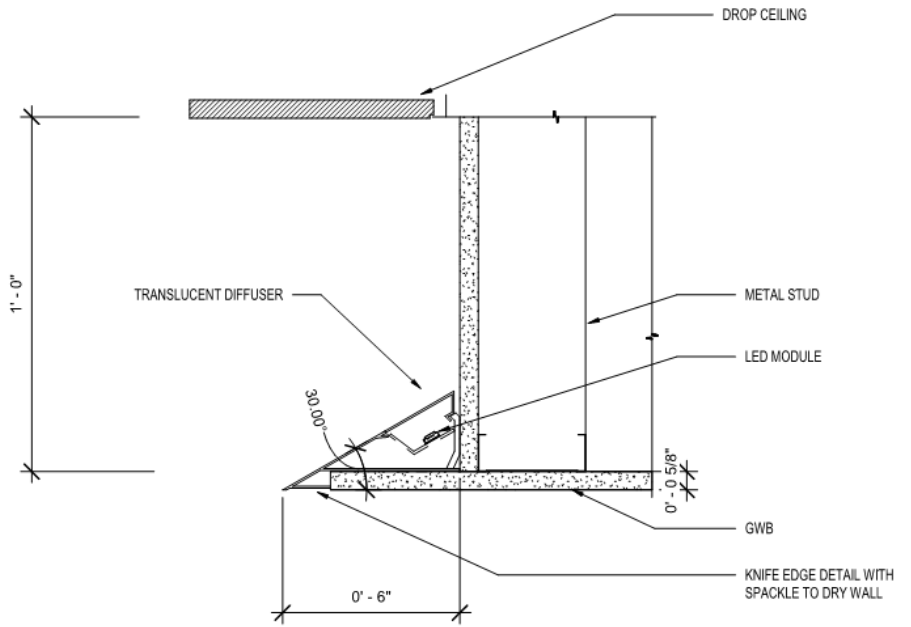
Case Study 2 | Knife-Edge Cove

Highlights

- Managing Cost: Constructed Element vs. Manufactured Fixture
- Contractor Collaboration: Construction Methods, Detailing and Mock-up for Infection Control

Cost Control | Constructed Element vs. Manufactured Fixture



2 LIGHTING FIXTURE DETAIL - 02 - KNIFE EDGE FIXTURE "LH3"
3" = 1'-0"

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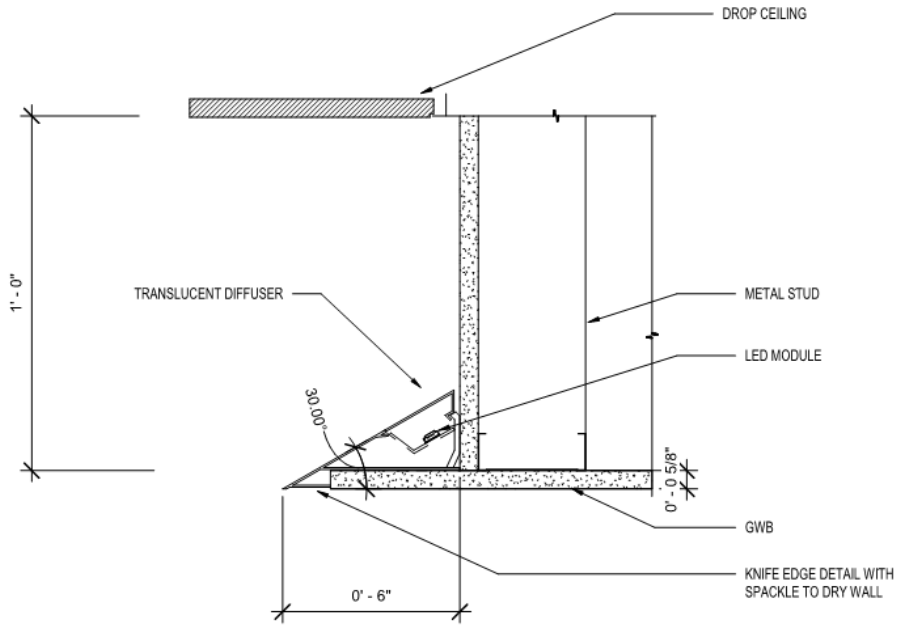
Cost Control | Constructed Element vs. Manufactured Fixture



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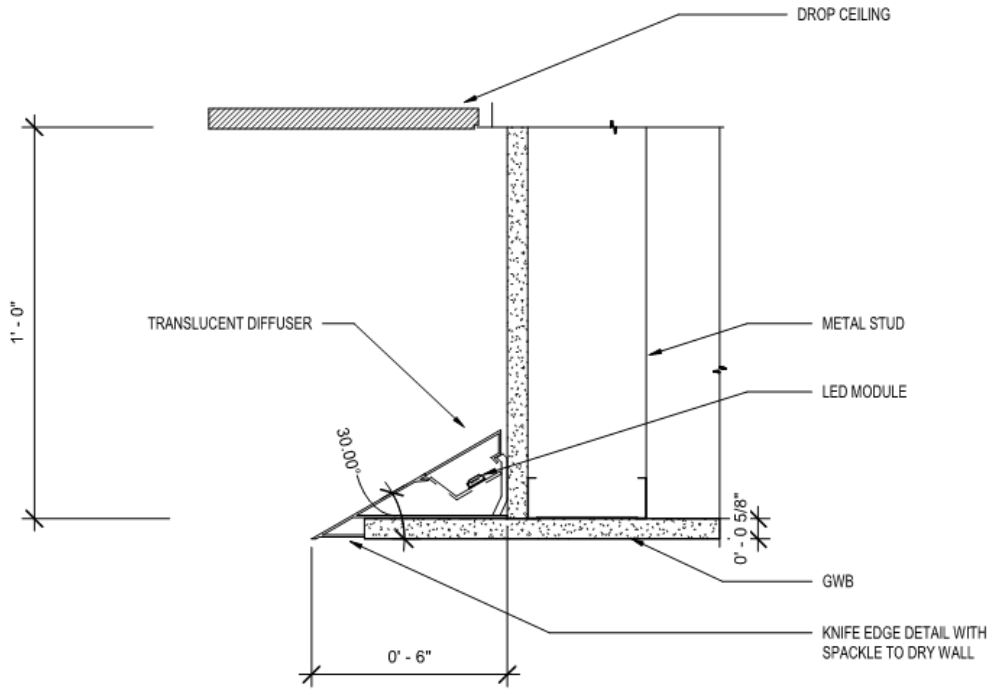
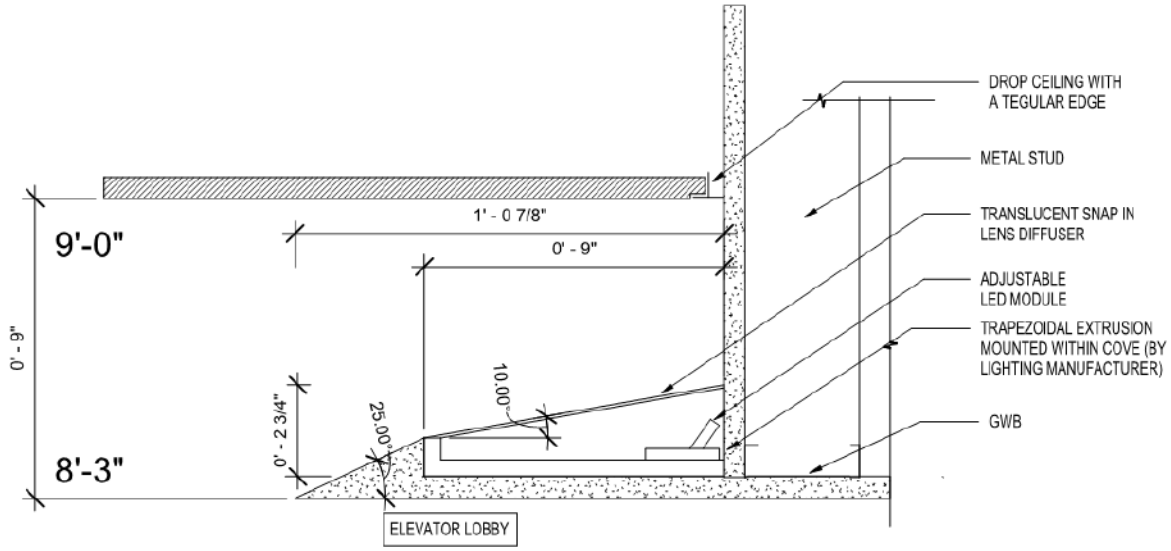
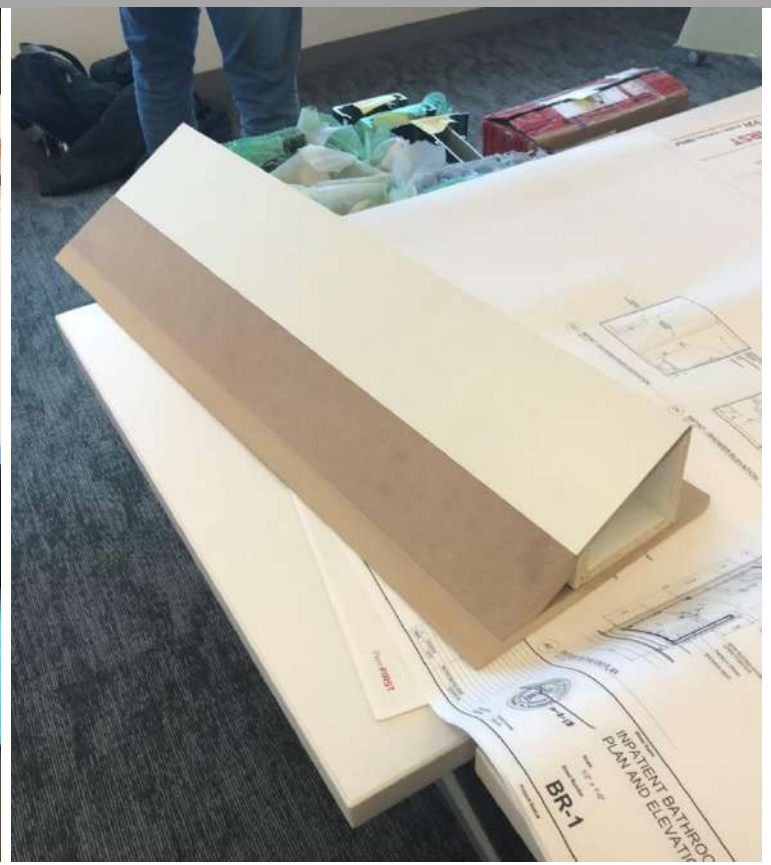
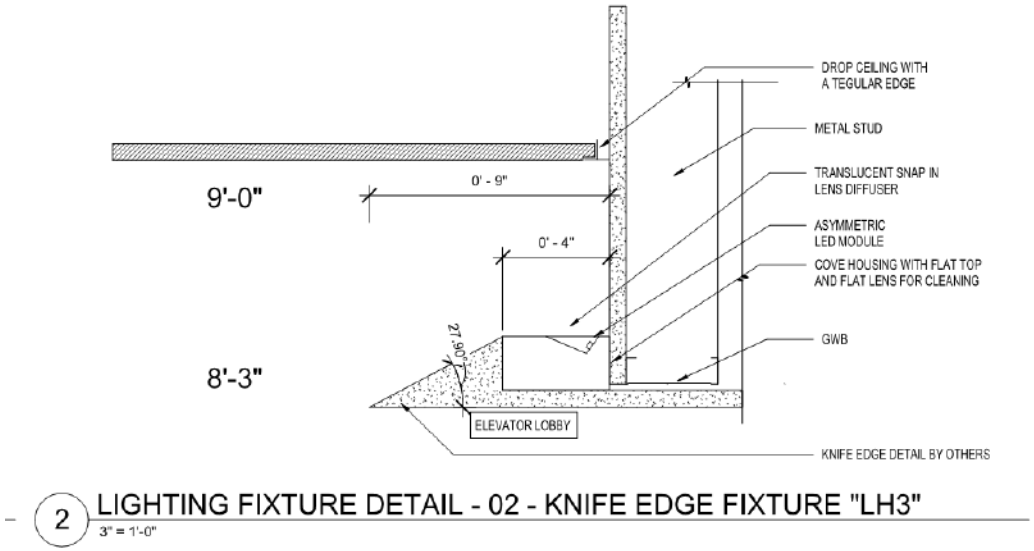




Contractor Collaboration | Detailing and Mock-up





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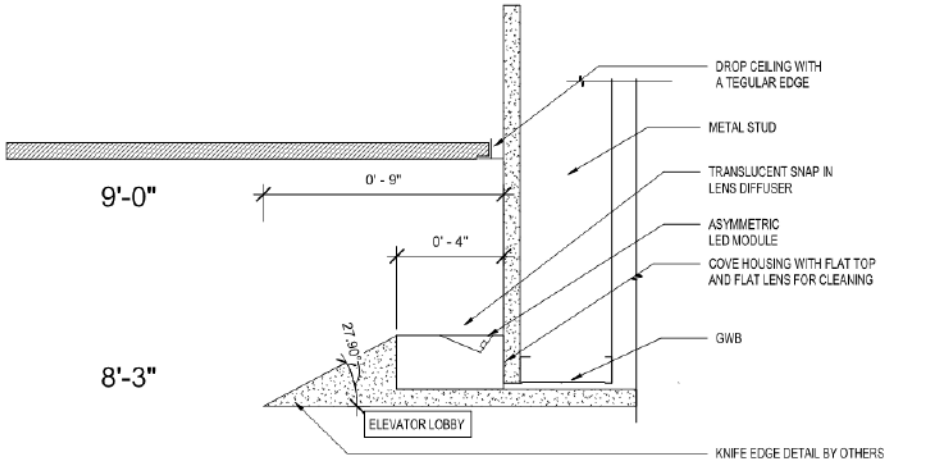
Contractor Collaboration | Detailing and Mock-up



2 LIGHTING FIXTURE DETAIL - 02 - KNIFE EDGE FIXTURE "LH3"
3" = 1'-0"

Case Study 3 | Backlit Headwall Panel

Highlights

- Integrating Lighting into 3rd Party Manufactured Element
- Prototyping and Mock-ups: Concept Evolution
- Managing Diverging Priorities: Evaluating an Element's Value to the Project

Initial Design Concept

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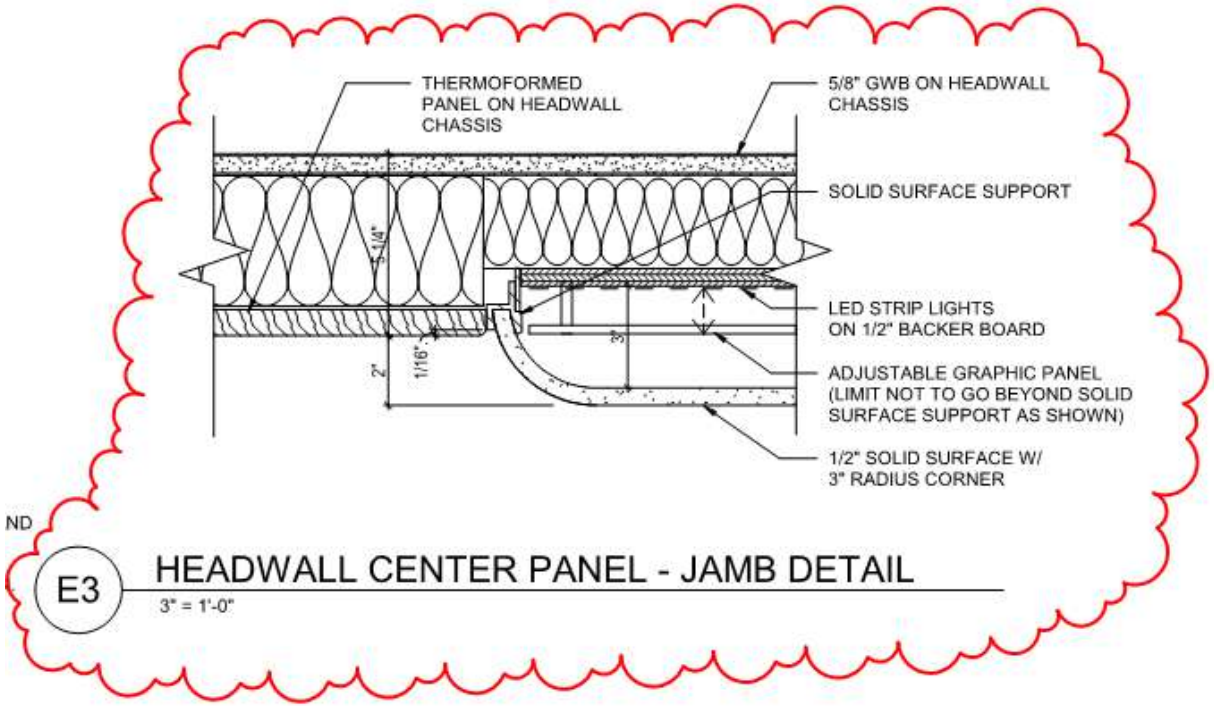
Concept Development | Working with 3rd Party Vendor



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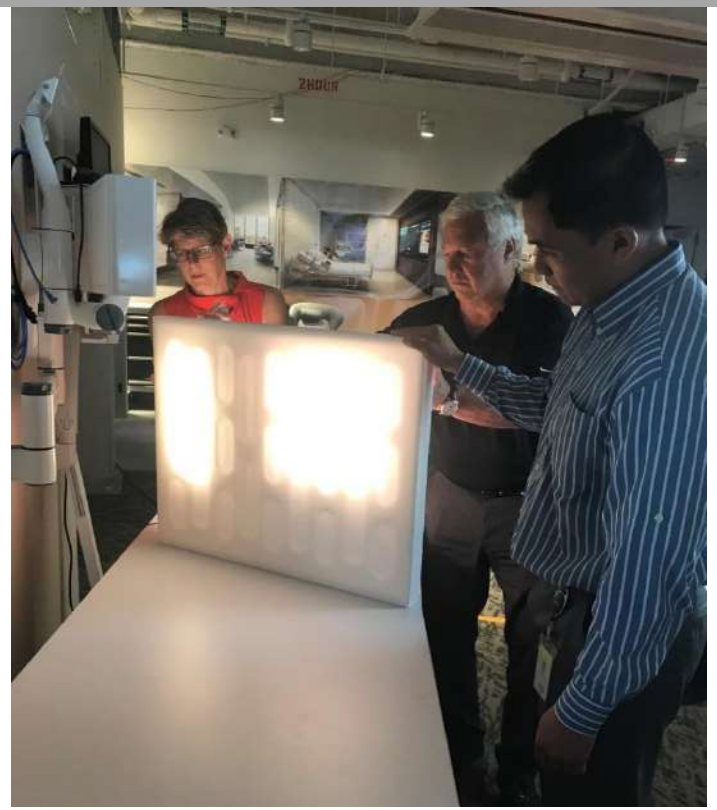
Concept Development | Prototyping + Pattern Studies



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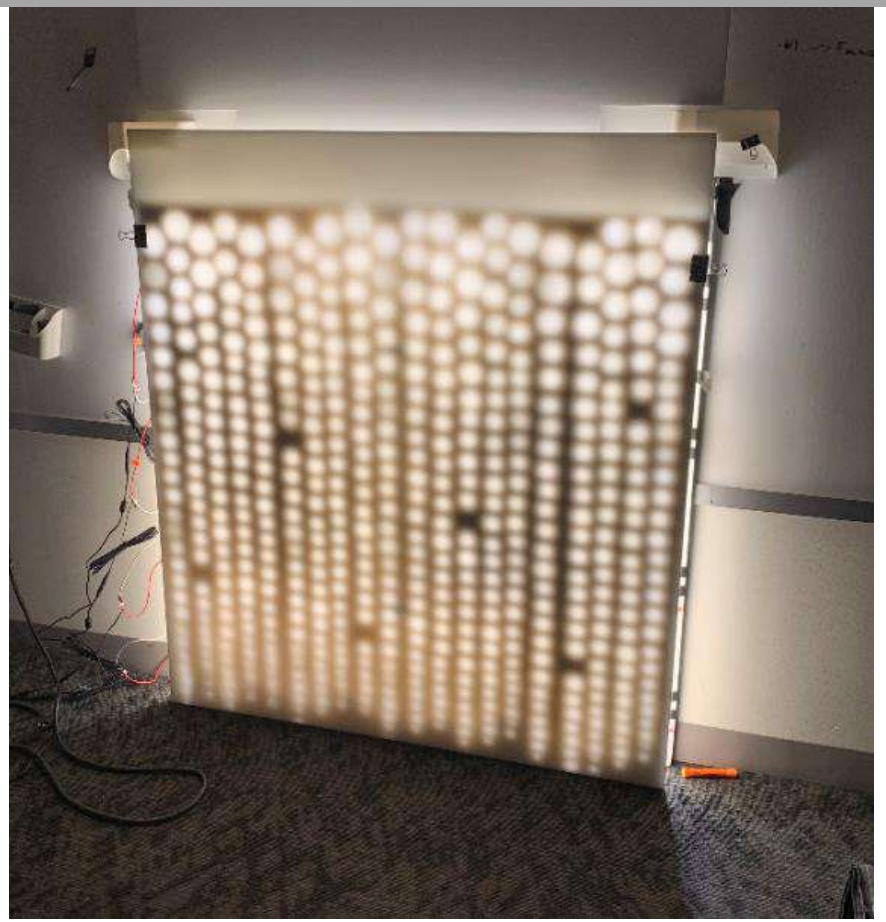
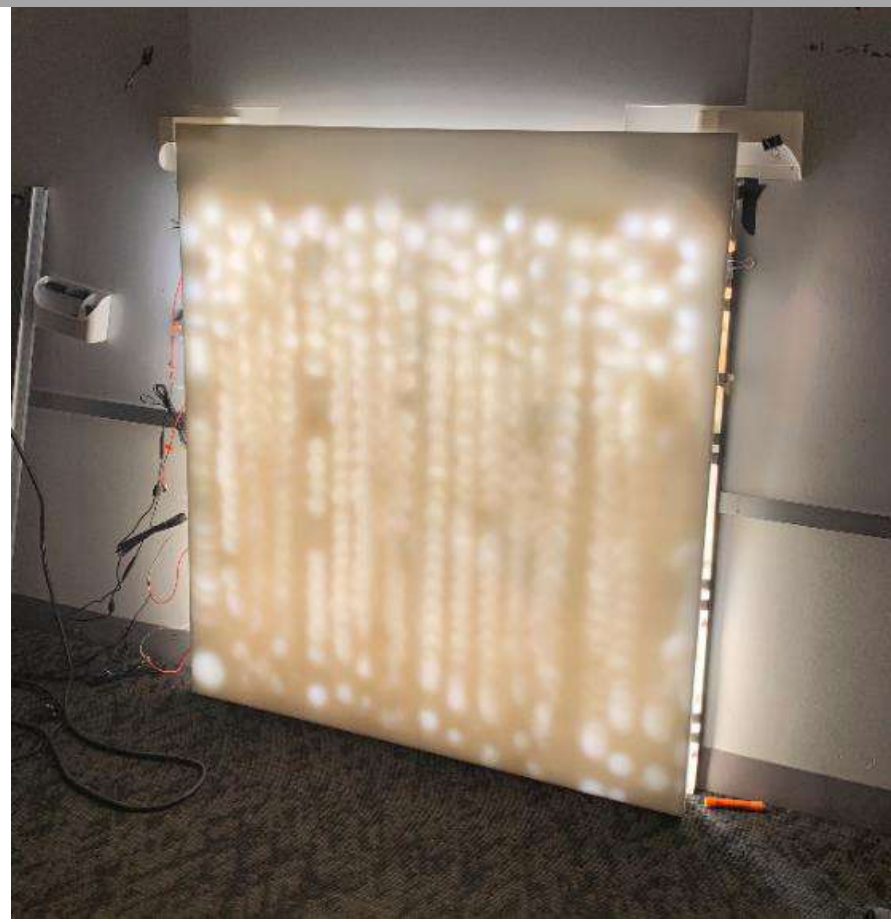
Concept Development | Prototyping + Pattern Studies

Concept Development | Prototyping + Pattern Studies





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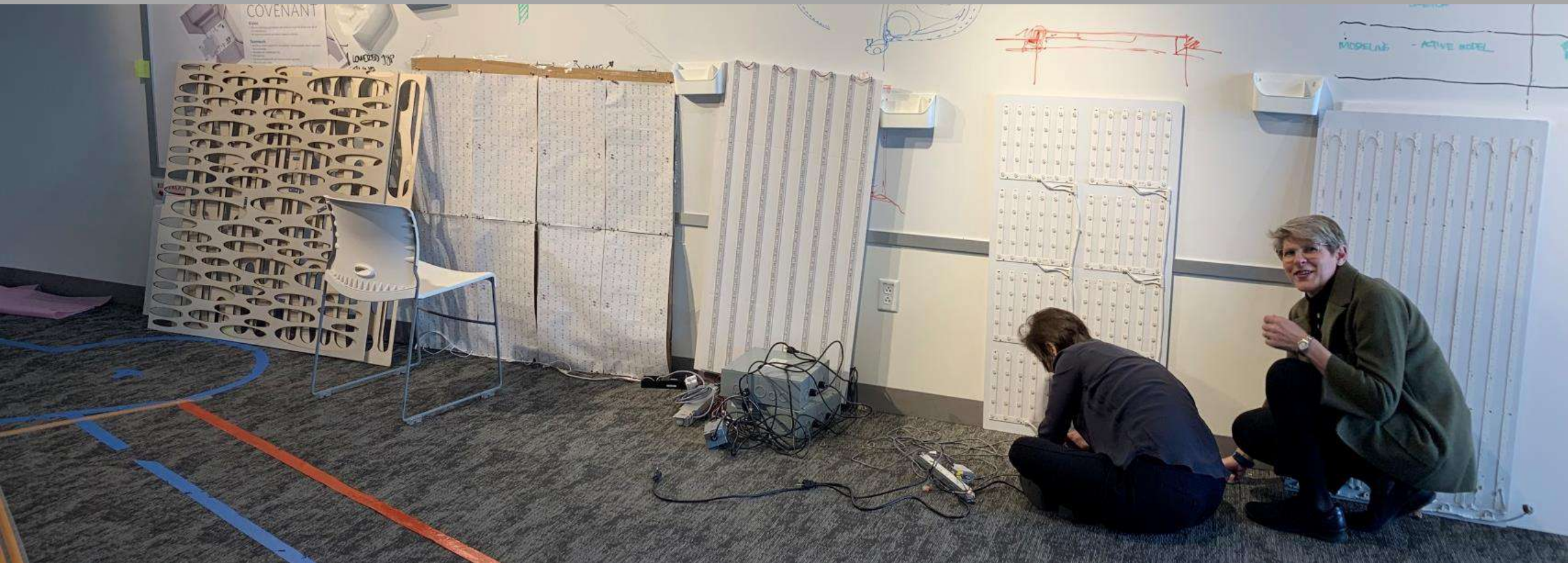
Concept Development | Prototyping + Pattern Studies



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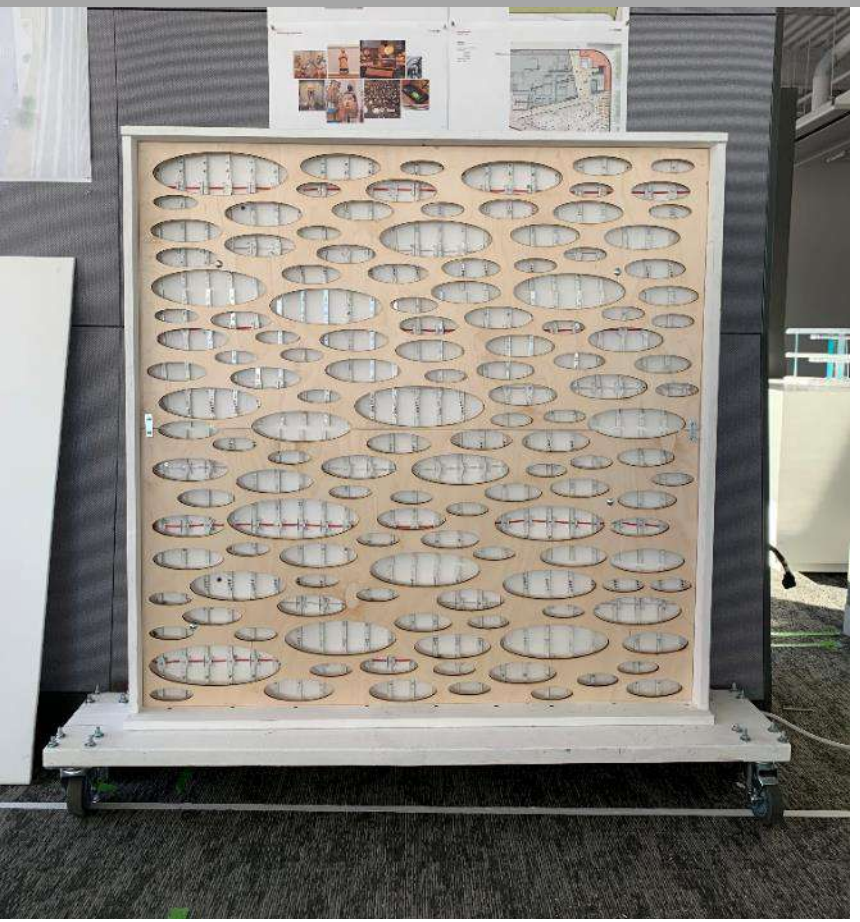
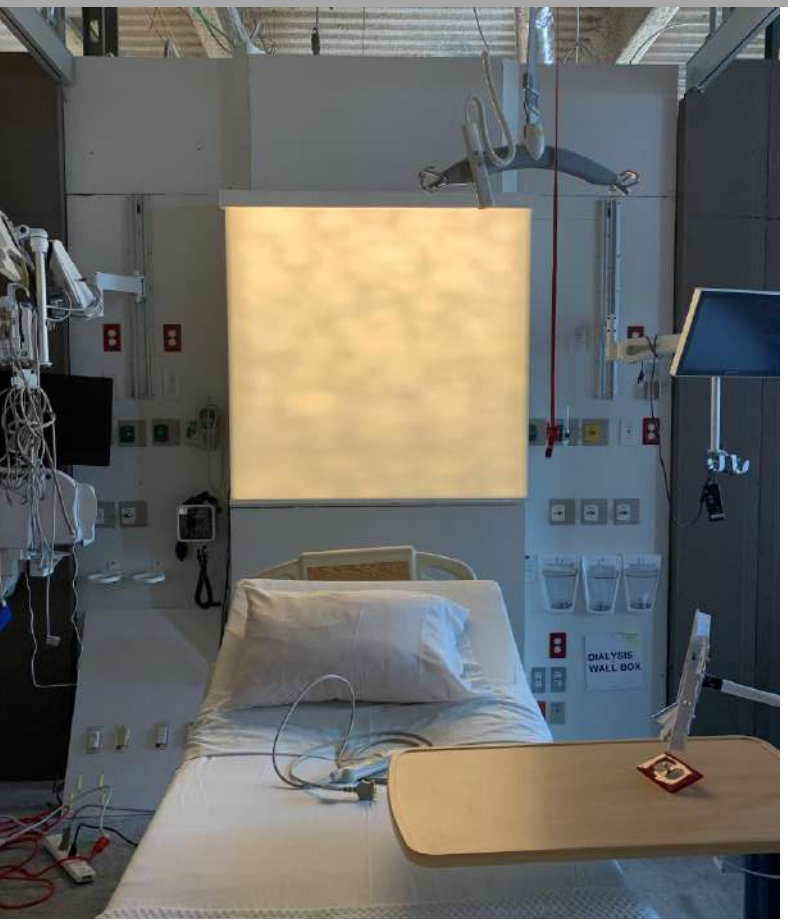
Concept Development | Prototyping + Pattern Studies

Diverging Priorities | Determining Value



Diverging Priorities | Determining Value



Diverging Priorities | Determining Value

IPD Q&A

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This concludes The American Institute of Architects Continuing Education Systems Course

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