

# ***Dayton International Airport Terminal Master Plan Study***

*DRAFT PUBLISHED 08.05.2015*



INTERNATIONAL AIRPORT

**Easy to and through.**





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# EXISTING CONDITIONS

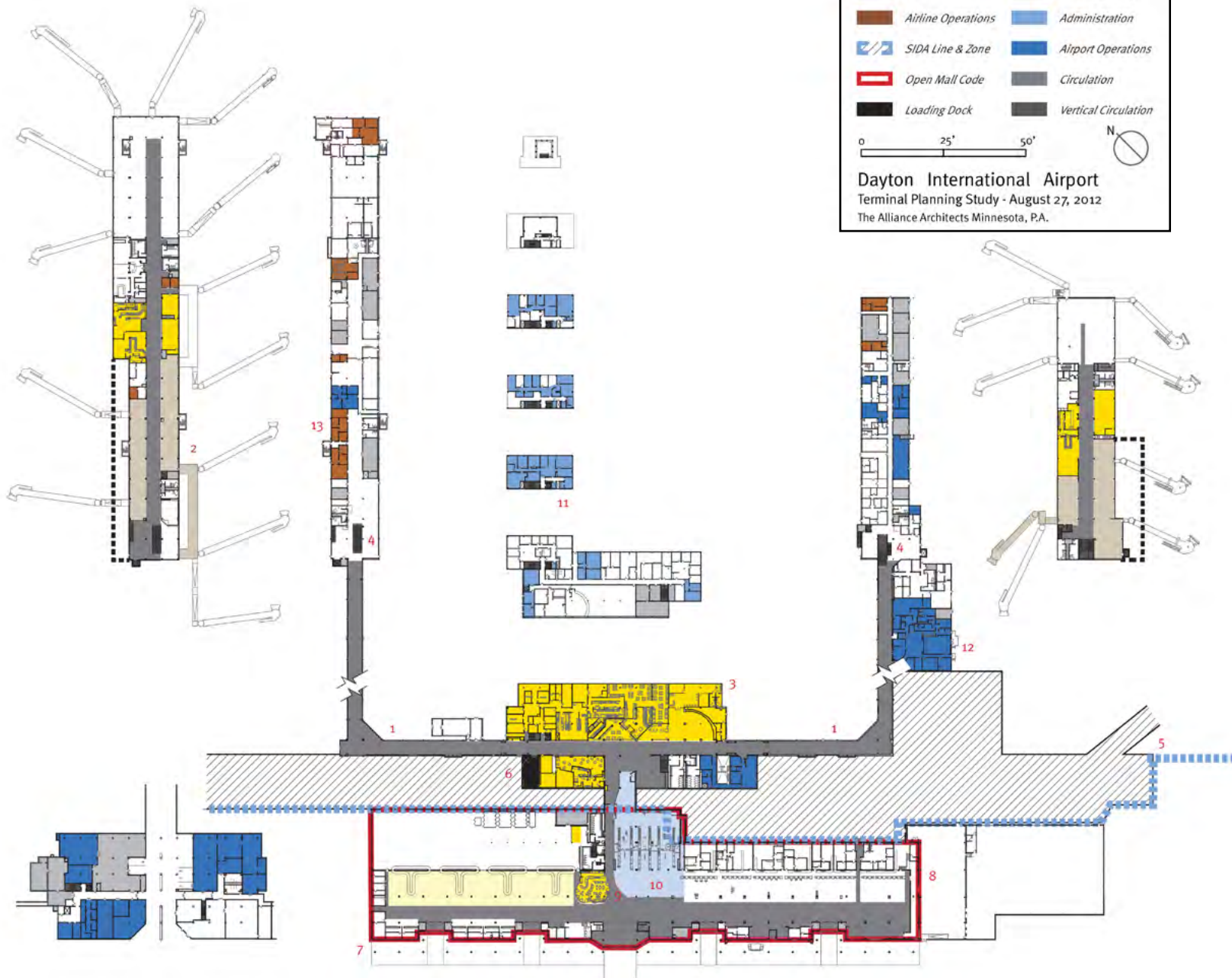
## Summary of Challenges and Opportunities

Dayton International Airport conducted a Terminal Planning Study, published August 27, 2012. In this study, fourteen items were addressed in the Assessment of Facility Shortfalls, Needs, Utilization and Opportunities. These items are as follows:

1. Connectors: Excessive length, inadequate width / height, operations conflict, poor passenger experience.
2. Gates: Congested, dated furniture / finishes, long distance from terminal.
3. Concessions: Improve revenue opportunity, circulation restriction at concourses.
4. Intuitive Navigation: Lacking spatial cues, vertical circulation lacks organization.
5. SIDA Line: Ambiguous, operational obstruction and potential security breach.
6. Loading Dock: Congested, lack of staging and screening areas.
7. Terminal Infrastructure: Systems outdated, unreliable, operationally and energy inefficiency, lack of adjacency.
8. Building Code: Building currently non-compliant, consider “covered mall” provisions.
9. Meeter and Greeter Space: Inadequate for passage and current guest wait.
10. Security Checkpoint: Limited queue and recomposure spaces.
11. Administration: Poorly distributed, difficult access, inappropriately sized.
12. Airport Operations: Unconsolidated locations, difficult access through security.
13. Airline Tenant Operations: Unallocated distribution, difficult access through security.
14. Generally does not function as a modern airport terminal or accommodate post 2001 requirements.



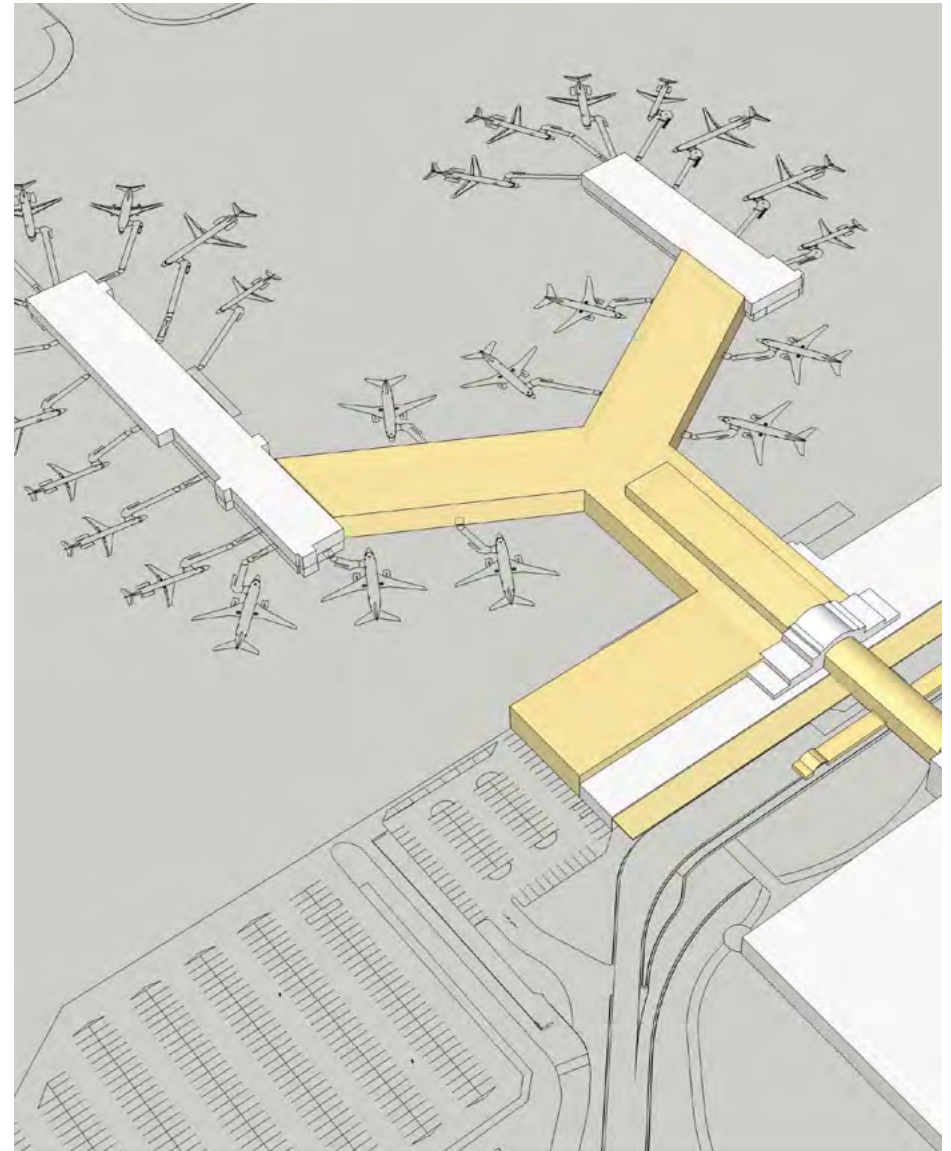
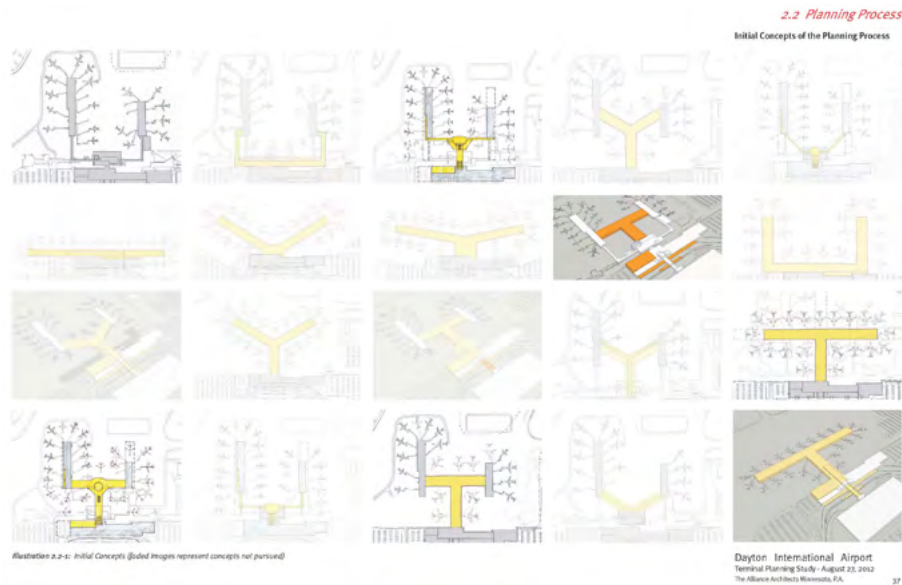




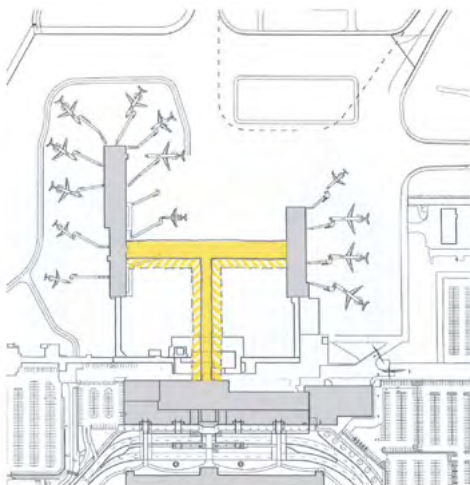
# STUDIES OF ALTERNATIVES

## Evaluation of 2012 Terminal Planning Study

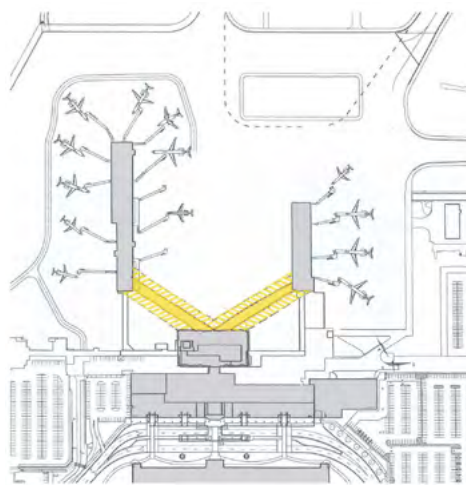
The Dayton International Airport Terminal Planning Study, published August 27, 2012 evaluated the existing conditions of the airport, processed several design alternatives, and after carefully considering the benefits and challenges of each design option, prescribed a solution that would cost \$223.5M to implement. LWC was asked to review this study and develop alternatives that would be more economical yet accomplish many of the same goals to overcome existing challenges.



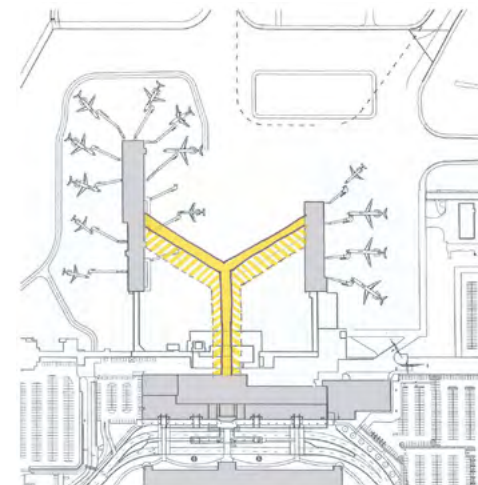




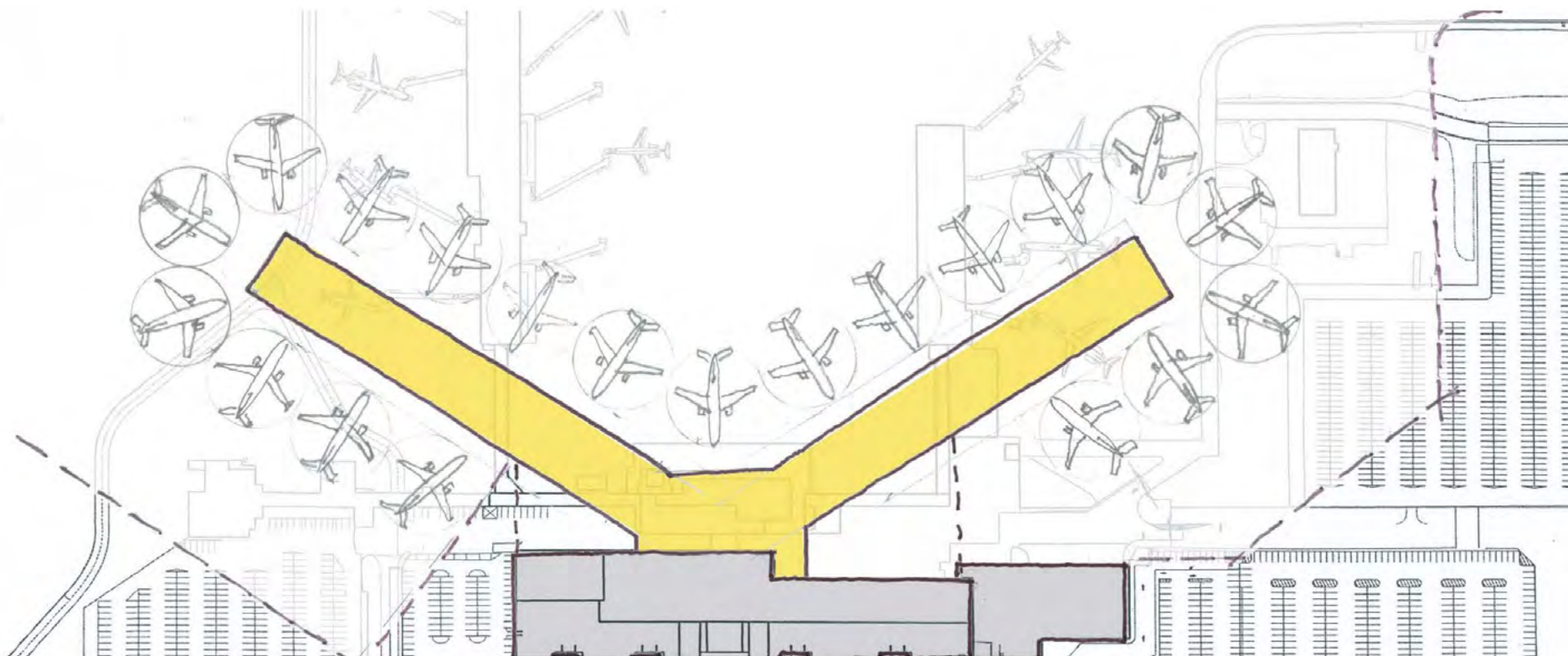
*Illustration 2.2.2-11: Incremental Initial Build-Out "T" Concept*



*Illustration 2.2.2-12: Incremental Initial Build-Out "Chevron" Concept*



*Illustration 2.2.2-13: Incremental Initial Build-Out "Y" Concept*



*Illustration 2.2.2-5: Future "Chevron" Deep Full Build-Out - 2040*

# REFINING THE APPROACH

## Redefining value

Throughout 2013 and 2014, LWC partnered with Passero, Woolpert, JD Bender, and Messer Construction to provide a comprehensive critical overview of the solutions offered by the 2012 Study. A new series of alternatives that control cost were evaluated in terms of architectural features, site development needs, infrastructure enhancements, and overall energy efficiency. Logistics of how to phase and sequence the construction while maintaining airport operations was also a primary consideration.

The initial Terminal Implementation Plan included a phased approach to achieving the goals outlined in the original Terminal Study. Upon completion, financial consultants reviewed the overall plan and outlined the anticipated funding required to implement the plan. This analysis indicated the overall plan was \$200 million over the duration of the phases.

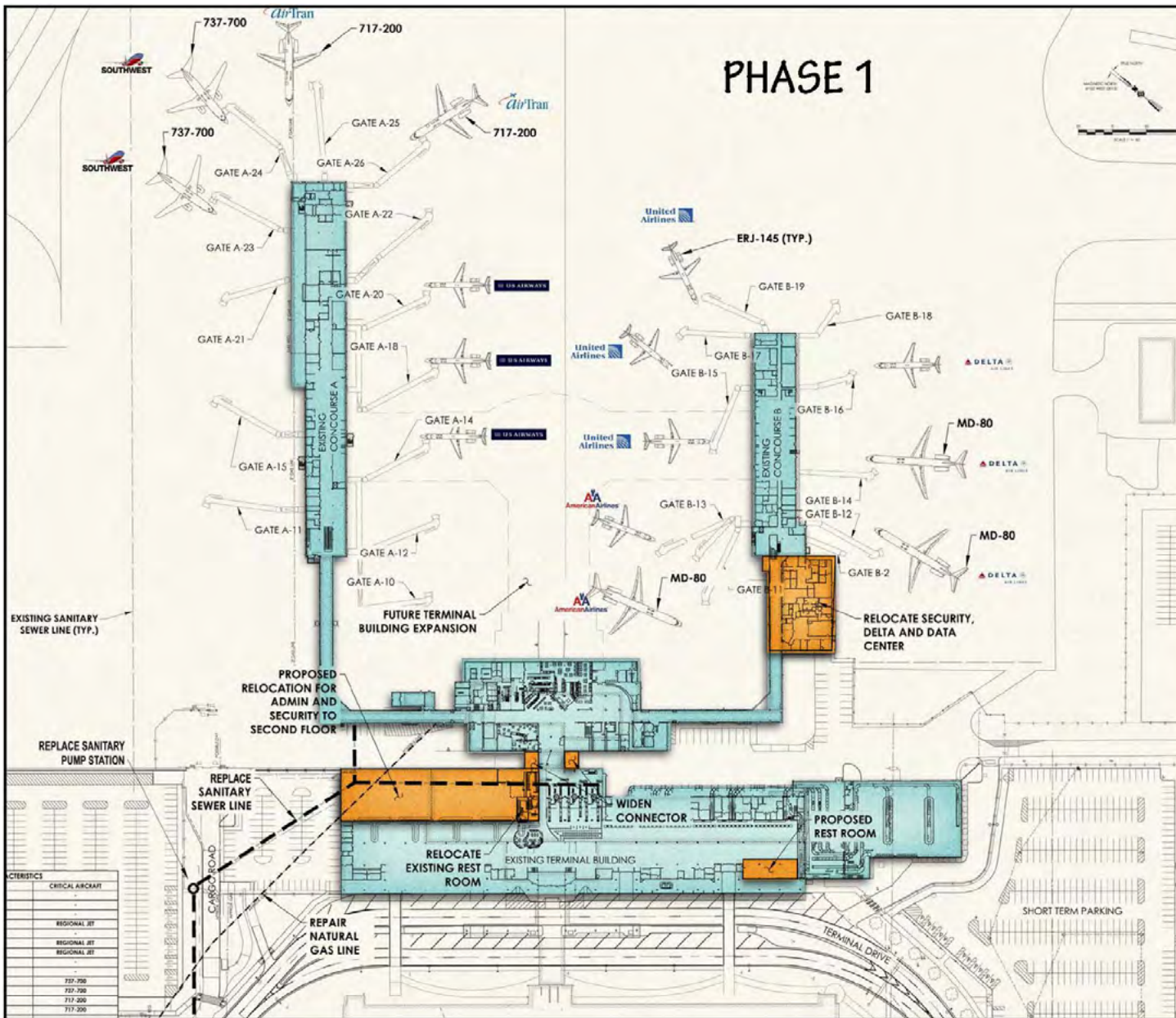
Dayton International Airport staff requested a revised phasing plan to focus on getting to the new terminal construction phase as soon as possible.

Additional areas of focus on the new plan included:

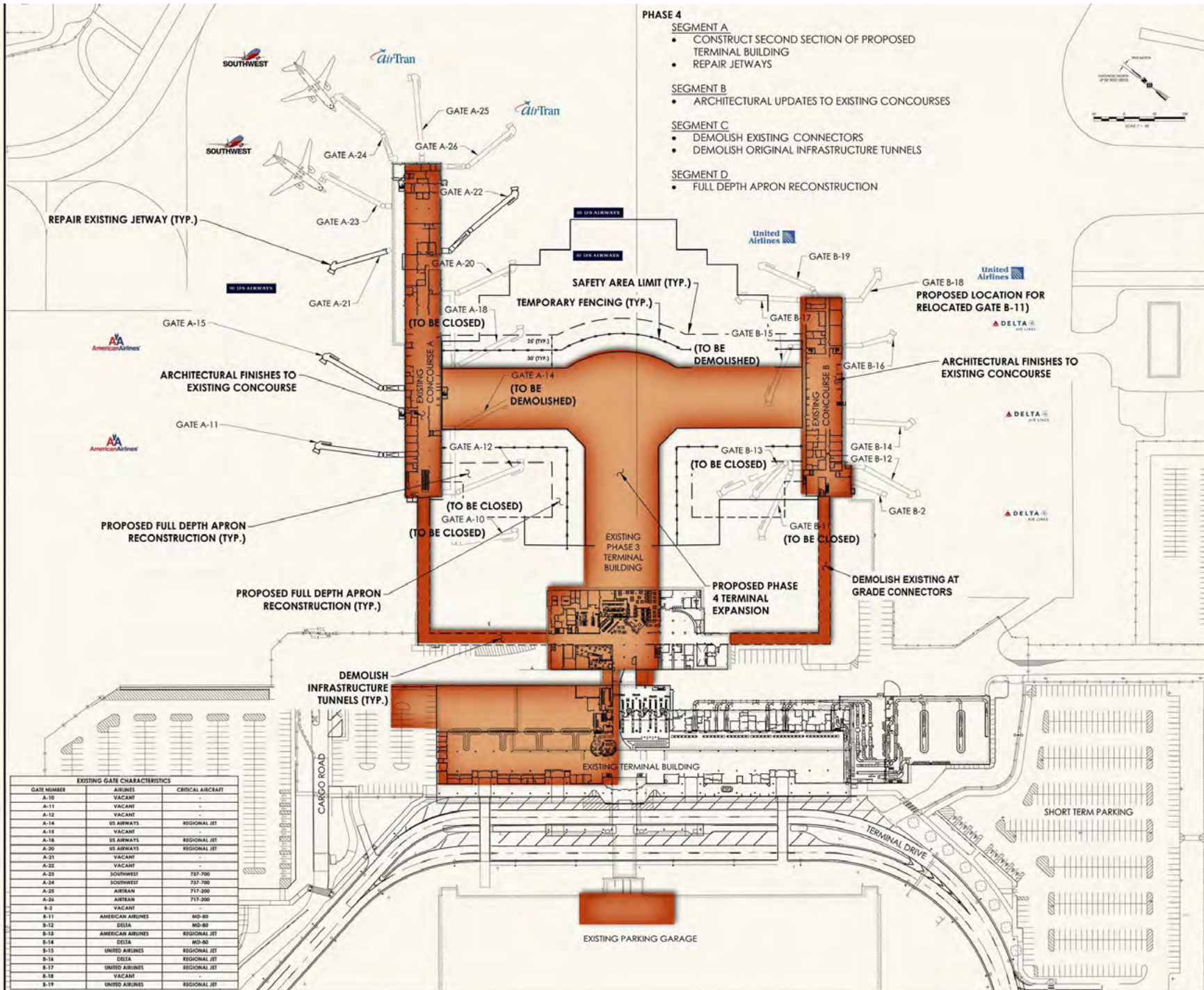
- \* Options to address mechanical and electrical upgrades required
- \* Integrate a public observation area
- \* Further define security options for the second floor arriving passenger corridor
- \* Present options for International arrivals/departures and associated support/security











**PA**  
PASSERO ASSOCIATES  
Engineering Architecture  
www.passero.com

**LWC**  
LAW OFFICES  
400 East Main Street  
Suite 1000  
Dayton, OH 45377  
Tel: 937.233.8888  
Fax: 937.233.8889

**63 MONTHS**  
**\$124.5M**

**DRAWING INDEX**

- 1 PHASE 1
- 2 PHASE 2
- 3 PHASE 3
- 4 PHASE 4

Dayton International Airport  
3600 Terminal Drive Suite 300  
Vandalia, Ohio 45377

**PASSERO ASSOCIATES**  
William F. Passero, P.E.  
Principal  
Michael J. Morgan, P.E.  
Principal  
Robert E. Day, P.E.  
Principal  
Christopher J. Smith  
Principal

**B-1**

Revisions

**Terminal Building Concept Plan**

**Phase 4**

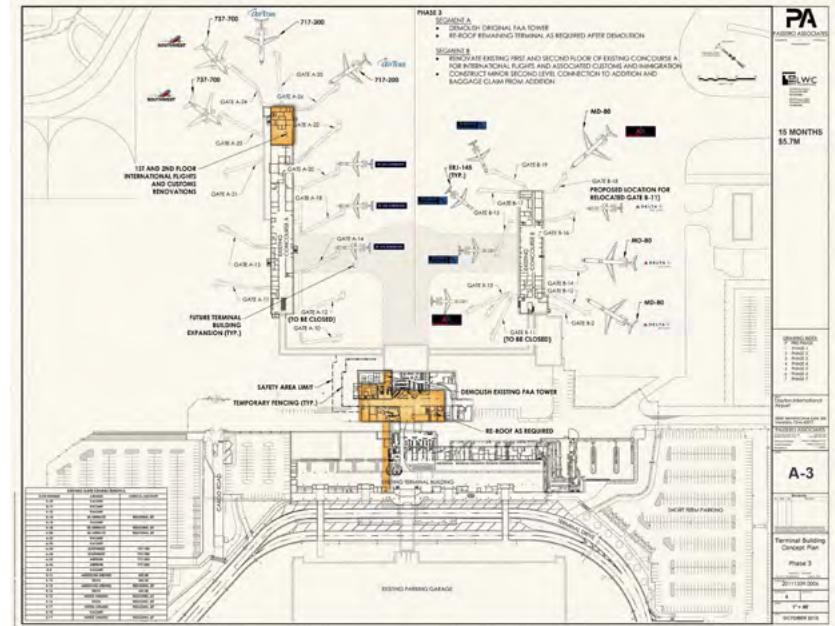
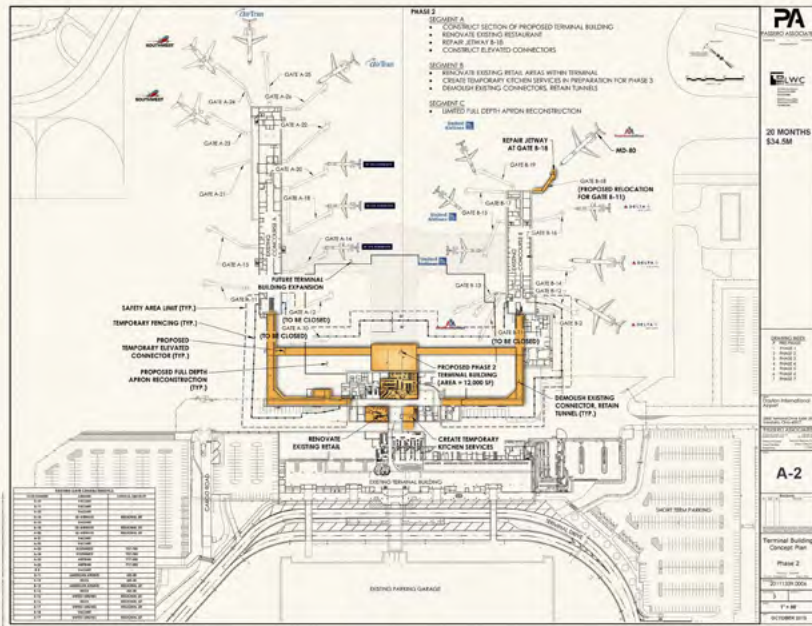
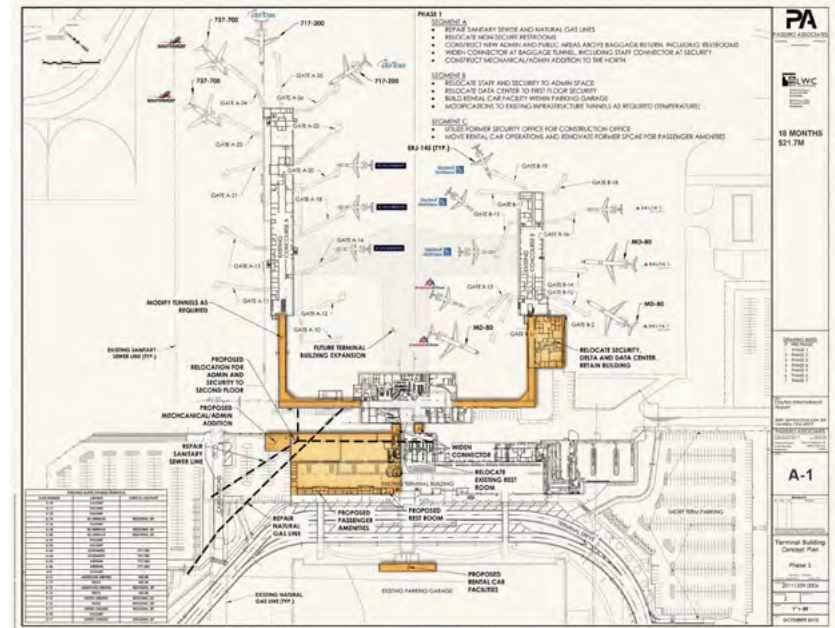
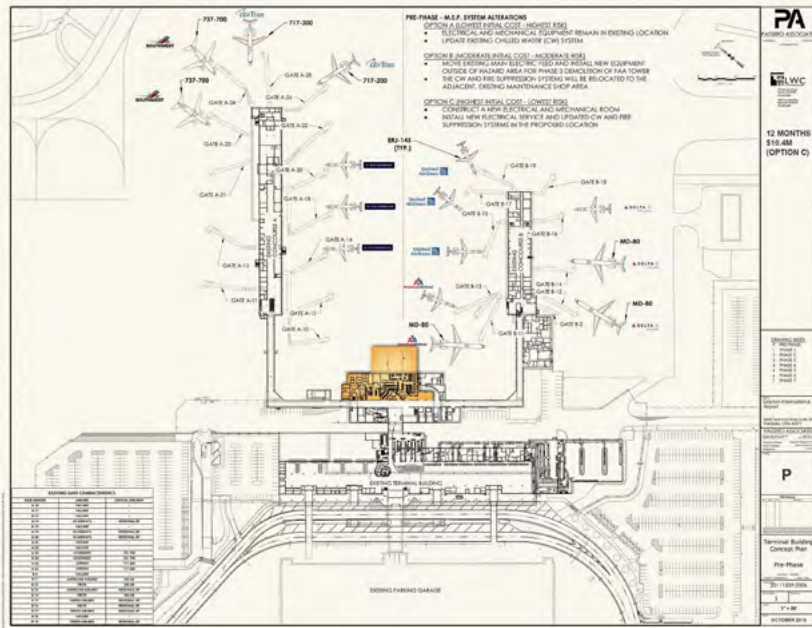
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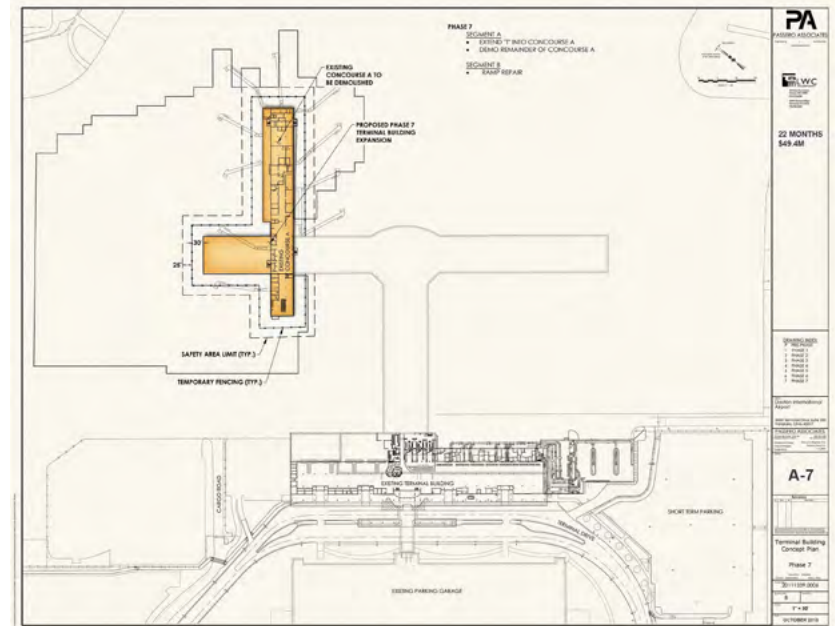
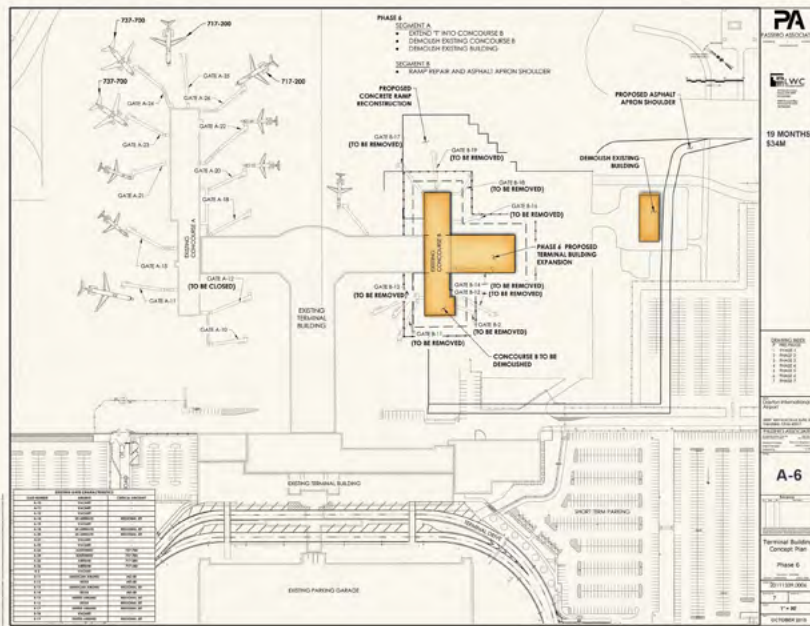
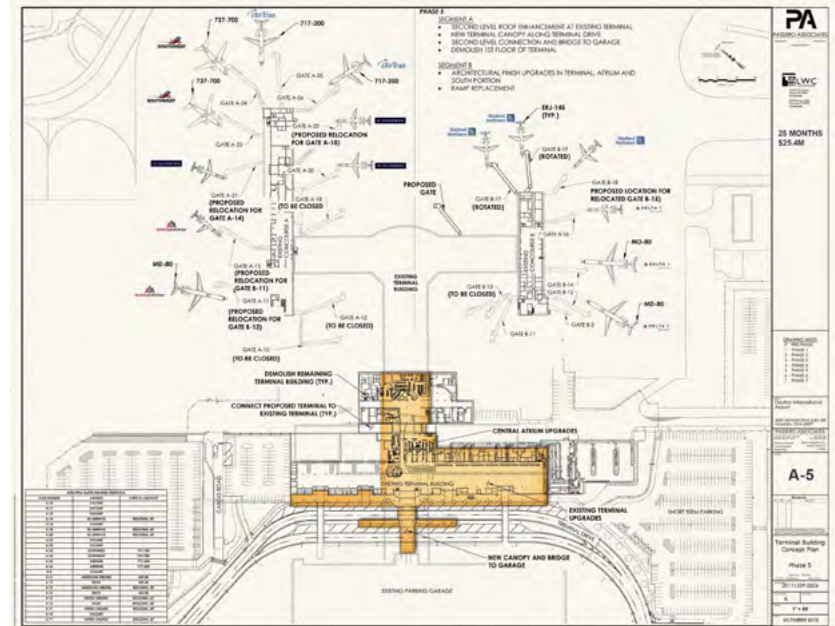
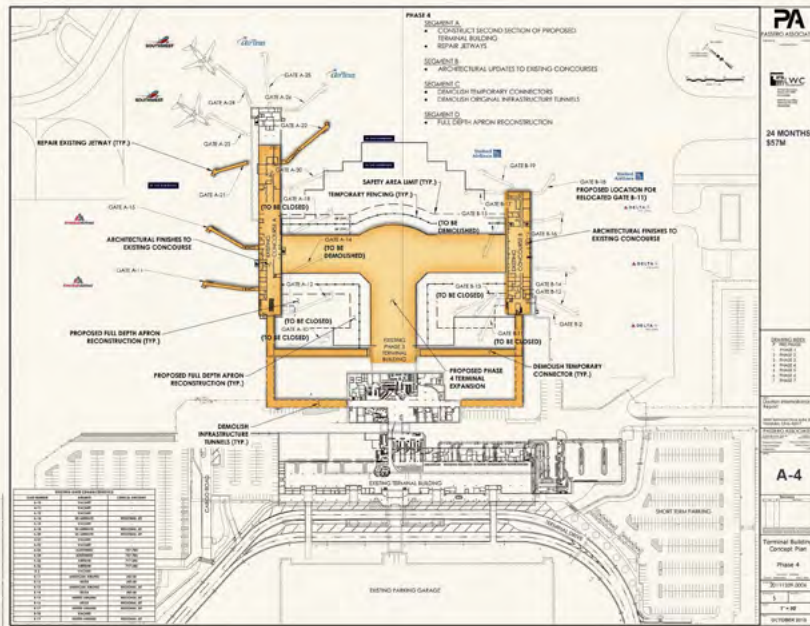
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OCTOBER 2013

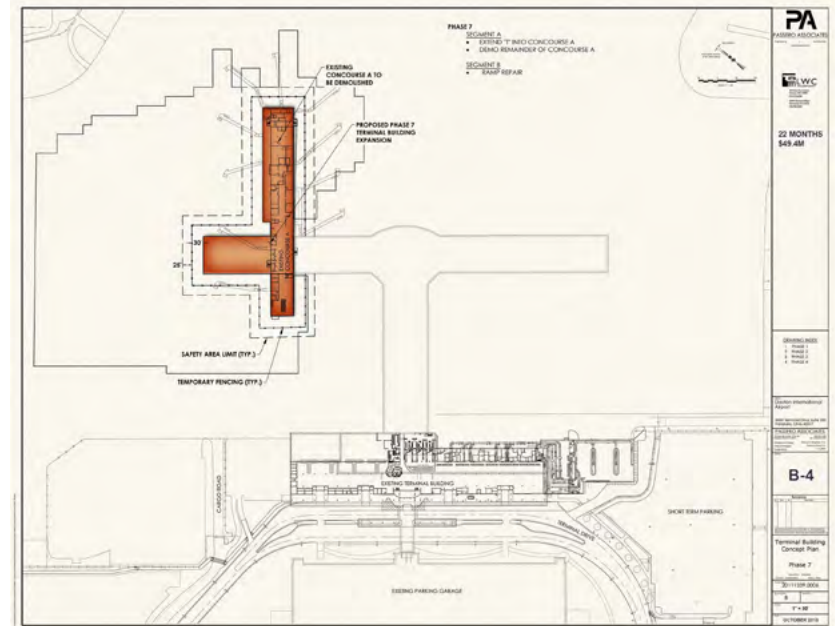
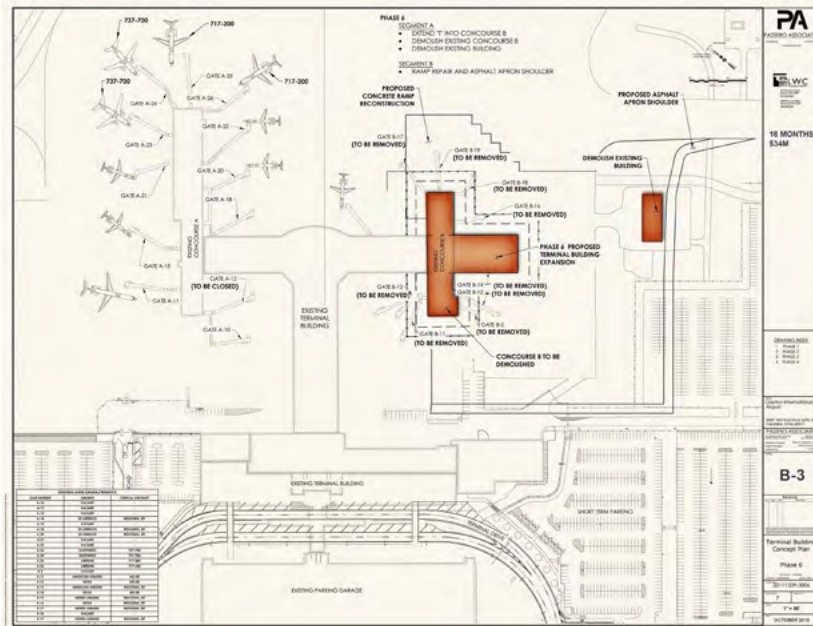
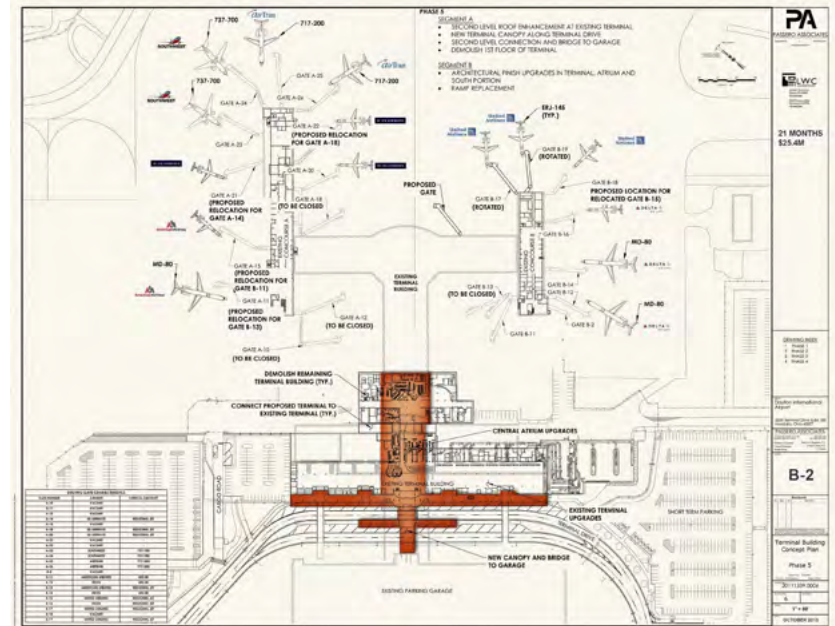
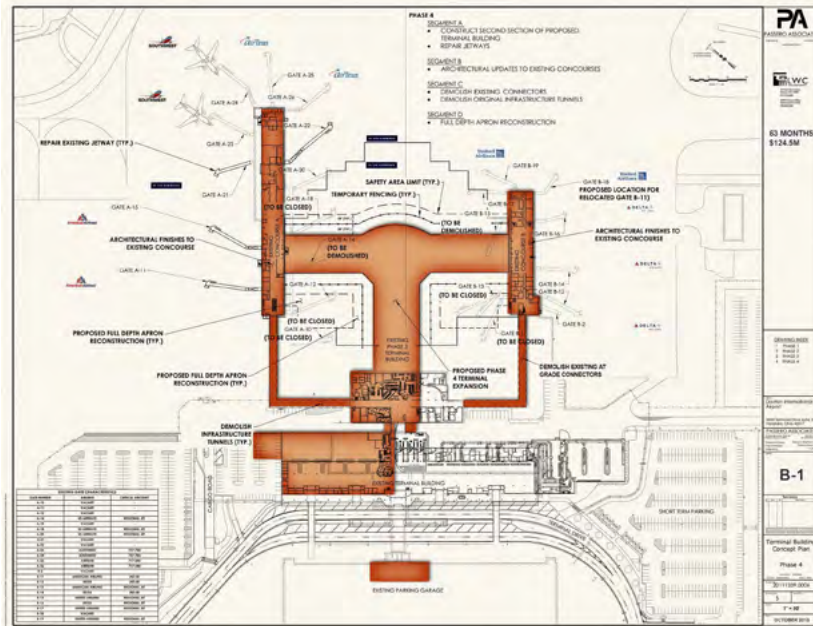


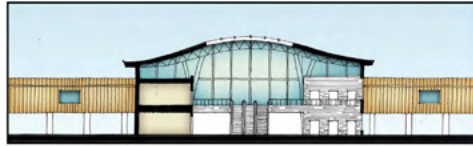




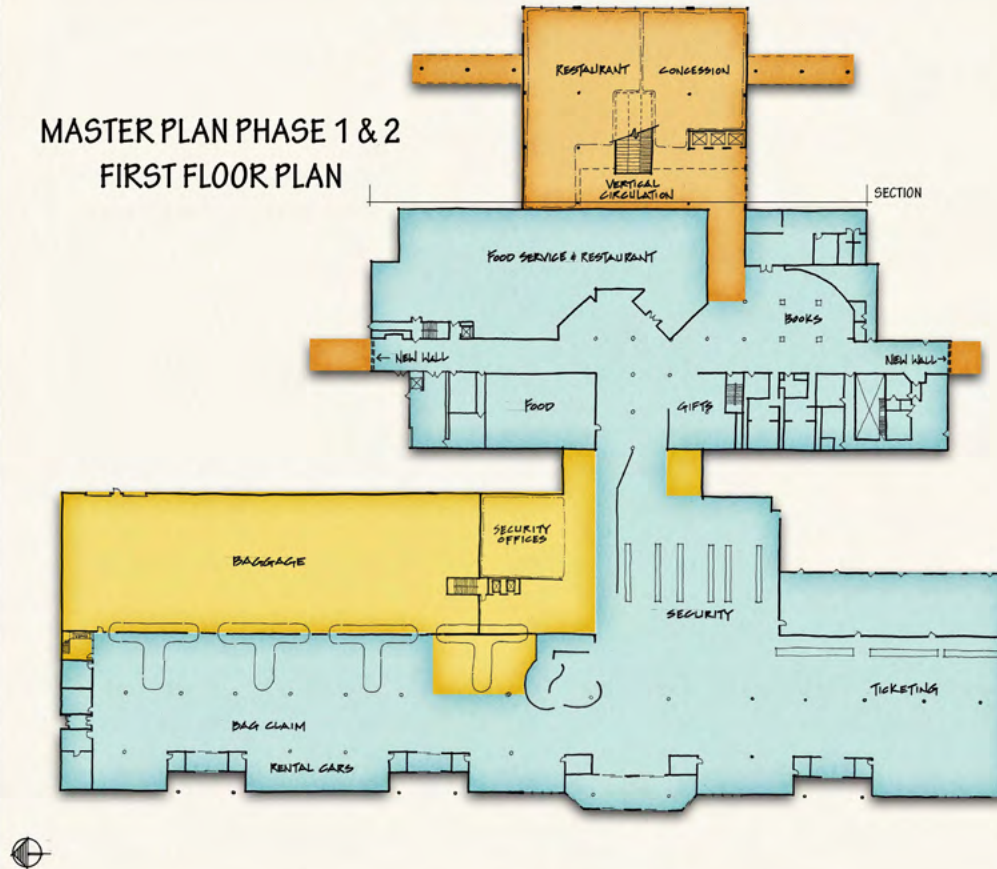








# MASTER PLAN PHASE 1 & 2 FIRST FLOOR PLAN



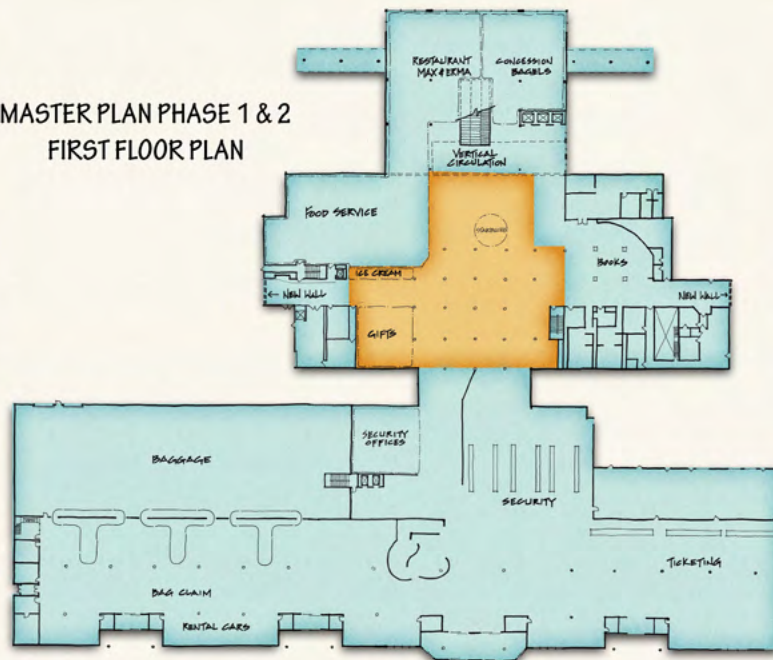
DAYTON INTERNATIONAL AIRPORT  
MASTERPLAN  
IMPLEMENTATION




9.9.13

- PHASE 1
- PHASE 2
- EXISTING



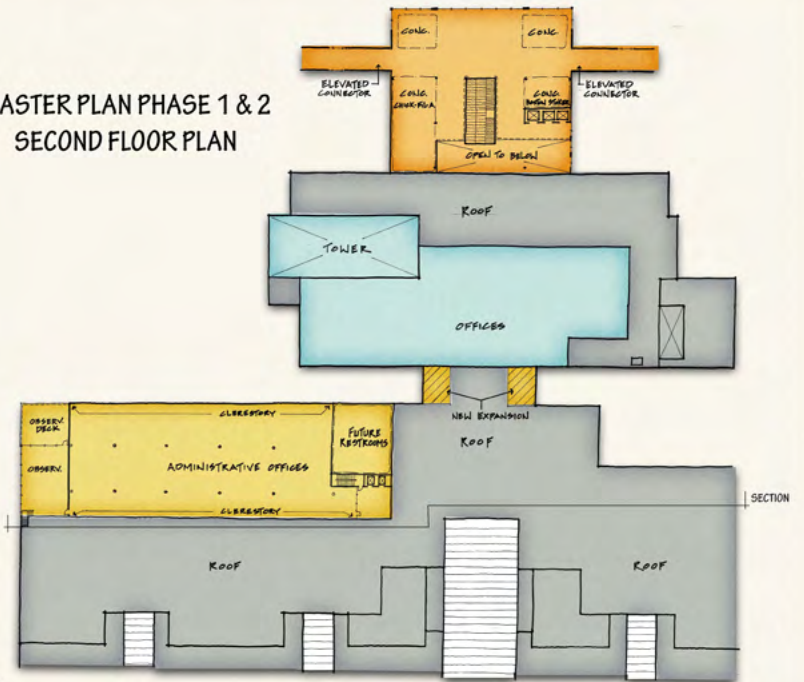
MASTER PLAN PHASE 1 & 2  
FIRST FLOOR PLAN






 PHASE 1  
 PHASE 2  
 EXISTING



MASTER PLAN PHASE 1 & 2  
SECOND FLOOR PLAN



 PHASE 1  
 PHASE 2  
 EXISTING



DAYTON INTERNATIONAL AIRPORT  
DECEMBER 19, 2013



EXISTING CANOPIES

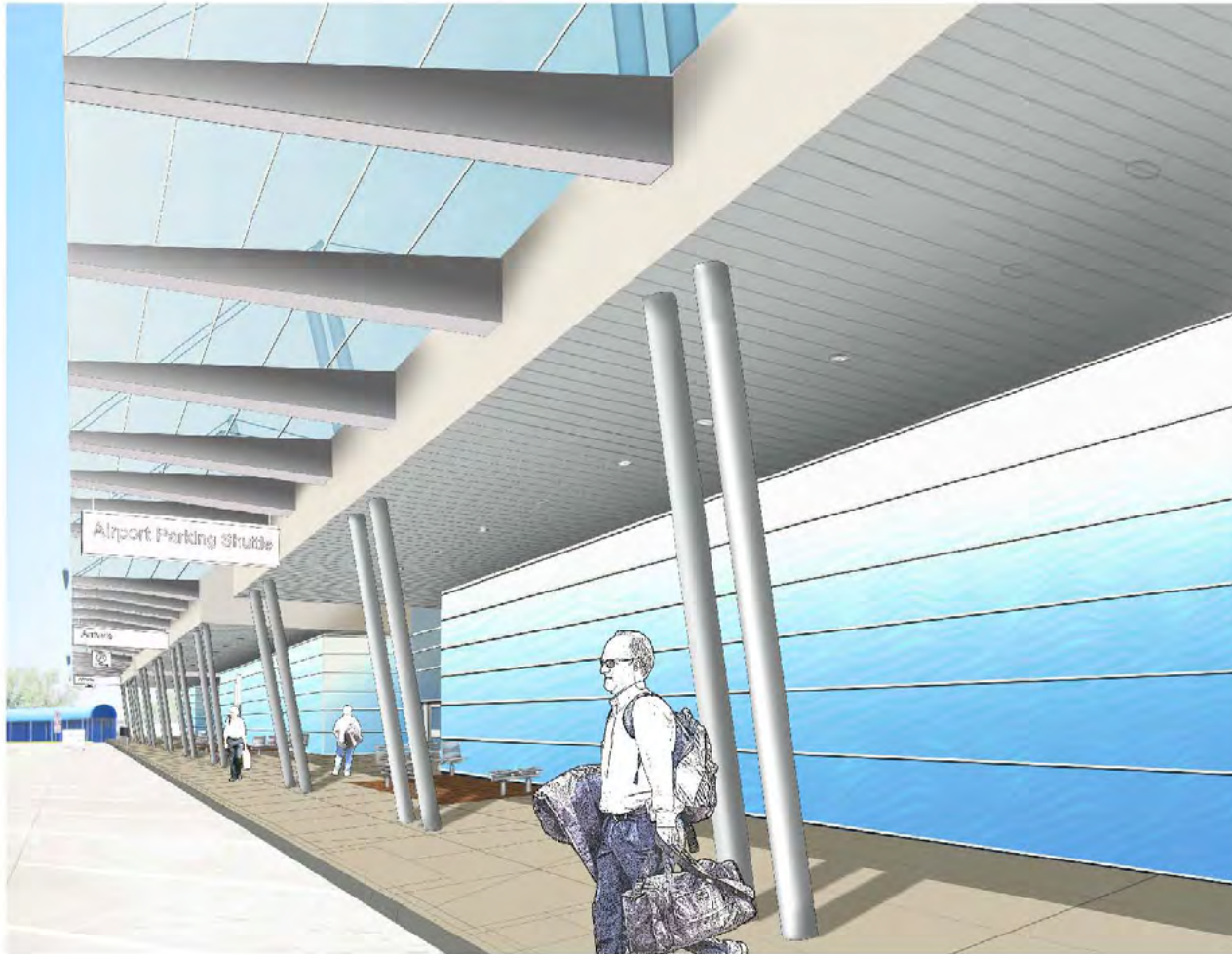




DAYTON INTERNATIONAL AIRPORT  
DECEMBER 19, 2013



PROPOSED REMOVAL OF CENTER ISLAND CANOPIES

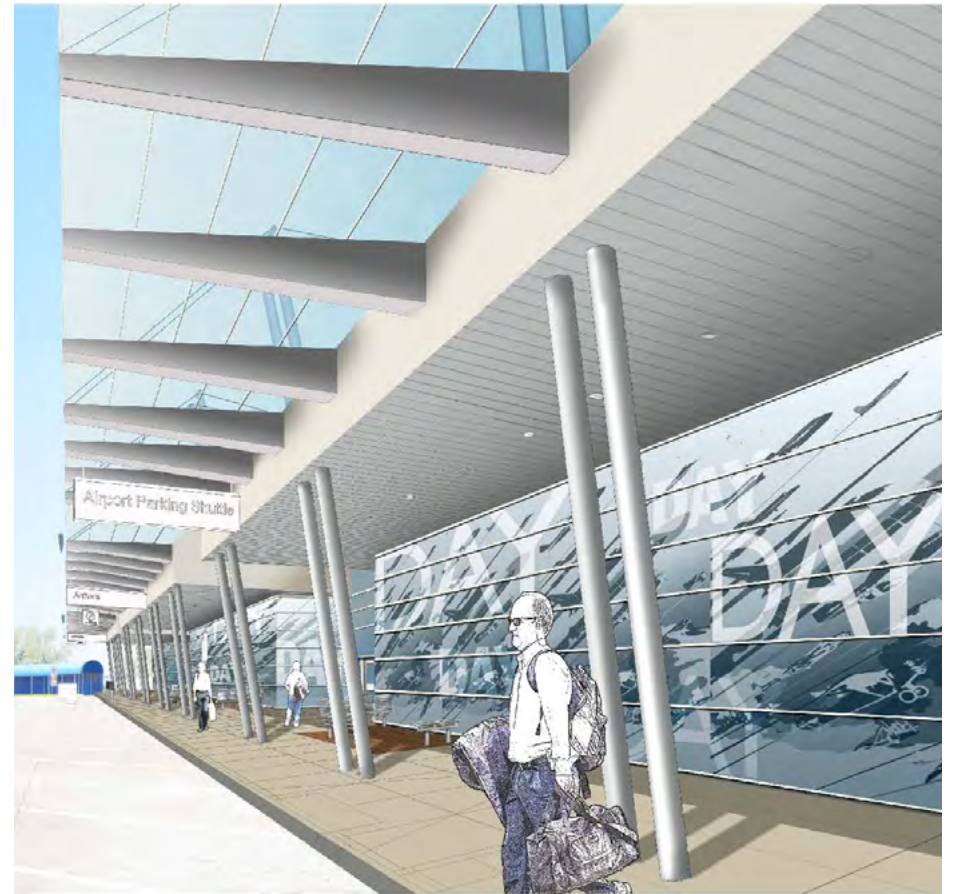
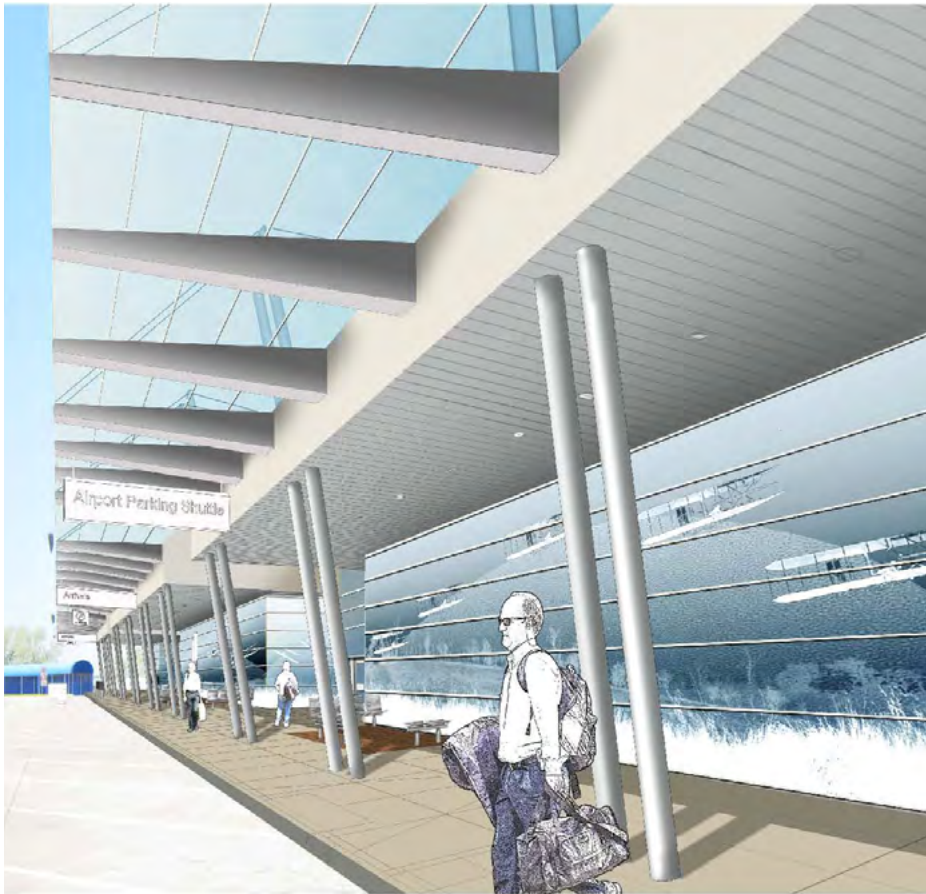


DAYTON INTERNATIONAL AIRPORT  
Terminal Drive Studies - A

April 4, 2014







# COMPLETED WORK

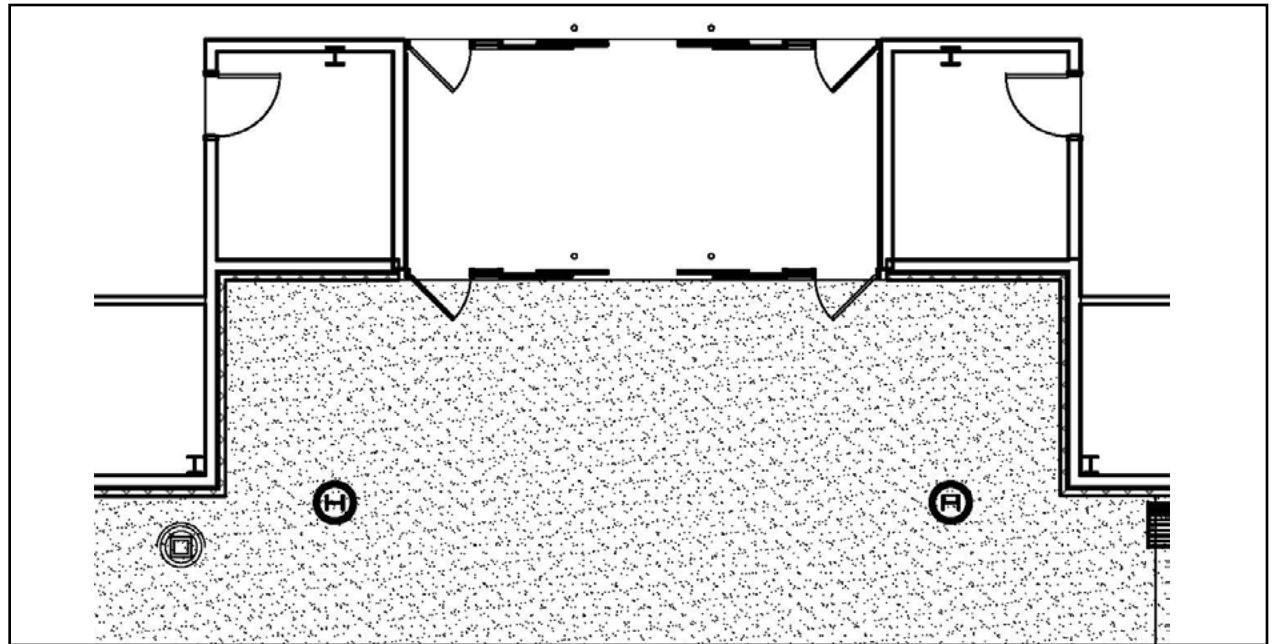
## Entrance Replacement Project

The Dayton International Airport Terminal Driveway Walkway and Entrances were constructed as part of the terminal expansion in 1987, prior to current security mandates and baggage requirements. The entrances are not fully ADA compliant and have reached the end of their useful life. Replacement parts to keep them operating are no longer available for purchase. The single entry entrances are configured in a way that there is congestion and conflict of people entering and exiting the terminal. This has the potential to separate passengers from their bags when they take advantage of using porter services. The current passenger entries are single doors and do not accommodate the demand for carry-on baggage and two-way traffic. This has rendered the existing entries inadequate to meet current requirements. The new entrances (two entries per vestibule) provide wider access and more distinct entrance allowing porters and passengers to use the same entry without losing sight of the baggage for security. These entrances now use automatic horizontal sliding door systems to maximize entrance width and ease of operation. The new doors are three leafs which provide maximum width and speed of operation while minimizing energy loss due to two openings vs a single, which is always in operation. The entrance replacement project has successfully improved the various entrances by changing to modern automatic sliding entrance systems to accommodate people and baggage flow while meeting ADA accessibility standards.

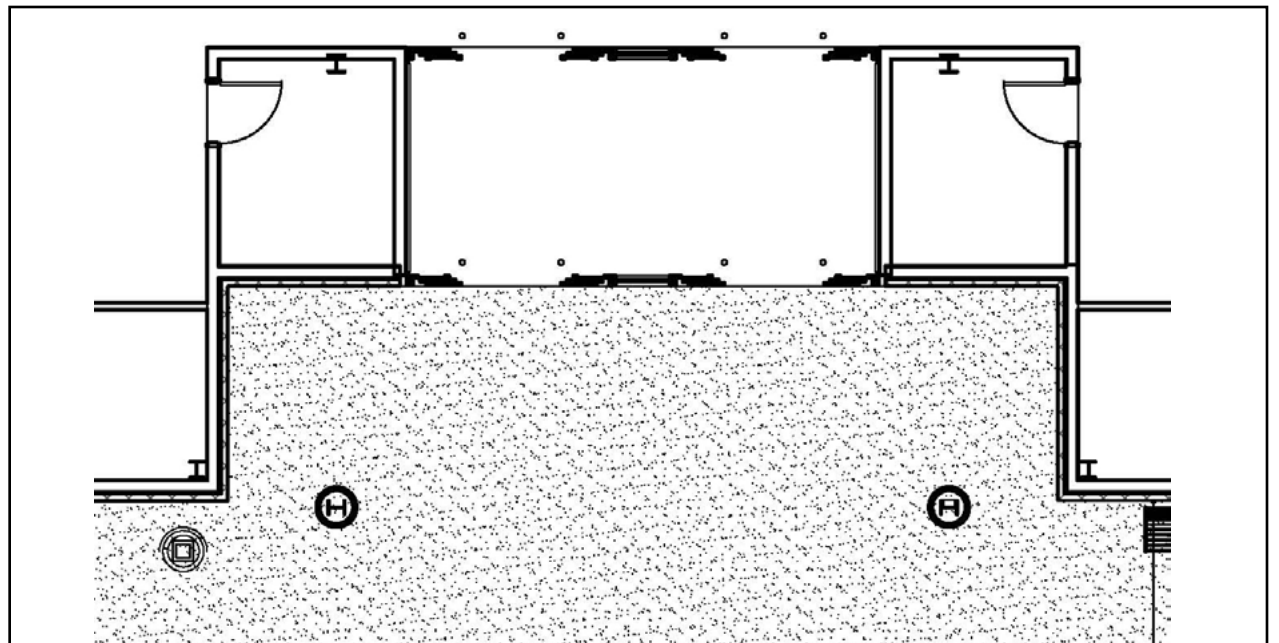
**Estimated Cost of Construction: \$500,000**  
**Duration of Construction: 2014-2015**



New entrance recently replaced



Original entrances



New entrances



# Terminal Restrooms

The existing restrooms are also 28 years old (constructed in 1987) and present general maintenance as well as functional challenges. The position of the existing terminal restrooms does not work well with the new security check point area, making them difficult for passengers to find and use. The interior layout of the restrooms does not comply with today's ADA requirements and the finishes present a dated aesthetic. The plumbing chases behind the water closets present significant maintenance challenges as large sections of walls are often removed to access the valves and controls that need to be replaced. New restrooms for the Terminal building are proposed in Phase 1 to comply with ADA standards, present finishes that are consistent with recent restroom renovations through the remainder of the airport, and to provide walkable chases behind plumbing fixtures for easier maintenance.

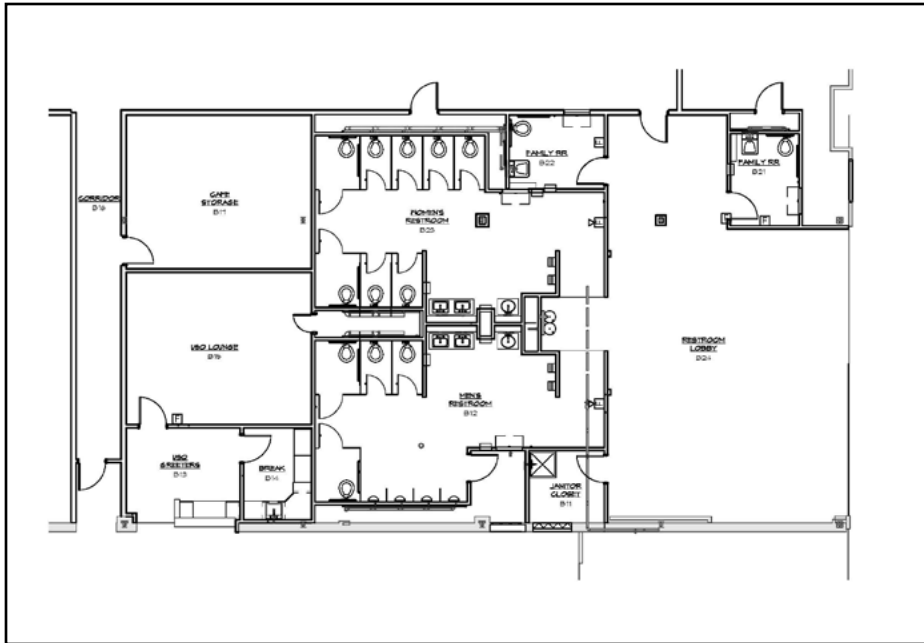


Existing restroom counters



Existing restroom partitions





Proposed new terminal restrooms



New restroom entry facade



New adult and child sinks



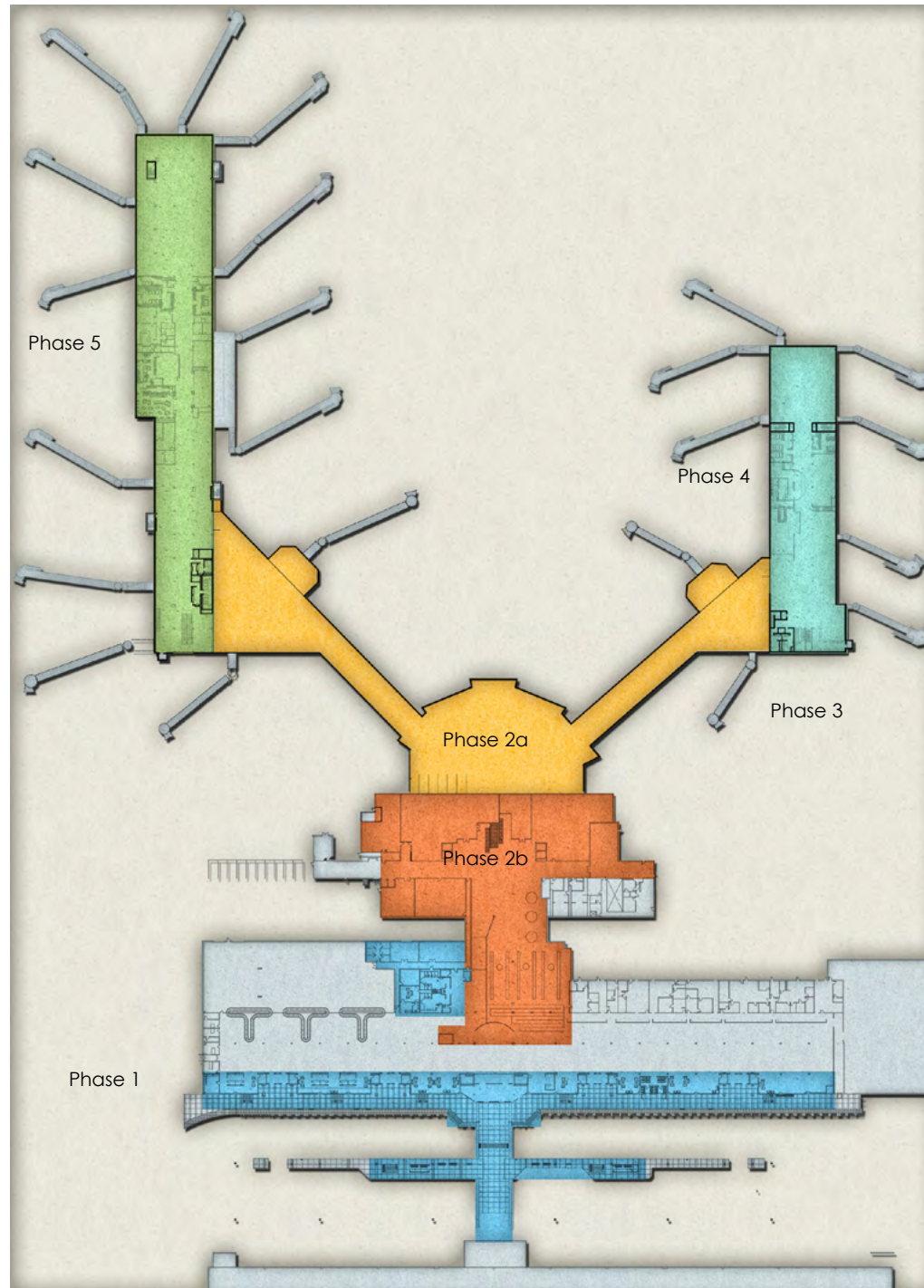
New toilet partition standard

# TERMINAL PLANNING

## 2015 Study

1. Connectors: Minimized length, increased width / height with views to airfield, created opportunity for four new close gates.
2. Gates: New finishes and furnishings gives improved modern aesthetic and more comfortable passenger experience.
3. Concessions: Increased square footage adds opportunity for additional vendors, central location close to gates will increase revenues.
4. Intuitive Navigation: Central escalators / elevators and large views to airfield will improve passenger experience.
5. SIDA Line: Requires off site loading dock site to be determined.
6. Loading Dock: Increased first floor holding room, added second floor holding room to better serve concessions and operations.
7. Infrastructure: System retrofits improve energy efficiency and reliability.
8. Building Code: New construction will comply with “covered mall” provisions.
9. Meeter and Greeter Space: Decongested front door space and new Family Lounge spaces along window walls improve passenger experience.
10. Security Checkpoint: Expanded recomposure and increased width offers room for growth in Security Zone to comply with post 2001 requirements.
11. Administration: Open central stair connects three levels of staff offices.
12. Airport Operations: Centralized first floor accommodations can be accessed via secured corridor.
13. Airline Tenant Operations: Accessed via secured interior corridor.

**Total Estimated Cost of Construction: \$94,400,000**  
**Duration of Construction: 2016-2025**





# PHASE I

## Public Entrance Renovation

### Terminal Drive Canopy

The Terminal Drive canopy is 28 years old and the cladding is failing. The cladding cannot be repaired due to connection systems. Its design is heavy and creates a dark environment, therefore requiring supplemental lighting that exceeds recommended energy consumption levels. The existing canopy has several areas of damage, including the structural decking, that has required multiple maintenance repairs and the decking is currently at the end of its useful life. The aging exterior cladding needs to be replaced with new. The original HID artificial lighting is failing and is not as energy efficient or bright as modern fixtures. The current sound system is also dated and in need of updating for better communication with passengers. The current sidewalk and various site amenities such as benches, trash receptacles, and the like are aged and in need of replacement and made to comply with current ADA standards and TSA security. New wide expanses of glazing along the exterior facade will help bring natural light into the terminal and will improve visibility of transportation arrivals and departures.

The severity of the required maintenance repairs creates a situation where it is more cost-effective to replace the entire canopy structure, lighting, sound system, and sidewalk. This offers an opportunity for a fresh environmentally

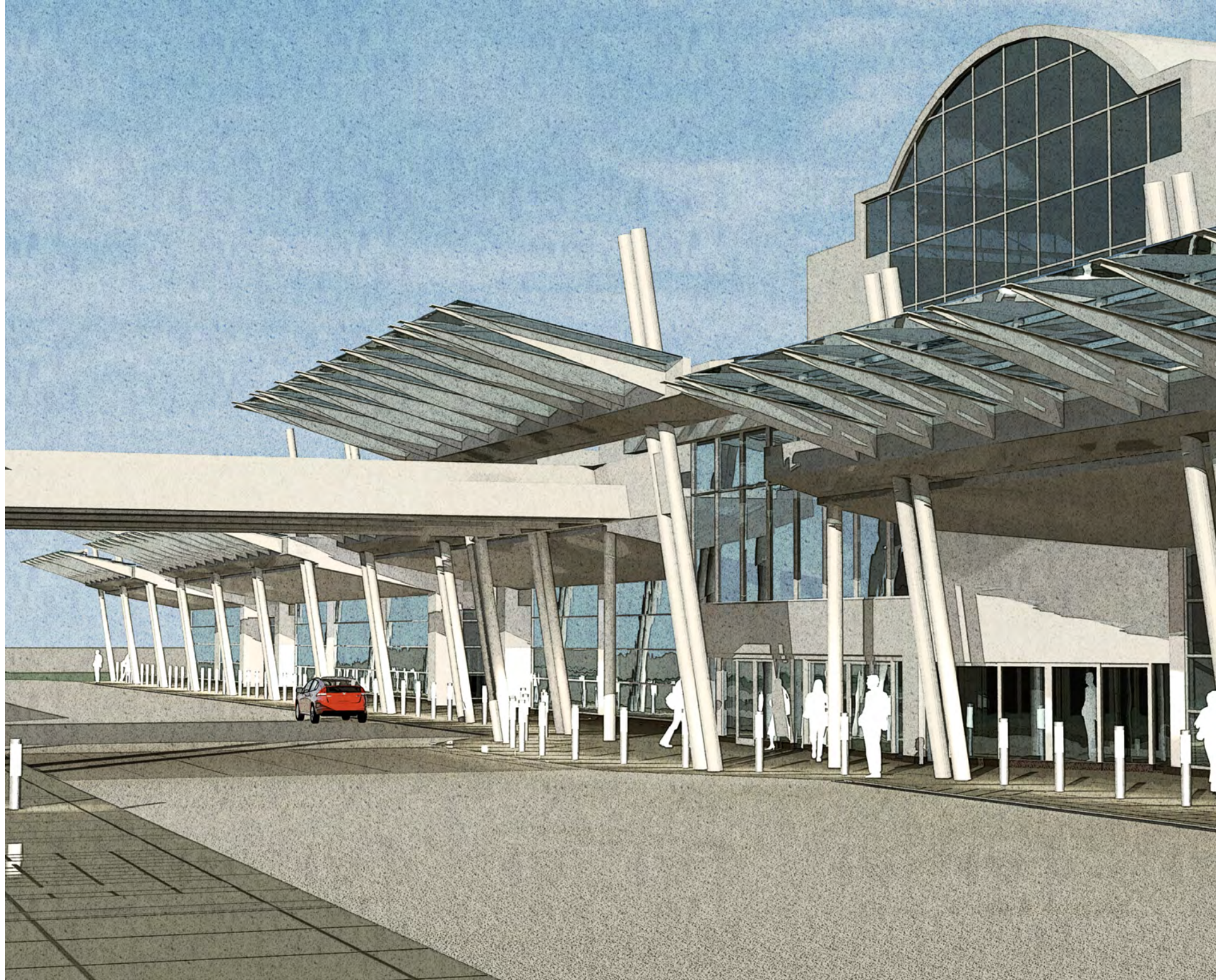
friendly design to present a more modern front door to the airport. The new design is planned to create a more open configuration with greater daylight and a brighter feel while still providing good protection of people and vehicles at the curb. New brighter and energy efficient lighting is planned. The sidewalk will be re-graded to make it ADA compliant and easier to load and unload passengers and their luggage from their vehicles to help alleviate the congestion. The new construction alleviates the burden of the constant maintenance challenges that the airport currently faces in this area.

The existing electrical and mechanical systems will be revised and upgraded to meet the new program requirements. This work includes new HVAC distribution and upgraded LED lighting. Changes made to the existing HVAC system will be coordinated with the overall facility energy reduction protocol, referred to as Energy Retrofit Project from here on. The goal of that project is to minimize energy use while also still meeting customer comfort satisfaction.

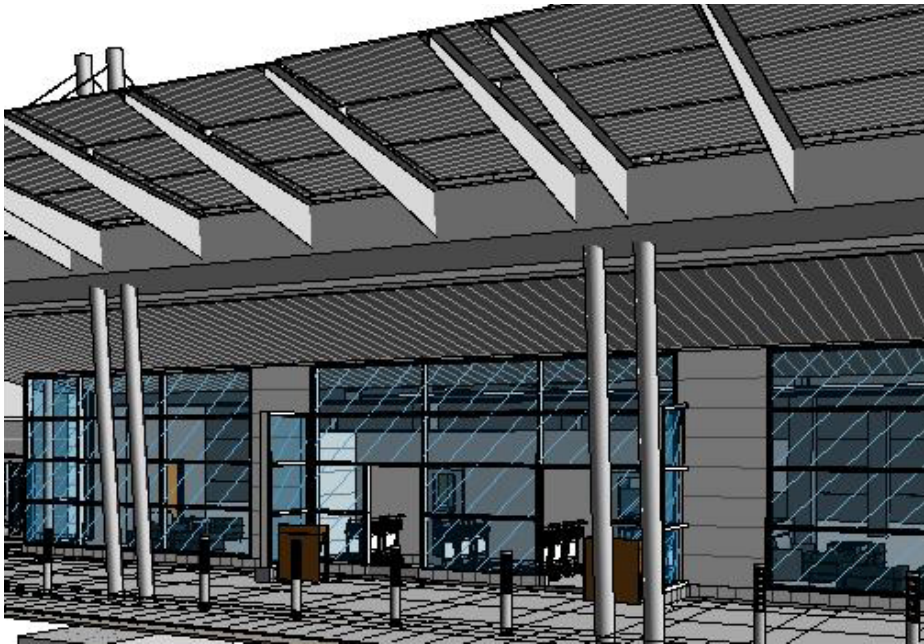
Existing air handling units serving the Terminal Canopy will be replaced as well as associated variable air volume (VAV) terminal units. The number of units will be consolidated from 4 units to 3 units to save energy and operating costs, making 40 years of add on projects and controls work more like one building. Existing ductwork that is to remain will be cleaned. New air handling units will be designed to meet the Energy Retrofit Project design requirements which include variable air volume fans, reduced hot water temperature heating coils and demand control ventilation.

**Estimated Cost of Construction: \$16,000,000**  
**Duration of Construction: 2016-2017**

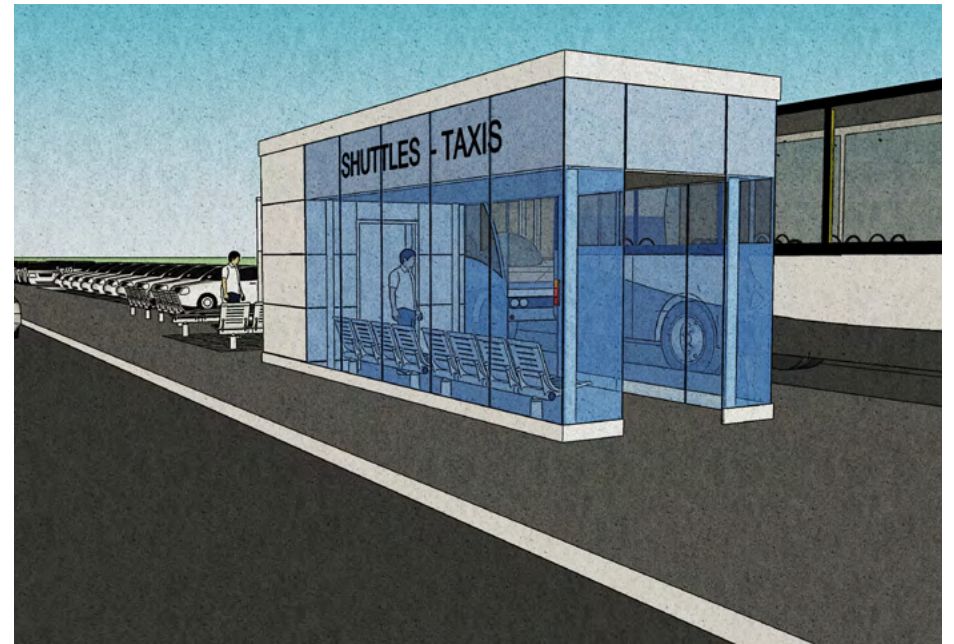




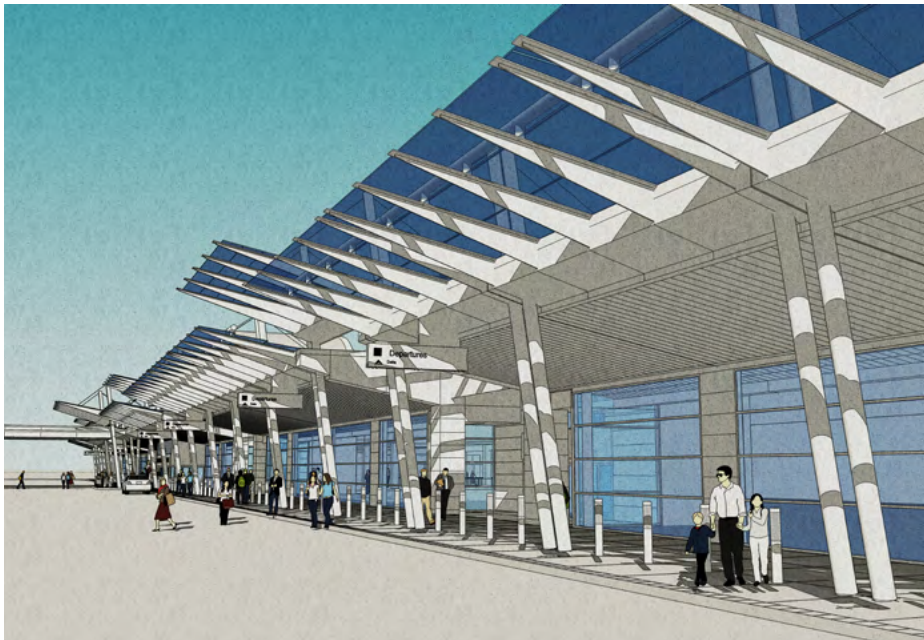




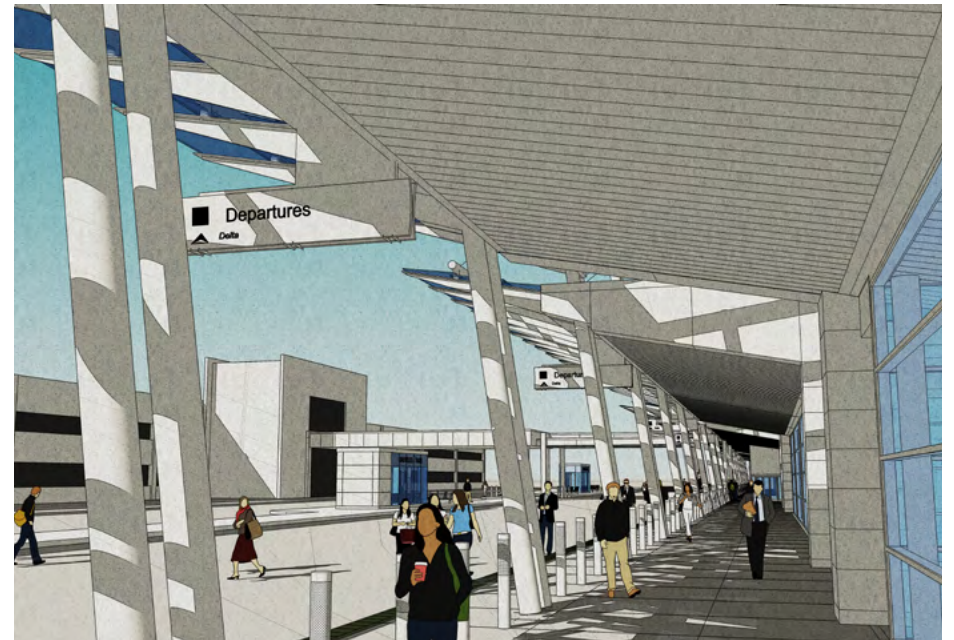
New porter station



New shuttle shelters

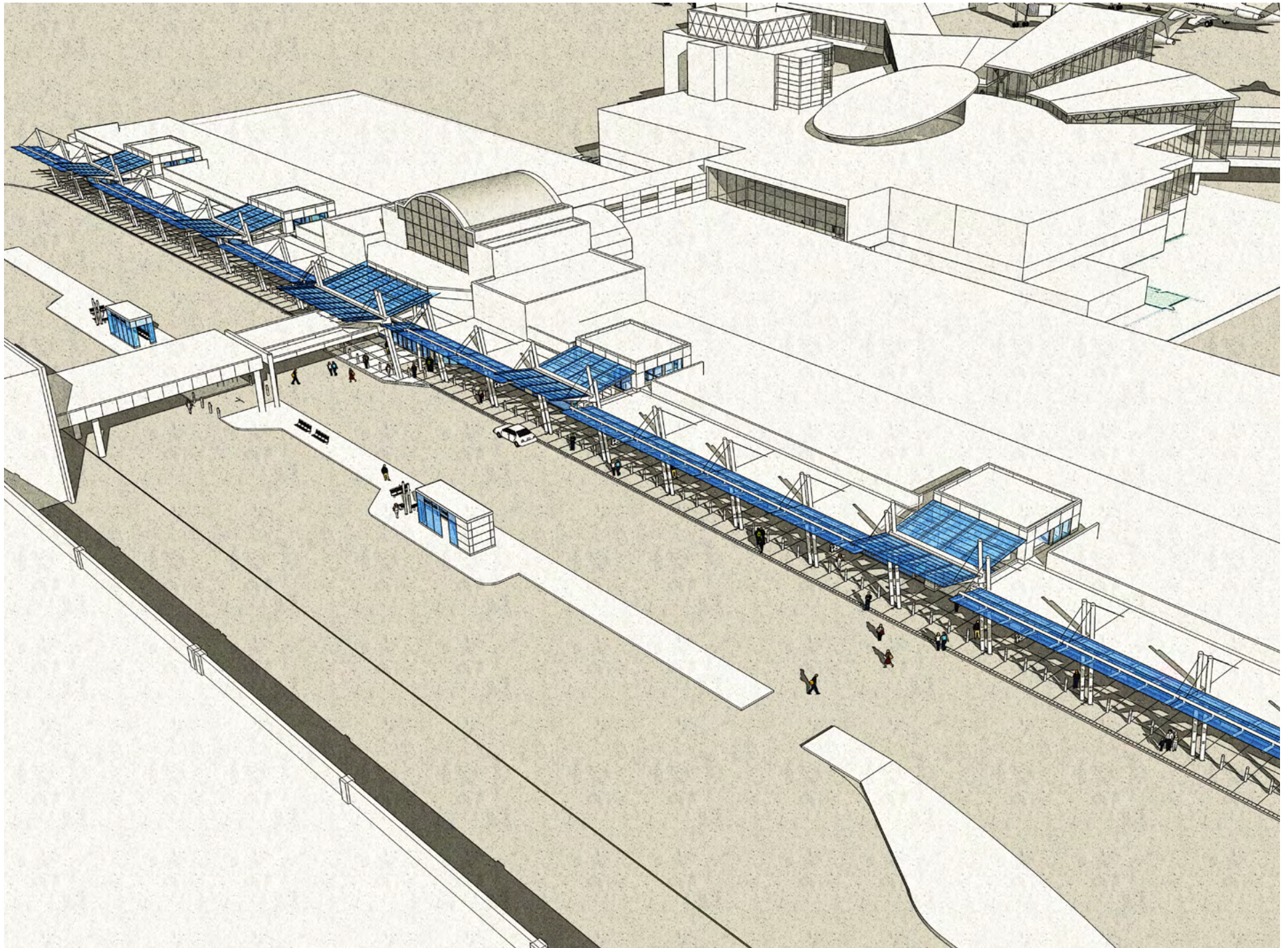


View from vehicular approach



Pedestrian view from under canopy





Aerial of Terminal Drive with new canopy



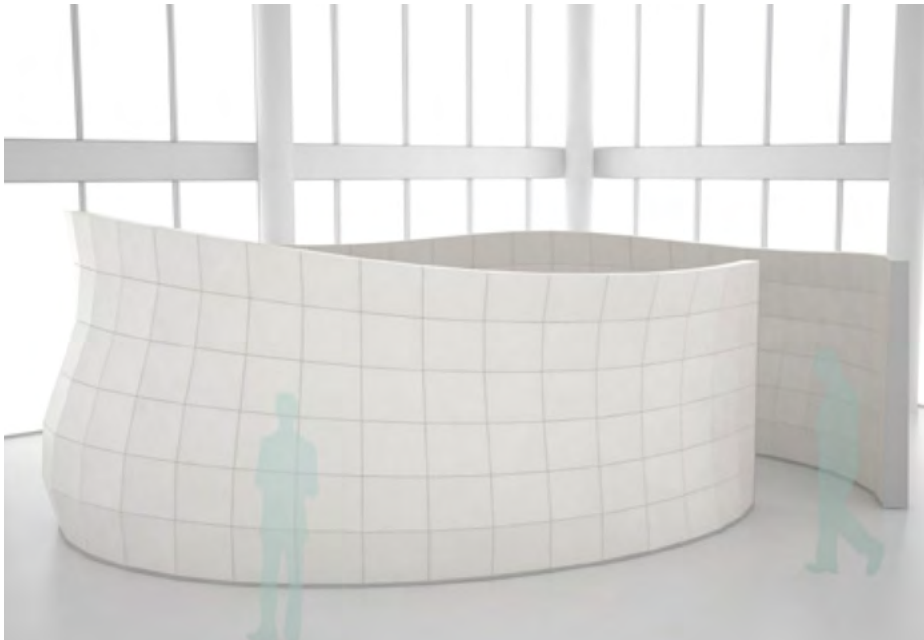
# Terminal Building Interior

The building façade will be modified to provide large glazed openings that allow natural light to enter into the Terminal Check-In and Baggage Claim areas. Inside the Terminal building, the car rental kiosks, lost luggage offices, CNBC gift shop, porter station, meditation room, and USO suite will be relocated to accommodate the new façade.

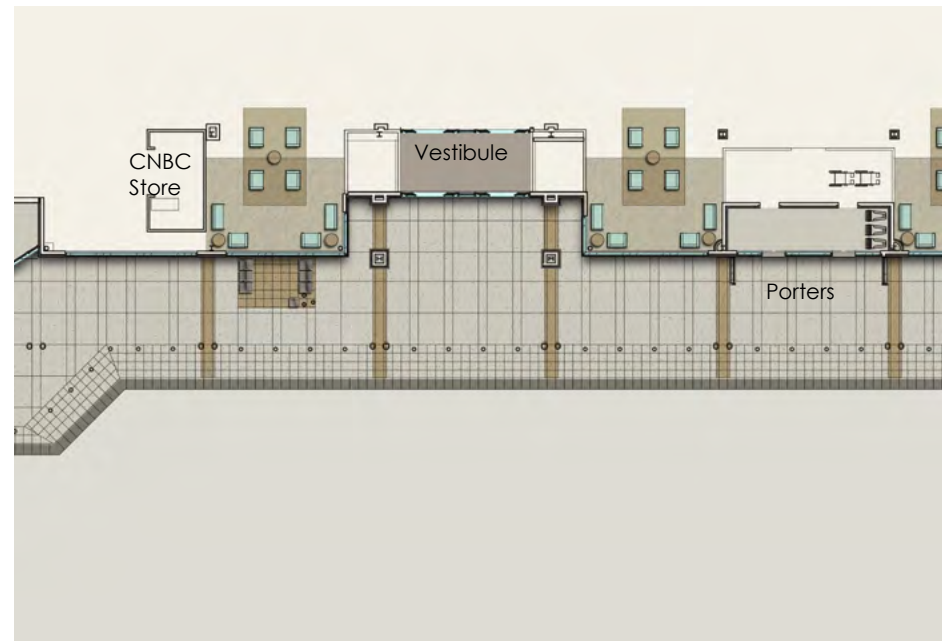
The Phase I interior floor plan is designed to accommodate the future plans in Phase II to provide new elevator/escalators for the new second floor connector for passengers returning to Dayton, giving them a direct route to baggage claim without passing through the activities in the security screening zone.



Car Rental Kiosks

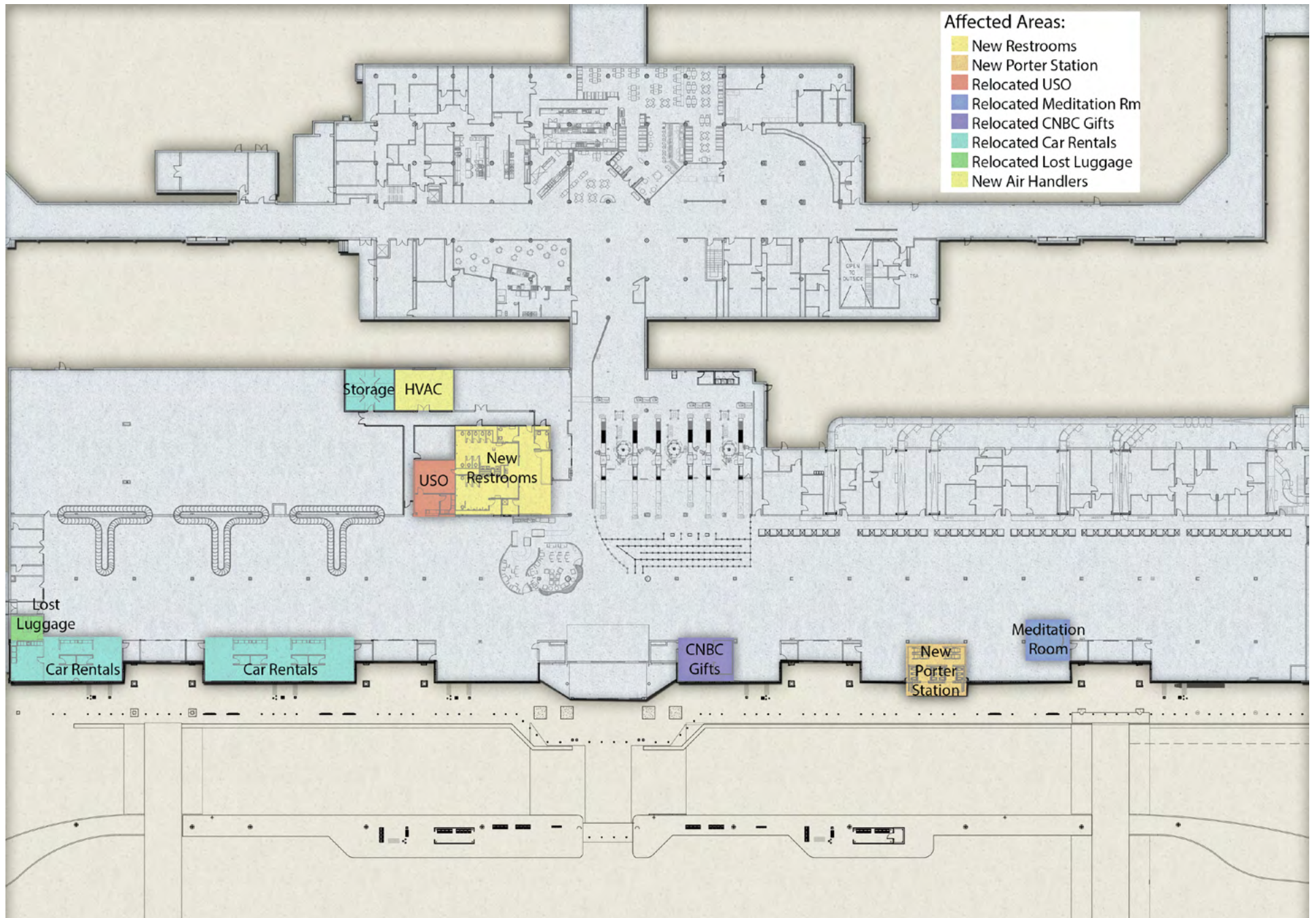


Meditation room - photo courtesy of Seeyond Architectural Solutions



Interior design rendering



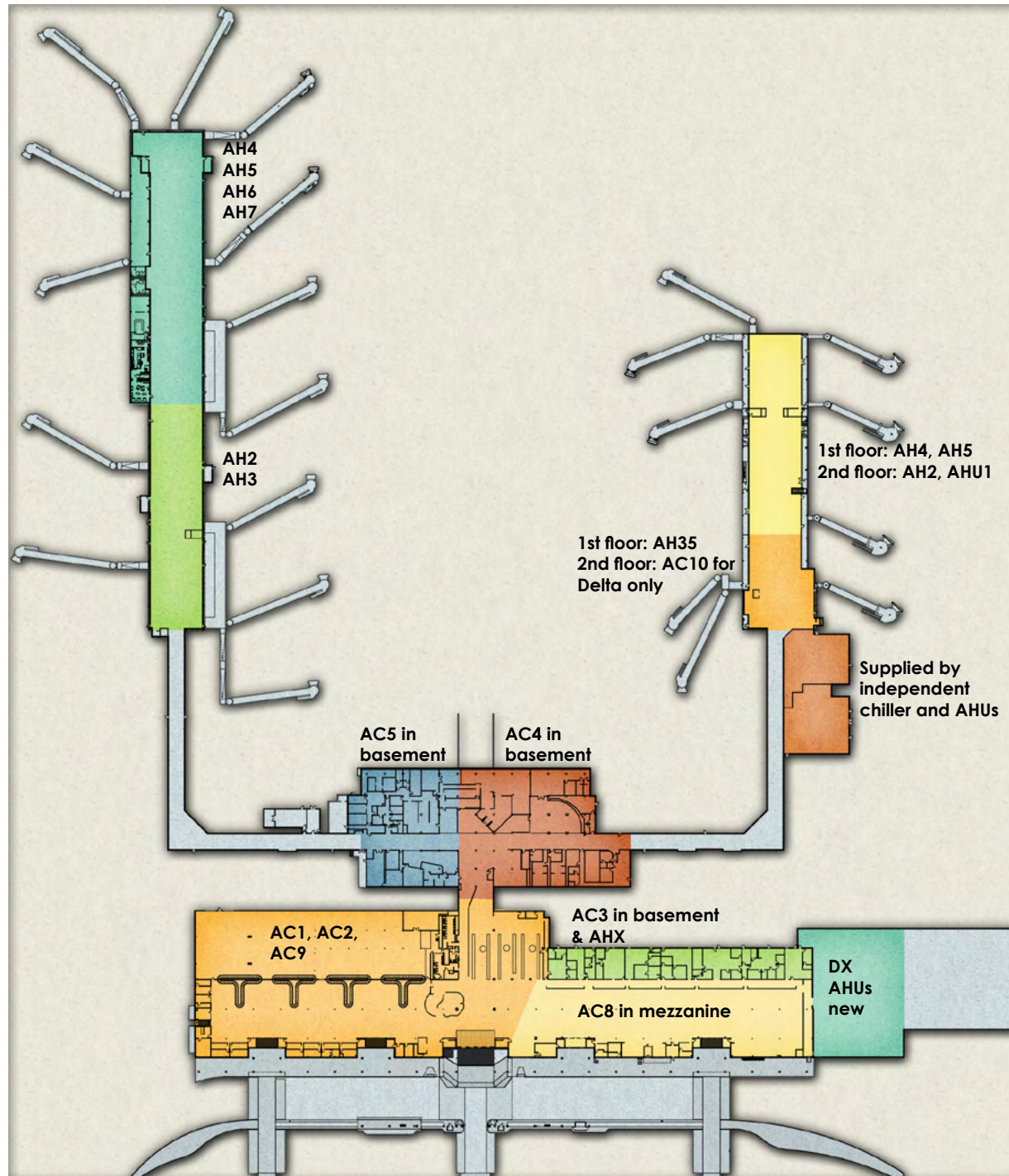


Areas affected by Phase One

## Terminal MEP Impact

Mechanical work includes the removal of (2) two existing HVAC air handling units from the basement below the restroom area and providing (1) one new air handling unit in a new mechanical room located on the first floor to serve the same area and save energy costs. Chilled and hot water piping will be extended from the existing mains to the new unit locations. New air handling units and VAV coils will be sized for a lower entering water temperature to meet Energy Retrofit Project design parameters. New ductwork will be provided from the new unit locations to the existing duct mains for back feeding of the existing systems. Existing ductwork serving the baggage claim area will be cleaned at this time. Existing ductwork serving the ticketing counter area will be cleaned during a future phase. The air handling unit relocation will allow the proposed floor plan to be opened up as access to the basement area will not be needed any longer. This will also provide easier maintenance access for the new units. All new HVAC components will be designed for compatibility with the Energy Retrofit Project requirements for open protocol building automation system (BAS). This new BAS will allow for better monitoring and control of the HVAC systems.



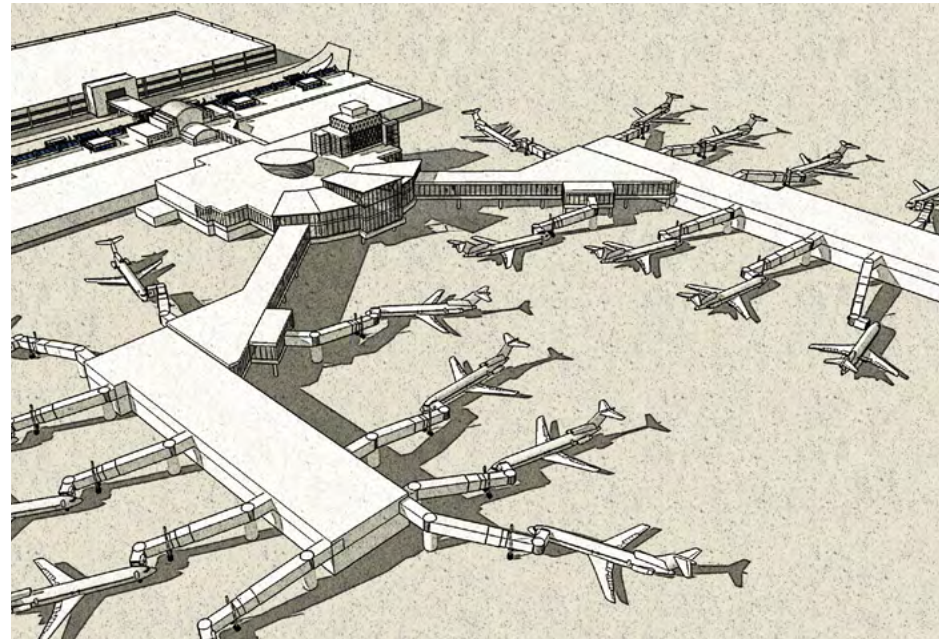


# PHASE II-A

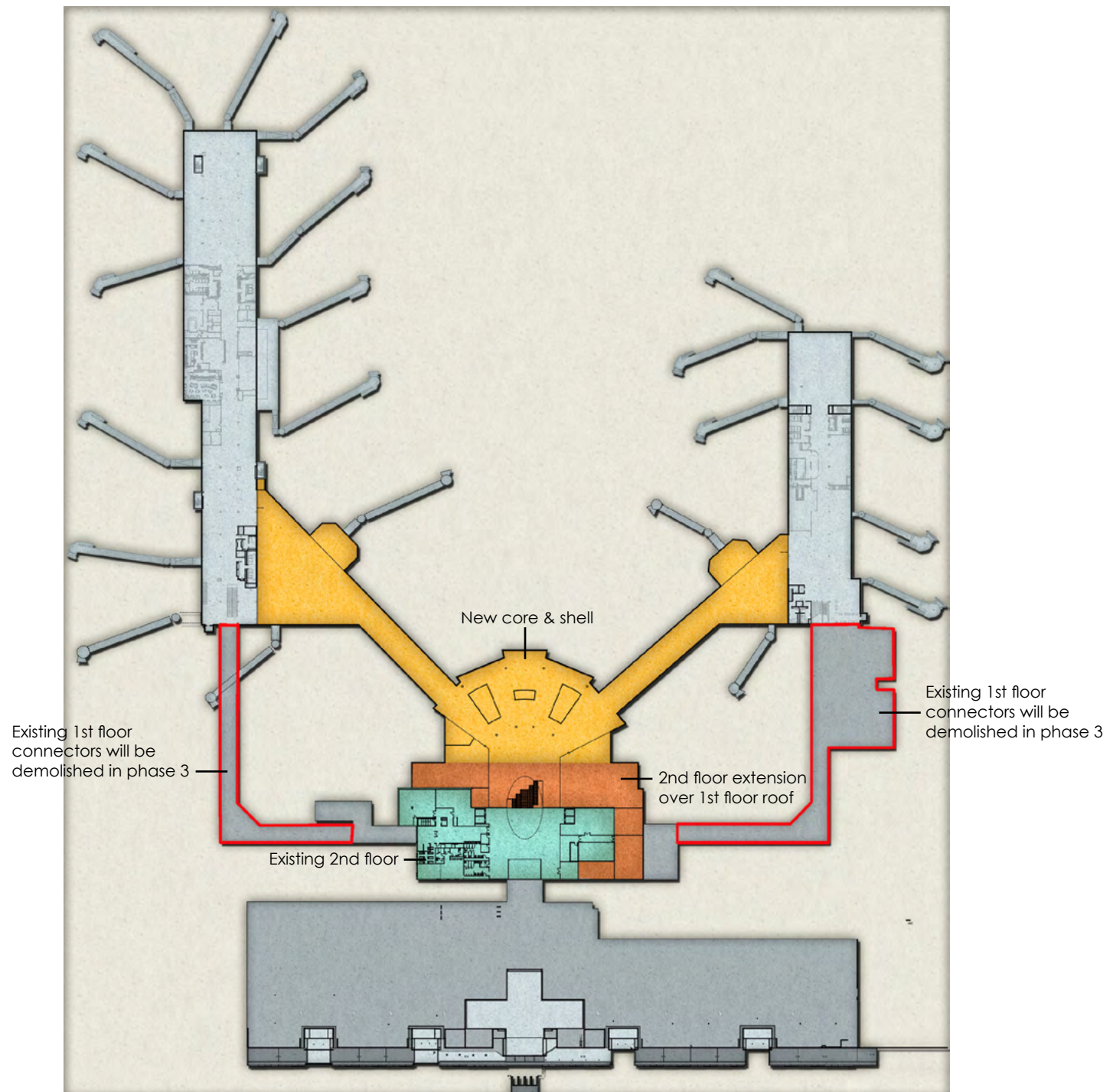
## Second Floor Addition

Phase 2a will add a new second floor addition to the airside of the existing FAA building. We will also extend the existing second floor over the first floor roof of the FAA building to increase the amount of square footage available for concessions and concession support spaces. Phase 2a will add two new 30' wide connectors out to the concourses and offer new closer gates to minimize the travel distance from concessions to concourse. There is approximately a 7'-4" difference between the FAA building and the concourses, so the new connectors will need to accommodate this. The new second floor will accommodate relocated existing concessions as well as offer approximately potential lease space for new concessions. In Phase 2a, the contractor will provide two new passenger elevators and two "up" escalators for departure traffic, two new passenger elevators and two "down" escalators for arrival traffic, and a wide open stair in between. The contractor will also provide a new additional freight elevator (to be located next to the existing freight elevator), a staging/storage area for concessions, and a new set of public restrooms that conforms to the airport restroom standards. At the end of Phase 2a, the existing concessions will take occupancy on the second floor and the airport passengers will actively and only use the new second floor to access the concourses. The contractor will provide temporary partitions &/or signage to prevent passengers from using the old connectors any longer.

**Estimated Cost of Construction: \$44,000,000**  
**Duration of Construction: 2018-2020**

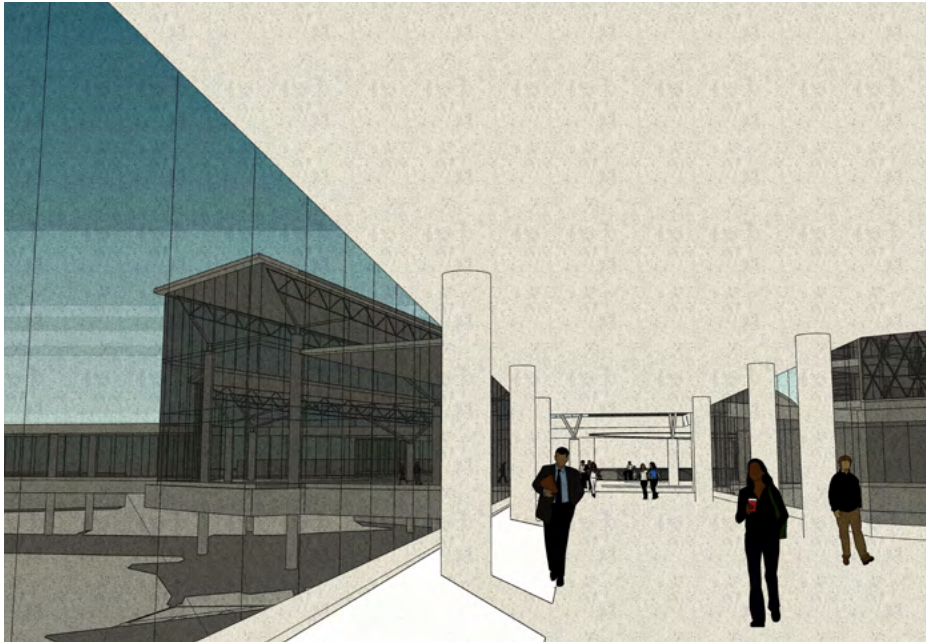




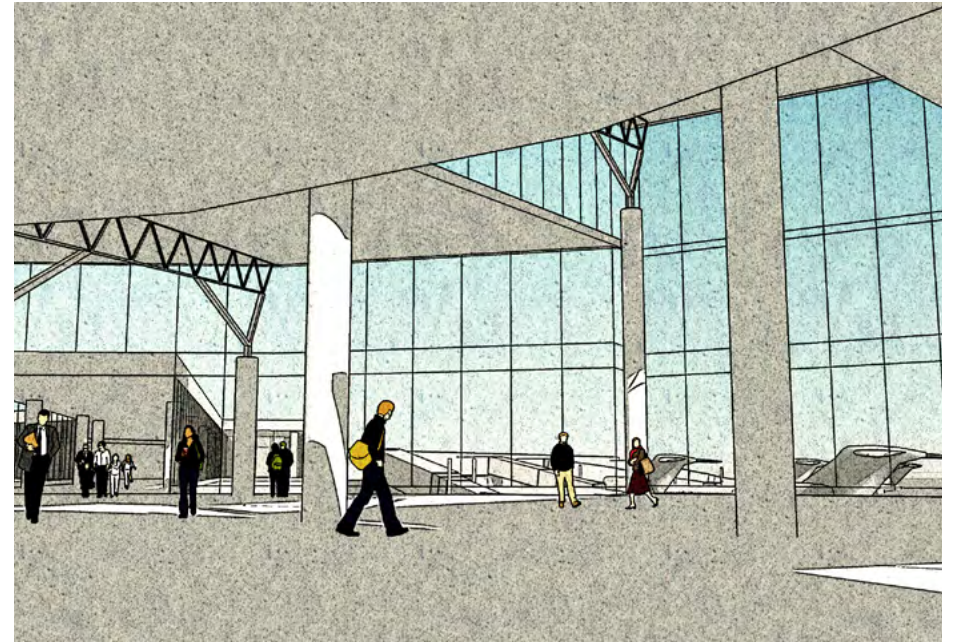


Core and shell plan to accommodate new second floor concessions, concourse connectors, and future gate relocations

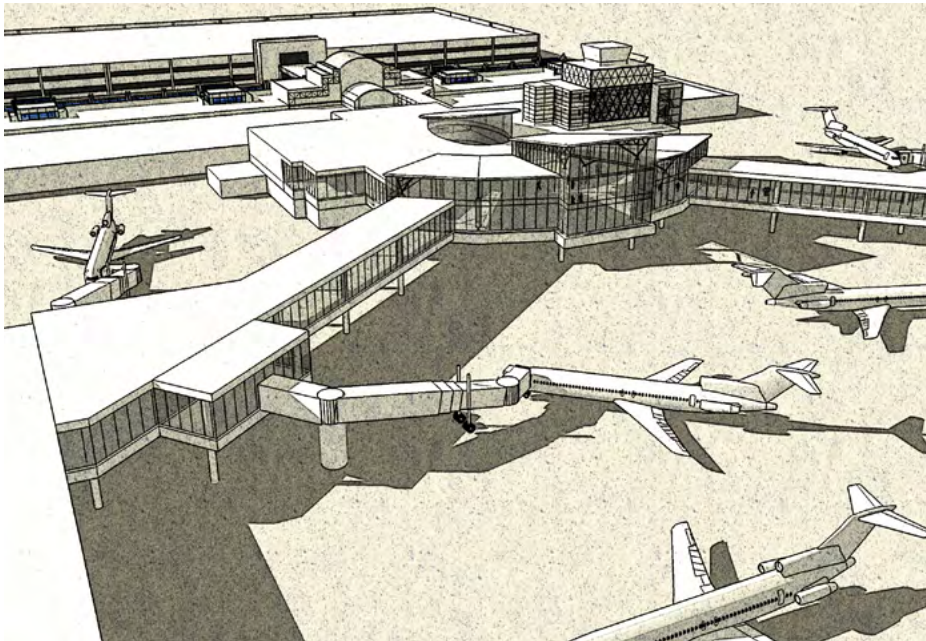




New connectors to each concourse provides view of airfield



New centrally located concessions

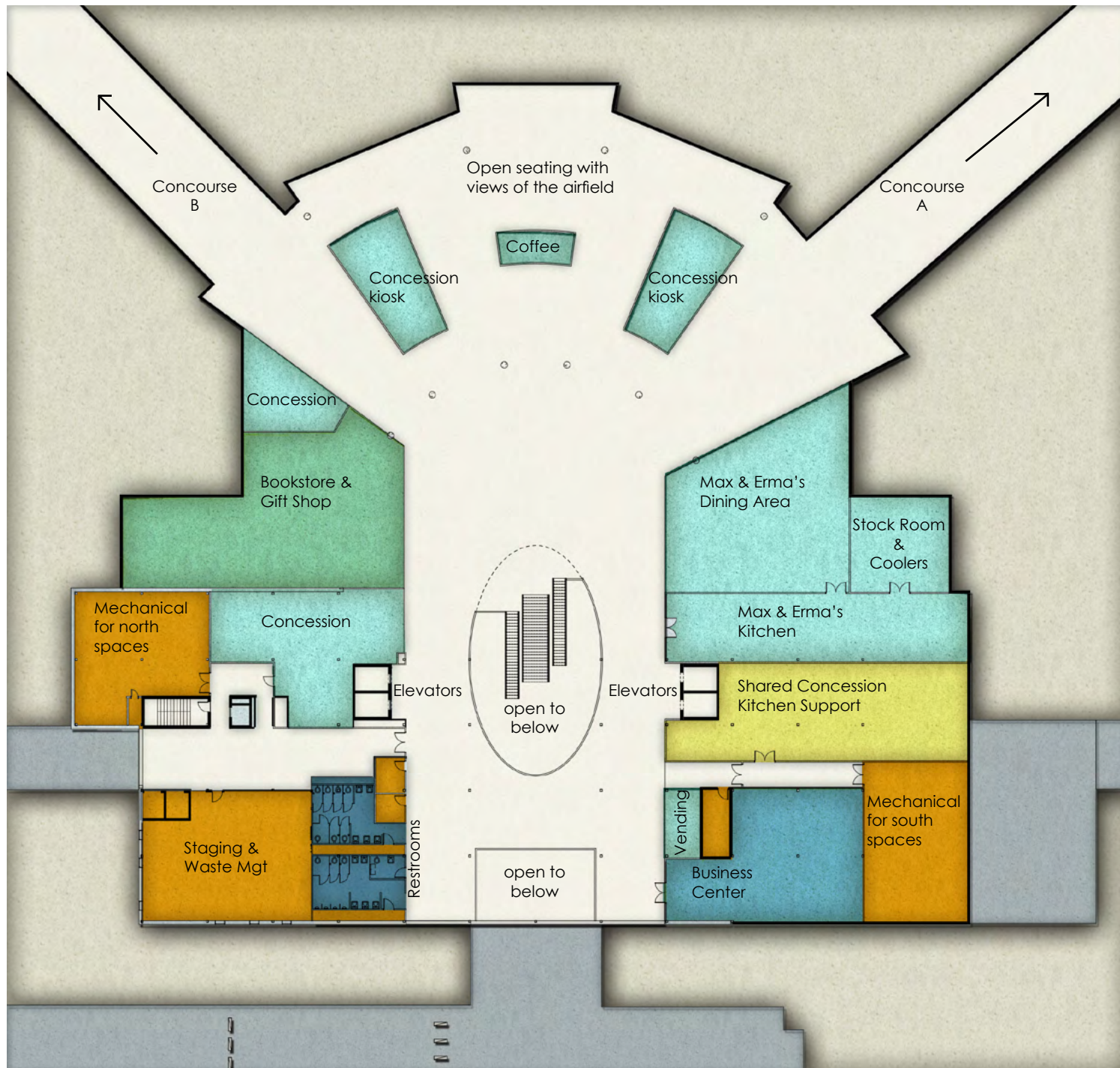


Birdseye view of new connector and central concessions



New stair and escalators take travelers up to concessions immediately following security





Proposed second floor plan for concessions

# PHASE II-B

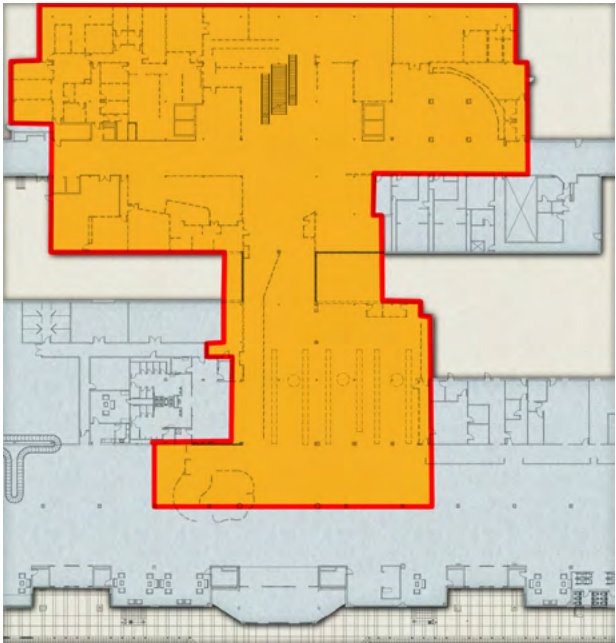
## Widen Security & Repurpose First Floor

The Dayton International Airport Terminal Planning Study dated August 27, 2012 identified existing challenges in the area of the Security check point in terms of width and depth to properly accommodate recomposure after passengers leave the Security scanners. Phase 2b will expand the width of security by constructing a single story addition to the left and right of the connector between the terminal building and the FAA building. This will allow the security scanners to be moved back to better accommodate the queue lines and adds space after security for passengers to sit comfortably while putting on their shoes and belts and reassembling their belongings.

The area in proximity to the main entrance would be renovated to offer an information wall, complete with technological displays that promote the City of Dayton and inform the travelers about weather conditions, departure/arrival times, etc. Boston Stoker would be relocated to a smaller, free-standing kiosk, thereby alleviating the congestion at the front door.

The first floor spaces previously occupied by concessions (moved up to the second floor at the end of Phase 2a) would be renovated to offer new staff offices for Airport Police, Ops Team, IT/Data, TSA, and Union staff. The receiving room at the loading dock would also be expanded to afford better opportunity to scan, sort, and secure delivered packages. Covered parking for airport vehicles would also be available under the new second floor addition.

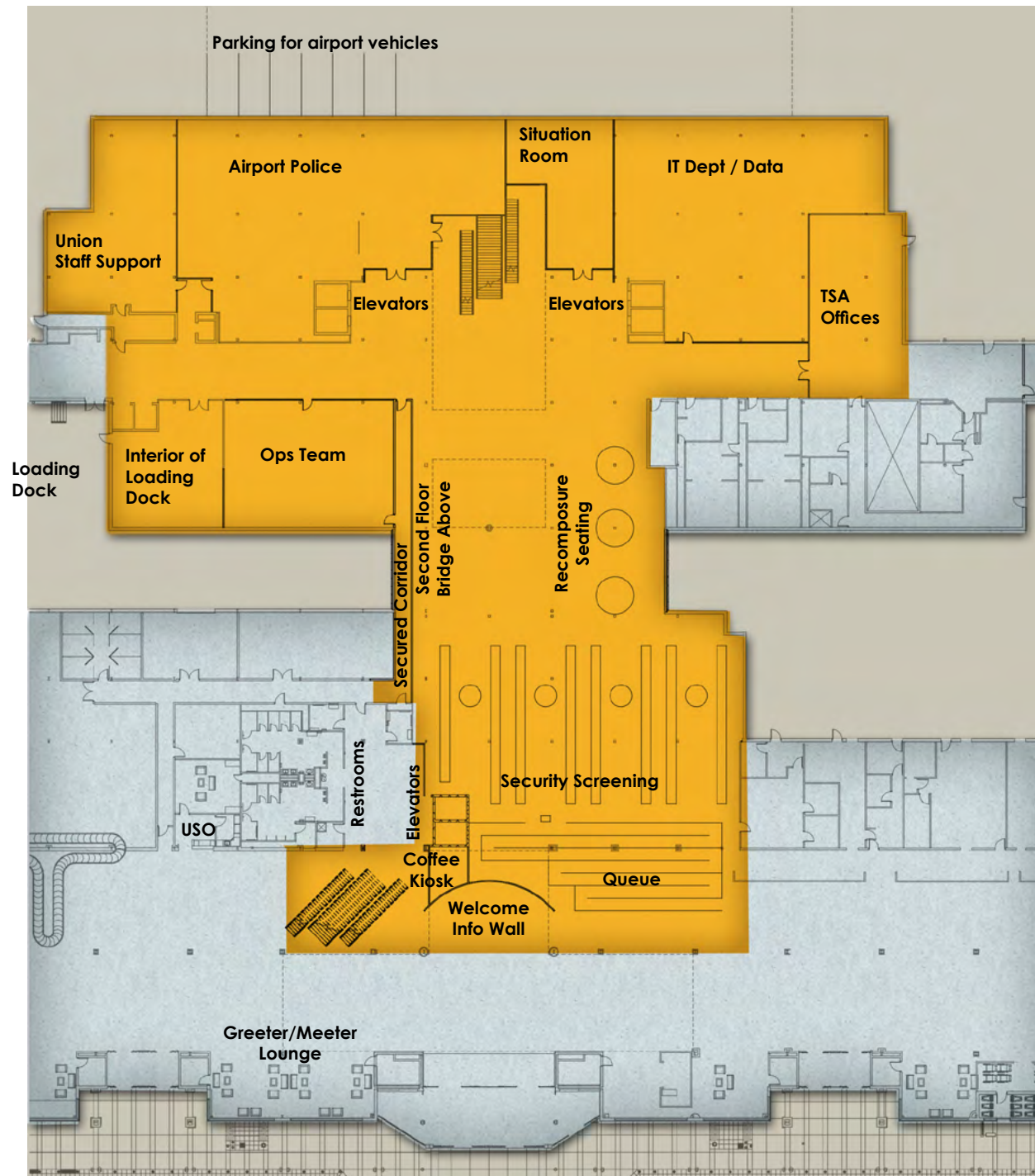
The existing HVAC distribution system serving the ticketing area and security will be revised to meet the new program requirements. Any existing ductwork that remains for reuse will be cleaned at this time. (2) Existing air handling units currently serving the restaurants and retail spaces will be removed along with all associated ductwork, VAV units and piping will be removed. New air handling units with VAV terminal units and ductwork will be provided to meet the new program requirements. All components and control systems will be designed to meet requirements set forth by the Energy Retrofit Project.

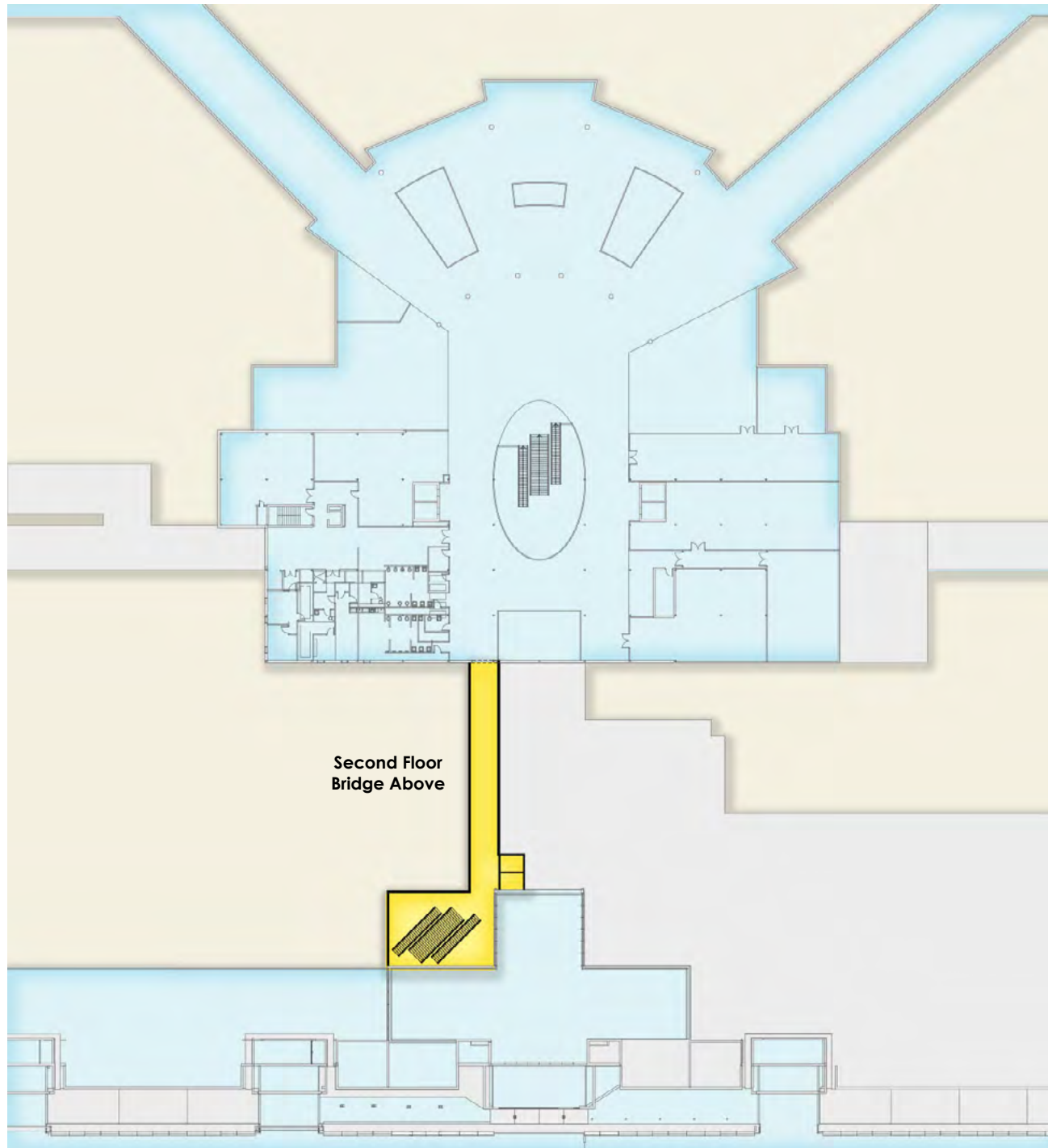


Phase 2b demolition plan

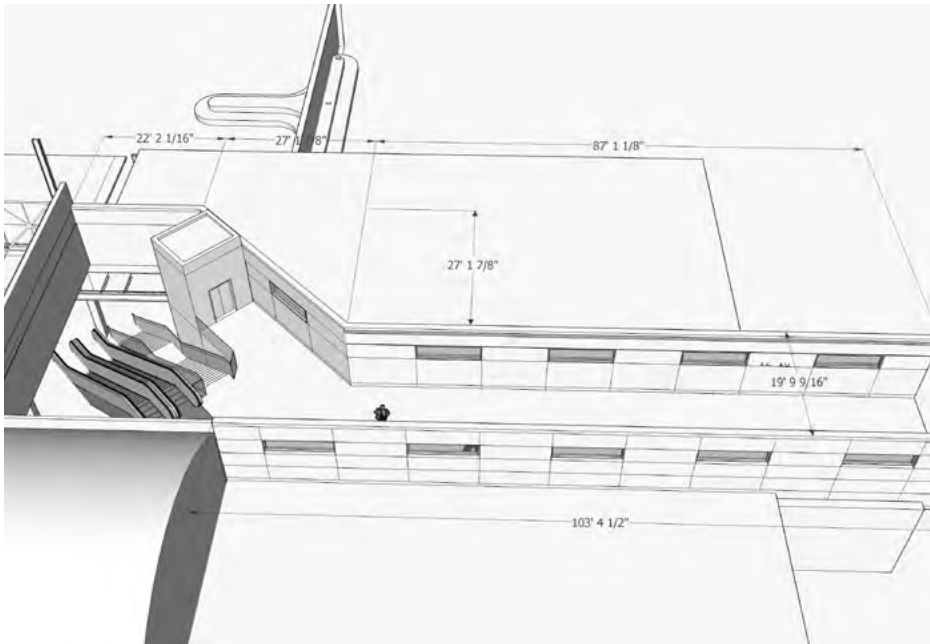
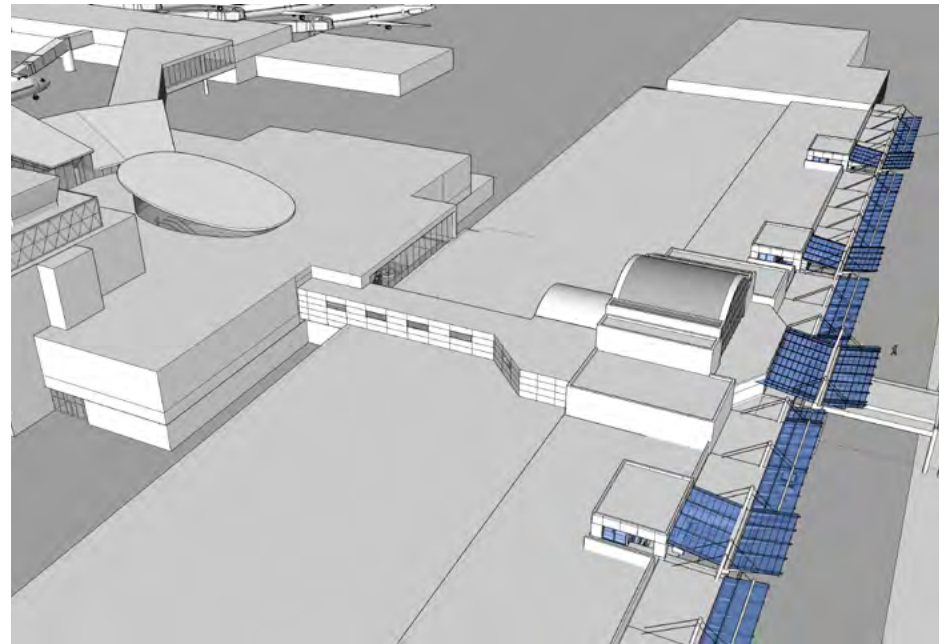
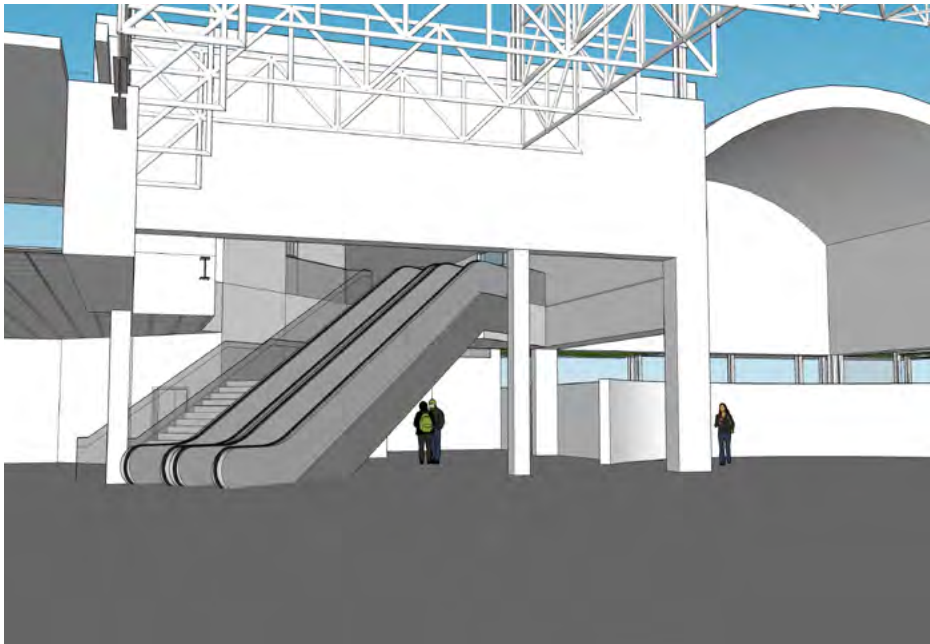
**Estimated Cost of Construction: \$9,500,000**  
**Duration of Construction: 2021-2022**











# PHASE III

## Demo of Existing Connectors to Concourses

In phase 3, we would demolish the existing connectors, Airport Police, and IT/Data offices. We will repair the site and apron as required to provide proper drainage and offer more efficient paths of travel for airport vehicles delivering baggage to/from the aircraft.

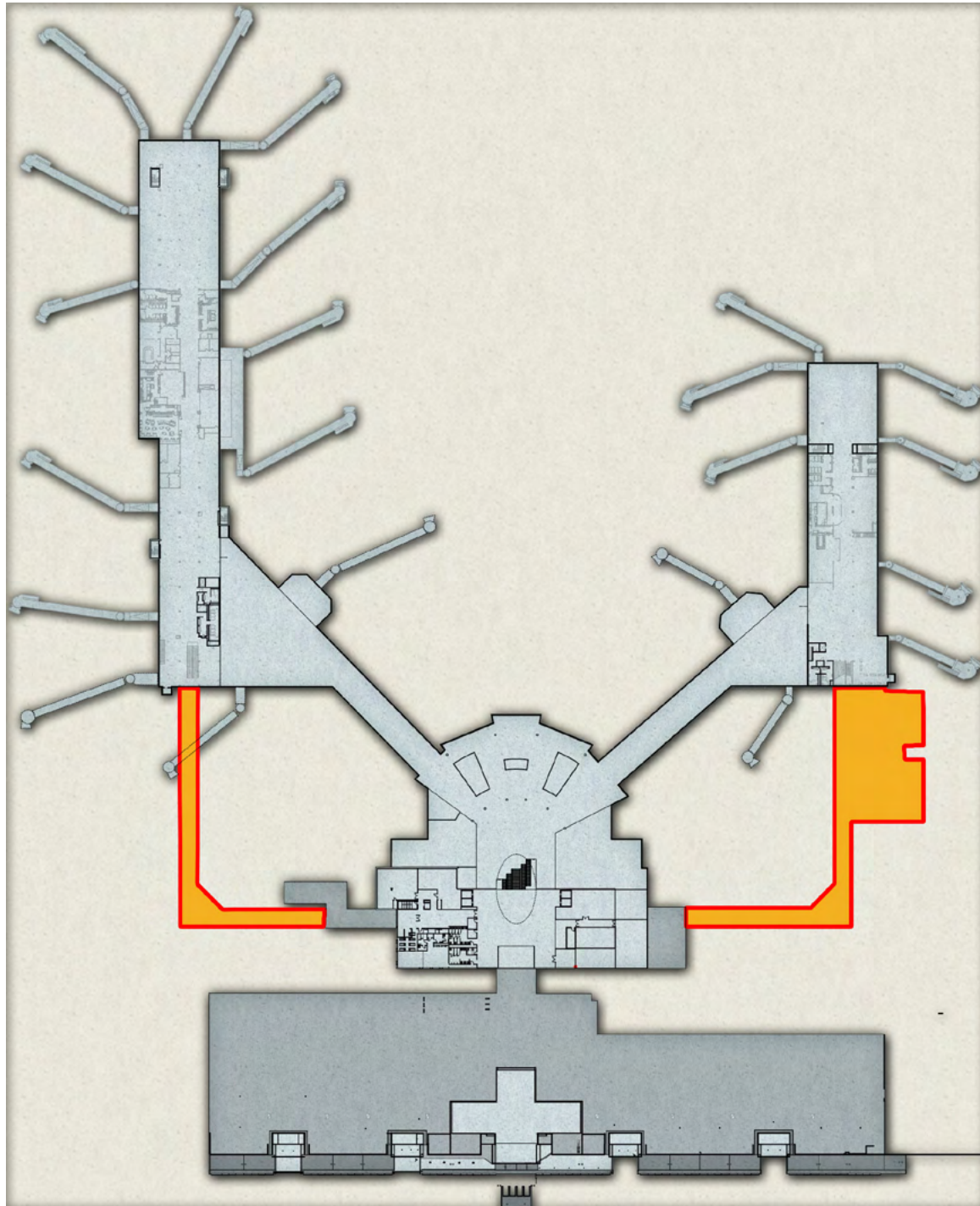
The existing terminal to concourse connectors scheduled to be demolished in Phase 3 will not receive any energy system enhancements in any of the Master Plan phases. Engineering study of these spaces has shown that additional investment in these connectors is not needed.

All existing mechanical and electrical systems located within the existing concourse connectors will be removed. Existing concourse systems will be now be fed from the new concourse connectors.

**Estimated Cost of Construction: \$1,100,000**

**Duration of Construction: 2023**





Proposed demolition plan for vacated connectors

# PHASES IV & V

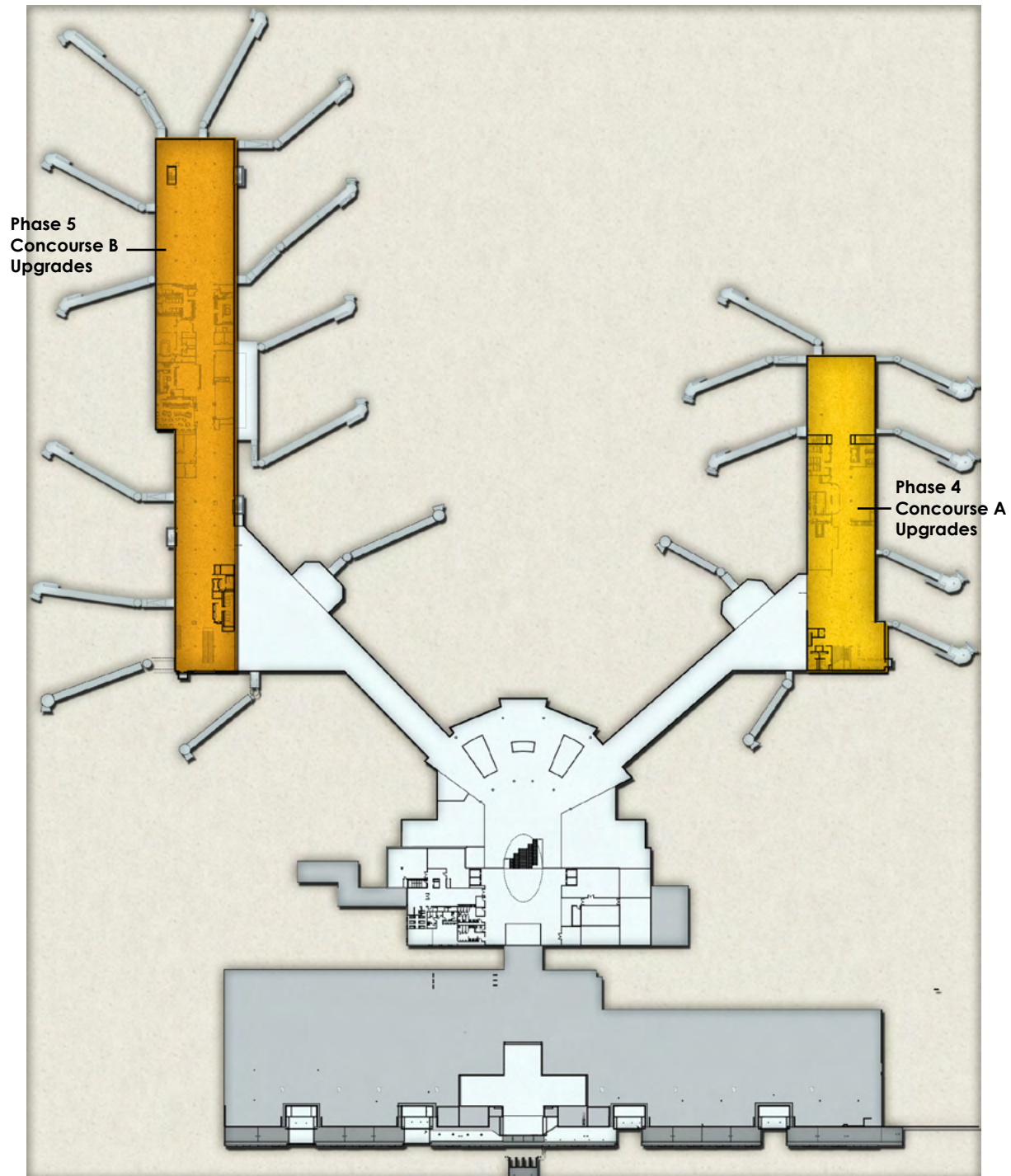
## Renovation Upgrades to Concourses A & B

In phase 4 & 5, we will renovate the existing concourses. The goal is to provide the concourses with new roofs, all new HVAC, ELEC, and finishes (flooring, wall covering, ceiling). It has been requested that we also add windows to increase views to the airfield, but the extent of the new windows will be budget dependent.

Energy systems in each concourse will be modified in two phases. In Phases 4 & 5, the energy production equipment and distribution will be installed to serve existing concourses. HVAC distribution changes are planned along with the space reconfiguration and architectural enhancements to replace systems that will have achieved end of useful life.

**Estimated Cost of Construction: \$16,200,000**  
**Duration of Construction: 2024**





Proposed areas of renovation

# PHASE VI

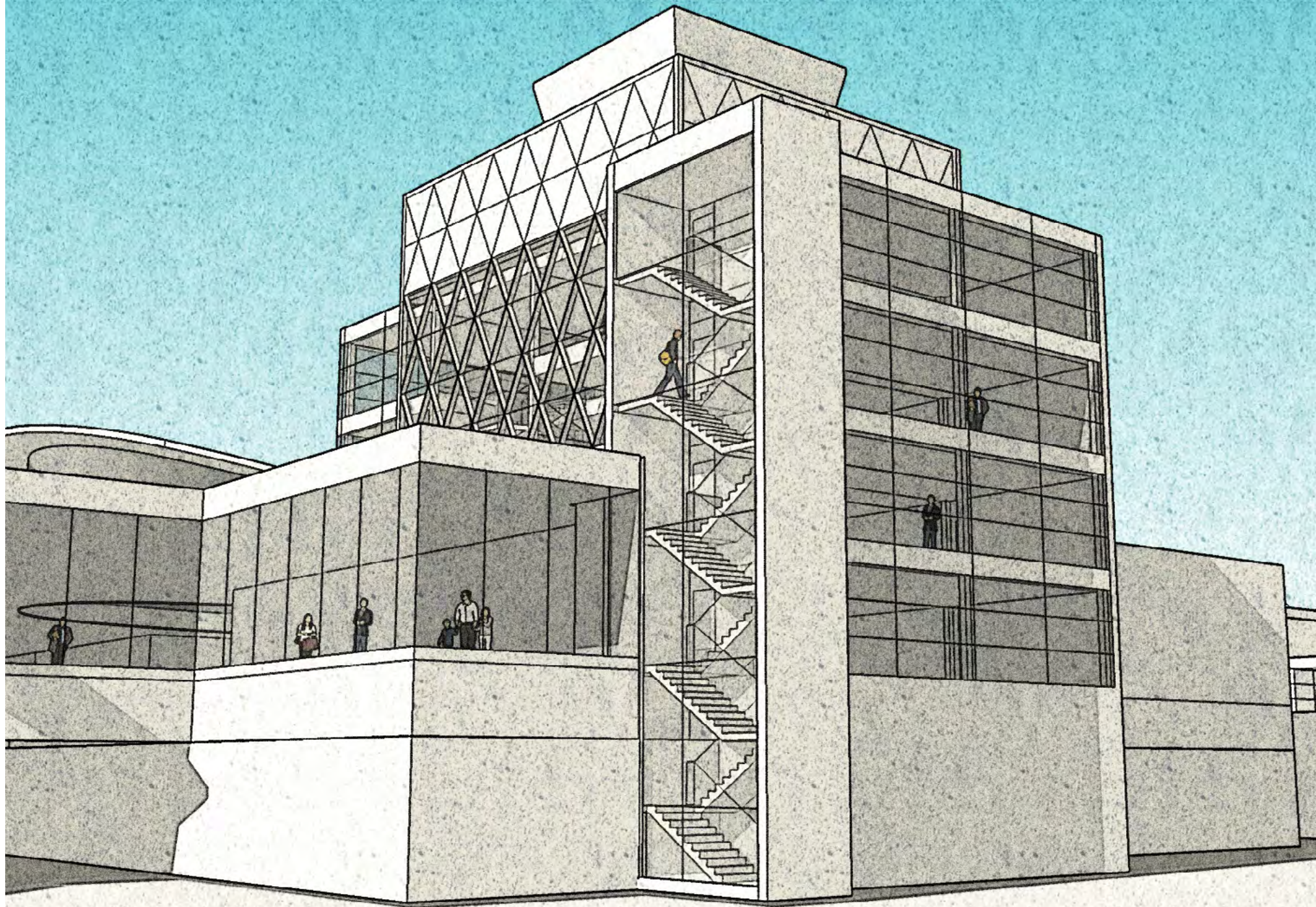
## Tower Renovation

In phase 6, we will renovate the tower floors 3, 4, and 5. The proposed plan includes a new open stair to connect the three floors, a new enclosed exit stairwell that extends from the basement to the fifth floor, and a new 3500# passenger elevator that extends from the basement to the sixth floor. We will re-roof the tower and improve the thermal performance of the envelope (new windows and cladding). We will provide new office layouts and new finishes (flooring, paint, and ceilings) inside the 3rd, 4th, and 5th floors.

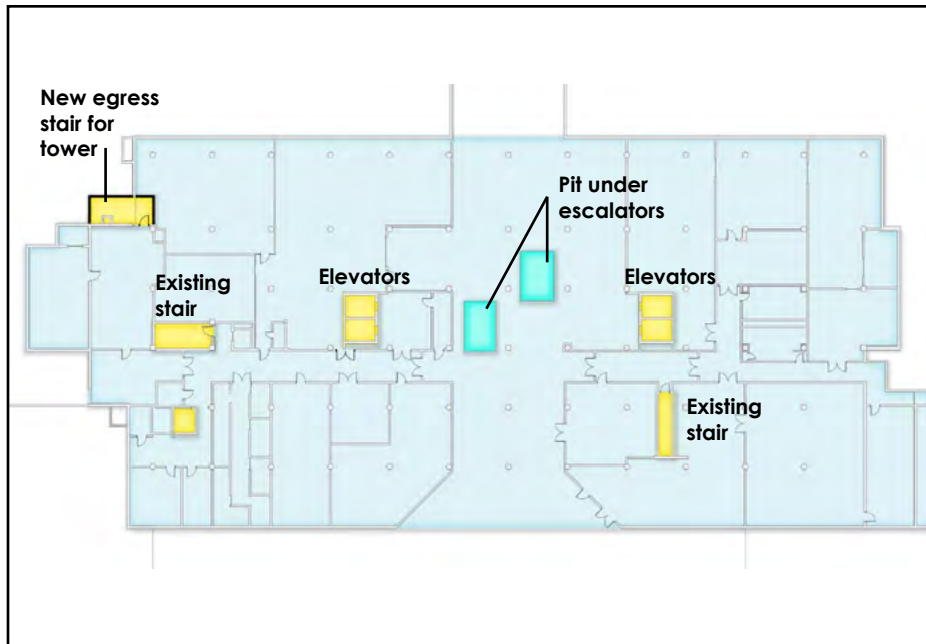
The Phase 6 energy improvements will include the replacement of energy-related piping systems at the time when the office tower floors are being reconfigured and constructed. The renovation of office tower space will include new piping and utilities to maximize the reliability and use of this space at minimum capital and operating costs.

**Estimated Cost of Construction: \$7,600,000**  
**Duration of Construction: 2025**

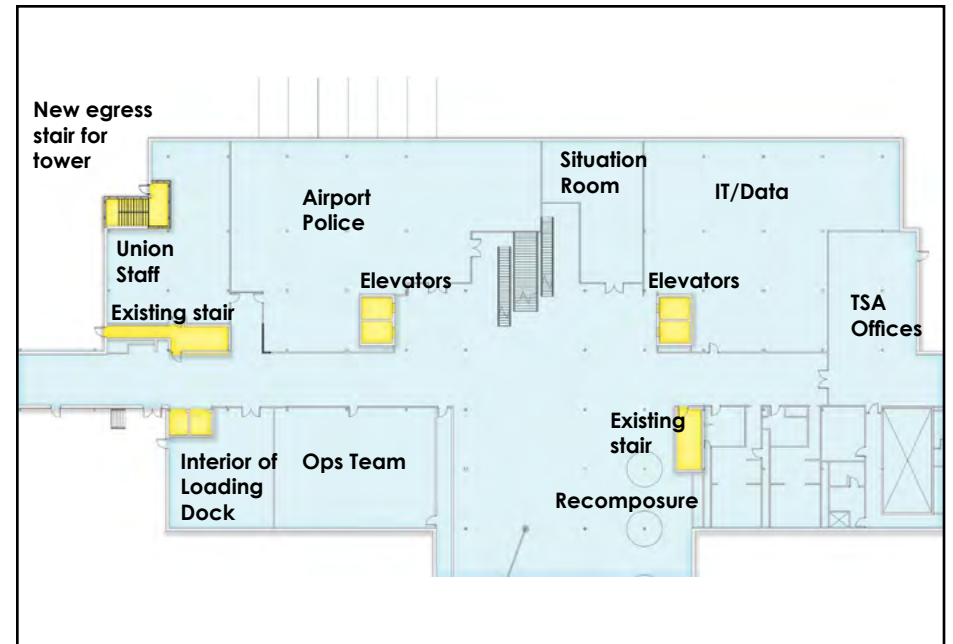




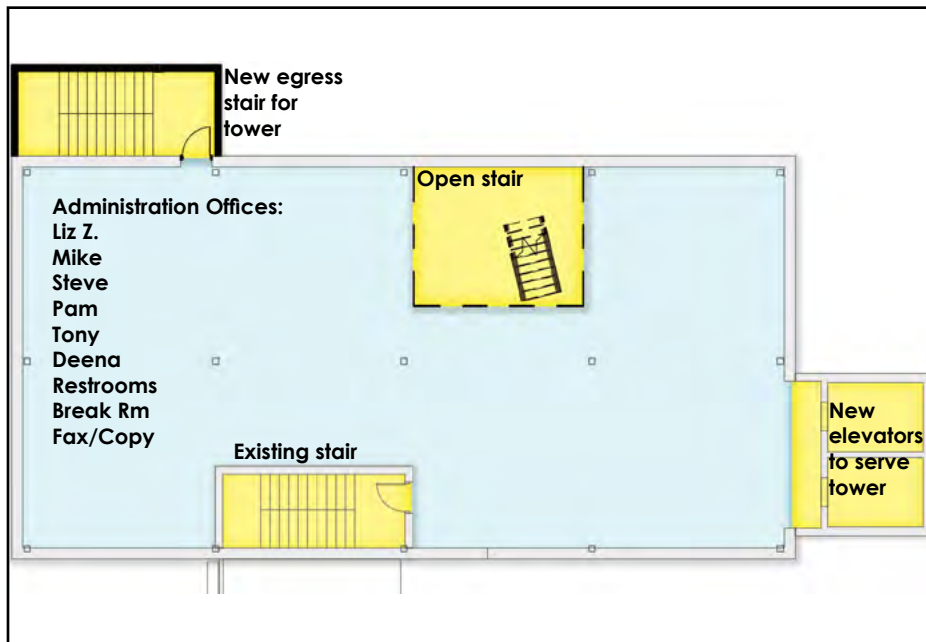




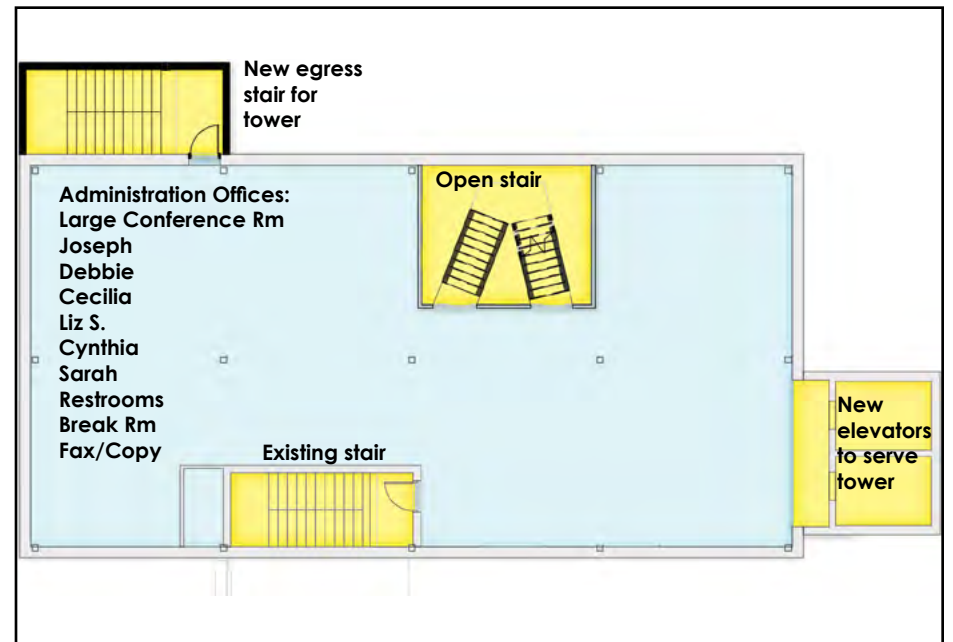
Basement floor plan



First floor plan

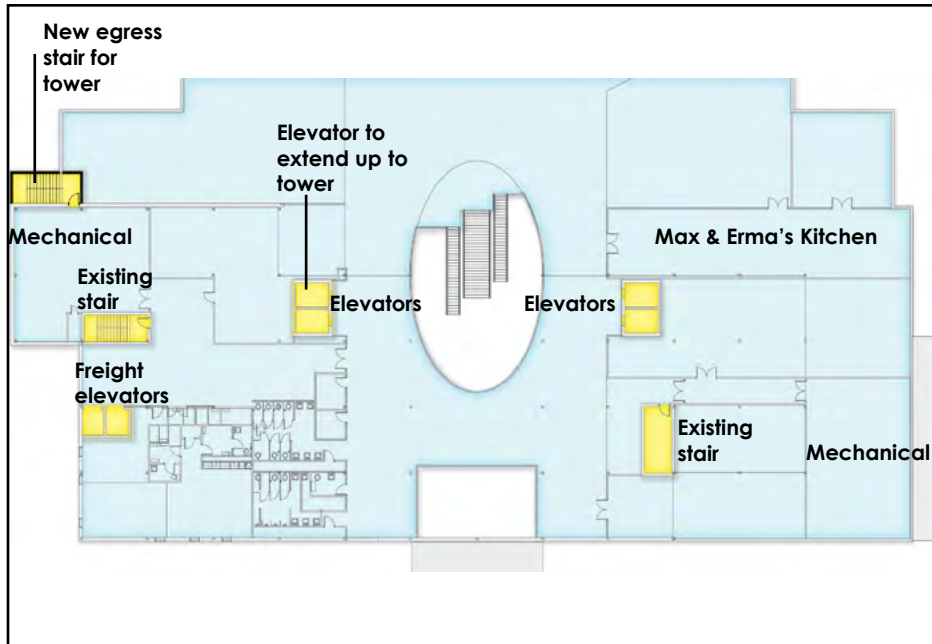


Third floor plan

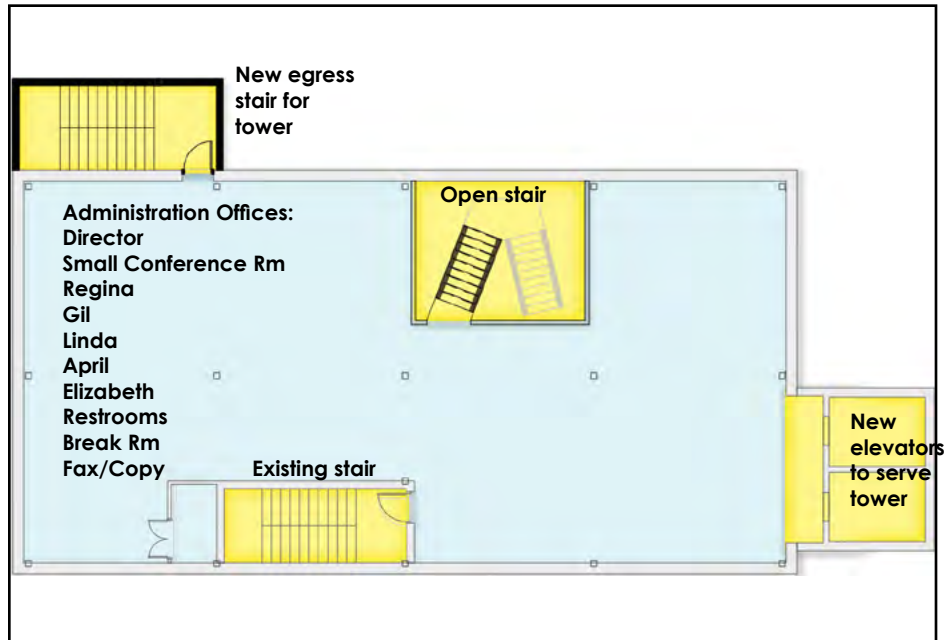


Fourth floor plan

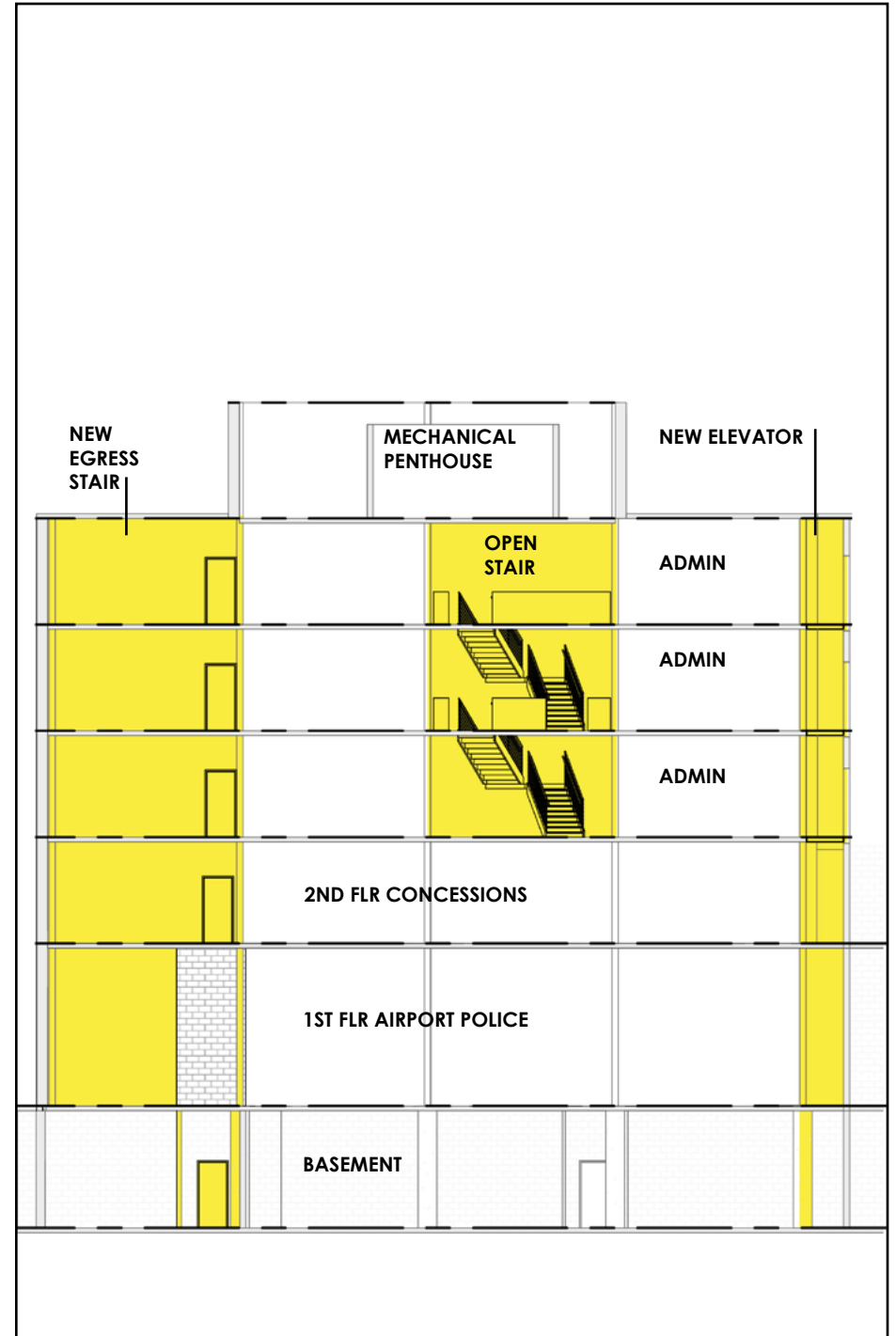




Second floor plan



Fifth floor plan



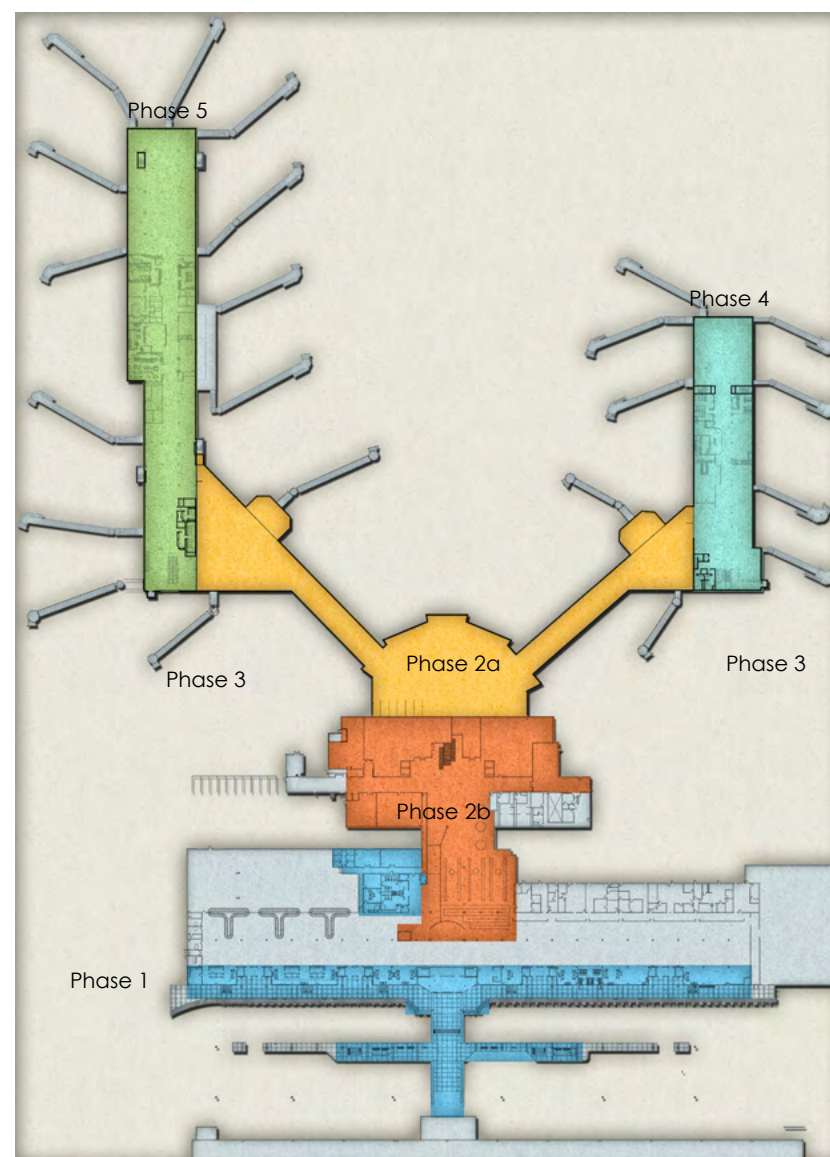
Section thru tower

# COMPLETED WORK

## Summary

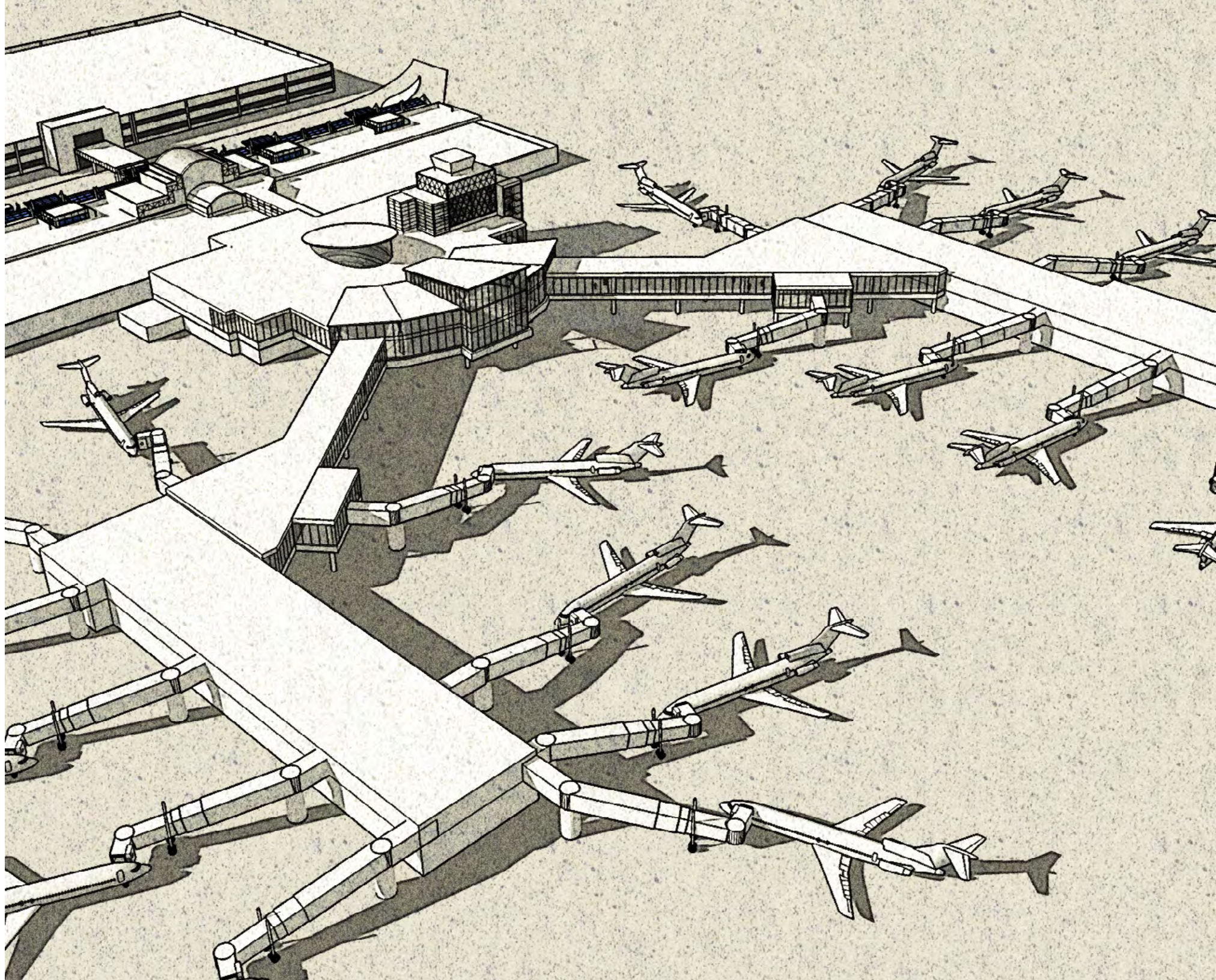
1. Connectors: Minimized length, increased width / height with views to airfield, created opportunity for four new close gates.
2. Gates: New finishes and furnishings gives improved modern aesthetic and more comfortable passenger experience.
3. Concessions: Increased square footage adds opportunity for additional vendors, central location close to gates will increase revenues.
4. Intuitive Navigation: Central escalators / elevators and large views to airfield will improve passenger experience.
5. SIDA Line: Requires off site loading dock site to be determined.
6. Loading Dock: Increased first floor holding room, added second floor holding room to better serve concessions and operations.
7. Infrastructure: System retrofits improve energy efficiency and reliability.
8. Building Code: New construction will comply with "covered mall" provisions.
9. Meeter and Greeter Space: Decongested front door space and new Family Lounge spaces along window walls improve passenger experience.
10. Security Checkpoint: Expanded recomposure and increased width offers room for growth in Security Zone to comply with post 2001 requirements.
11. Administration: Open central stair connects three levels of staff offices.
12. Airport Operations: Centralized first floor accommodations can be accessed via secured corridor.
13. Airline Tenant Operations: Accessed via secured interior corridor.

**Total Estimated Cost of Construction: \$94,400,000**  
**Duration of Construction: 2016-2025**



Summary floor plan







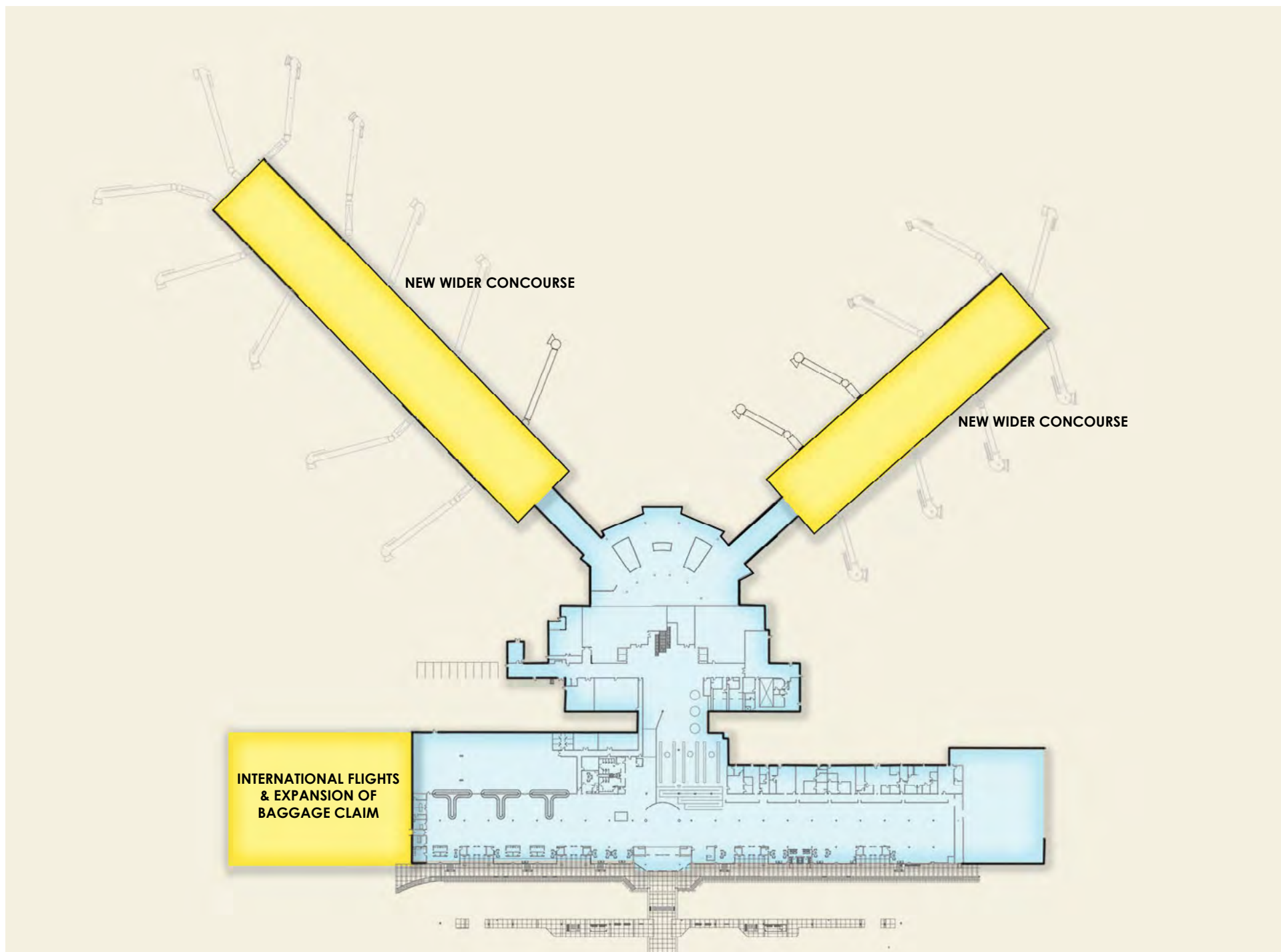
# FUTURE POTENTIAL

## New Concourses

In the future, Concourse A and Concourse B can be reconstructed to accommodate deeper gate holds, expansive glazing giving clear views of the airfield and integrating natural light.







Future phase plan

