



2025 Iowa Better Concrete Conference  
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# Case Study: Des Moines International Airport Parking Expansion



# Meet the Presenters



**Bryan Belt**

**Des Moines International Airport**  
Chief Development Officer



**Chris Schweers**

**Weitz**  
Assistant Project Manager



**Forrest Martinson**

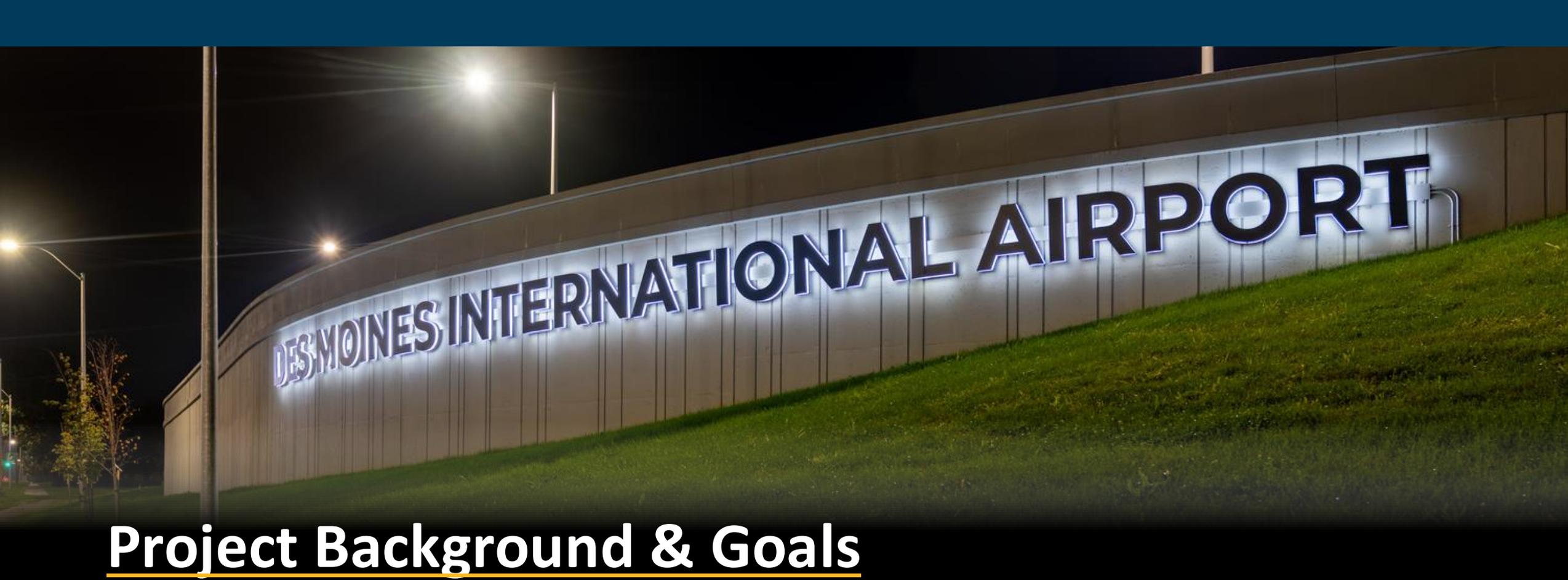
**Bolton & Menk**  
Municipal Project Manager



# Agenda

- Background and goals
- Design parameters & approach
- Approach and challenges
- Project completion & outcome
- Questions



A nighttime photograph of the Des Moines International Airport building. The sign 'DES MOINES INTERNATIONAL AIRPORT' is illuminated in blue and white, mounted on a curved, light-colored metal facade. The building is set against a dark sky, with several streetlights visible on the left. A grassy hillside is in the foreground, sloping upwards from the bottom right towards the building.

DES MOINES INTERNATIONAL AIRPORT

## Project Background & Goals

You'll discover:

- The project's necessity
- What does its success look like?

# Background



- The Des Moines International Airport (DSM) has seen **sustained passenger growth**, exceeding pre-pandemic levels.
- Existing parking infrastructure was **at capacity**, having to be closed for 2-3 days during the week, on a weekly basis.
- Strategic goal: Modernize airport facilities to **improve passenger experience**, provide covered parking for the public and **support future expansion**.

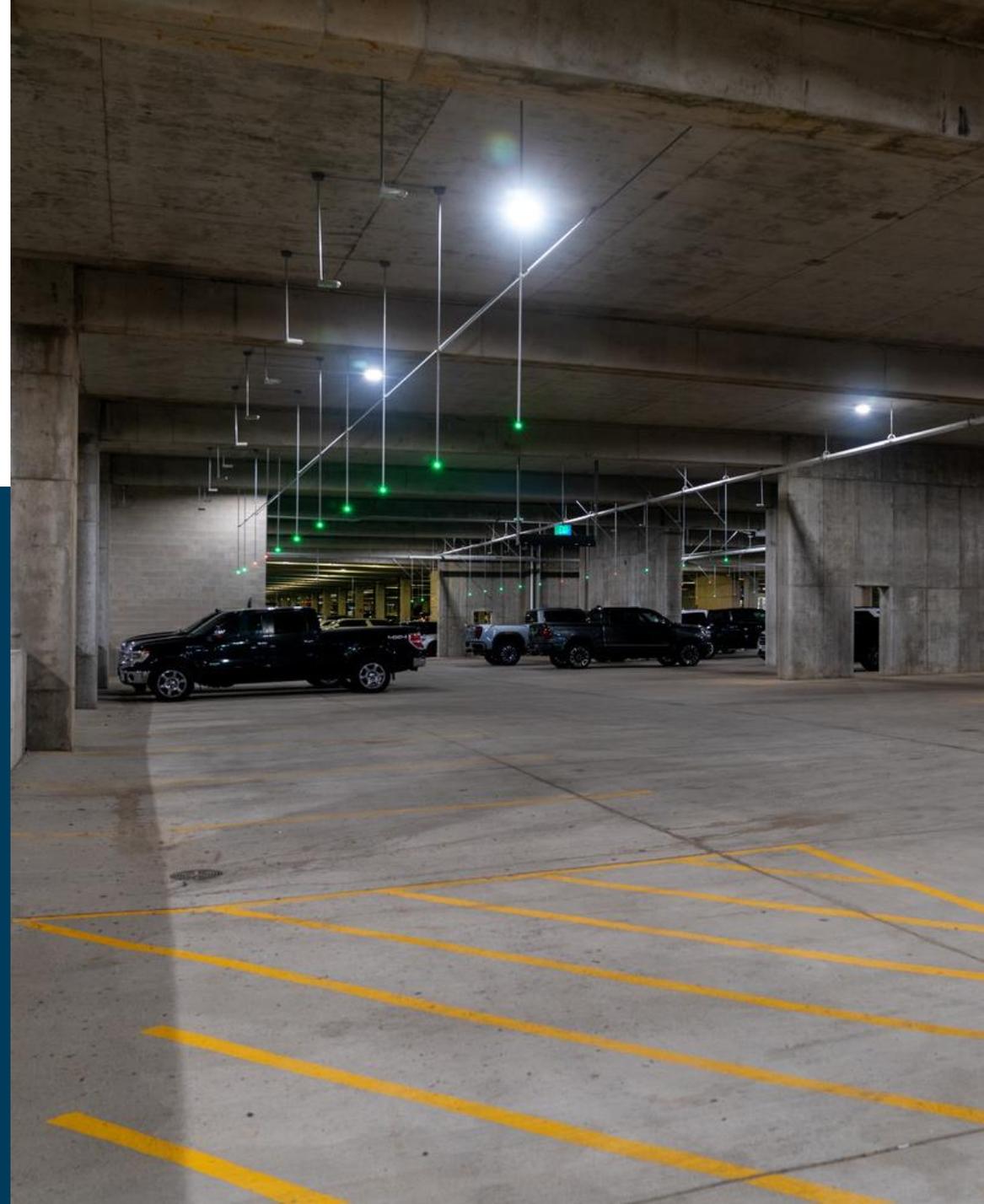
# Project Scope

- Multi-level parking garage expansion **adjacent** to existing terminal and existing "B" Garage
- **Integration** with terminal circulation and roadway network, all phases over multiple year infrastructure program.
- Include **improved accessibility**, extend parking **guidance system**, and **enhanced safety/security** systems.
- Evaluate **EV charging**



# Owner's Goals

- Increase total parking capacity by 1100 stalls
- Minimize passenger disruption during construction.
- Ensure long-term durability and reduced maintenance.
- Achieve efficient traffic flow and ADA compliance.
- Deliver project within budget and before high-travel season.



# Vision

- Create a first impression of modernization for travelers.
- Align with DSM's overall terminal modernization plan.





# Design Parameters, Constraints, and Approach

You'll learn:

- How design responded to site, structural, and operational constraints

# Site Constraints:

## Project Coordination

- **Cowles Drive – Phase 1**
  - Minor design coordination
  - No construction coordination
  - Relocated entrance for the Terminal
  - Opens site for future parking garage "Loop Road" entrance.



# Site Constraints:

## Project Coordination

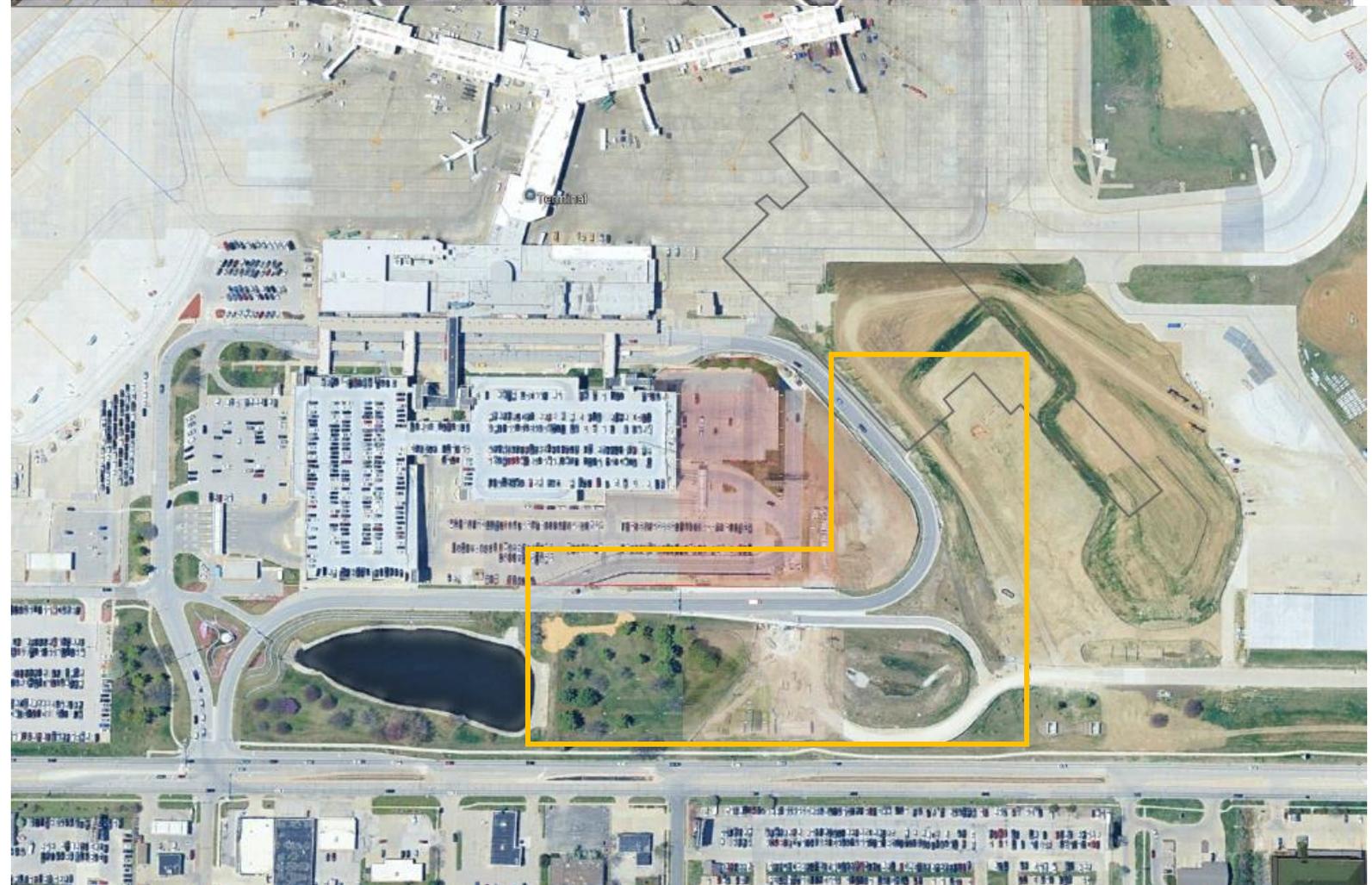
- Cowles Drive – Phase 1
- **Cowles Drive – Phase 2**
  - Temporarily re-routes all traffic through surface lot
  - Establishes future temporary Entrance Plaza
  - Clears more of the site for Phase 3.



# Site Constraints:

## Project Coordination

- Cowles Drive – Phase 1,2
- **Cowles Drive – Phase 3**
  - Constructs Cowles Drive, Retaining walls and "Portal" structure.
  - Re-routes Terminal traffic on new lanes.
    - 2 of 4 Terminal drop-off lanes



# Site Constraints:

## Maintain Parking Access

- Relocate parking entrance



# Site Constraints:

## Maintain Parking Access

- Relocate parking entrance



# Site Constraints:

## Construction Site Access

- Single lane, two-way Traffic through "Portal"



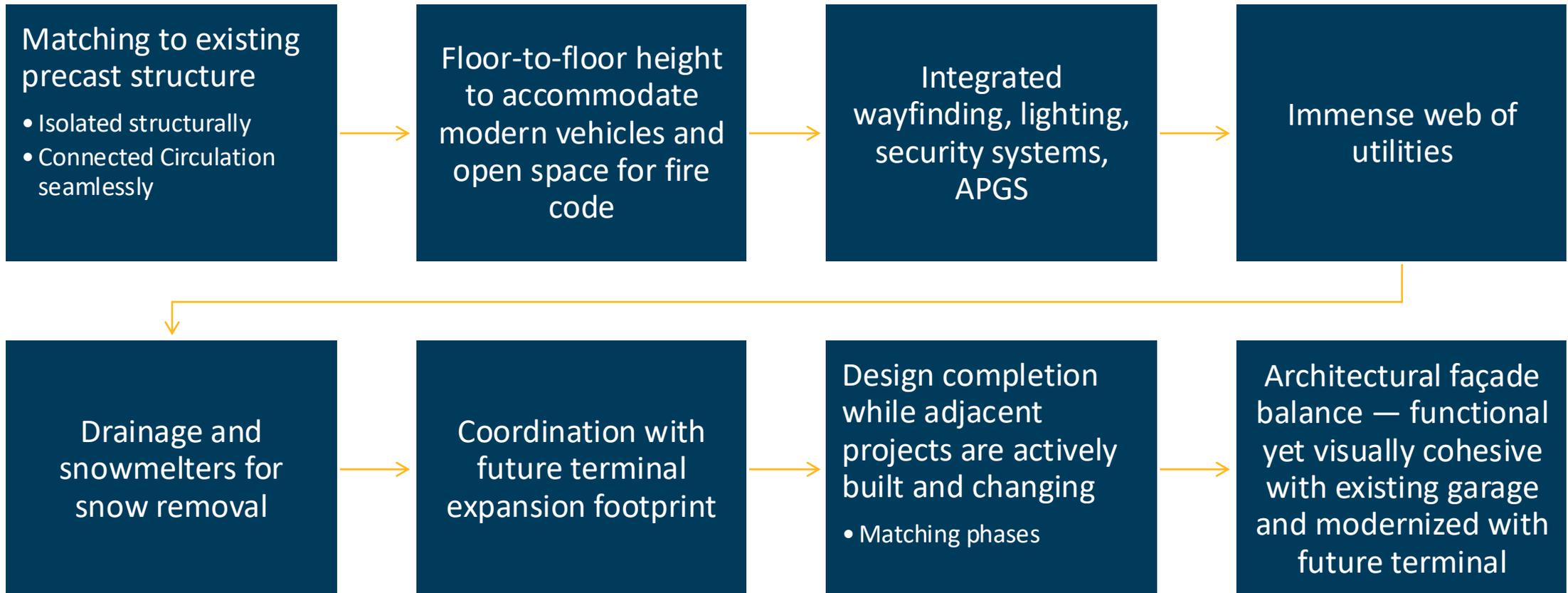
# Site Constraints:

## Construction Site Access

- Opening of Commercial Lanes
- Restriction of lane closures



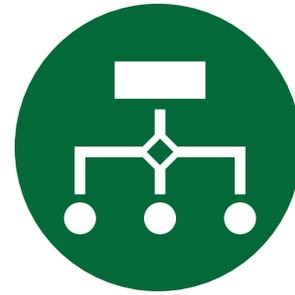
# Design Parameters & Challenges:



# Design Approach



Phased design and temporary entrance plaza allowing construction while maintaining active parking.



Coordination for MEP, structural, and architectural integration.



Efficiency



# Construction Approach & Challenges

You'll learn:

- A contractor's perspective with a focus on concrete

# Construction Overview



Construct south half (adjacent to the existing garage) of the parking decks completely before the north half of the parking decks and before the ramp due to:

- 1) Site constraints and logistics, and
- 2) To allow sufficient time for building the more complicated foundations that were at the north and east portions of the structure

# Duration

Phase	Timeline	Duration (Days/Weeks/Months)
Site Preparation	6/5/23 - 9/17/23	105 days / 15 weeks / 3.5 months
Deep Foundations	9/18/2023 - 11/20/23	64 days / 9 weeks / 2 months
Shallow Foundations (n.i.c. S.O.G.) & Level 1 Columns	10/26/23 - 5/9/24	197 days / 28 weeks / 6.5 months
S.O.G.	11/20/23 - 4/15/25	507 days / 72.5 weeks / 16.7 months
Superstructure above level 1 columns, including pour back strips and spandrel precast	12/14/23 - 12/27/24	380 days / 54 weeks / 12.5 months
Post superstructure foundations, SOG, low clearance beams	2/24/25 - 5/9/25	75 days / 11 weeks / 2.5 months
Final grading, roadways, and sidewalks	3/17/25 - 6/30/25	106 days / 15 weeks / 3.5 months
South parking lot and landscaping	7/1/25 - 10/3/25	95 days / 13.5 weeks / 3 months

# Phased Construction to Maintain Operational Continuity

Phase 1A and 1B:  
Construct temporary  
entrance plaza and reroute  
traffic to keep existing  
garage operational

Temporary occupancy for  
Spring Break '25

Roadways completion was  
critical for terminal project

South surface parking lot  
scope after final  
occupancy of the parking  
garage due to location of  
temporary entrance plaza

Switchgear in parking  
garage for terminal project  
in November '25 –  
February '26

# Concrete Focus

- Structural system used 19,825 cubic yards of concrete.
- Mix design tailored for durability — corrosion prevention, freeze-thaw resistance, air entrainment, low permeability.
- Coordination of post-tensioning cables and embedded utilities.



# Challenges



Tight site access — limited laydown space and traffic control near active passenger zones.



Corrosion inhibitor — caused concrete to setup very quickly at air temps. >70 deg F and in sunny conditions, was very "sticky", made the deck concrete difficult to finish.



Concrete finish quality — aesthetic and slip resistance for exposed decks.

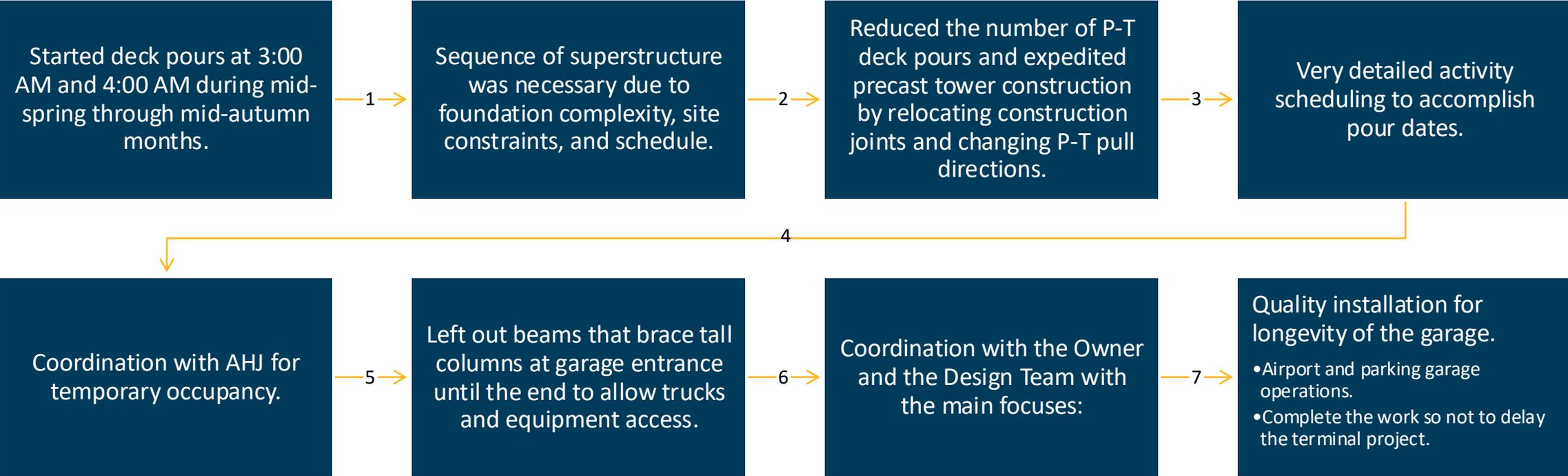


Winter concreting in Iowa climate — required heated enclosures and cure protection.



Elevated deck pour sequencing — achieving formwork efficiency while maintaining schedule.

# Innovations & Solutions





# Project Completion & Outcome

You'll learn:

- The final project outcome
- Lessons learned

# Final Outcome

- Parking Garage Opened June 2025 within 5% of the budget.
- Added 1122 parking stalls, including EV ready and accessible spaces.
- Enhanced passenger flow and reduced congestion at terminal entrance.



# Operational Performance

- Improved revenue through increased parking capacity.
- Reduced maintenance due to durable materials and LED lighting.
- Positive customer feedback on ease of navigation and aesthetics.



# Lessons Learned



Early collaboration between design, construction, and airport ops was critical.



Phasing and communication plans minimized disruption.



Future phases can leverage BIM data for maintenance management.

# Big Picture

- The garage serves as a model for future infrastructure upgrades at DSM.
- Represents DSM's commitment to modernization and traveler experience.





**Thank You!**  
**Questions?**



**Bryan Belt**

Des Moines International Airport

(515) 256-5160

[BMBelt@flydsm.com](mailto:BMBelt@flydsm.com)



**Chris Schweers**

Weitz

(515) 419-9004

[Chris.Schweers@weitz.com](mailto:Chris.Schweers@weitz.com)



**Forrest Martinson**

Bolton & Menk

(515) 391-0027

[Forrest.Martinson@bolton-menk.com](mailto:Forrest.Martinson@bolton-menk.com)

