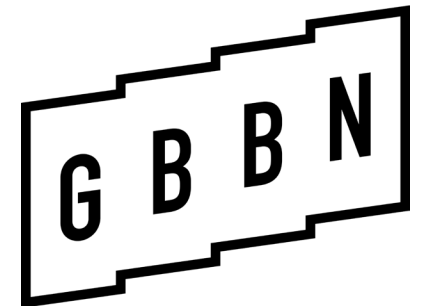


AR in the ER

Leveraging Technology During the Design of a Pediatric
Emergency Department



LEARNING OBJECTIVES

- Understand Augmented Reality (AR)
- Learn how AR was used on a Healthcare project to support design communication
- Understand the benefits of using AR in the design process

PRESENTERS



Carlo Juarez-Sweeney MBA, BSN, RN

Patient Care Manager, Minneapolis Pediatric Emergency Dept.
Children's Minnesota



Michael Grage, AIA

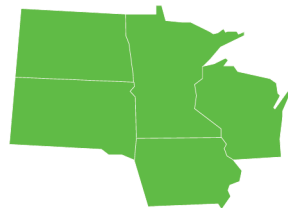
Project Manager, Principal
GBBN Architects



Kirsten Miller, AIA, ACHA, EDAC

Medical Planner, Associate
GBBN Architects

REGION 6





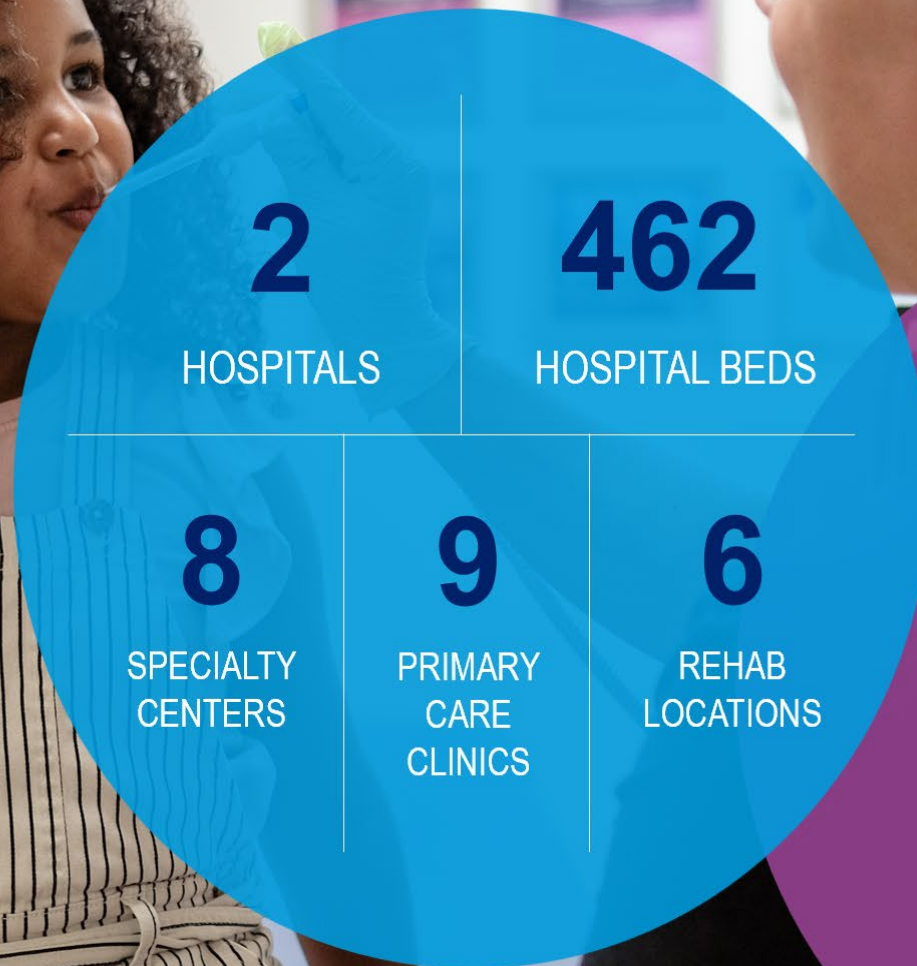
Children's Minnesota
St. Paul



Children's Minnesota
Minneapolis



By the numbers



14,400+
INPATIENT ADMISSIONS

23,500+
SURGICAL PROCEDURES

85,200+
EMERGENCY ROOM VISITS

389,000+
OUTPATIENT CLINIC VISITS

4,500+
HOME CARE VISITS

GBBN

150 Professionals Across 4 US Offices

HEALTHCARE TEAM

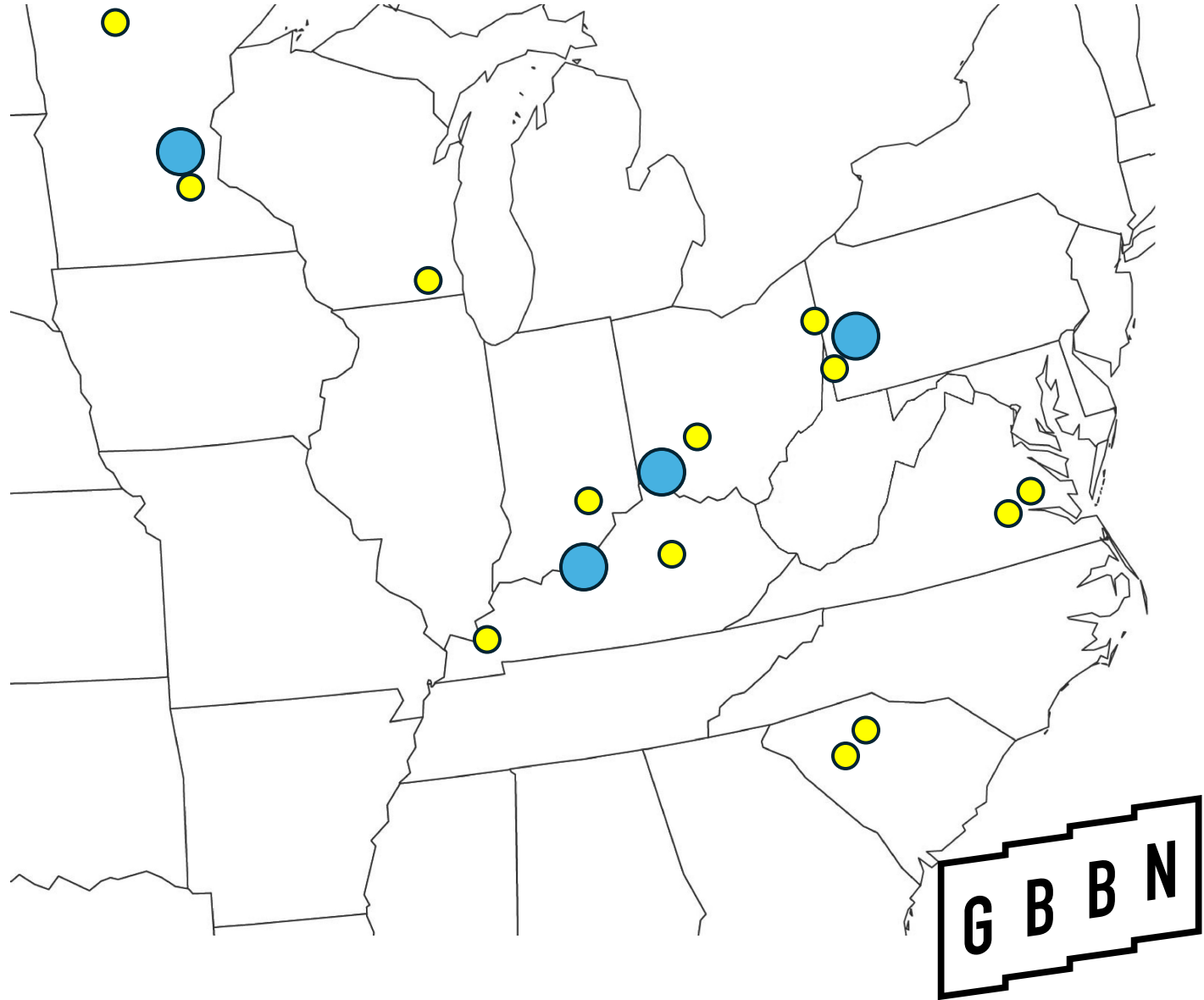
50 Members Delivering Healthcare Work

OUR HISTORY

65+ Years of Helping Our Clients

HOW WE CAN HELP

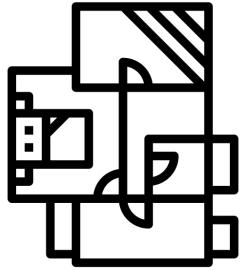
Planning, Architecture, & Interiors



AUGMENTED REALITY 101

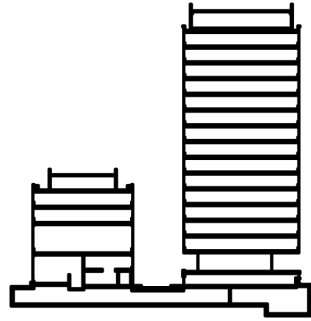


REPRESENTATION



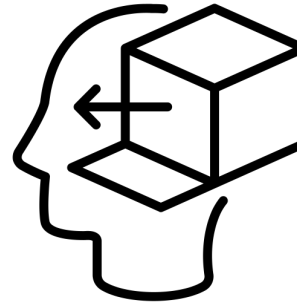
PLANS

The nature of 2D drawings may not convey the true spatial experience to end-users



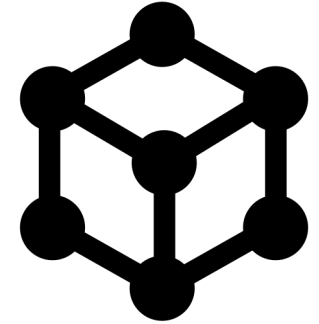
DOCUMENTS

The ability to interpret plans, sections, perspectives and renderings is a learned skill



SCALE

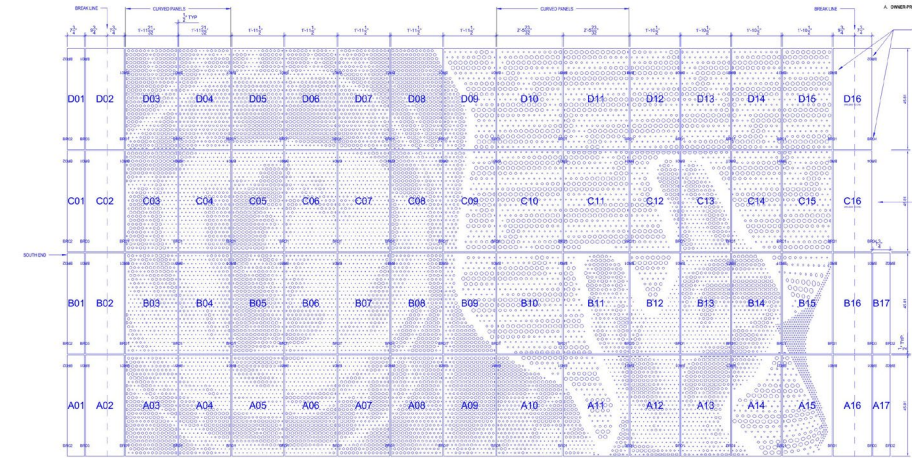
The ability to mentally picture 2D and 3D space in 1:1 scale



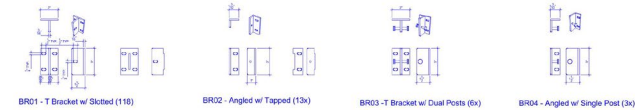
VISUALIZING

Connecting the dots: creating a picture of the space in your own mind

DOCUMENTATION



FEATURE WALL PANEL LAYOUT
Scale: 1/8" = 1'-0"



FEATURE WALL PANEL ANCHORS
Scale: 1/8" = 1'-0"

GENERAL NOTES - FEATURE WALL DETAILS
A. UNFINISHED MATERIALS ARE SHOWN IN BLUE



PROJECT ARCHITECT
400 South 4th Street, Suite 400-420
Minneapolis, MN 55415
612.338.3899
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CONSULTANTS
MEP/FP Engineer
Victus Engineering
2337 Wyckoff Street, Suite 230
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612.939.8279

DRAWING ISSUE

NO.	DATE	DESCRIPTION
1	10-18	ISSUED

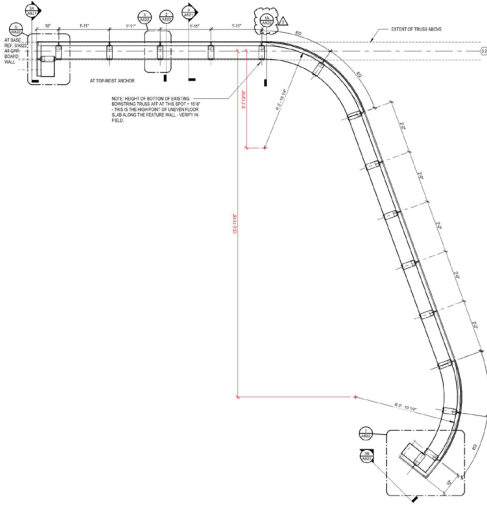
CONSTRUCTION DOCUMENTS

DRAWING TITLE
INTERIOR DETAILS -
FEATURE WALL

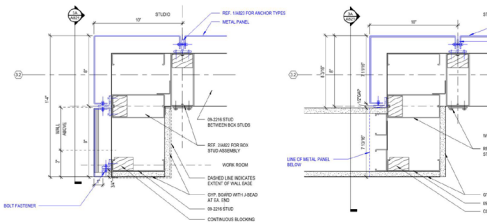
SEAL

PROJECT: 1966.04
DATE: 10/18/18
LOCATION: ST. PAUL, MN
JOB NUMBER: 1966.04

A823
6/14/23



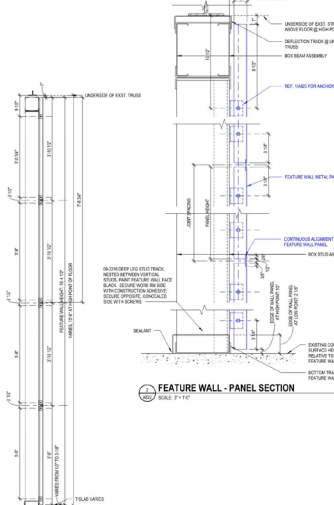
ENLARGED PLAN - FEATURE WALL
Scale: 3/8" = 1'-0"



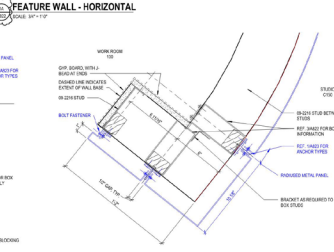
FEATURE WALL PLAN BASE AT NORTH END
Scale: 3/8" = 1'-0"

FEATURE WALL - HORIZONTAL
Scale: 3/8" = 1'-0"

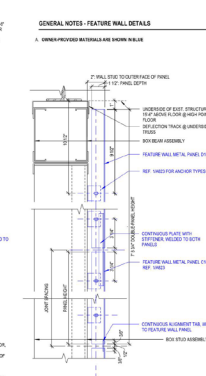
FEATURE WALL PLAN AT NORTH ABOVE OPENING
Scale: 3/8" = 1'-0"



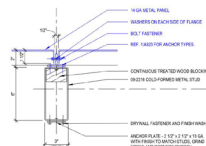
FEATURE WALL - PANEL SECTION
Scale: 3/8" = 1'-0"



FEATURE WALL PLAN BASE AT SOUTH END
Scale: 3/8" = 1'-0"



FEATURE WALL - SECTION DOUBLE-HEIGHT PANEL
Scale: 3/8" = 1'-0"



FEATURE WALL PLAN - BOX STUD
Scale: 3/8" = 1'-0"



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DRAWING ISSUE

NO.	DATE	DESCRIPTION
1	10-18	ISSUED

CONSTRUCTION DOCUMENTS

DRAWING TITLE
INTERIOR DETAILS -
FEATURE WALL

SEAL

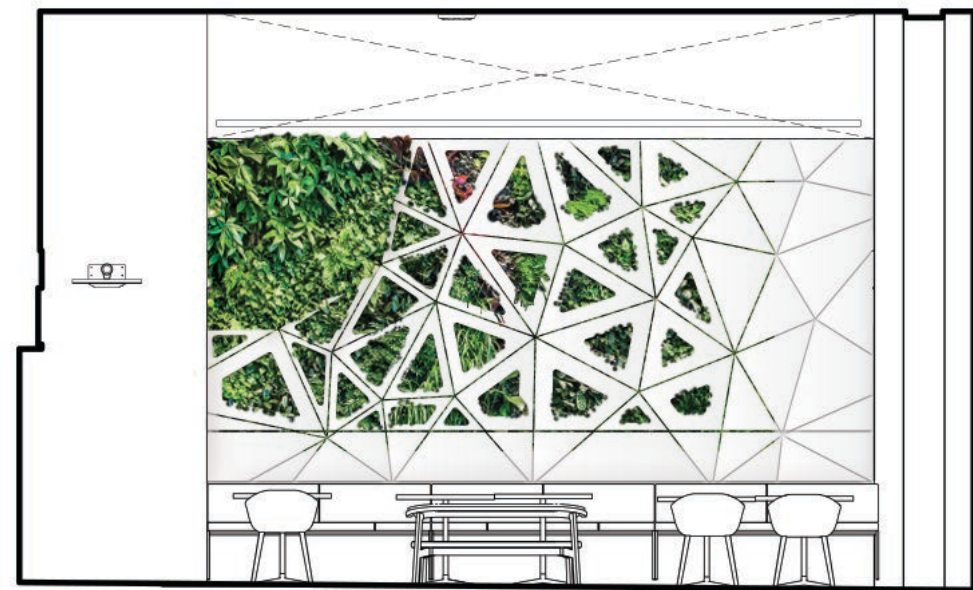
PROJECT: 1966.04
DATE: 10/18/18
LOCATION: ST. PAUL, MN
JOB NUMBER: 1966.04

A822
6/14/23

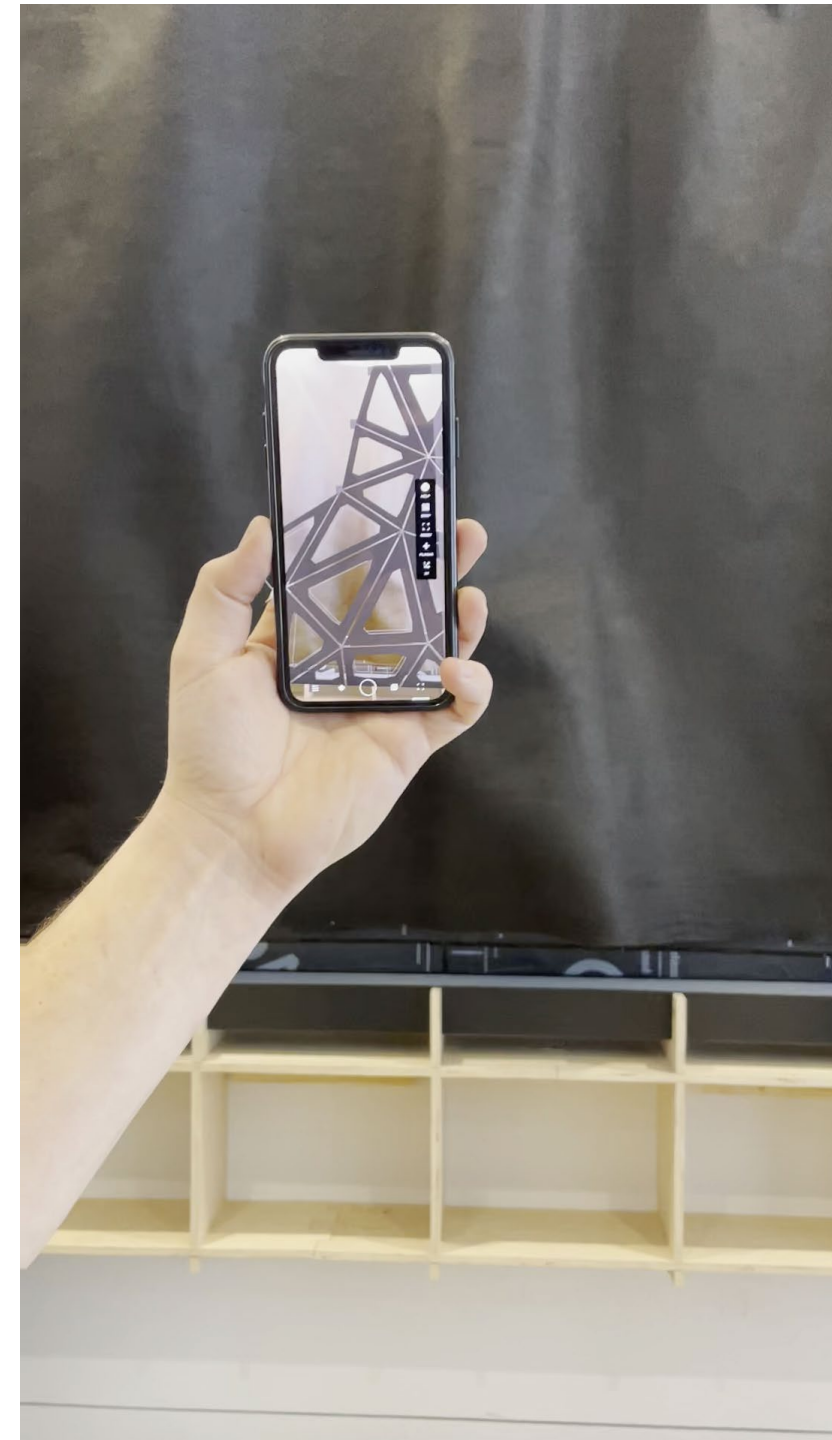
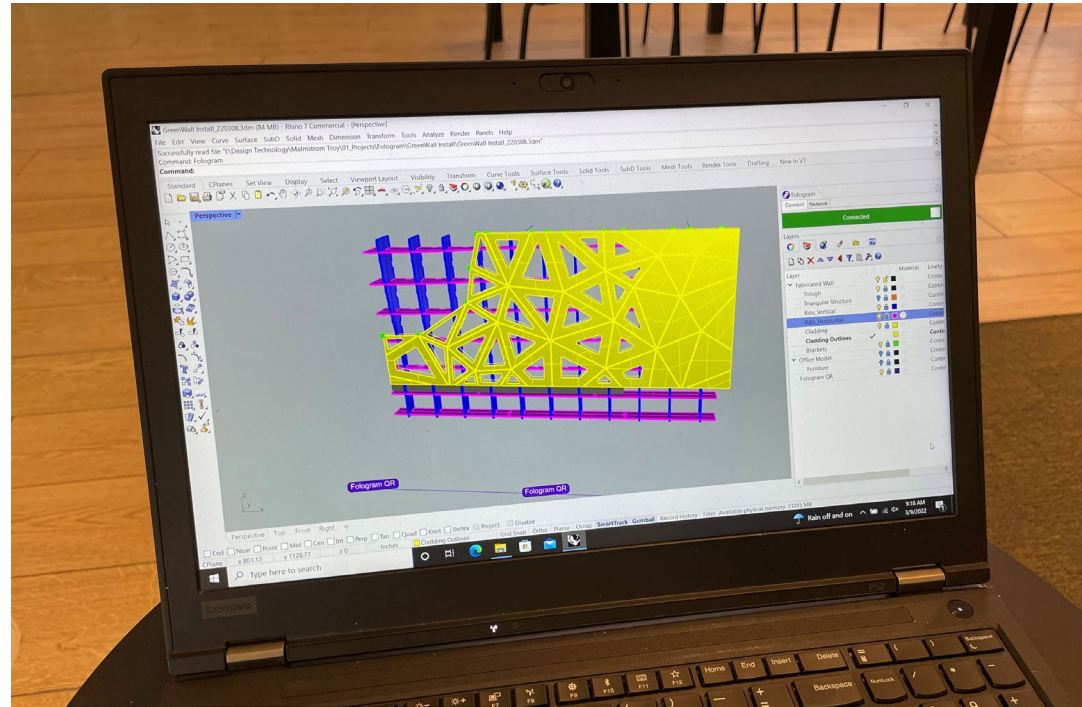
DESIGN VISUALIZATION



CASE STUDY: DESIGN AND DOCUMENTATION



VIRTUAL DOCUMENTATION



INSTALLATION



CASE STUDY: DESIGN VALIDATION



CHILDREN'S MINNESOTA ER



Project Program

New entrance & waiting

3 Triage Room

8 Fast Track Room

Support Space

Ancillary rooms

ER PROJECT GOALS

Foster confidence in our high-quality care with a high-quality space and experience

Right-sized space with resources to support improved workflow and experience for care team

Provide positive distractions that express organizational values where the space celebrates children

A robust upfront area to reduce real and perceived wait-times and leave a lasting positive impression



Safety + Security

**Transform the
“front door”**



Staff Empowerment

**Empower with
resources**



Patient Experience

**Inspired by
children**



Process Innovation

**Beyond the
expected**

STAKEHOLDERS



Emergency Registered
Nurses

Emergency Physicians

Child Life Specialists

Security

EMT

Infection Prevention

Administration

Employee Safety

Strategy

Performance Improvement

Interns

ITS

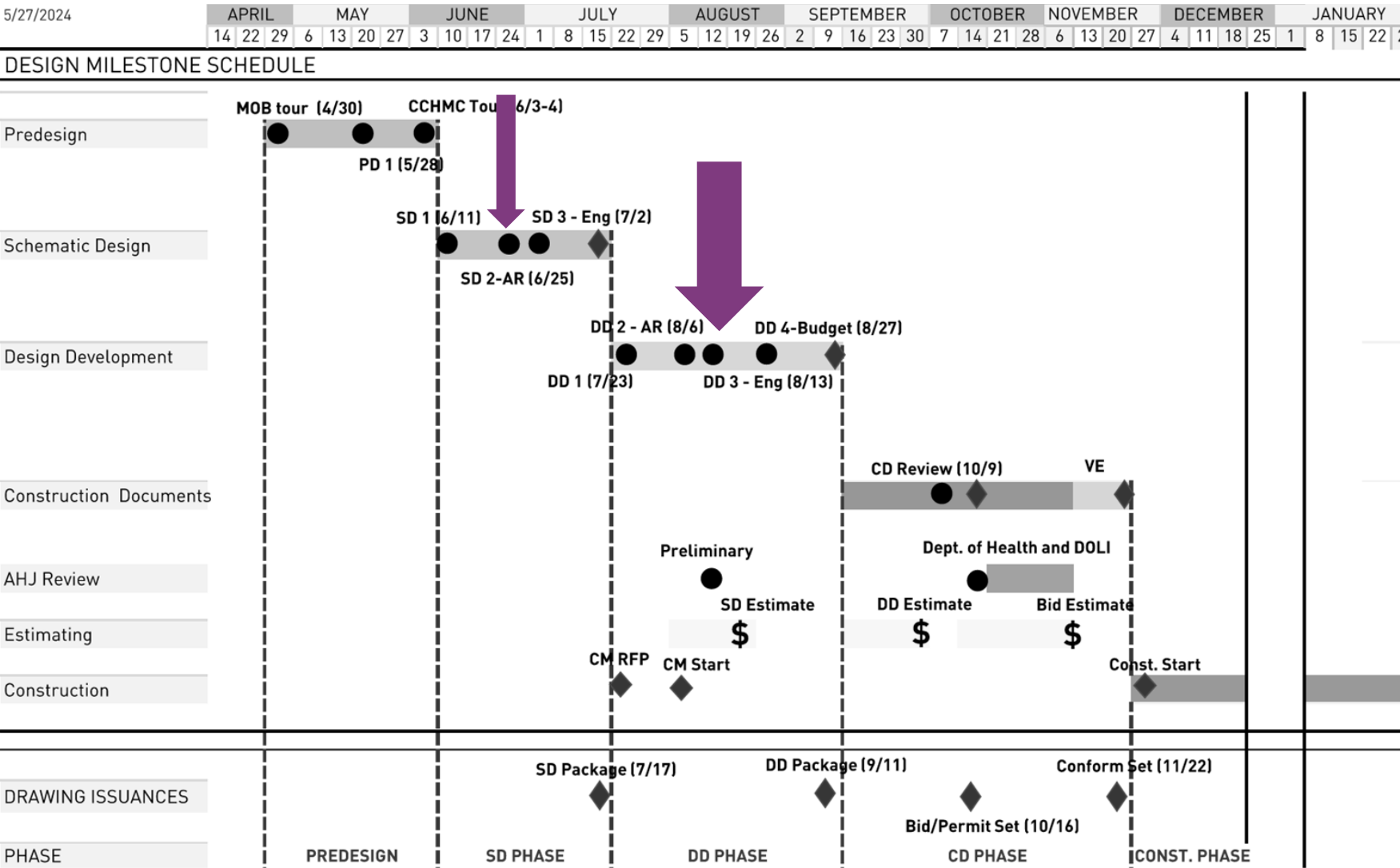
Project Manager

Director of Facilities

Value Clinical Excellence



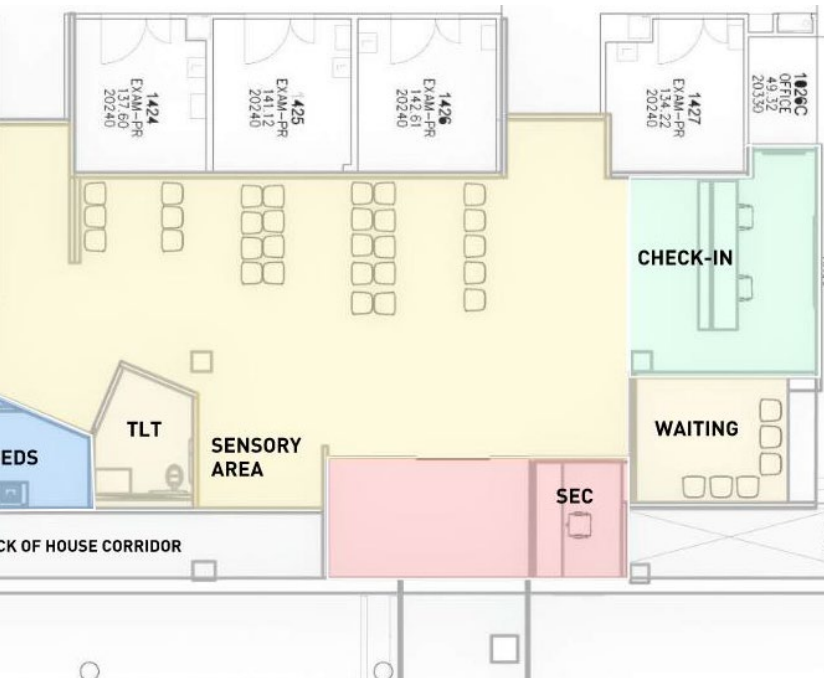
DESIGN SCHEDULE



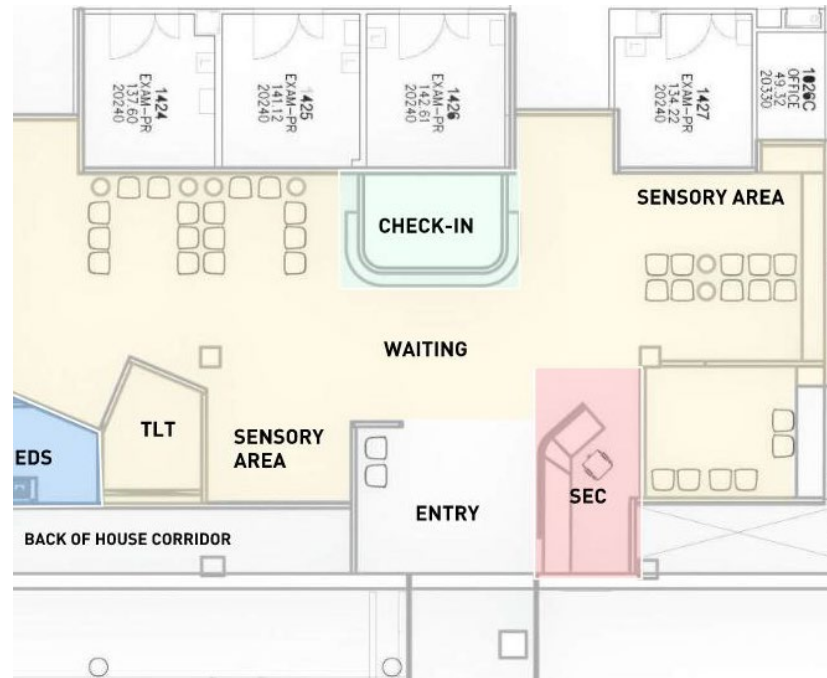
AR IN DESIGN

Schematic Design

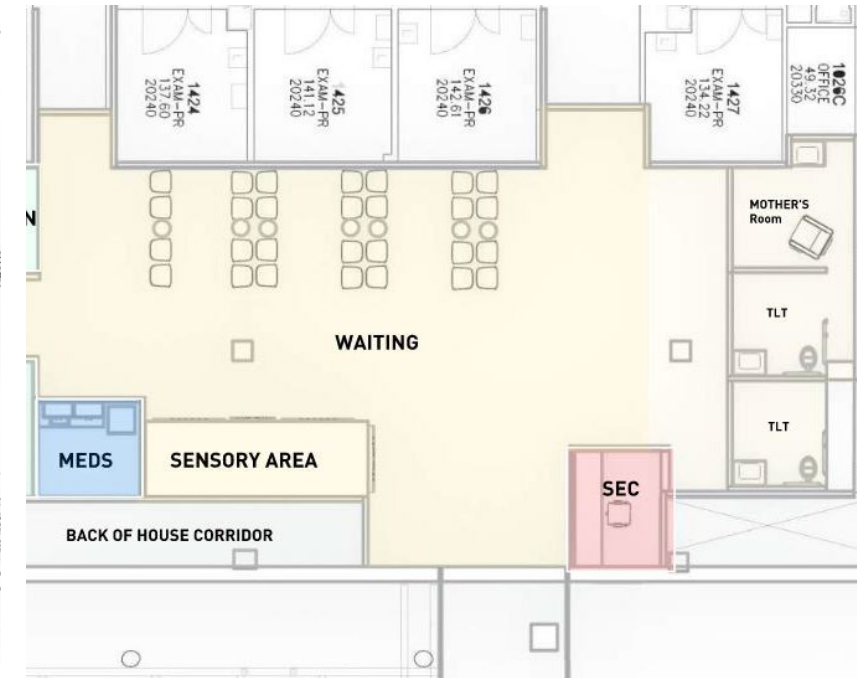
AR was used in SD to review 3 design options. Stakeholders worked through each option and evaluated them based on project goals and real-time feedback



Option 1



Option 2



Option 3

AR IN DESIGN

Schematic Design

Like in Option 2 the open security design

Physician

Would like to flip flop waiting and queue to keep access to main hospital.

Nurse

Option 2 is great to see Registration when you walk in

Physician

The waiting area needs spaces for kids to lay down

Process Improvement Staff



AR IN DESIGN

Schematic Design

Schematic Design Survey Results

Survey taken by nurses, administrators/
managers, and other disciplines

7 of the 10 have been involved with
design and construction in the past

100% of respondents stated that using
AR helped them better understand the
design concept



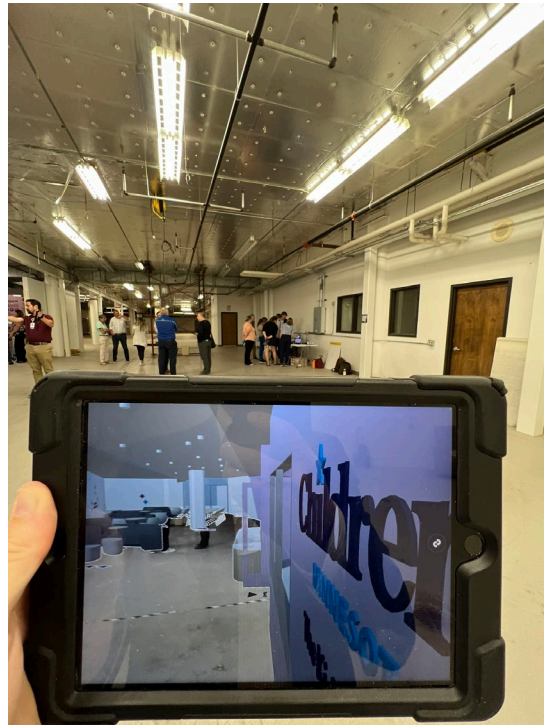
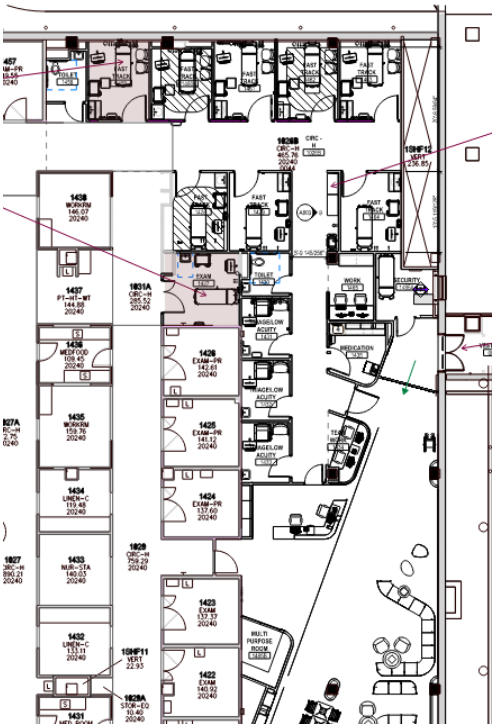
AR IN DESIGN

Design Development



AR IN DESIGN Design Development

AR was used in DD to review the upfront process and fast track rooms of the emergency design. Small design decisions were reviewed such as a door location.



BENEFITS & LIMITATIONS



QUESTIONS?



AR SOFTWARE

- ARki
- GAMMA AR
- Fologram
- Morpholio AR Sketchwalk
- InCitu

