

26TH ANNUAL



26TH LCI CONGRESS
OCTOBER 22-25, 2024

Quit Bringing Sand to a Beach: **A study of lasting A3's**

Adam Kouri, Thomas Harper, Steve Haemmerle, Tyler Campbell

SURFING THE WAVE OF LEAN DESIGN AND CONSTRUCTION

October 24, 2024

Who Are These Handsome Gentlemen?



Thomas



Steve



Adam



Tyler



Problem Statement

Lack of decisions are a catalyst for waste, and this is the biggest issue many project teams face. Countless teams attempt to drive sound decision-making by doing A3's without truly understanding the purpose, process & value it brings. **If you need a decision made, “just do an A3” is not necessarily the answer.**



- Too much time on an A3?
- Approved by the wrong person?
 - A3 approved too late?
- Whose Court is the Ball in?
- Unclear on when to do an A3?

Eight Types of Waste

-  **Over/Under Production**
-  **Waiting**
-  **Unnecessary Transportation**
-  **Over Processing**
-  **Excess Inventory**
-  **Unnecessary Motion/Effort**
-  **Defects**
-  **Unused Creativity of Team Members**
(teammates check out)



Not Always Calm Seas



Collocation Plan (Logistics Continued)

Atrium Health Project Big Room Layout
DPR Rodgers has reviewed the collocation study prepared by Little Diversified Architectural Consulting in preparation for this project. Our collocation plan aligns well with Option 6 with the caveat that we feel that more space is required for the size of the team and good working space to truly achieve the results and meet the expectations set forth in the project approach document. By adding a second floor and expanding the work areas we not only create a viable long term space for Atrium Health, we create a best in class space for collocation and the additional 8,000 SF will be well utilized. Our plan as shown in greater detail in the RFQ response and linked on this page allows our high performing team to integrate seamlessly with the high performing team already assembled by Atrium.

- First Floor**
- Main Seating Area including the Big Room which will be 60' x 118' and will accommodate 120-125 people comfortably
 - Seating will be arranged in Cluster Groups

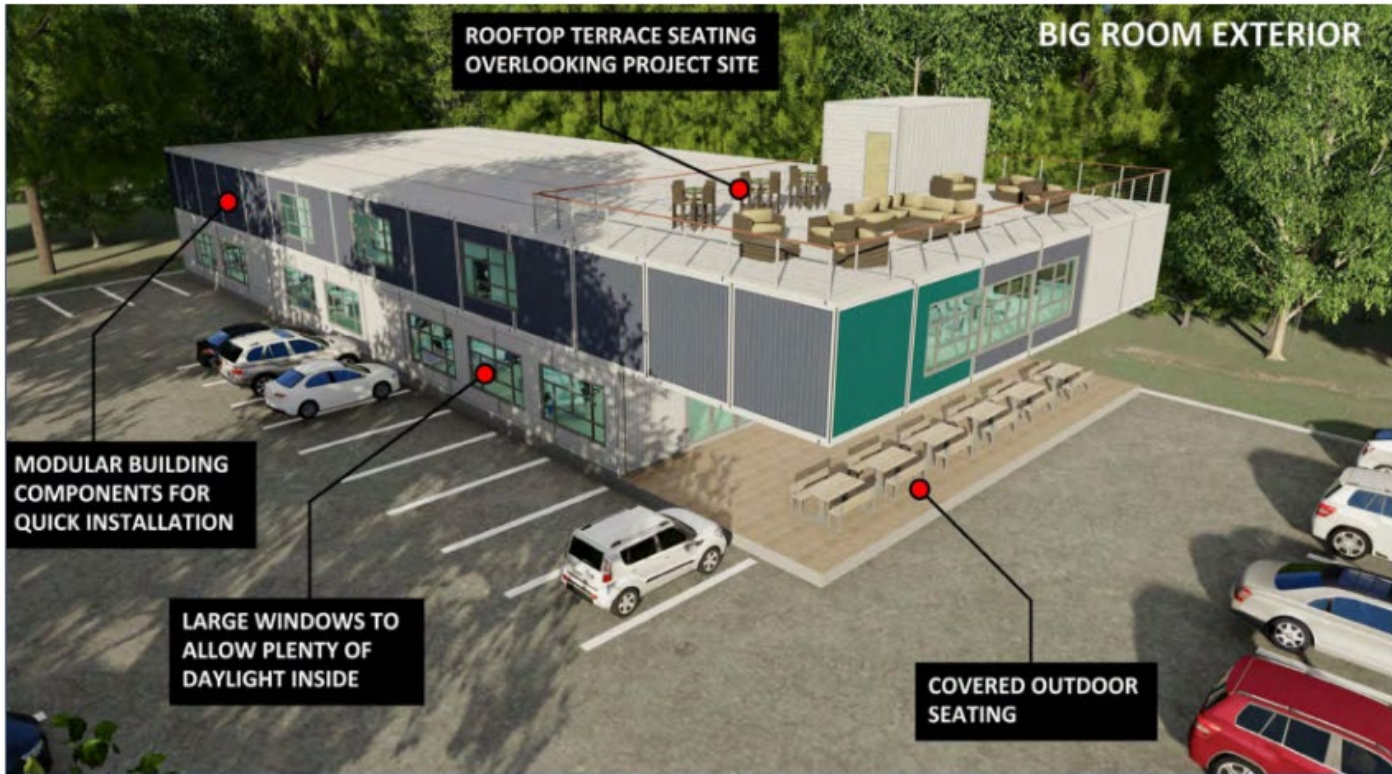
- Second Floor**
- Large conference room measuring 40' x 60' to fit the entire team
 - Conference room can be divided by movable partitions to accommodate smaller spaces and more flexible meeting spaces
 - 5 smaller breakout conference rooms
 - Several open meeting spaces in the center of the space for more casual and flexible meeting options.
 - Bathrooms, IT closet, workout space and break room

Make it fun. The collocation space includes fun team building locations like a rooftop terrace which team members can enjoy outdoor seating while looking out over the project site. There is also covered outdoor shade seating on the first floor near the main entry of the Big Room under the overhang.

Modular and Sustainable Construction of the Big Room
Instead of a traditional trailer compound or metal building, we propose a prefabricated modular solution for the Big Room space. This customizable solution will accelerate establishing the Big Room and can also be reused and re-purposed once the project is over. With natural light in mind, the space will have large operable Energy Star windows and utilize sustainable materials creating an enjoyable, productive, and healthier workspace fostering productivity and collaboration. By using materials such as cement fiber panels for the exterior rather than traditional trailer panels, there will be reduced heat absorption and increased energy efficiency while still delivering a comfortable work space. With such a large, diverse group of team members, it is extremely important that the space is enjoyable to work in so they look forward to working in the collocation space and prioritize the Big Room. We will promote a high performance team by building a high performance space.



Click above or visit the link below to view.
<https://dpr.box.com/s/cz32f7sc1dfaolmrwpp2xhumipcqgfg>



DPR Rodgers | 27


Wrong Stakeholders Involved

Not Always Calm Seas



Disagree & Commit

53
pg 1

**Atrium Health**

TITLE : A3 #53 MRL VS MACHINE ROOMS FOR ELEVATORS IN CR ONLY


DATE : 04/20/2020

CHAMPIONS : KARL SCHANTZ AND DENNIS FORD

REVISION : 06/24/2020 PER 06/23/2020 MEETING

OBJECTIVE:
DETERMINE IF ELEVATORS IN THE CR WILL BE MACHINE ROOM OR MRL

BACKGROUND:
THERE ARE TWO TYPES OF ELEVATOR MACHINE CONFIGURATION.
1. TRADITIONAL ELEVATORS WITH A MACHINE ROOM ABOVE THE HOISTWAY, 1.5 X THE SIZE OF THE HOIST WAY. THE MACHINE ROOM CONTAINS THE MACHINE AND CONTROL PANEL. MONTHLY MAINTENANCE IS PERFORMED IN THE MACHINE ROOM WHILE ELEVATORS ARE OPERATIONAL.
2. MACHINE ROOM LESS (MRL) WITH A CASSETTE AT THE TOP OF THE HOISTWAY AND MAINTENANCE CONTROL PANEL EITHER IN THE JAMB OF THE ELEVATOR OR REMOTE. MONTHLY MAINTENANCE IS PERFORMED ON TOP OF THE ELEVATOR CAR WITHIN THE ELEVATOR SHAFT WITH ALL ELEVATORS IN THE SAME SHAFT SHUT DOWN.
3. MRL WAS FIRST USED 15 YRS AGO IN CONDOMINIUMS, THEN IN SMALL OFFICE BLDGS
----- SEE NEXT SLIDE -----

DRAWINGS/DIAGRAMS OF THE CURRENT CR ELEVATORS:

7 Elevator configuration 1500 SF of Machine Room

GOALS / FUTURE STATE:

- PROVIDE ELEVATORS TO CARRY PATIENTS, VISITORS AND STAFF, AND SUPPLIES/FOOD FUNCTIONALLY SEPARATED WITH MINIMAL WAIT TIME.
- MAINTENANCE IS CONVENIENT AND INVISIBLE TO PATIENTS, VISITORS AND STAFF.
- LOW FIRST COST (MRL WERE BUDGETED AND WHAT IS CURRENTLY IN THE ESTIMATE)
- SUSTAINABLE – LOW ENERGY CONSUMPTION, LONG LIFE, AND LOW LIFE CYCLE COSTS.
- PER A3.045 PATIENTS IN REHAB OPERATE ON TIGHT THERAPY SCHEDULES. HOSPITAL REVENUE DEPENDS ON TIME SPENT IN THERAPY. PATIENTS COME IN WHEELCHAIRS, BARIATRIC CHAIRS, AND HIGH-TECH POWER CHAIRS. THE INPATIENT ELEVATORS ARE CUSTOM FOR THIS.
- PER A3.045 ELEVATOR TRAFFIC FEASIBILITY STUDY, THE 2 INPATIENT ELEVATORS FALL SHORT AT 8.6% OF THE DESIRED 12% HANDLING CAPACITY. THEREFORE, IN-PATIENTS WILL ALSO NEED TO USE THE 2 SERVICE ELEVATORS. THE SERVICE ELEVATORS ARE A DIFFERENT SIZE AND SHAPE. THIS STUDY DID NOT ACCOUNT FOR ADDITIONAL DOWNTIME OF MAINTENANCE AND REPAIR OF THE MRL SERVICE ELEVATORS.

ATTRIBUTES & KEY INFORMATION:
MACHINE ROOM PROS (30 YR LIFE SPAN)

- LESS MAINTENANCE
- LESS DOWNTIME
- LESS PROPRIETARY
- EASIER TO FIND PARTS
- LONGER LIFE SPAN OF 30 YRS
- CAN SEE MACHINE MOVEMENT, TO TROUBLESHOOT PROBLEMS, WITHOUT SHUTTING DOWN THE ELEVATOR

MRL PROS (20 YR LIFE SPAN)

- USES MUCH LESS SPACE
- USES LESS ENERGY, UP TO 50%, DUE TO SMALLER HP MOTORS, LESS ROOM TO COOL, FEW LIGHTS
- HAVE ~9' LESS OF OVERRUN/MACHINE ROOM SPACE

MRL CONS

- DIFFICULT TO ACCESS THE MACHINE ASSEMBLY. TECHNICIAN MUST STAND ON TOP OF THE ELEVATOR CAR IN ORDER TO ACCESS MACHINE ASSEMBLY. MAINTENANCE IS REQUIRED MONTHLY AND WILL SHUT DOWN ALL ELEVATORS IN THE SHAFT.
- MAINTENANCE REQUIRES MORE DOWNTIME, 12 TO 36 HRS OF DOWNTIME PER ELEVATOR PER MONTH PER LIFE OF BLDG
- MAINTENANCE IS MORE EXPENSIVE. OPERATIONS WILL PAY 200% TO HAVE WORK PERFORMED AFTER NORMAL HOURS
- REMOTE CONTROL PANELS DO NOT PERMIT VIEW OF ELEVATOR MOVEMENT (YOU CAN'T SEE THE SHEAVE TURNING)
- EXTREMELY PROPRIETARY EQUIPMENT AND CONTROLS. "OBSOLETE PARTS" ARE COMMON WITH PROPRIETARY ELEVATOR EQUIPMENT AND THESE PARTS MUST BE REPLACED WHEN MANUFACTURE DEEMS THEM TO BE OBSOLETE. SOME AS EARLY AS THREE YEARS. SOME REQUIRE THE REPLACEMENT OF ENTIRE ASSEMBLIES (NOT JUST THE OBSOLETE PART).
- LESS LIFE (LIFE IS ONLY 20 YEARS VS. 30 YRS FOR MACHINE ROOM ELEVATORS)
- COSTLY TO SERVICE DUE TO CONFLICTS BETWEEN ATRIUM HEALTH SYSTEM WIDE MAINTENANCE CONTRACTOR (I.E., KONE) AND ELEVATOR MANUFACTURER (I.E., OTIS). KONE WOULD HAVE TO CALL IN OTIS TO PERFORM MONTHLY MAINTENANCE. GETTING PARTS WILL TAKE LONGER AND WORK ON MRL TAKES LONGER, THEREFORE, ADDITIONAL DOWNTIME

MACHINE ROOM CONS

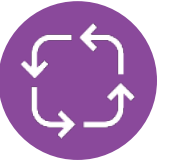
- ADDED HEIGHT TO THE BUILDING
- ADDED AREA TO ENCLOSE, 1.5 X HOIST WAY SF
- MACHINE ROOMS REQUIRE ADDITIONAL EXTERIOR ENCLOSURE
- COST MORE (AND NOT IN CURRENT CR BUDGET)

COST & SCHEDULE INFORMATION:
THERE IS A CONFLICT BETWEEN THE PROJECT BUDGET (MRL) AND THE DESIRED SYSTEM. THE 2 INPATIENT ELEVATORS ARE CUSTOM 6,000 LB ELEVATORS AND WILL HAVE MACHINE ROOMS. THE 4 SERVICE AND OUTPATIENT VISITOR ELEVATORS WILL BE MRL. MACHINE ROOMS ARE NOT CURRENTLY IN THE DESIGN OR BUDGET FOR THESE 4 ELEVATORS, THEREFORE, TO ADD THEM, SEE BELOW SCHEDULE AND COST IMPACTS:

CONCLUSION:
FOUR OF THE SIX ELEVATORS WILL BE MRL WITH MINIMUM SPEEDS OF 350 FPM. PERMANENT SAFETY SCREENS WILL BE INSTALLED BETWEEN ELEVATORS THAT SHARE THE SAME SHAFT. PROPRIETARY SPARE PARTS WILL BE PROVIDED BY VENDOR ALONG WITH A COMPREHENSIVE 5-YR PREVENTATIVE MAINTENANCE (PM) AND REPAIR AGREEMENT.

APPROVAL OF OPTION: APPROVED BY CORE TEAM AND EXEC SWAT ON 6/23/20

ATRIUM GUIDELINES DEVIATION (CHECK YES/NO):
☒ YES ☐ NO



Not Always Calm Seas

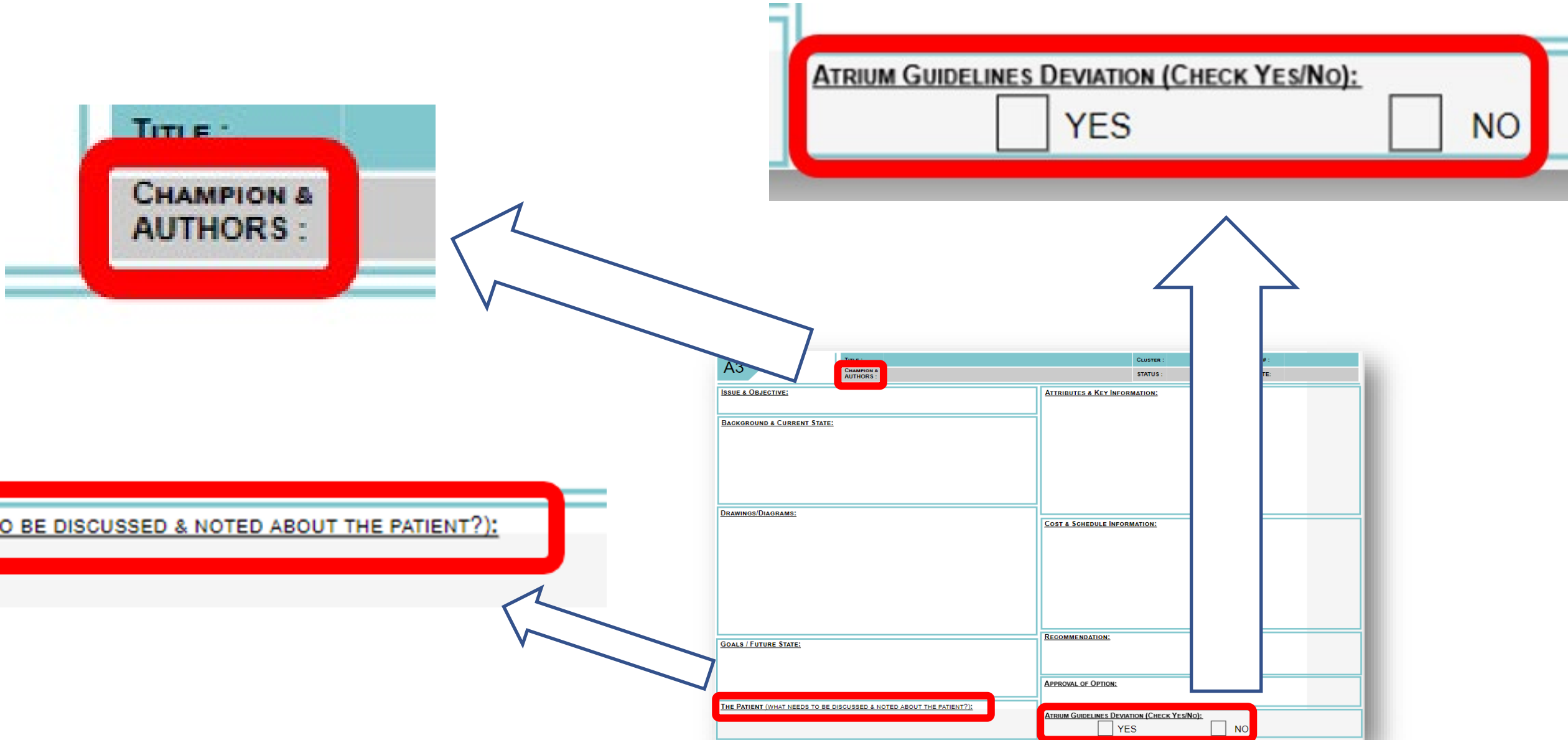
Should Have Memorialized
via A3 Process



Our Journey



Tailored the A3



Alignment Session

Typical reasons to do an A3: Impacts to

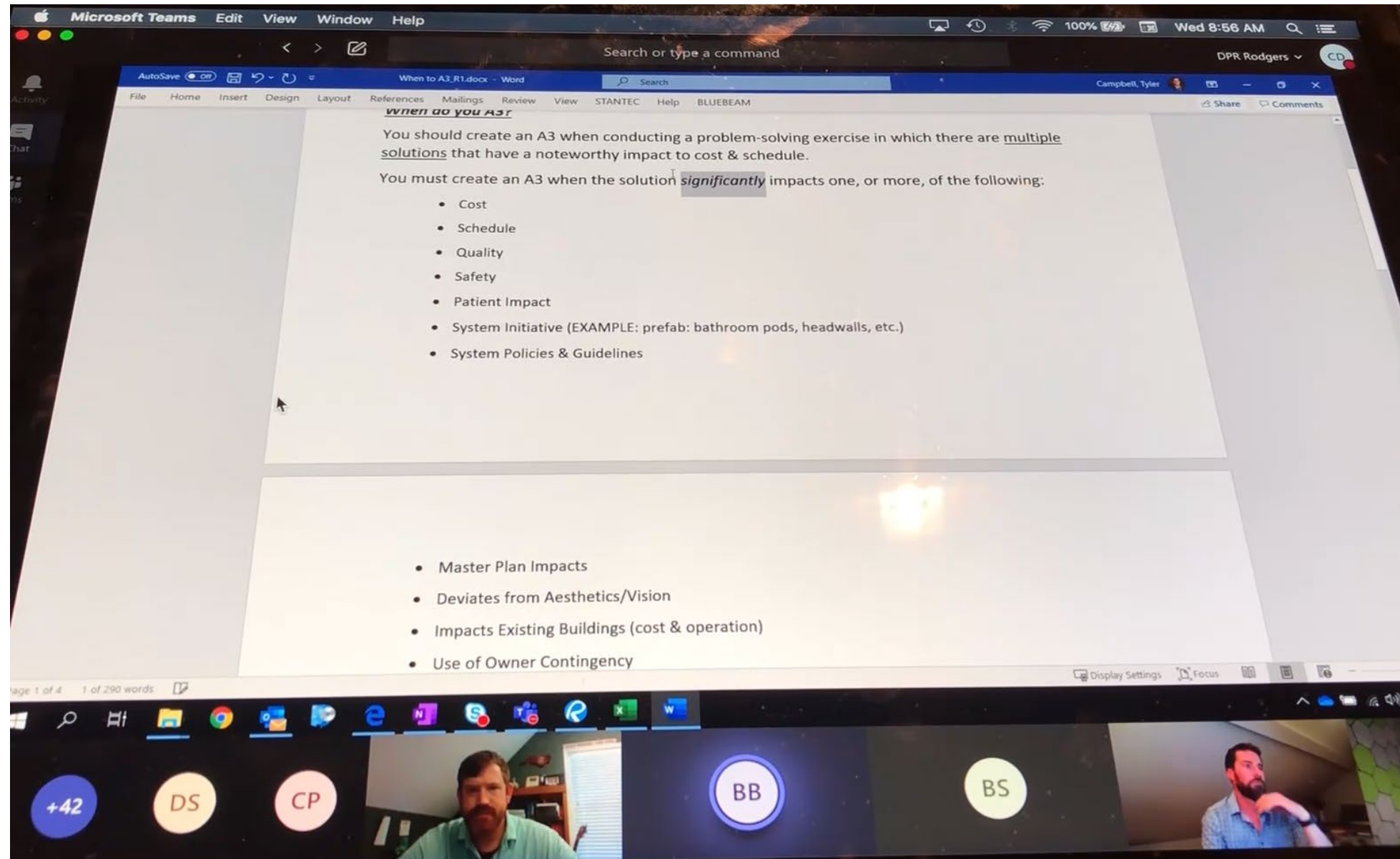
- Scope, schedule, budget



Significantly impacts:

- Quality
- Safety
- Patient Impact
- System Initiative
- System Policies & Standards
- Master Plan Impacts
- Deviates from Aesthetics/Vision
- Impacts existing buildings
- Use of Owner Contingency
- Change to the Program

To A3 or Not to A3...

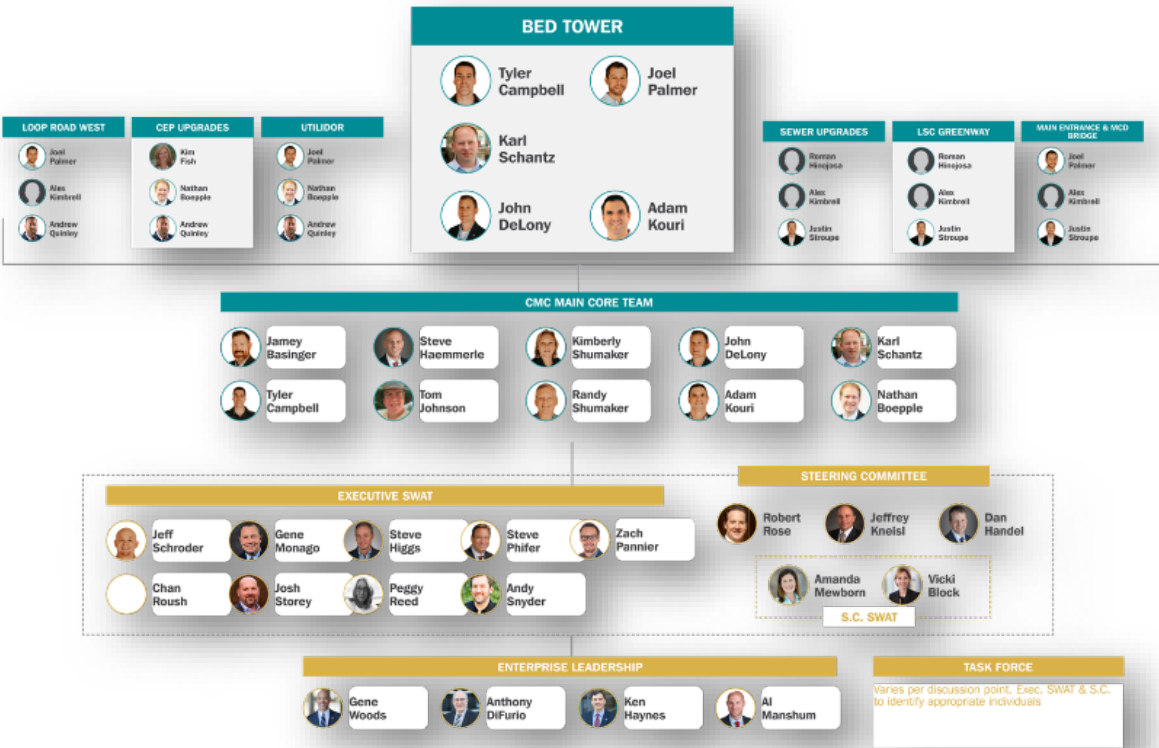
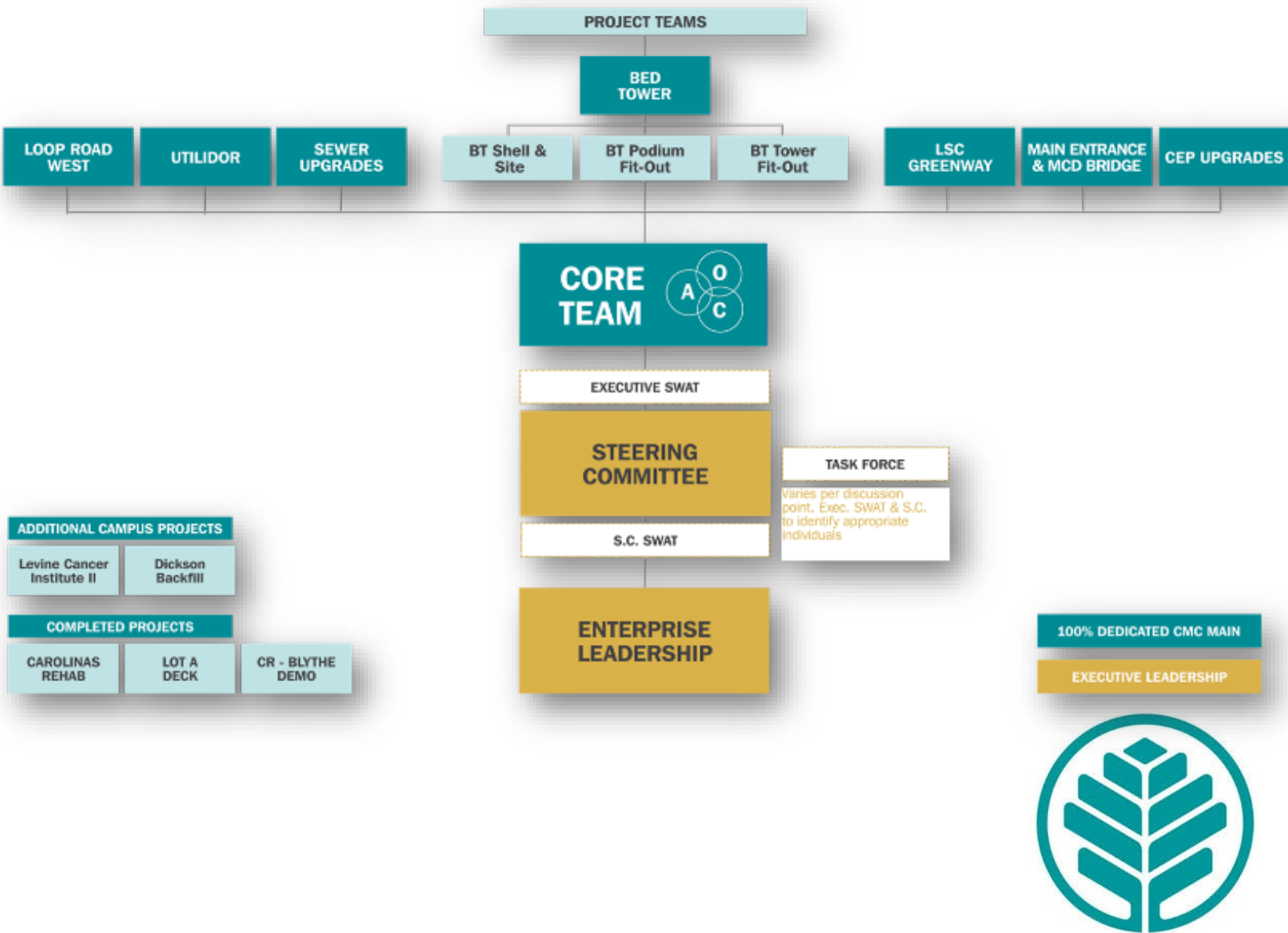


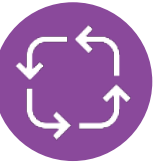
To A3 or Not to A3...

When should you use and A3?	<p>You should create an A3 when conducting a problem-solving exercise in which there are <u>multiple solutions</u> that have a noteworthy impact to cost & schedule. You must create an A3 when the solution <i>significantly</i> impacts one, or more, of the following:</p> <ul style="list-style-type: none">• Cost• Schedule• Quality• Safety• Patient Impact• System Initiative (EXAMPLE: prefab: bathroom pods, etc.)• Master Plan Impacts (<i>long term operational impacts</i>)• System Policies & Guidelines• Deviates from Aesthetics/Vision• Impacts Existing Buildings (cost & operation)• Use of Owner Contingency• Change to the program								
When should you use and A4?	<p>You should create an A4 when capturing <u>design decision(s)</u>. The intent is to provide real time feedback of <u>who</u>, and <u>when</u>, the decision(s) was made, and to share this information with other clusters and end users.</p> <p>Design Decisions would include the following: System Types, Equipment Types, Finish Selections</p> <p>A4's will be used to track <u>Design Evolution</u> decision(s).</p> <p>A4's will help provide the team design decisions when user sign-off is <u>not</u> required.</p> <p>An A4 will be created to memorialize a net-zero budget transfer between clusters</p>								
Decision making authority	<table><tr><td>Project Team</td><td><ul style="list-style-type: none">▪ All A4's, except for net-zero budget transfers▪ All A3's that don't go to Core Team or Steering Committee</td></tr><tr><td>Core Team</td><td><ul style="list-style-type: none">▪ When the Project Team is not in agreement or uncertain as to whether this needs to be elevated beyond the project team▪ Net-Zero budget transfers</td></tr><tr><td>Steering Committee</td><td><ul style="list-style-type: none">▪ Impacts to the following: Cost (\$1M+) (Should this be higher?) & A3's generated for all reasons noted above▪ Deviates from the following: Master Plan, Aesthetics, Atrium Vision</td></tr><tr><td>Enterprise Leadership</td><td><ul style="list-style-type: none">▪ Significant Change in Scope, schedule, budget, aesthetics or operational impact▪ Artwork or Major Exterior Building Signage & Branding▪ What else??</td></tr></table>	Project Team	<ul style="list-style-type: none">▪ All A4's, except for net-zero budget transfers▪ All A3's that don't go to Core Team or Steering Committee	Core Team	<ul style="list-style-type: none">▪ When the Project Team is not in agreement or uncertain as to whether this needs to be elevated beyond the project team▪ Net-Zero budget transfers	Steering Committee	<ul style="list-style-type: none">▪ Impacts to the following: Cost (\$1M+) (Should this be higher?) & A3's generated for all reasons noted above▪ Deviates from the following: Master Plan, Aesthetics, Atrium Vision	Enterprise Leadership	<ul style="list-style-type: none">▪ Significant Change in Scope, schedule, budget, aesthetics or operational impact▪ Artwork or Major Exterior Building Signage & Branding▪ What else??
Project Team	<ul style="list-style-type: none">▪ All A4's, except for net-zero budget transfers▪ All A3's that don't go to Core Team or Steering Committee								
Core Team	<ul style="list-style-type: none">▪ When the Project Team is not in agreement or uncertain as to whether this needs to be elevated beyond the project team▪ Net-Zero budget transfers								
Steering Committee	<ul style="list-style-type: none">▪ Impacts to the following: Cost (\$1M+) (Should this be higher?) & A3's generated for all reasons noted above▪ Deviates from the following: Master Plan, Aesthetics, Atrium Vision								
Enterprise Leadership	<ul style="list-style-type: none">▪ Significant Change in Scope, schedule, budget, aesthetics or operational impact▪ Artwork or Major Exterior Building Signage & Branding▪ What else??								



To A3 or Not to A3...



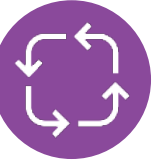


Initial Few Waves

Switchgear & AHU manufacturer decision

- Say NO to seagulls
- Did not significantly impact A3 criteria
- Trust the process & people involved
- Eroded trust
- Wasted energy & time NOT on the project
- We spent 2 months re-evaluating and landed at the same conclusion





Initial Few Waves

Exterior Façade Change

- Followed the process
- Underestimated the amount of time to get reviews done
- Too many approval gates involved
- Should have circumvented at rendering or table-top mock-up standpoint.





Initial Few Waves

Renderings



Table-Top Mock-Up



Scale Mock-Up

✓ Core Team

✓ Core Team

✓ Core Team

✓ Exec SWAT

✓ Exec SWAT

✓ Exec SWAT

? Steering Committee

✗ Enterprise Leadership


Continuous Improvement



A4s



A4

**Atrium Health**

TITLE: Med Gas Isolation Valves

CHAMPION: James Pitre-Williams

A4 # & REVISION: 103

DATE: March 10, 2021

Background:

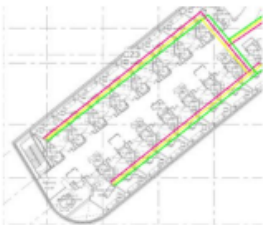
The medical gas system includes Isolation valves to support future maintenance and construction on.

Problem Statement:

Decrease the need to move ICU Patients to different room by decreasing the number of rooms grouped together on a single set of valves.

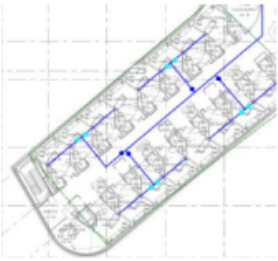
List the different decisions made:

Isolation valves at each branch to headwall unit. Each room can be isolated.




Option A
Most valves least pipe
Pipe=1233LF, Valves=48, Hours=536

Isolation valves in corridor for groups of 4 rooms. Isolation valves in rooms for subgroup of 2 rooms



Option B
More valves more pipe
Pipe=1427LF, Valves=36, Hours=609

Isolation valves in rooms for groups of 2 rooms



Option C
Fewest valves most pipe
Pipe=1673LF, Valves=24, Hours= 638

This is Recommended for Approval or Approved by the above Cluster.

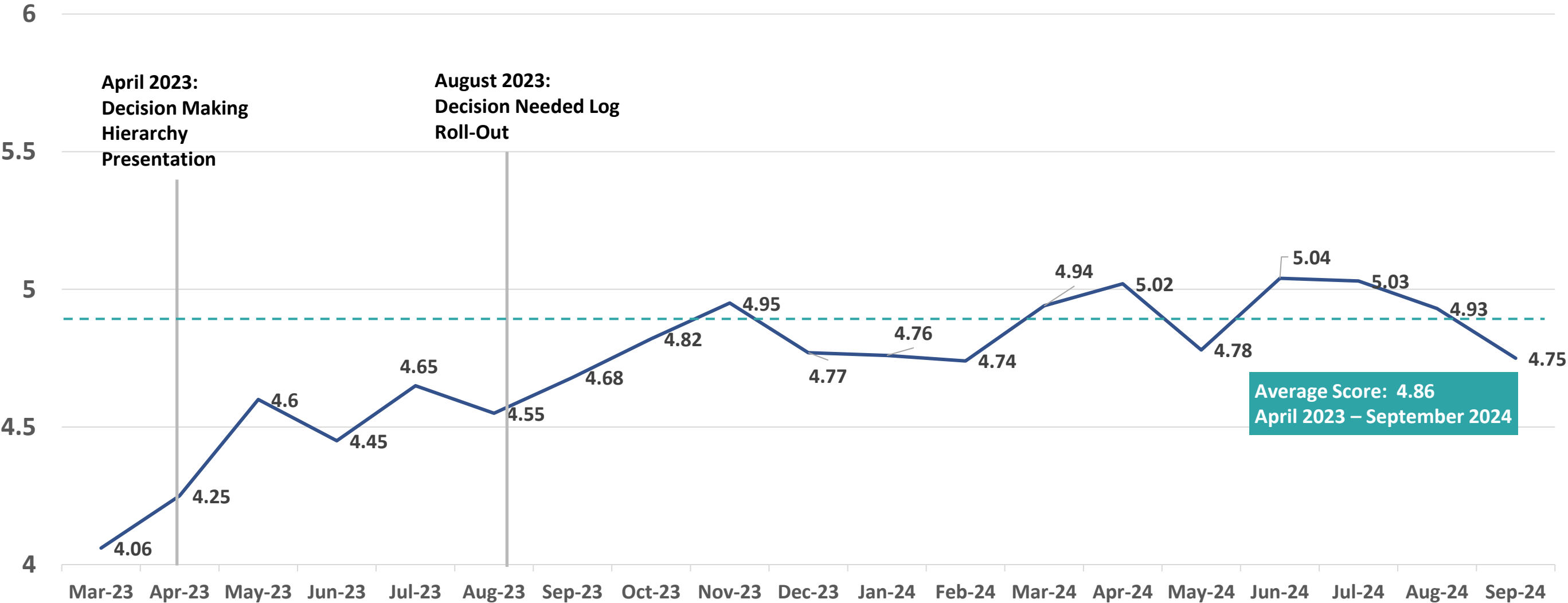
1) Option A is basis of budget and design

Project Cost & Schedule Impacts: None

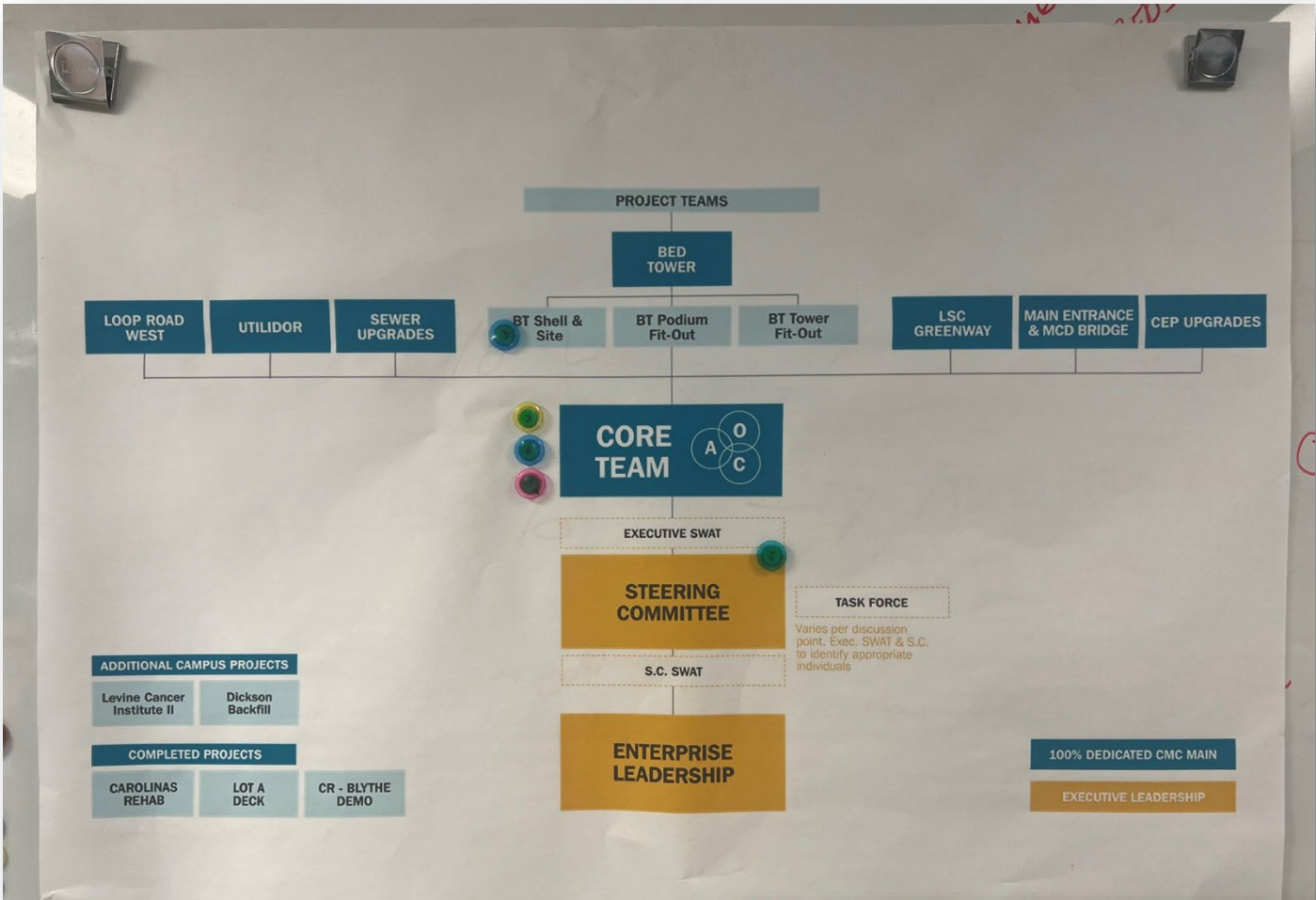
APPROVED

Team Code & Team Health

Team Health Survey Results
Do we make high quality decisions fast enough to meet the needs of the project?



Decision-making log



Item #	Alternate #	Join #	Scope Description	2022				2023				2024				2025				2026			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5		8	Eliminate Monumental Stair - L1 to L2																				
6			Shell Patient Discharge (lvl 1)																				
7			Shell Gift Shop (lvl 1)																				
8			Shell Behavioral Health Holding (lvl 2)																				
9		413	Shell Chapel & Spiritual Care Admin Space (lvl 2)																				
10			Shell Clinical Decision Unit (lvl 2)																				
11			Shell (1) CT Scan Room (lvl 2)																				

Decision Needed Log

Month

September 2023

#	Description of Needed Decision (be very specific)	Added By
✓	Toilet Pods - One enterprise Submittal What does this impact? Jeff S.	
✓	Incentives - Introduce into Big 5 Contracts Mtg on 10/18	
✓	Water Heater - Final Decision on 1 of 3 Options No such thing as a "Hot Water Heater". How do we document?	
✓	Busway Selection Documents?	
✓	Ventilator Capacity Resolution (expect Final appvl 2/5/24 by S.C.)	L.C.
✓	OR Walls + Floors ↳ PMR 26 Dec '24	J.D.
7	Sitewall Design. - Finalize color/finish	Alex K.
✓	HeaPad Diff System Change Dec '24	L.C.
✓	Res. Flooring Package Buyout Dec '24	J.D.
✓	Stair 19 LSM	R.S.
11	2nd Floor Doors	D.R.

2025

2026

Q3 Q4 Q1 Q2 Q3 Q4

The end of the wave



Contract is signed... now what?



TARGET VALUE DESIGN

- A3's
- High Engagement

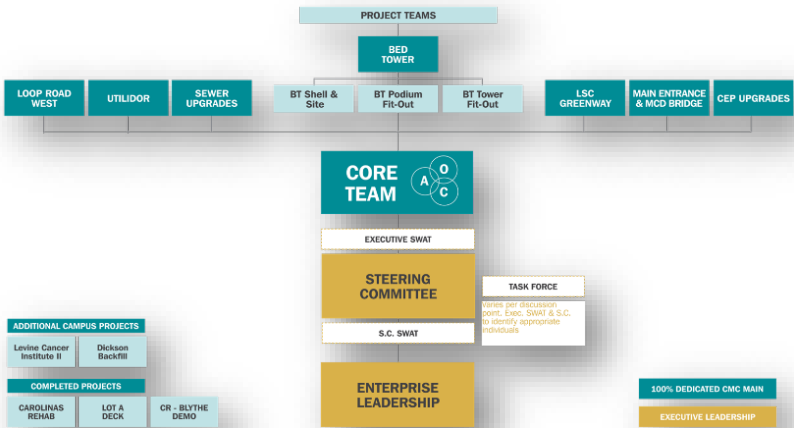


(Signed GMP)

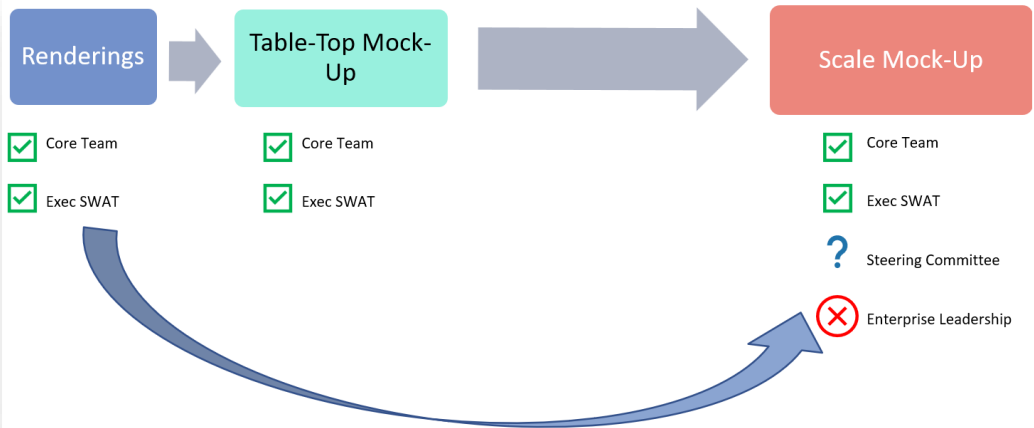
TARGET VALUE DELIVERY

- Change Management
- Required Engagement

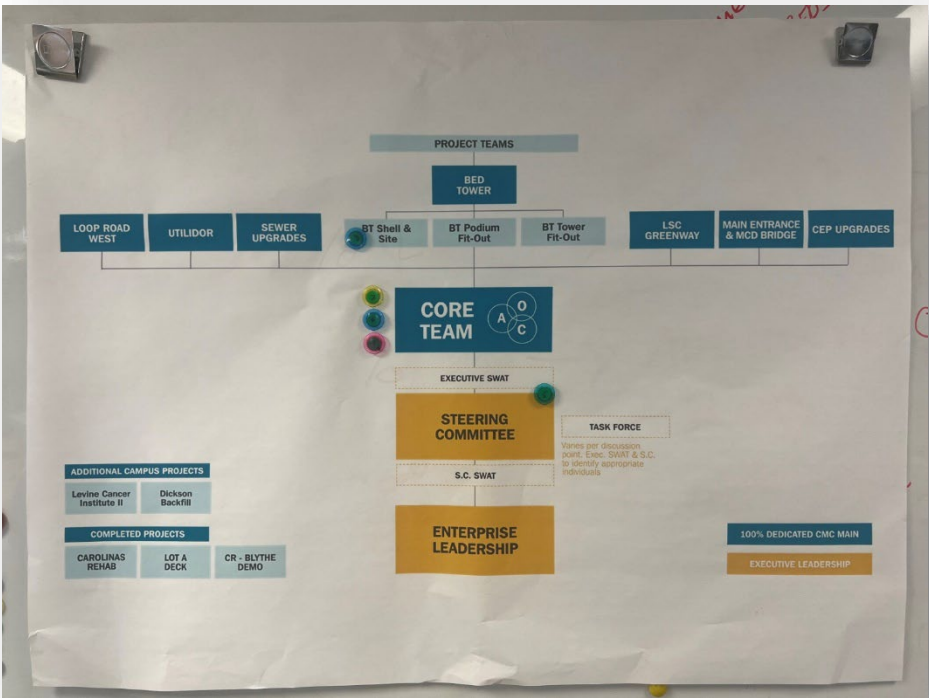
How/What can you apply tomorrow?



When should you use and A3?	<p>You should create an A3 when conducting a problem-solving exercise in which there are <u>multiple solutions</u> that have a noteworthy impact to cost & schedule. You must create an A3 when the solution <i>significantly</i> impacts one, or more, of the following:</p> <ul style="list-style-type: none">• Cost• Schedule• Quality• Safety• Patient Impact• System Initiative (EXAMPLE: prefab: bathroom pods, etc.)• Master Plan Impacts (<i>long term operational impacts</i>)• System Policies & Guidelines• Deviates from Aesthetics/Vision• Impacts Existing Buildings (cost & operation)• Use of Owner Contingency• Change to the program								
When should you use and A4?	<p>You should create an A4 when capturing <u>design decision(s)</u>. The intent is to provide real time feedback of <u>who</u>, and <u>when</u>, the decision(s) was made, and to share this information with other clusters and end users.</p> <p>Design Decisions would include the following: System Types, Equipment Types, Finish Selections</p> <p>A4's will be used to track <u>Design Evolution</u> decision(s). A4's will help provide the team design decisions when user sign-off is <u>not</u> required. An A4 will be created to memorialize a net-zero budget transfer between clusters</p>								
Decision making authority	<table><tr><td>Project Team</td><td><ul style="list-style-type: none">▪ All A4's, except for net-zero budget transfers▪ All A3's that don't go to Core Team or Steering Committee</td></tr><tr><td>Core Team</td><td><ul style="list-style-type: none">▪ When the Project Team is not in agreement or uncertain as to whether this needs to be elevated beyond the project team▪ Net-Zero budget transfers</td></tr><tr><td>Steering Committee</td><td><ul style="list-style-type: none">▪ Impacts to the following: Cost (\$1M+) (Should this be higher?) & A3's generated for all reasons noted above▪ Deviates from the following: Master Plan, Aesthetics, Atrium Vision</td></tr><tr><td>Enterprise Leadership</td><td><ul style="list-style-type: none">▪ Significant Change in Scope, schedule, budget, aesthetics or operational impact▪ Artwork or Major Exterior Building Signage & Branding▪ What else??</td></tr></table>	Project Team	<ul style="list-style-type: none">▪ All A4's, except for net-zero budget transfers▪ All A3's that don't go to Core Team or Steering Committee	Core Team	<ul style="list-style-type: none">▪ When the Project Team is not in agreement or uncertain as to whether this needs to be elevated beyond the project team▪ Net-Zero budget transfers	Steering Committee	<ul style="list-style-type: none">▪ Impacts to the following: Cost (\$1M+) (Should this be higher?) & A3's generated for all reasons noted above▪ Deviates from the following: Master Plan, Aesthetics, Atrium Vision	Enterprise Leadership	<ul style="list-style-type: none">▪ Significant Change in Scope, schedule, budget, aesthetics or operational impact▪ Artwork or Major Exterior Building Signage & Branding▪ What else??
Project Team	<ul style="list-style-type: none">▪ All A4's, except for net-zero budget transfers▪ All A3's that don't go to Core Team or Steering Committee								
Core Team	<ul style="list-style-type: none">▪ When the Project Team is not in agreement or uncertain as to whether this needs to be elevated beyond the project team▪ Net-Zero budget transfers								
Steering Committee	<ul style="list-style-type: none">▪ Impacts to the following: Cost (\$1M+) (Should this be higher?) & A3's generated for all reasons noted above▪ Deviates from the following: Master Plan, Aesthetics, Atrium Vision								
Enterprise Leadership	<ul style="list-style-type: none">▪ Significant Change in Scope, schedule, budget, aesthetics or operational impact▪ Artwork or Major Exterior Building Signage & Branding▪ What else??								



Item #	Alternate #	Join #	Scope Description	2022				2023				2024				2025				2026			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
5		8	Eliminate Monumental Stair - L1 to L2																				
6			Shell Patient Discharge (lvl 1)																				
7			Shell Gift Shop (lvl 1)																				
8			Shell Behavioral Health Holding (lvl 2)																				
9		413	Shell Chapel & Spiritual Care Admin Space (lvl 2)																				
10			Shell Clinical Decision Unit (lvl 2)																				
11			Shell (1) CT Scan Room (lvl 2)																				





26TH LCI CONGRESS
OCTOBER 22-25, 2024



In the spirit of continuous improvement, we would like to remind you to complete this session's survey! We look forward to receiving your feedback.

Contact Us

Adam “The Lean Ranger” Kouri

DPR Construction

AdamK@DPR.com

Steve “HammerTime” Haemmerle

Atrium Health

Steven.Haemmerle@AtriumHealth.org

Thomas “Mr. T” Harper

Adams Electric

ThomasHarper@Adams-Electric.com

Tyler “Scottish Lord” Campbell

Storey Program Management

Tyler.Campbell@StoreyPM.com