

Speaker info



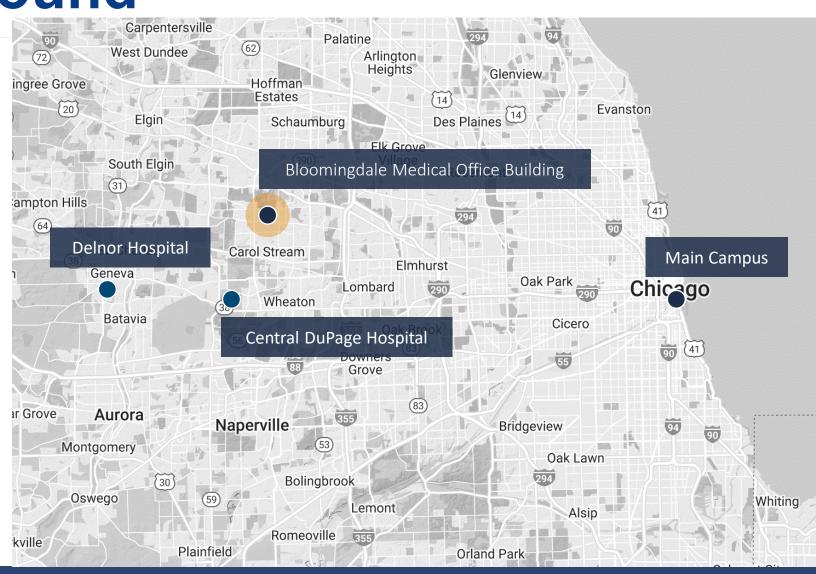
Mary Ann Lukowicz Project Executive The Walsh Group



Andy Lane Senior Vice President Cannon Design

Project Background

 Bloomingdale is in the West Region approx.
 40 miles west of downtown Chicago



Project Background/Problem Statement:

- Northwestern Medicine MOB Bloomingdale, IL
- Care closer to home strategy
- Suburb of Chicago
 - ~40 miles west of main campus
- Speed to market
 - Utilize existing real estate
 - Leverage Pre-fabrication
- 50,000 SF Renovation
- 71 Modular Exam Rooms
- 2 Phases



Project Overview:

- Program Included:
 - Multi-Specialty Clinics
 - Immediate Care
 - Imaging
 - Rehab
- ~50,000 SF Renovation
 - 2 Existing buildings
 - 1990's Retail / Non-descript
- Brand Recognition / Quality
- Limited Presence / Visibility



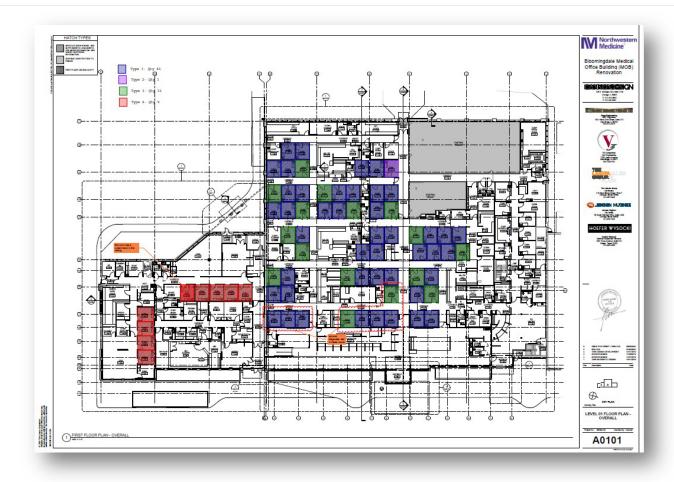
Why Modular:

- Higher Quality Less Defects and Higher Productivity
- Leverage Quality and Technical Labor Effectively
- Increased Safety Less Work Incidents
- Decreased Construction Scheduling Speed to Market
- Quicker Revenue Generation
- Global Supply Chain Advantages

Planning & Design Considerations:

Steps to decide and execute modular

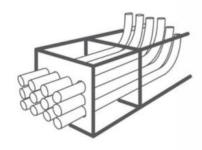
- Early involvement and decision to go modular
- Identify room types for the modular scope:
 - i.e. Exam & Toilet rooms
- Space allocation for modular units double walls
- Maintain consistency in standards and rooms types
- Acoustical separation
- MEP transitions



Modular vs. Prefabrication

Modular

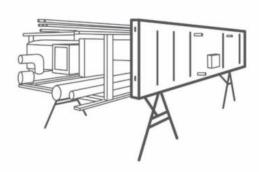
SINGLE TRADE INDIVIDUAL UNITS



PREFABRICATED COMPONENTS

Electrical Kit-of-Parts Stair Towers Doors & Hardware Preglazed Windows

MULTI-TRADE PANELS



PREFABRICATED SYSTEMS

MEPS Racks MEP Risers Headwalls Footwall/Sinkwall

VOLUMETRIC UNITS



SUB-ASSEMBLIES

Bathroom Pods Electrical Closet Pods Office Front Systems Modular Kitchens

VOLUMETRIC STRUCTURES

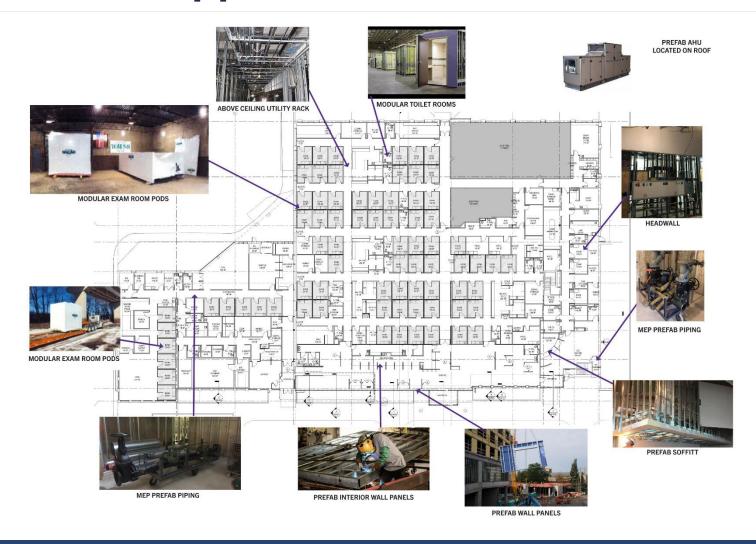


MODULES

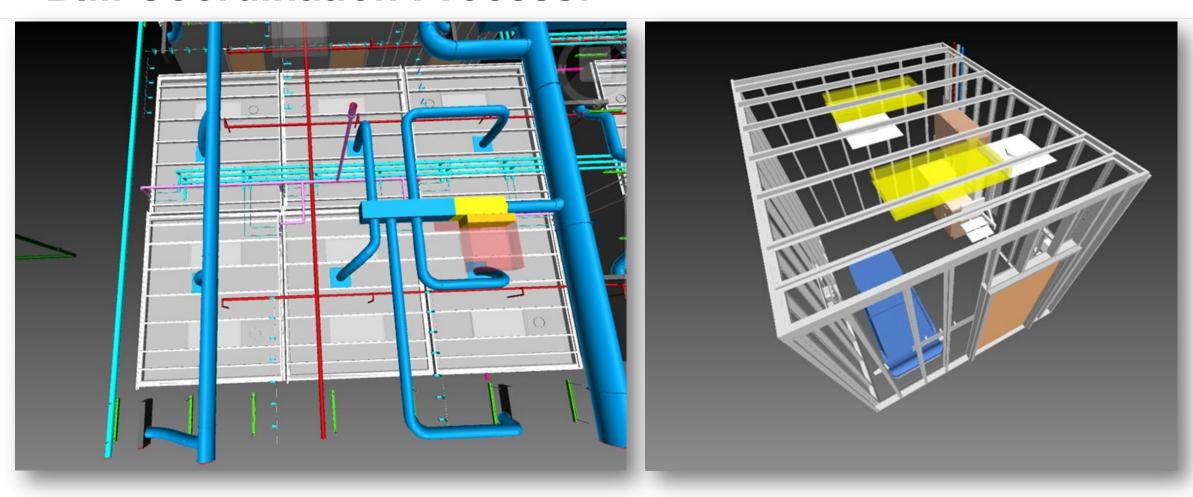
Modular Stacks Mechanical/Electrical Penthouses Patient Rooms Super Skids

INCREASING SCALE AND COMPLEXITY

Modular / Pre-fab Opportunities:



BIM Coordination Process:

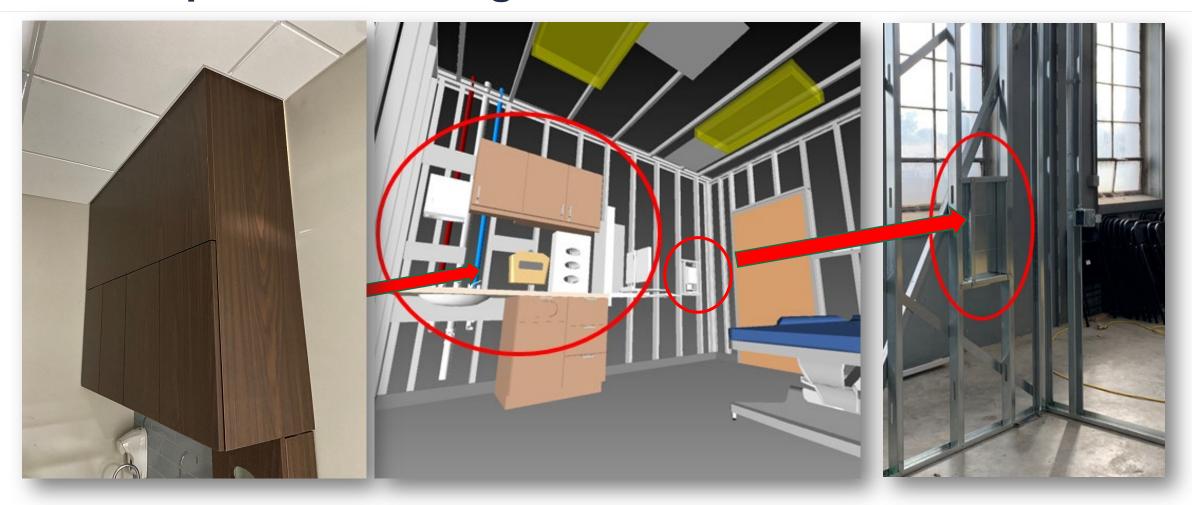


Onsite Mock-Up Review:



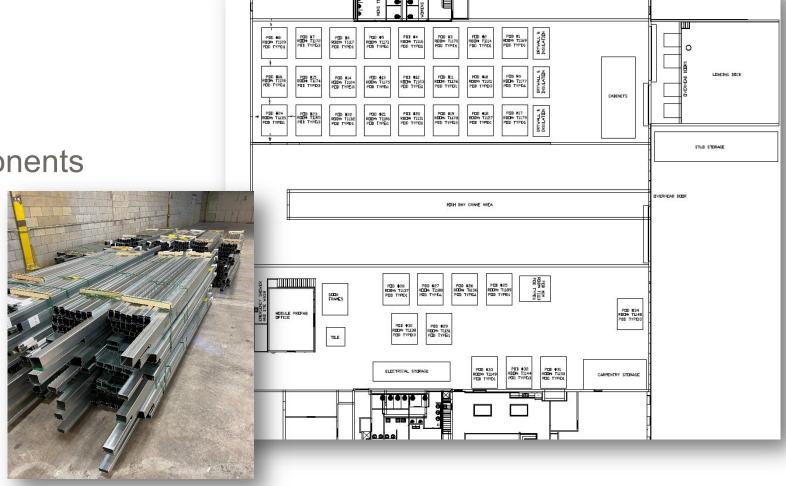


Mock-Up Review Changes:

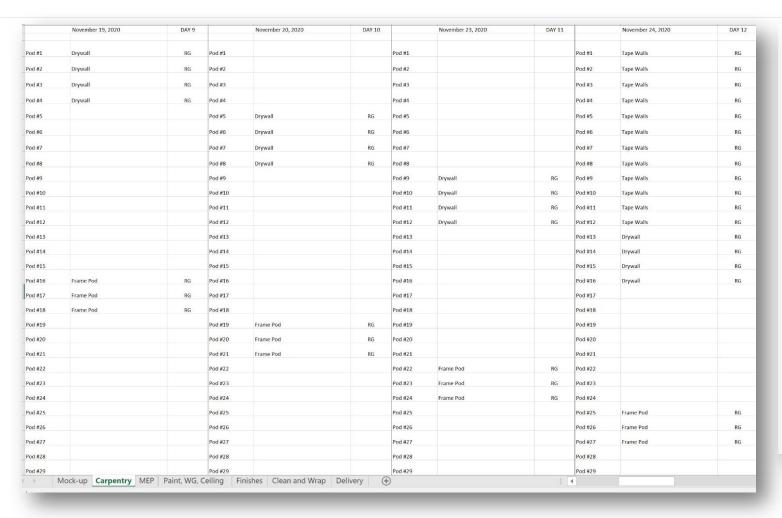


Fabrication Process:

- Workflow / Scheduling
- Minimal Crew Sizes
- Controlled Environment
- Prefabrication of Components
- Less Waste
- Quality Control
- Safety



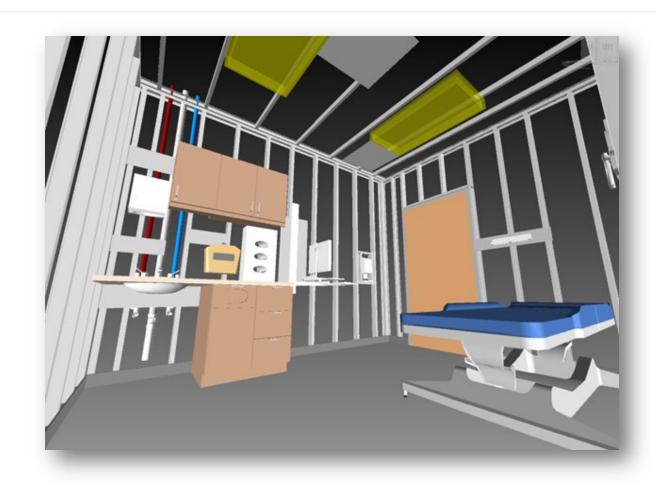
Fabrication Process:

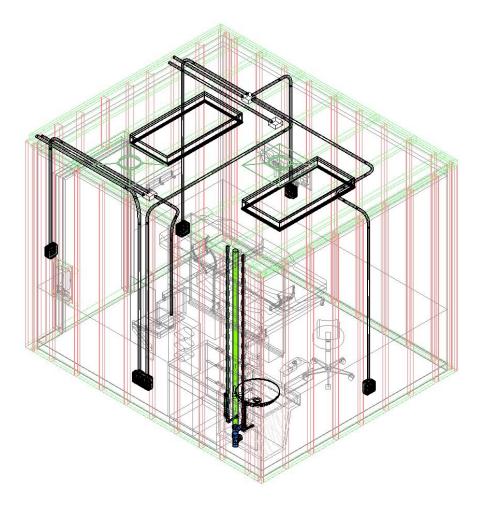


M Bloomingdale Q/C CHECKLIST	
DD INFORMATION	
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oom # T1175	
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(IM Bloomingdale Q/C CHECKLIST OD INFORMATION OD # 13 oom # T1175 ype: 1 elivery #

PLUMBING & ACCCESORIES	INITIALS	DATE
Lavatory rough is installed level/straight and soldered throughout. There should be no contact with cut studs & piping.		
All PVF has been pressure tested and report is on file.		
Hammer arrestors installed in hot & cold water lines above ceiling grid.		
Lavatory faucet and supplies have been installed. Faucet is free from movement.		
Lavatory overflow has been trimmed to avoid kinks.		
Notch bottom & top track for waste.		
All water piping has been insulated with 1" in wall.		
Soap dispenser is installed at specified height and free from defects.		
Hand sanitizer dispenser is installed centered in niche and free from defects.		
Sharps dispenser is installed at specified height and free from defects.		
Computer bracket is installed at specified height and free from defects.		
Coat hook is installed at 4'-6" OC and free from defects.		
Diagnostic set is installed at specified height and free from defects.		

Fabrication Process:







Jobsite Considerations

- 1. Preparation
- 2. Offloading
- 3. Sequencing / Phasing
- 4. Installation
- 5. Cost/Schedule



Jobsite Considerations – Preparation



Single Source Layout



Floor Levelness (25) / Floor Flatness (20) Flatter the better

<u>Jobsite Considerations – Preparation</u>

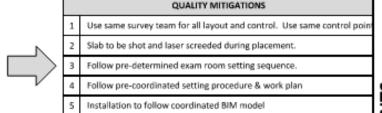


TOP FIVE SAFETY CHALLENGES								
1	Rigging & Offloading the exam rooms off of the truck]						
2	Strains & sprains from rolling & setting the exam rooms in place]						
3	Tripping hazzards]						
4	Ladder use while hooking up the exam rooms	1						
5	Pinch points and cuts to hands	1						

>	1	Qualified riggers, flag off area & stay clear of overhead flying loads
	2	Stretch & flex in the morning and don't over exert during placement.
	33	Maintain a clear pathway from the truck to the setting point
	4	Inspect ladder and user properly at all times. Proper ladder set up.
	5	Wear proper gloves for the task.

SAFETY MITIGATIONS

TOP FIVE QUALITY CHALLENGES										
1	Layout of the pods and underground plumbing stub up placement.									
2	Slab to be level withing 1/4" in 10'									
3	Don't block locations for plumbing connections									
4	No damage to walls or finishes during placement of exam rooms.									
5	Coordinate O/H MEP locations with pre-fabricated exam rooms.									



Above Ceiling - No Fly Zone

Work Planning

STEP	HOLD POINT (Y/N)	WORK PLAN PROCEDURE (STEP-BY-STEP)	CREW / SUBCONTRACTOR	DRAWING / ATTACHMENT	SAFETY HAZARD
1	N	Review daily THA, do strectch and flex, complete quality discussion and review work plan.	IDI		
2	N	Modular units arrive on site. Shrink wrapped. Three per truck. Hill Group and Walsh open shrink wrap and inspect exam rooms for any damage or defects from shipping	Hill Group & Walsh	A0201, Shop Drawings	Utility knife to cut shrink wrap. Ladder to access PODS
3	Y	All parties sign off on accepting of the units.	Hill Group & Walsh	A0201, Shop Drawings	
4	N	Set up Iuli and rig up exam rooms	IDI	Shop Drawings for rigging points	Equipment use, rigging, ladder use to rig the units

Jobsite Considerations - Offloading



Access Into Building



Access Into Site

Jobsite Considerations - Offloading



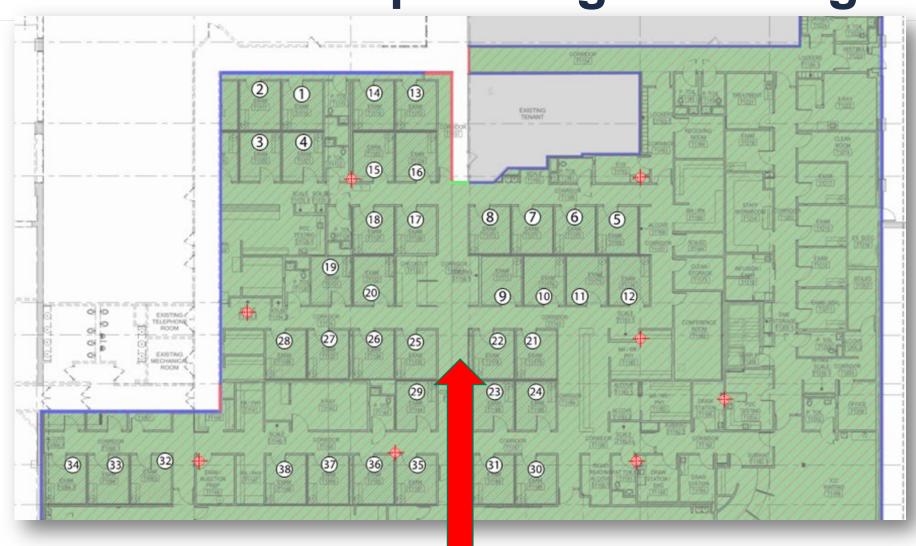
Transfer of Custody - Inspection Process



Pod Transport

Jobsite Considerations – Sequencing / Phasing

- Phase 1
- 36 Total Pods
- Set 12 pods/day



Jobsite Considerations – Sequencing / Phasing

- Phase 2
- 35 Total Pods
- Set 6 pods/day



Jobsite Considerations – Installation

- Set pod in place 15 minutes
- Plumbing Connections
 - 30 minutes
 - Inspector was onsite to witness pressure tests
- HVAC Connections 5 minutes
- Electrical Connections –
 10 minutes
- Fire Protection dropped head in ceiling tile





Cost Analysis

Trade		e Bid w/ Modular Exam Rooms	Star	ndard/Stick Built	Bid using DIRTT Wall Panel System					
Demolition	\$	687,110.00	\$	687,110.00	\$	687,110.00				
Concrete - Floor Prep	\$	867,123.00	\$	867,123.00	\$	867,123.00				
Metals	\$	613,609.00	\$	613,609.00	\$	613,609.00				
Carpentry	\$	204,684.00	\$	313,771.00	\$	25,000.00				
Architectural Woodworking	Š	562,452.00	Ś	851,452.00	Ś	23,000.00				
Casework and Countertops		v/ arch woodwork		// arch woodwork	0.0407	v/ arch woodwork				
Thermal and Moisture Protection	\$	1,066,758.00	\$	1,066,758.00	\$	1,000,000.00				
Doors, Frames and Hardware	\$	162,789.00	\$	197,525.00	\$	25,000.00				
Glass and Glazing	\$	785,407.00	\$	785.407.00	\$	785,407,00				
Gypsum Drywall	\$	1,344,411.00	\$	1,874,011.00	\$	80.000.00				
Ceramic Tile	\$	120,640.00	\$	157,120.00	\$	120,640.00				
VCT and base	Š	572.873.00	\$	572.873.00	\$	572.873.00				
Carpet and base		I w/ VCT & base	incl w/ VCT & base			w/ VCT & base				
Acoustical Ceiling		l w/ Gyp Board		l w/ Gyp Board		477,110.00				
가는 이 100개를 가게 100% 보고 1000 NGC (<mark>부</mark> .					\$					
Painting	\$	236,175.00 1.587,229.00	\$	262,925.00 166,153.00	\$	236,175.00				
Specialties						163,105.00				
Window Treatment	\$	14,344.00	\$	14,344.00	\$	14,344.00				
Fire Protection	\$	215,000.00	\$	215,000.00	\$	215,000.00				
Plumbing	\$	819,710.00	\$	1,145,710.00	\$	700,000.00				
HVAC	\$	1,339,250.00	\$	1,363,250.00	\$	1,039,250.00				
Electrical (not including fire alarm)	\$	1,601,861.00	\$	1,781,861.00	\$	1,401,861.00				
Fire alarm	\$	23,720.00	\$	23,720.00	\$	23,720.00				
Nurse Call	\$	187,150.00	\$	187,150.00	\$	187,150.00				
Telecommunications/Data	\$	242,550.00	\$	242,550.00	\$	202,550.00				
Security	\$	185,000.00	\$	185,000.00	\$	165,000.00				
DIRTT Wall System	\$		\$		\$	5,281,650.00				
Overtime Allowance		n/a		n/a		n/a				
Permits & Government Fees	\$	160,000.00	\$	160,000.00	\$	160,000.00				
General Conditions Costs	\$	458,916.00	\$	458,916.00	\$	458,916.00				
Contingency (GMP Contracts only)	\$	770,000.00	\$	770,000.00	\$	770,000.00				
Contractor Fee Payment and/or Performance Bond (if applicable identify for which trade)	\$	384,678.00	\$	384,678.00	\$	384,678.00				
TOTAL BID/CONTRACT SUM/GMP	\$	15,213,439.00	\$	15,348,016.00	\$	16,657,271.00				

- Evaluated Cost Options
- Best value to go with modular
- Approximately \$100,000 construction cost savings

Schedule Analysis

							:		:	: :			: :			: :		: :			
Interior Buildout (Phase 1B)		237	05-Aug-20 A	06-Jul-21																	
A2590	Demo Phase 1B	15	05-Aug-20 A	12-Aug-20 A		1		7	7		•	Der	no P	hase	1B	[777			T
A2740	NM Abate ACM Flooring Materials	15	12-Aug-20 A	24-Aug-20 A	Н						- 1	■¦ NI	ЙΑЬ	ate A	сім≀	- loor	ng Ma	aterials			
A2630	Demo SOG Phase 1B	10	18-Aug-20 A	21-Aug-20 A	Н							₽De	mo	soģ i	Phas	e 1B		1 1			
A3070	Install U/G Electrical, Inspect & Backfill	15	08-Sep-20 A	16-Sep-20 A								•	Inst	all 🖟/(G Ėle	dtrica	ıl, İnse	oect &	Backfill		
A3340	Install U/G Plumbing, Test, Inspect & Backfill	10	23-Sep-20 A	12-Oct-20 A	L	į.		. j	į								· •		nspect		dill
A3080	Backfill, Prep and Pour Slab on Grade	10	19-Oct-20 A	22-Oct-20 A	П	1		7	1			T	•	Back	dill, P	rep a	ind Po	our Slai	bon G	rade	T
A3090	Layout walls & shoot top track	10	02-Nov-20 A	13-Nov-20 A	Н									- ∤.a	aybu	wall	s & sh	oot top	track		
A3100	O/H MEP Rough-In	20	12-Nov-20 A	01-Dec-20 A	H						i		1	=	ОįН	МЕР	Raug	gh-In			i
A3110	Set 36 modular exam rooms	10	04-Jan-21 A	14-Jan-21 A	H										!	Set	36 m	odular	exam n	oonis	

- Eight-week savings to schedule
- Schedule Challenges
 - Phasing
 - Existing building conditions

Prefabrication Advantages:

- Schedule Compression
- Cost reduction
- Reliability on cost and schedule
- Competitive quality of manufactured product
- Long-term sustainability and building operating expense savings
- Daily productive hours increased compared to site
- Waste reduction/materials/recycle
- Inspections completed early in shop
- Truck deliveries minimized
- Dust and debris mitigation
- Safety 10,000+ man-hours removed from site
- Quality averaged < 1 punch list item per pod
- Supply chain improvements



Lessons Learned

Design

- Standards Important: Review of any deviations from facility standards early on in design process
- Early User Agreement on the exam room standard to avoid changes later
- Onsite Mock-up. Three versions of rooms reviewed
- AHJ Education

Fabrication

- Minimized crews with COVID-19 (Safety and Quality)
- Bulk purchasing/supply chain
- Team consistency
- Material adjustments

Construction

- Logistics: Plan and review how the pods laid out and coordinate with local MEP trades
- Review shop drawings to confirm consistency with other vendors building non-modular, but similar rooms for same details
- Inspect mock-ups and reinspect any changes before final approval

How can you apply this tomorrow?

- Developing standards helps with uniformity
- Find the right partners
- Have the right culture in place

25 YEARS OF LEARNING: SUPERCHARGE YOUR LEAN JOURNEY IN THE MOTOR CITY









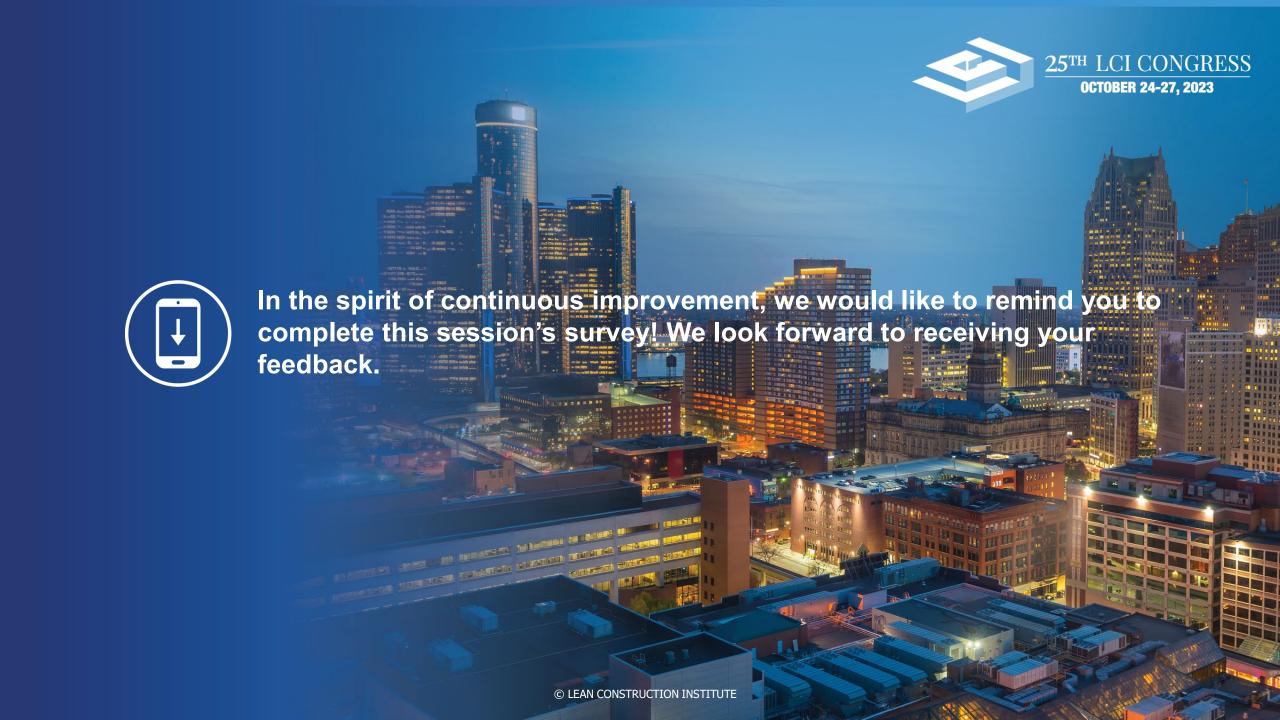












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