



DETROIT METRO ▪ WILLOW RUN  
WAYNE COUNTY AIRPORT AUTHORITY



# Technical Advisory Committee

Detroit Metropolitan Airport Master Plan Update

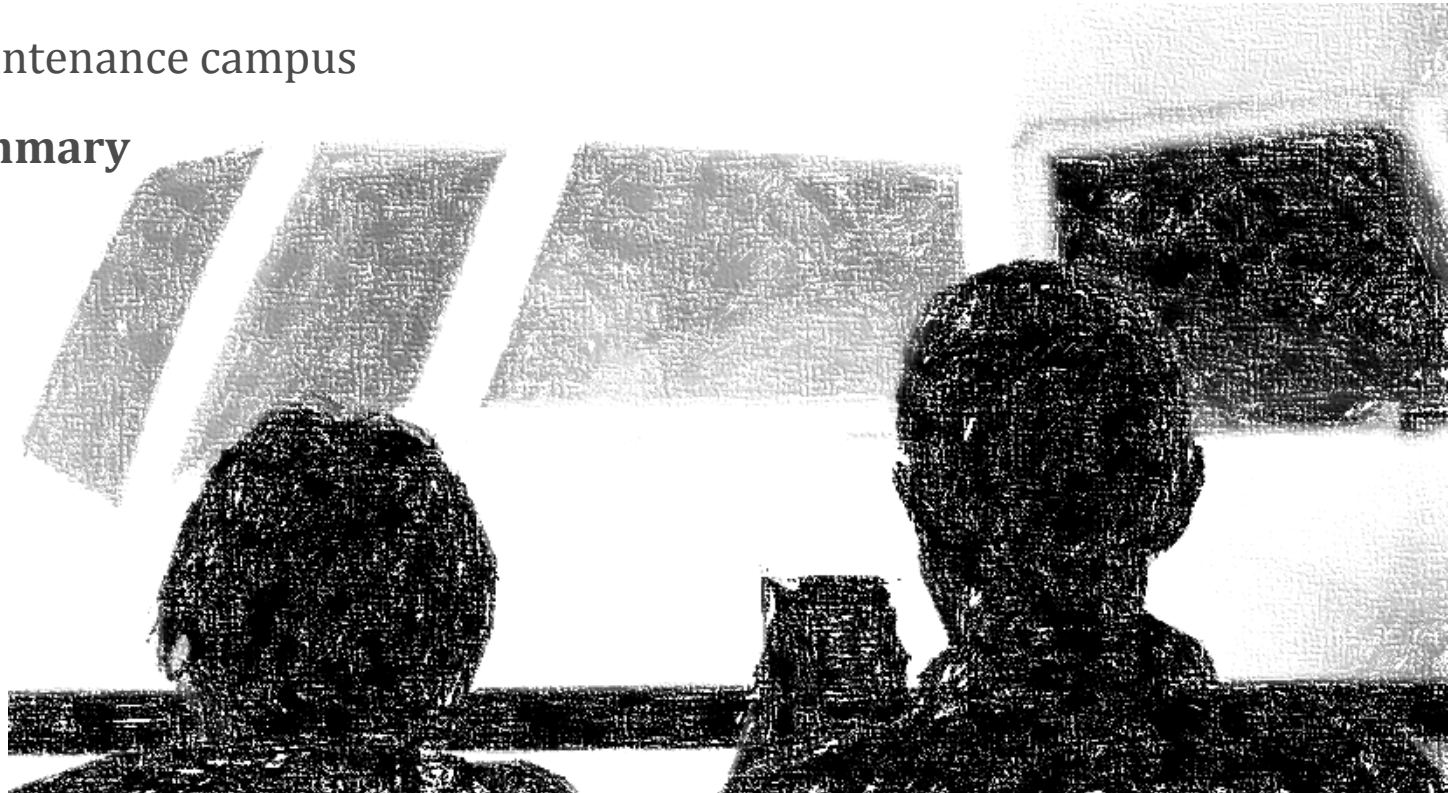
Meeting #3: Development Alternatives

August 25, 2016

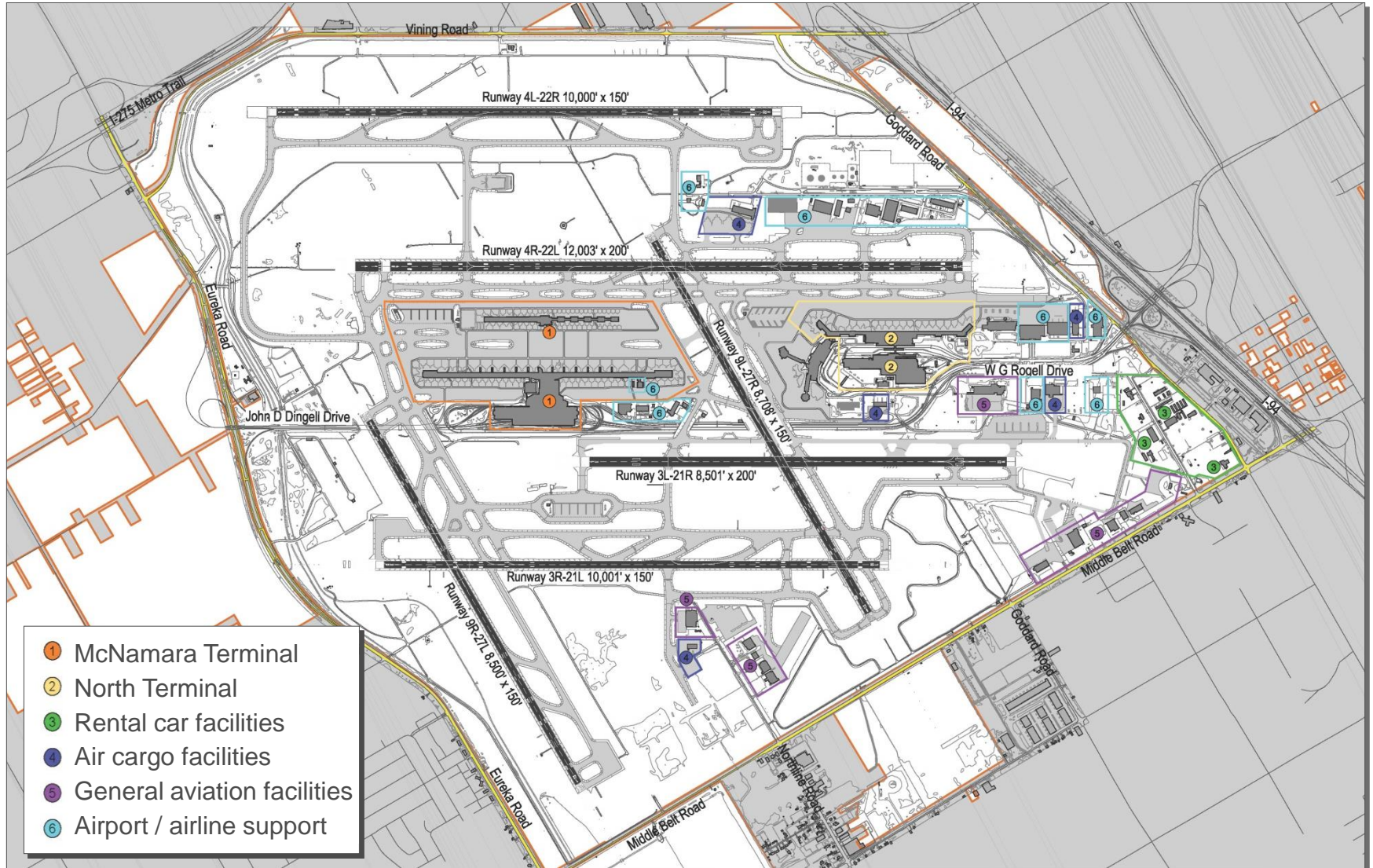
**Leigh** | Fisher

Today's agenda and discussion topics

- 1. Project overview and applicable background**
- 2. Alternatives Development**
  - Airfield
  - Passenger terminals
  - Ground transportation facilities
  - Air cargo
  - Airport maintenance campus
- 3. Closing / summary**

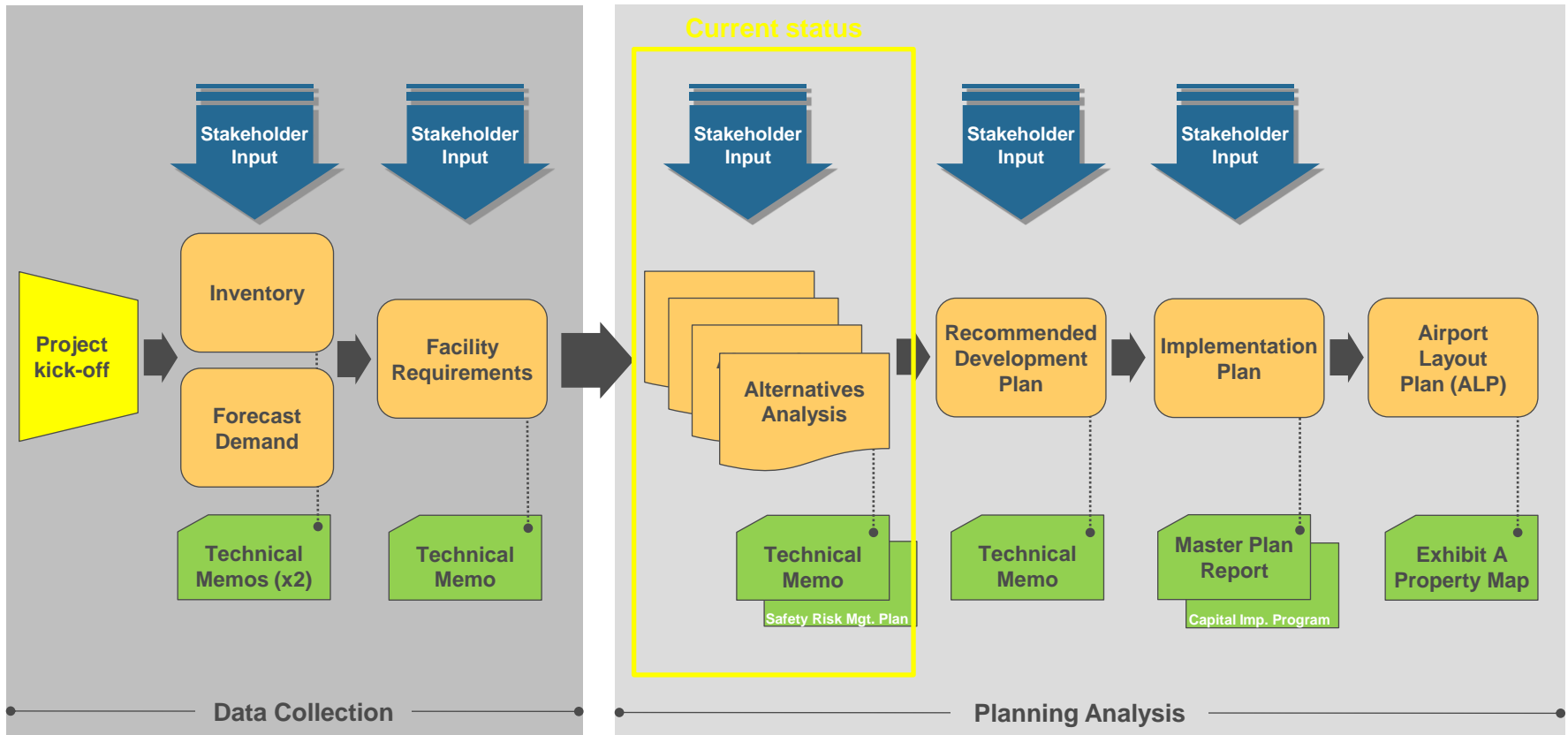


# Detroit Metropolitan Wayne County Airport



# The Master Planning Process

The master planning process includes a series of technical analyses and summary documents, as well as opportunities for stakeholder and community input

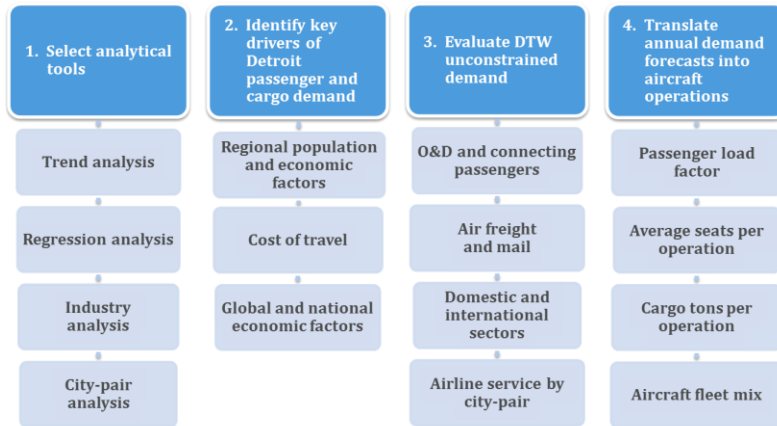




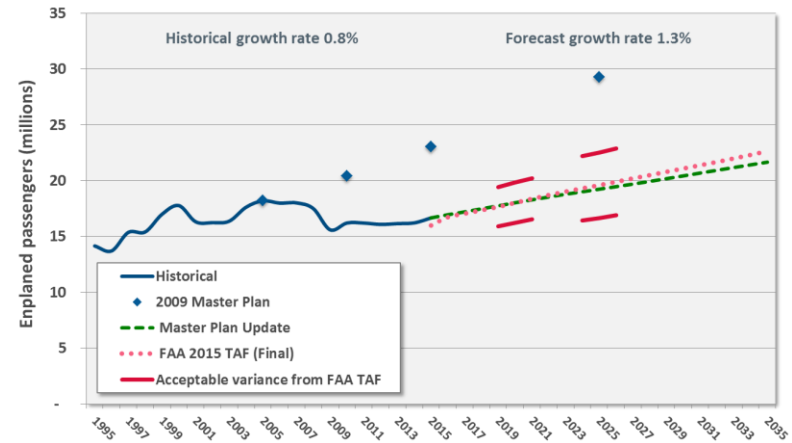
# Forecast Aviation Activity

Total annual passengers and operations are forecast to increase an average of 1.3% and 0.7% respectively per year between 2015 and 2035

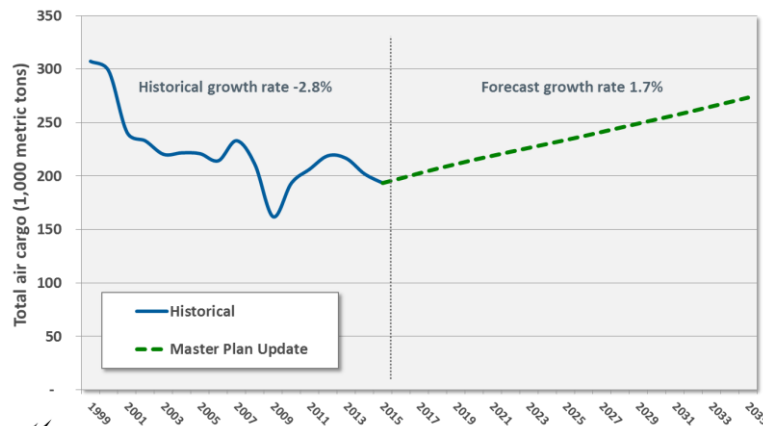
## Forecast Methodology and Approach



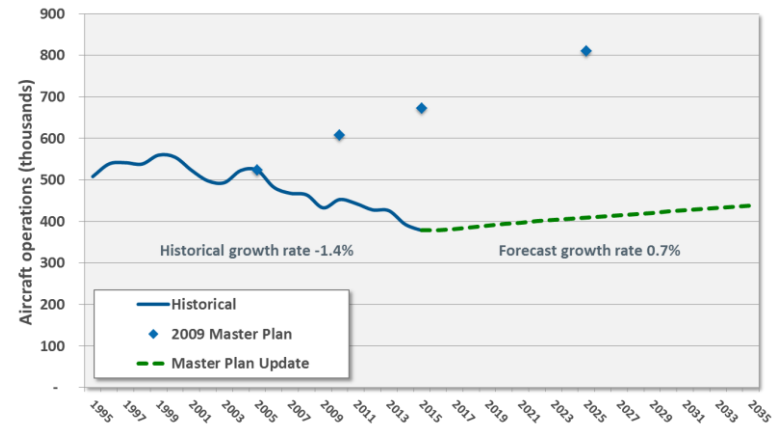
## Forecast Passengers



## Forecast Air Cargo



## Forecast Aircraft Operations




# *Alternatives Development: Airfield*

# Decision Drivers and Recommendations Made

## Runway 3L-21R

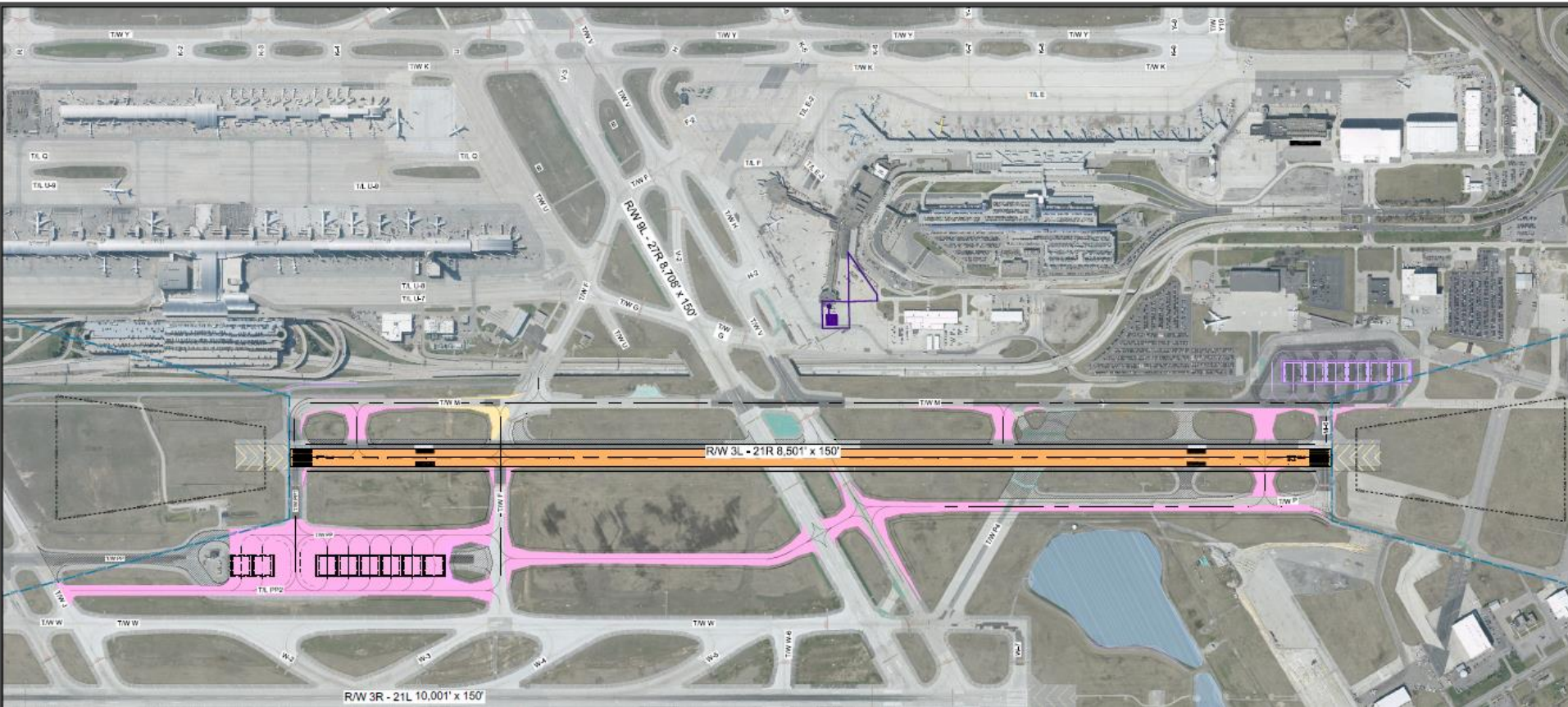
- Reconstruct at 150' wide
- No north extension
- Pursue non-precision instrument approach (1 mile visibility)
- Extend Taxiway P
- Improve departure surface penetrations
- No extension of Taxiway M
- Centerline alignment to minimize impact of fixed obstacles

## Deicing Pads

- Centralized deicing is not practical or feasible
- Address standards for new/reconfigured deicing pads
- Add two new wide-body positions (1 Sky Team and 1 OAL)
- Propose new Runway 4R (west) pad
- Reconfiguration of 22L pad
- **Long term utilization strategies for deicing** 

# Runway 3L-21R Reconstruction

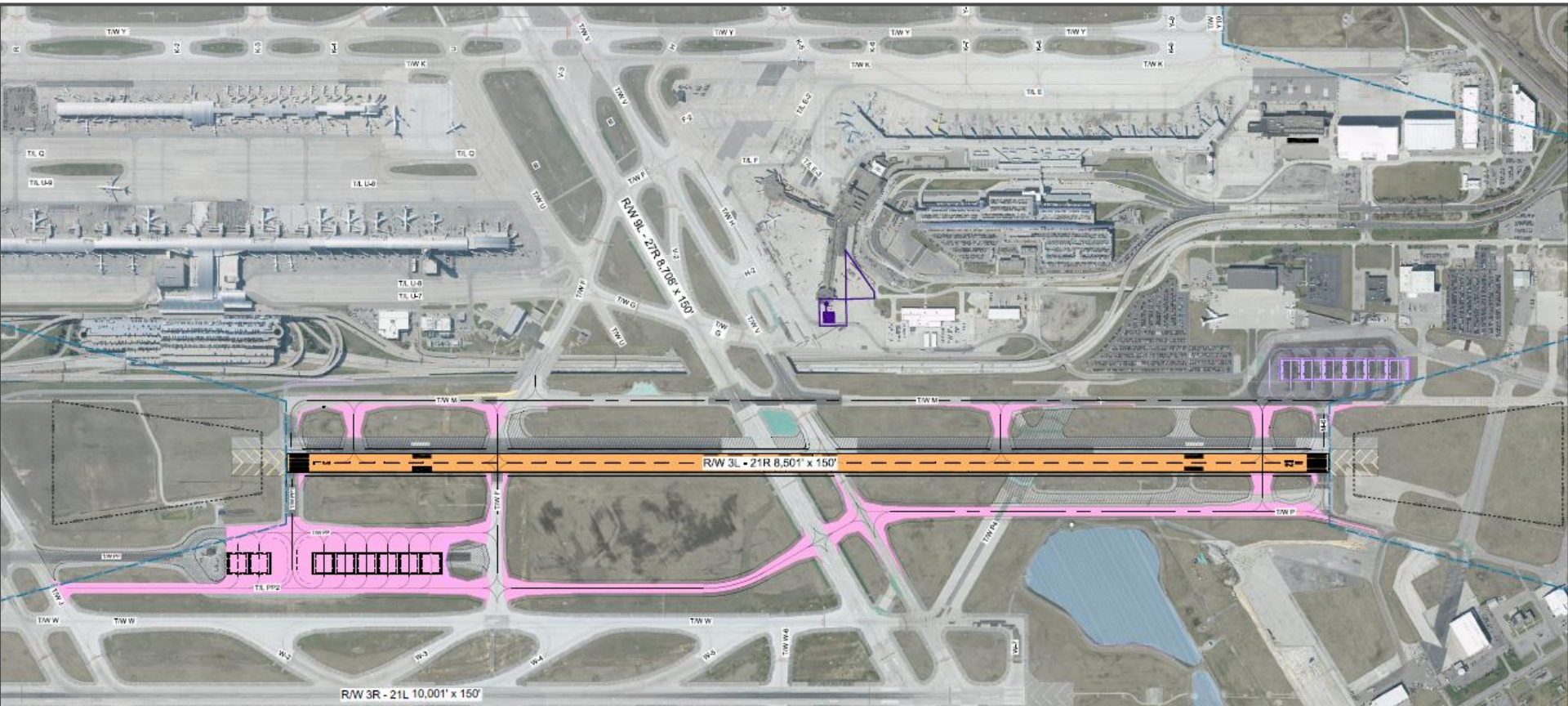
Runway 3L-21R must be reconstructed in 2020 to provide a safe operating environment; the reconstruction will require that the runway, adjacent taxiways, and deicing pad be relocated and or improved to meet new FAA standards





# Runway 3L-21R Reconstruction

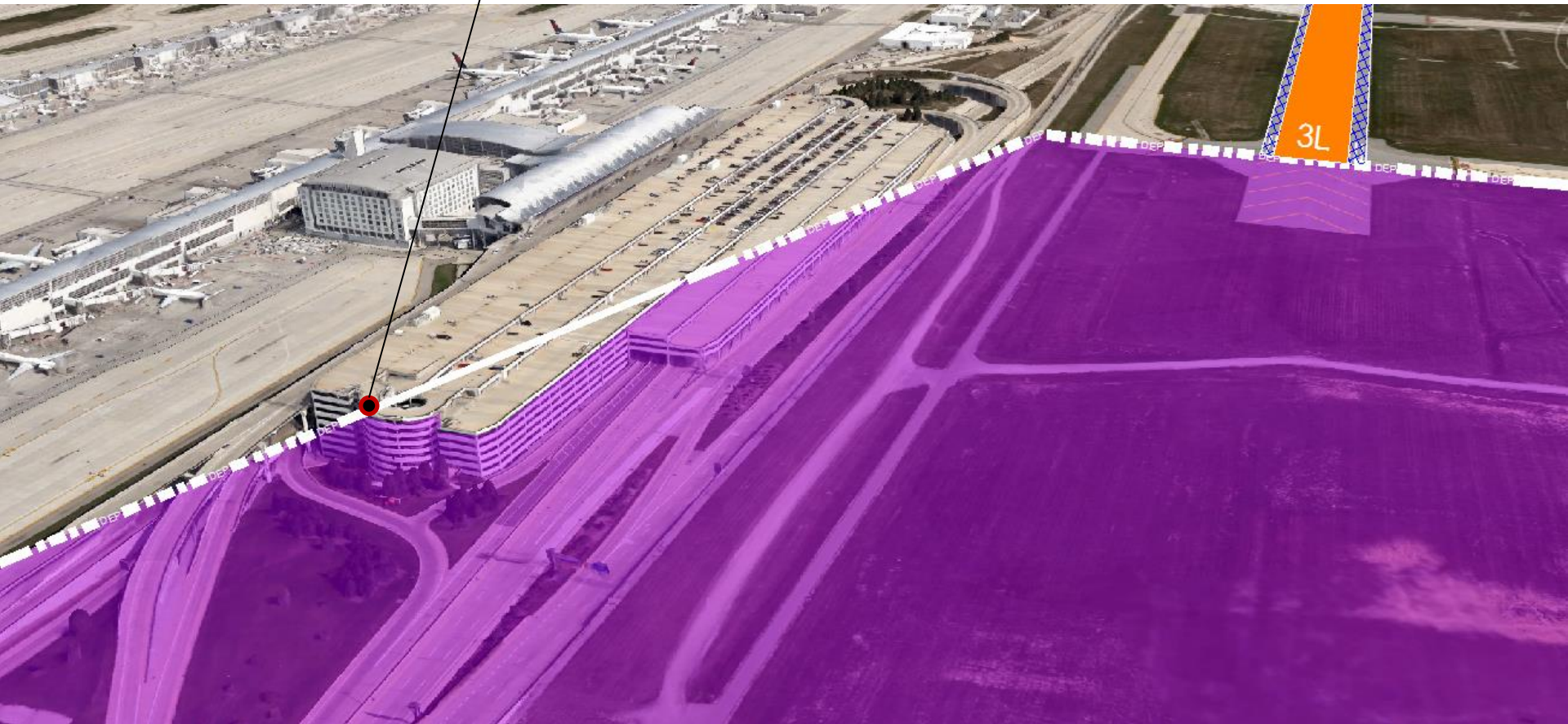
Runway 3L-21R must be reconstructed in 2020 to provide a safe operating environment; the reconstruction will require that the runway, adjacent taxiways, and deicing pad be relocated and or improved to meet new FAA standards





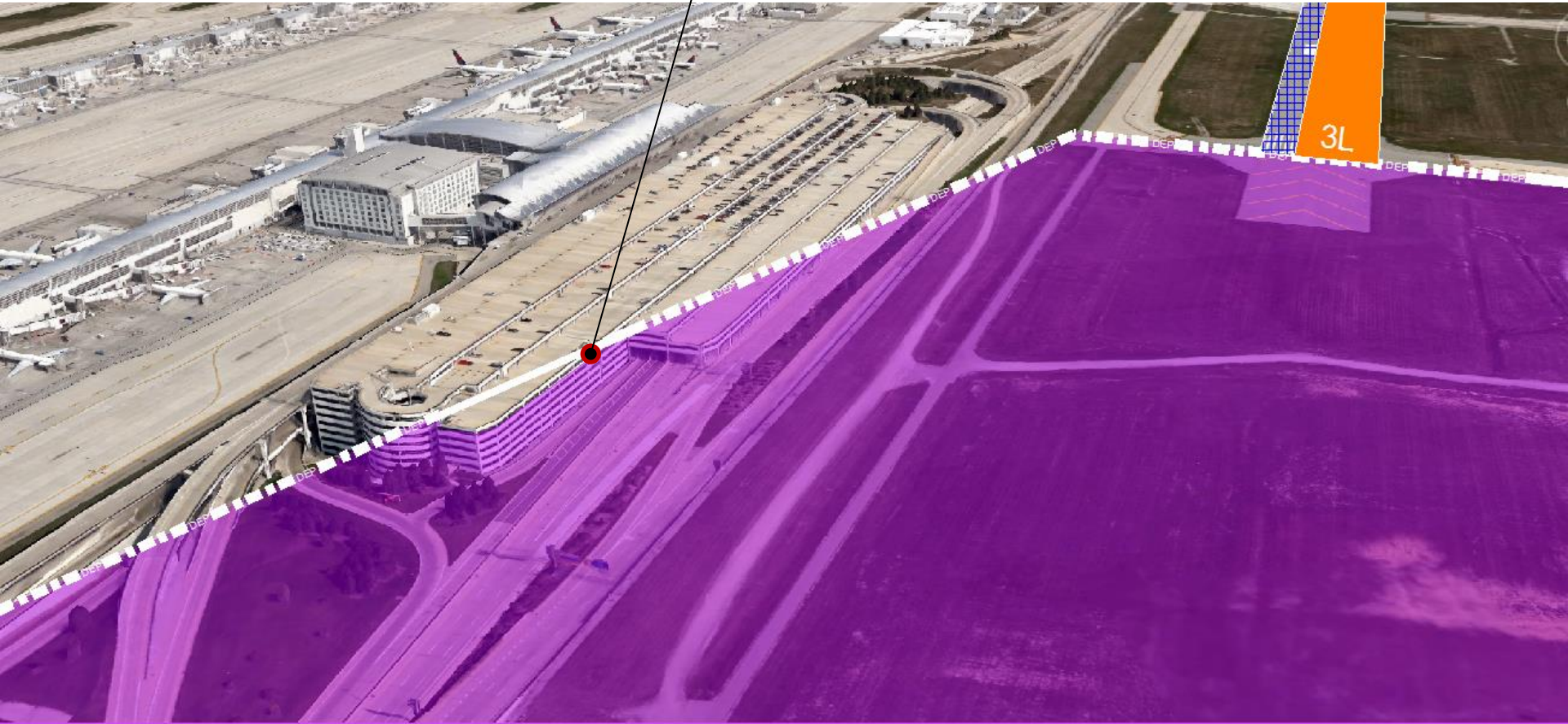
# Fixed TERPS Obstruction – Existing CL

Fixed Obstruction: 19.4' Penetration



# Fixed TERPS Obstruction – Shift CL 50' East

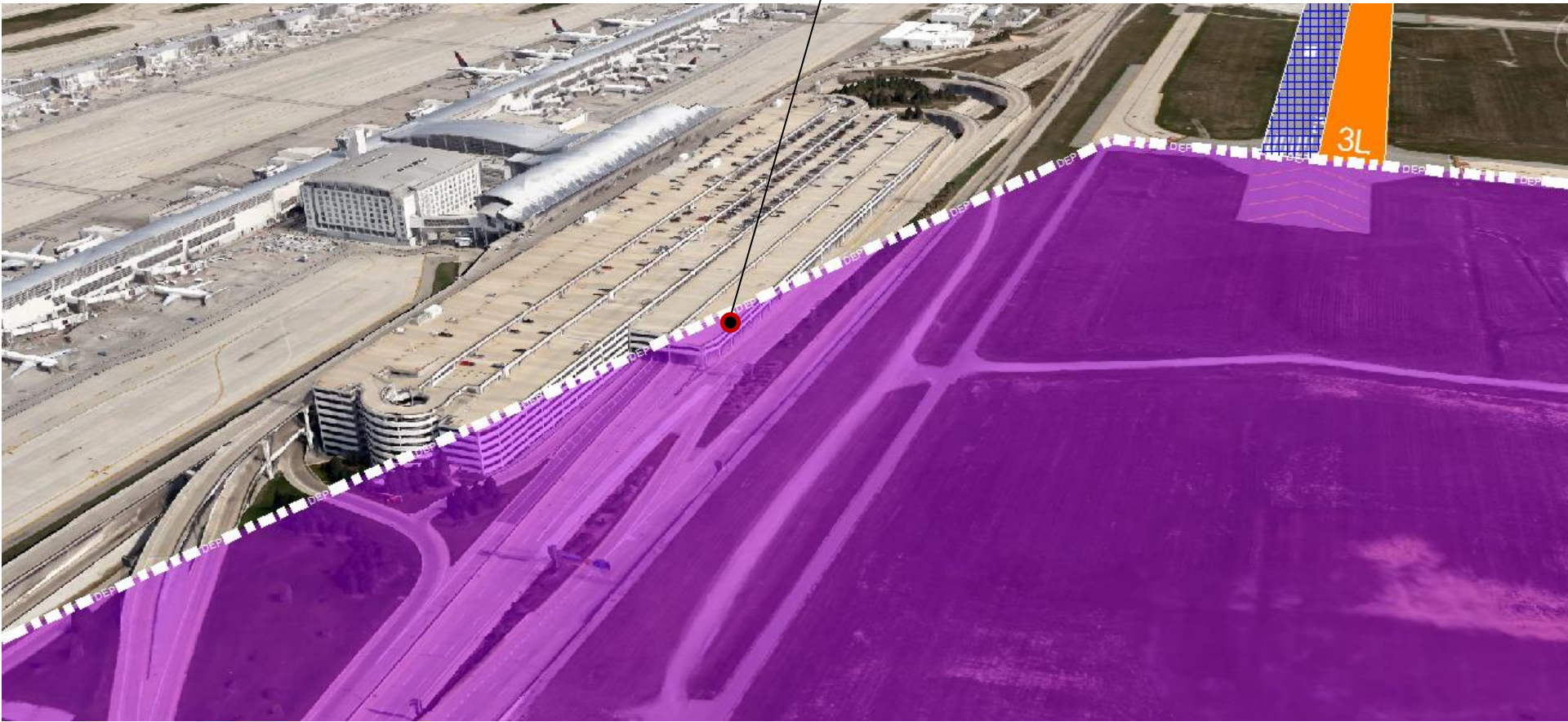
Fixed Obstruction: 5.6' Penetration





# No Fixed TERPS Obstruction – Shift CL 110' East

Fixed Structure: 8.5' Clearance





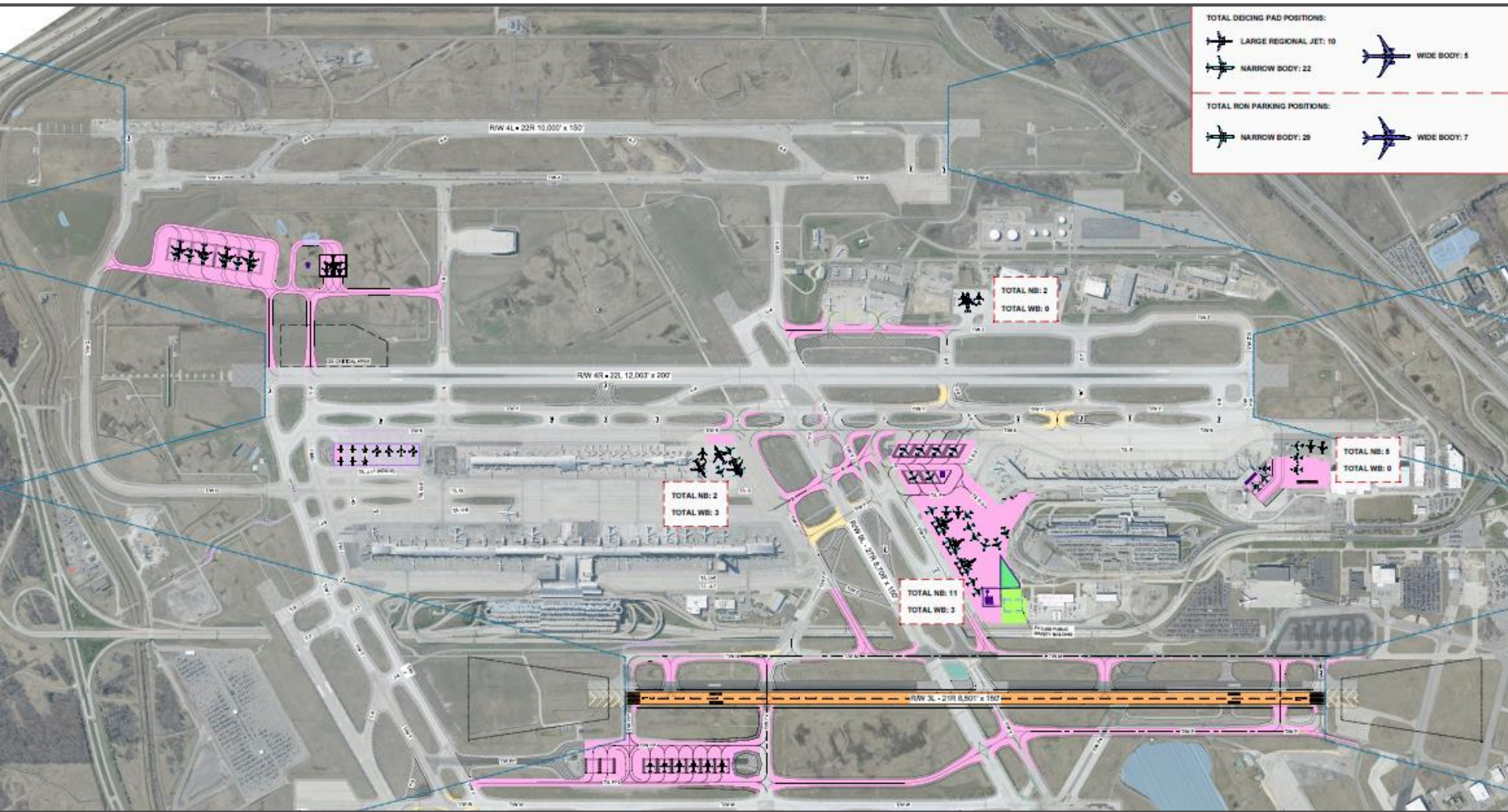
# Summary of Airspace Analysis

	Existing CL	Shift CL 50' East	Shift CL 110' East
<b>McNamara Terminal Parking Structure</b>	19.4' Penetration	5.6' Penetration	8.5' Clearance
<b>Taxiway J (B747 Tail)</b>	10.8' Penetration	11.7' Penetration	12.4' Penetration
<b>Taxiway T (B747 Tail)</b>	2.6' Penetration	3.1' Penetration	3.9' Penetration
<b>Proposed Taxiway PP (ADG III Tail)</b>	Not in Surface	Not in Surface	3.7' Clearance

# Airfield Alternative Summary

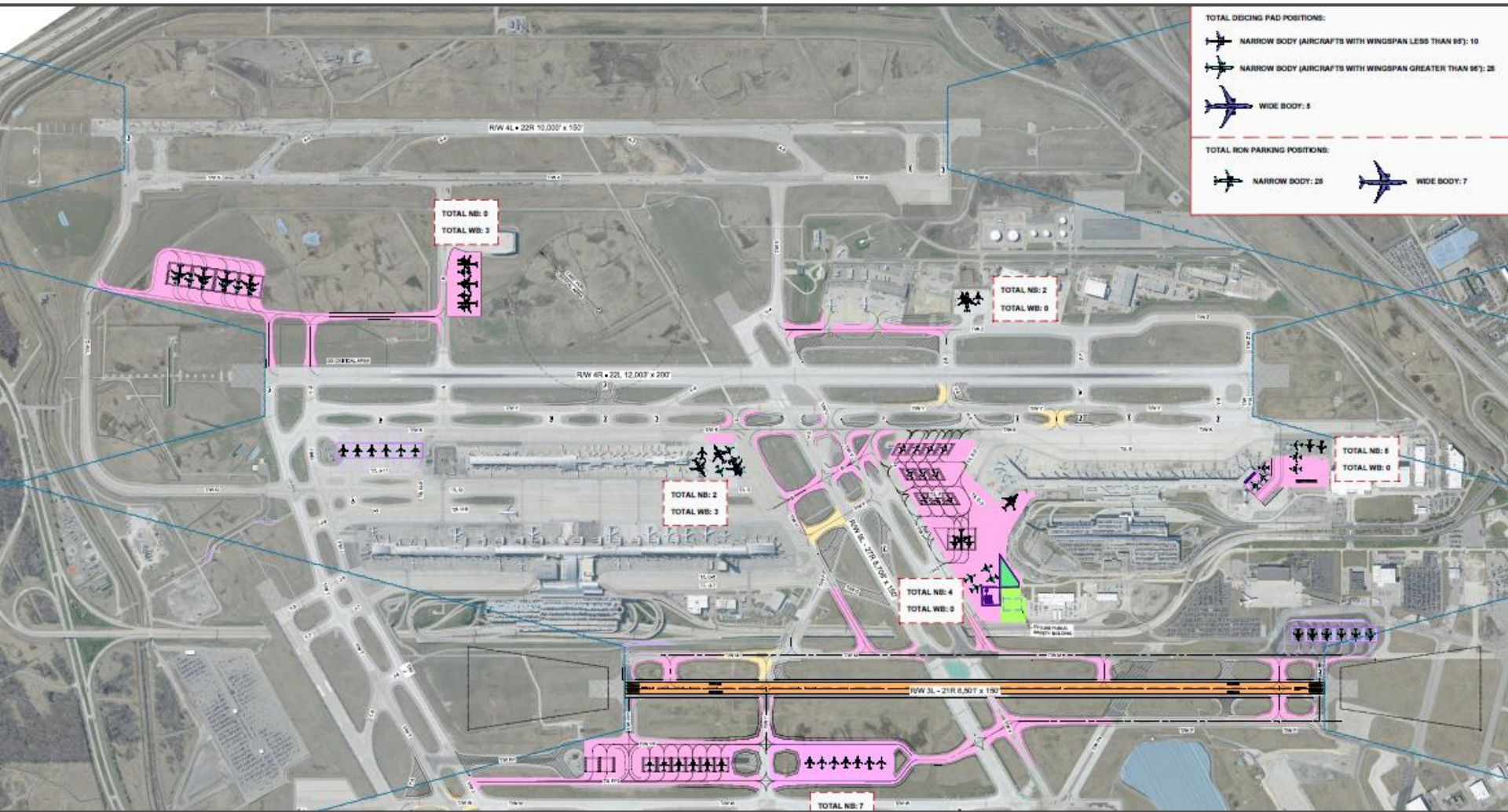
	Airfield Alternative 1A	Airfield Alternative 2
<b>Deicing Pads</b>	<ul style="list-style-type: none"> <li>• New Runway 4R West Pad for Delta Mainline Aircraft</li> <li>• Separate New Runway 4R West Pad for one OAL widebody</li> <li>• Runway 4R East Pad converted to Delta Connection Pad</li> <li>• Runway 22L Pad reconfigured for OALs</li> <li>• Reconfigured Runway 3L Pad</li> </ul>	<ul style="list-style-type: none"> <li>• New Runway 4R West Pad</li> <li>• Runway 4R East Pad reconfigured for narrowbody aircraft</li> <li>• Runway 22L Pad reconfigured to meet standards</li> <li>• One OAL widebody deicing spot added near 22L Pad</li> <li>• Runway 21 R Pad reconfigured to meet standards</li> </ul>
<b>Remain Over Night (RON)</b>	<ul style="list-style-type: none"> <li>• RON at Smith Terminal site</li> <li>• RON at Berry Terminal site</li> <li>• Reconfigured McNamara C North RON</li> <li>• RON near Spirit Hangar</li> <li>• Runway 21R Pad becomes backup RON and deicing pad</li> </ul>	<ul style="list-style-type: none"> <li>• RON at Smith Terminal site</li> <li>• RON at Berry Terminal site</li> <li>• Reconfigured McNamara C North RON</li> <li>• RON near Spirit Hangar</li> <li>• New RON Pad north of Runway 3L Deicing Pad</li> <li>• New RON Pad east of GRE along Taxiway R</li> </ul>

# Consolidated Airfield Alternative #1





# Consolidated Airfield Alternative #2





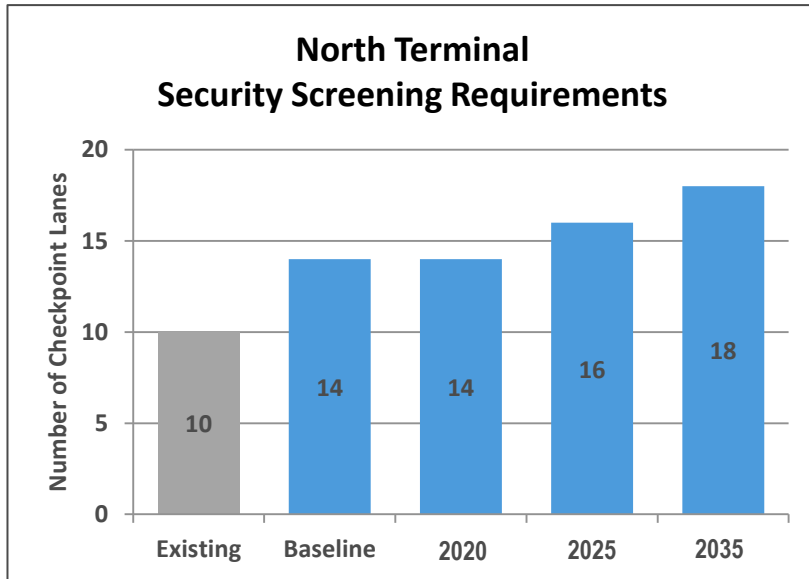
# Overall Deicing / RON Concepts Options – Pros & Cons

	PROS (+)	CONS (-)
<b>Alternative 1</b> <b>ROM Cost Deicing and</b> <b>RON ~\$120M</b>	<ul style="list-style-type: none"> <li>• Improves widebody deicing</li> <li>• Provides enhanced access for Delta, Delta Connection, and OALs</li> <li>• Reduces pad to departure runway time for OALs and Delta Connect in north flow</li> <li>• Provides enhanced ATC flexibility</li> <li>• Does not mix vendors on a single pad</li> <li>• Eliminates head-to-head conflicts on Taxiway M</li> </ul>	<ul style="list-style-type: none"> <li>• Potentially reduces number of positions for Delta Connection</li> <li>• Reduces J-11 to an ADG-III taxilane (currently ADG IV)</li> </ul>
<b>Alternative 2</b> <b>ROM Cost Deicing and</b> <b>RON ~\$150M</b>	<ul style="list-style-type: none"> <li>• Improves widebody deicing</li> <li>• Enables Runway 22L pad to meet standards</li> <li>• Provides enhanced ATC flexibility</li> <li>• No impacts to Taxilane J-11</li> </ul>	<ul style="list-style-type: none"> <li>• Mixes vendors on a single pad (22L)</li> <li>• More runway crossings for RON</li> <li>• Does not address head-to-head conflicts on Taxiway M</li> <li>• Complex procedures on 22L pad for ATCT</li> <li>• Does not benefit OALs</li> </ul>

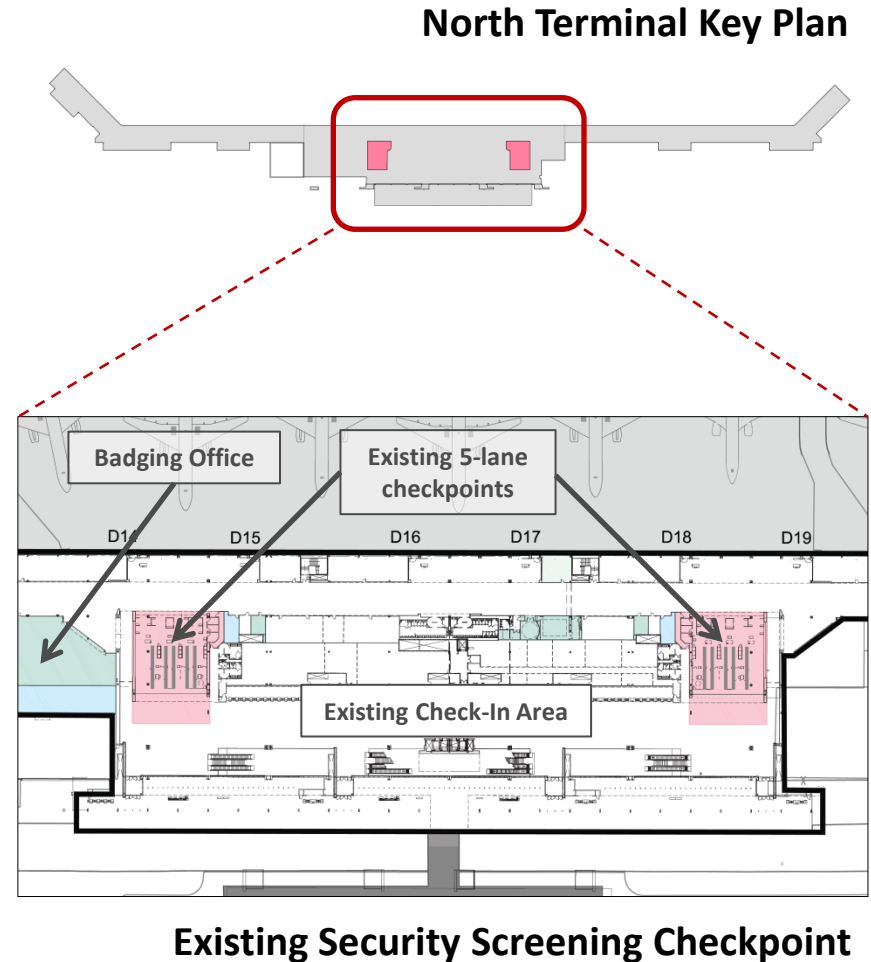
*Alternatives Development:  
Passenger Terminal*

# North Terminal Security Screening Requirements

Security screening checkpoints are insufficient to meet 20-year demand

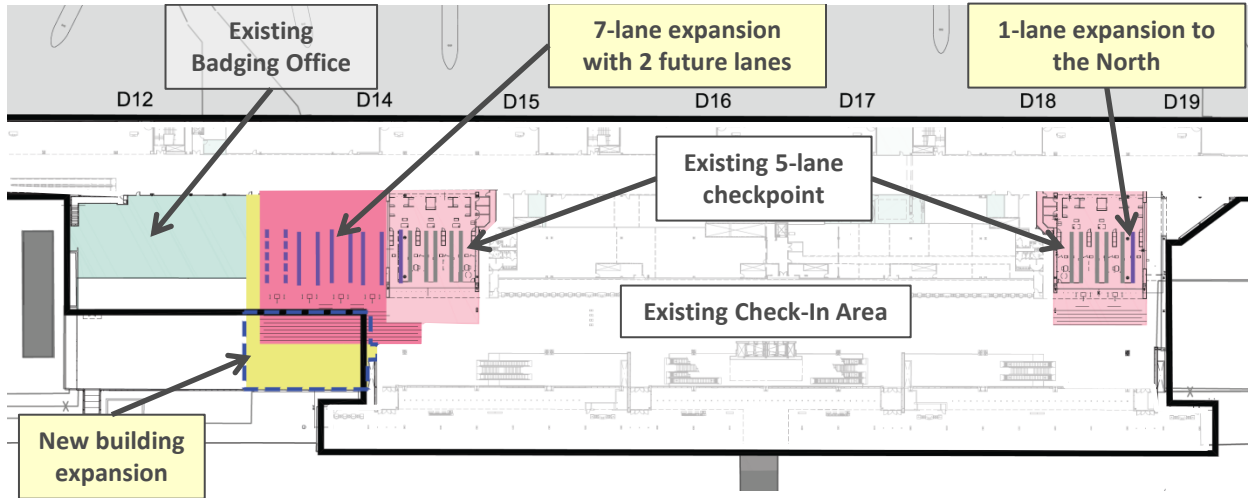


- 4 additional lanes are required at the North and South banks by 2035
- Existing check-in area will be preserved to accommodate near-term peaks
- Badging office will be relocated in the consolidated SSCP concept

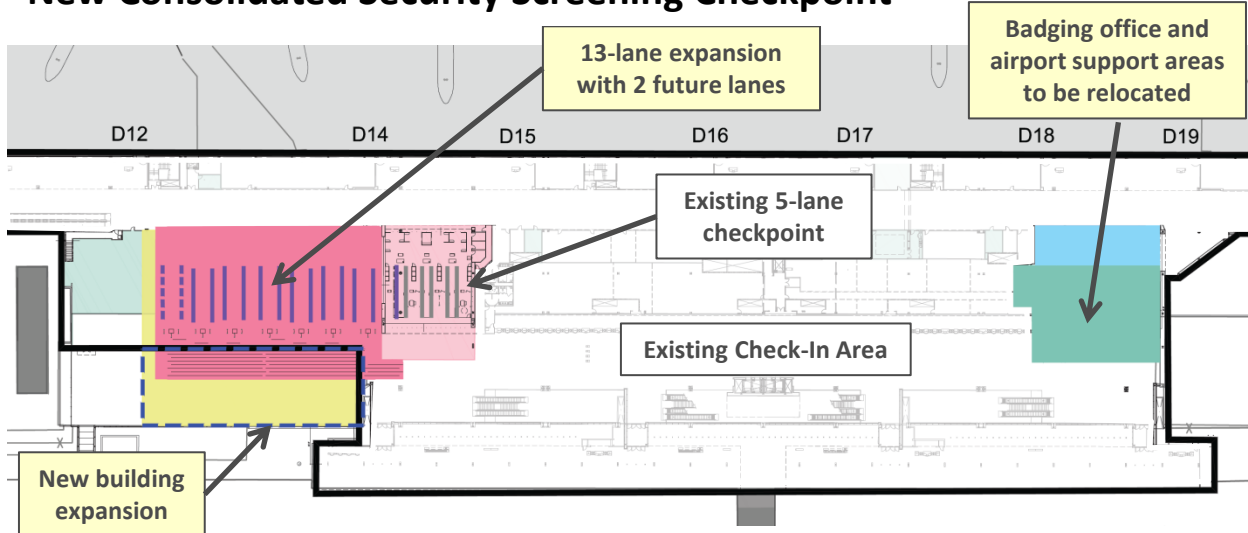


# North Terminal Security Screening Options

## Expanded Dual Security Screening Checkpoint



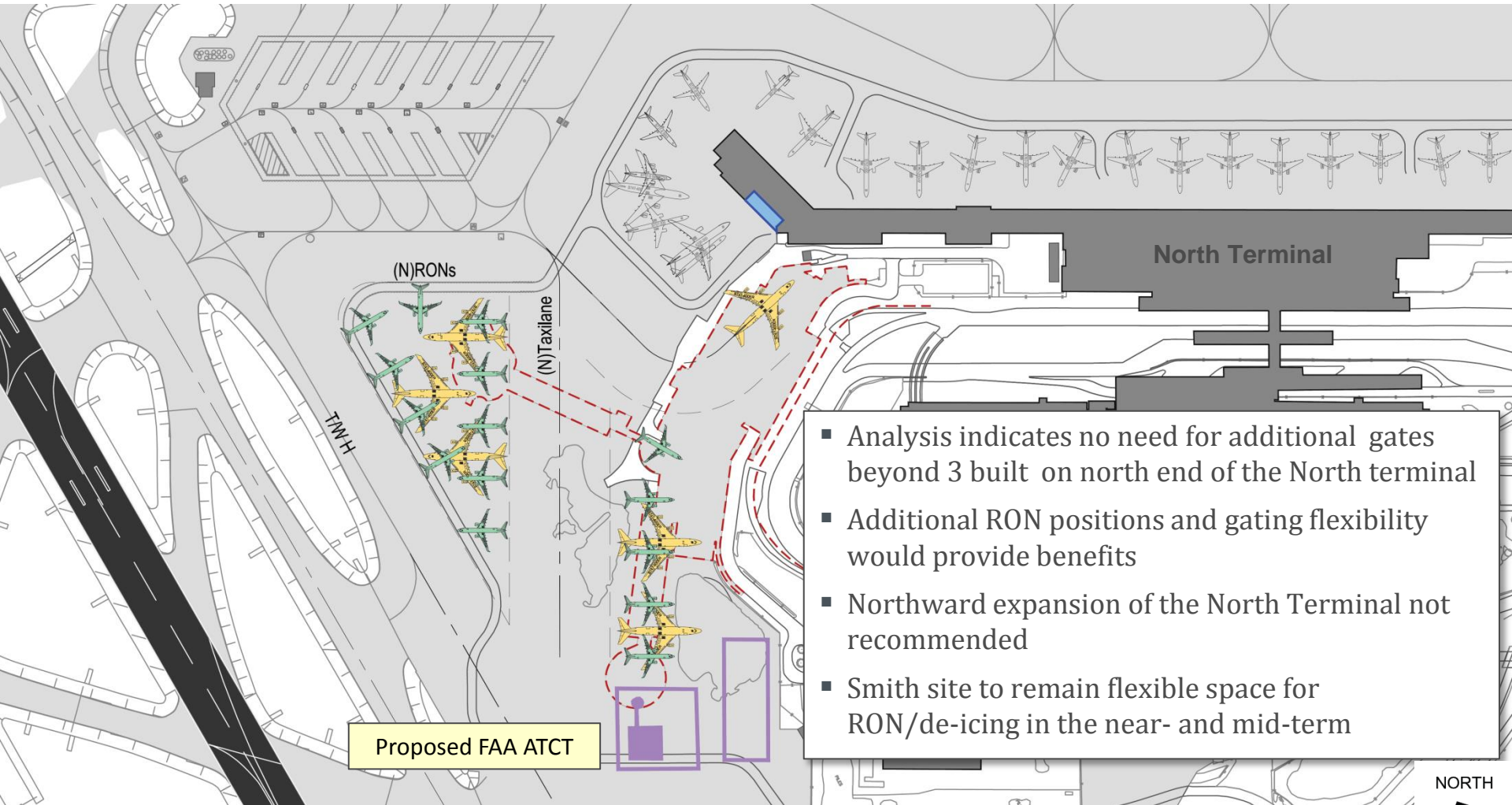
## New Consolidated Security Screening Checkpoint





# Proposed Use of the Smith Site

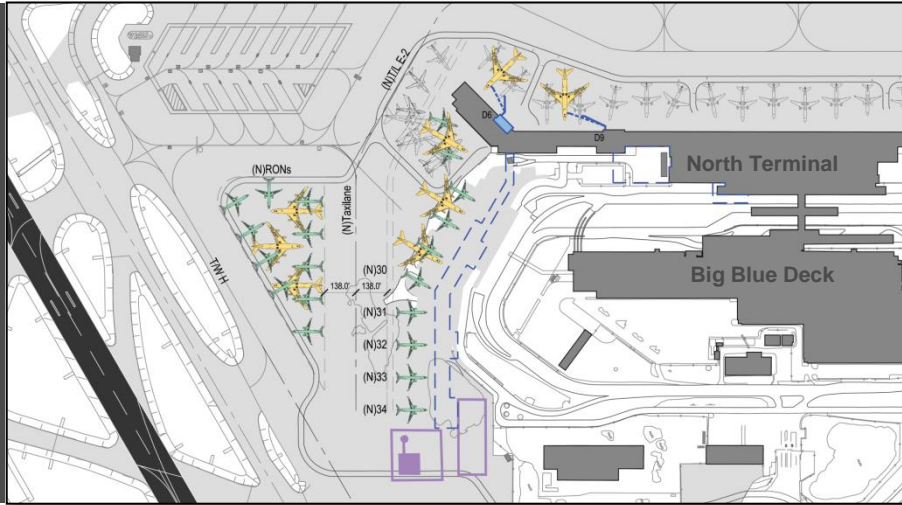
## 3 ADG-V contact gates and 15 ADG-III remote positions



- Analysis indicates no need for additional gates beyond 3 built on north end of the North terminal
- Additional RON positions and gating flexibility would provide benefits
- Northward expansion of the North Terminal not recommended
- Smith site to remain flexible space for RON/de-icing in the near- and mid-term

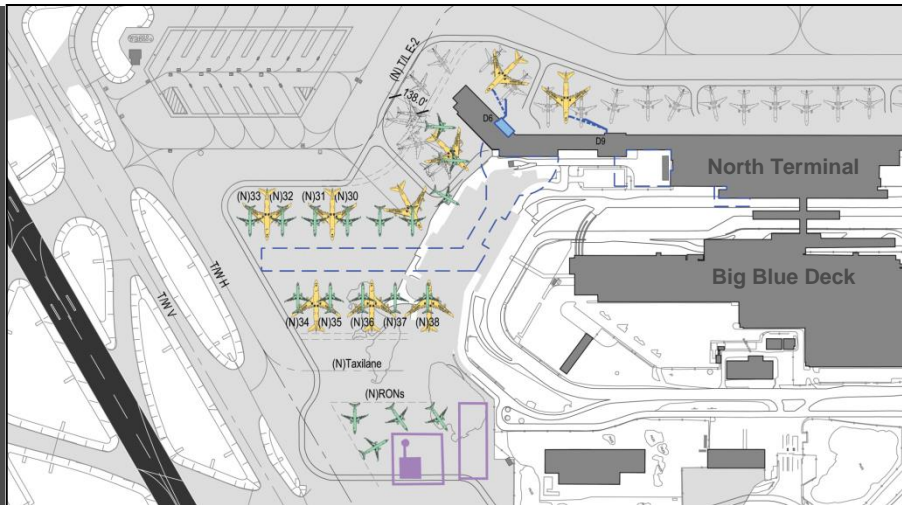
# Various Long-term Development Options Available for the Smith Site

Single-loaded concourse with connector bridge



GATE SUMMARY			
	Existing	Proposed	Net Gain
Contacts	26+3	34	5
RONs	15	10	(5)
Approx. 90,000 sf; ROM ~ \$221M			

Double loaded concourse with "pavilion"

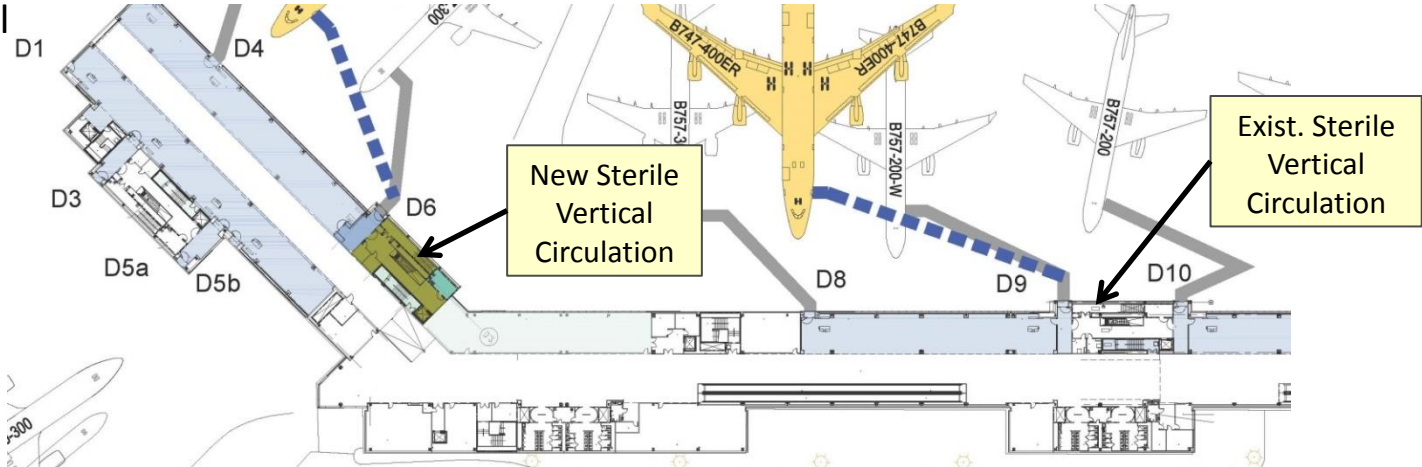


GATE SUMMARY			
	Existing	Proposed	Net Gain
Contacts	26+3	38	9
RONs	15	4	(11)
Approx. 170,000 sf; ROM ~ \$415M			

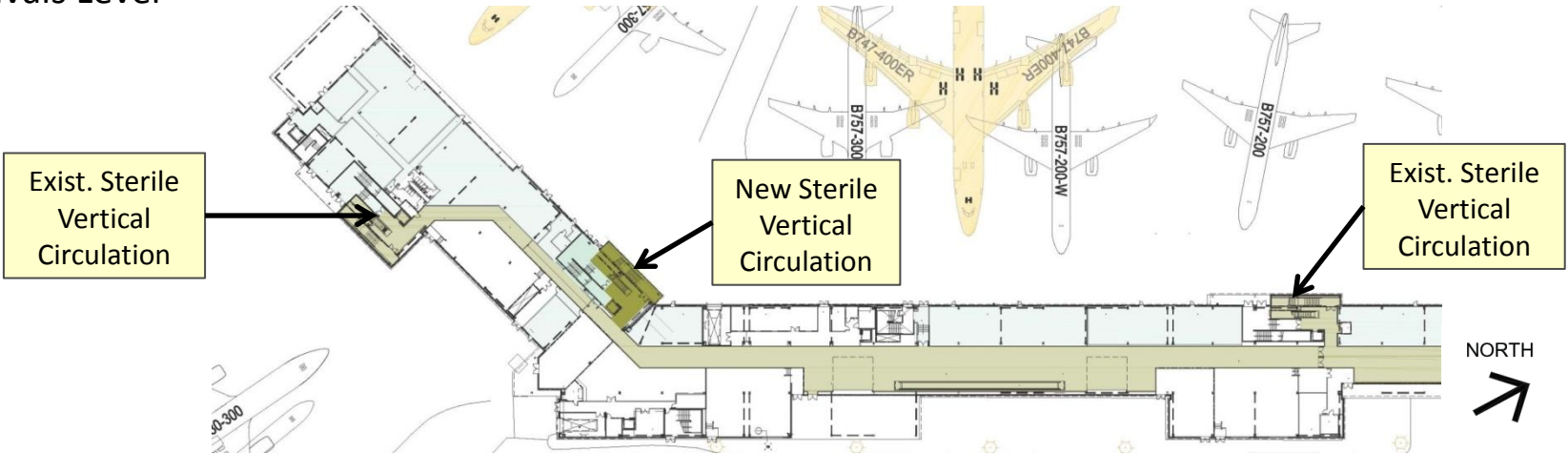
# FIS Gate Accessibility Option

## Convert Gate D6 vertical circulation to FIS circulation

Departures Level



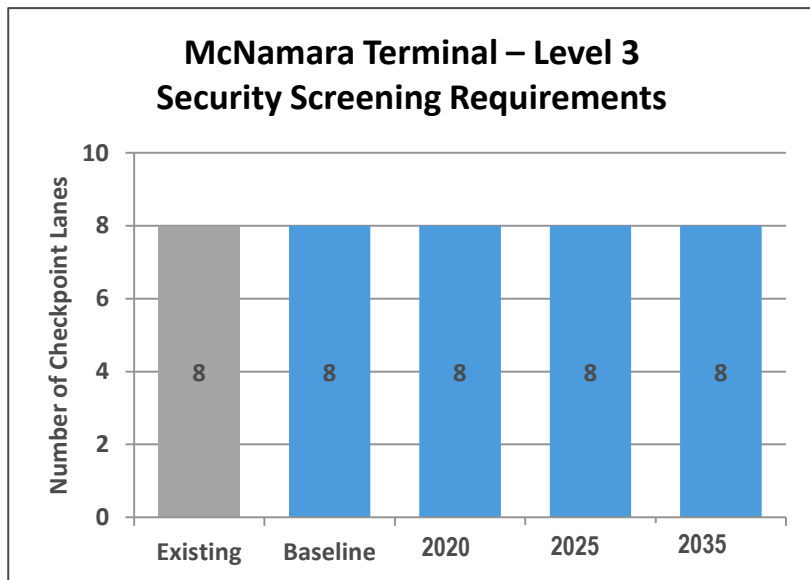
Arrivals Level



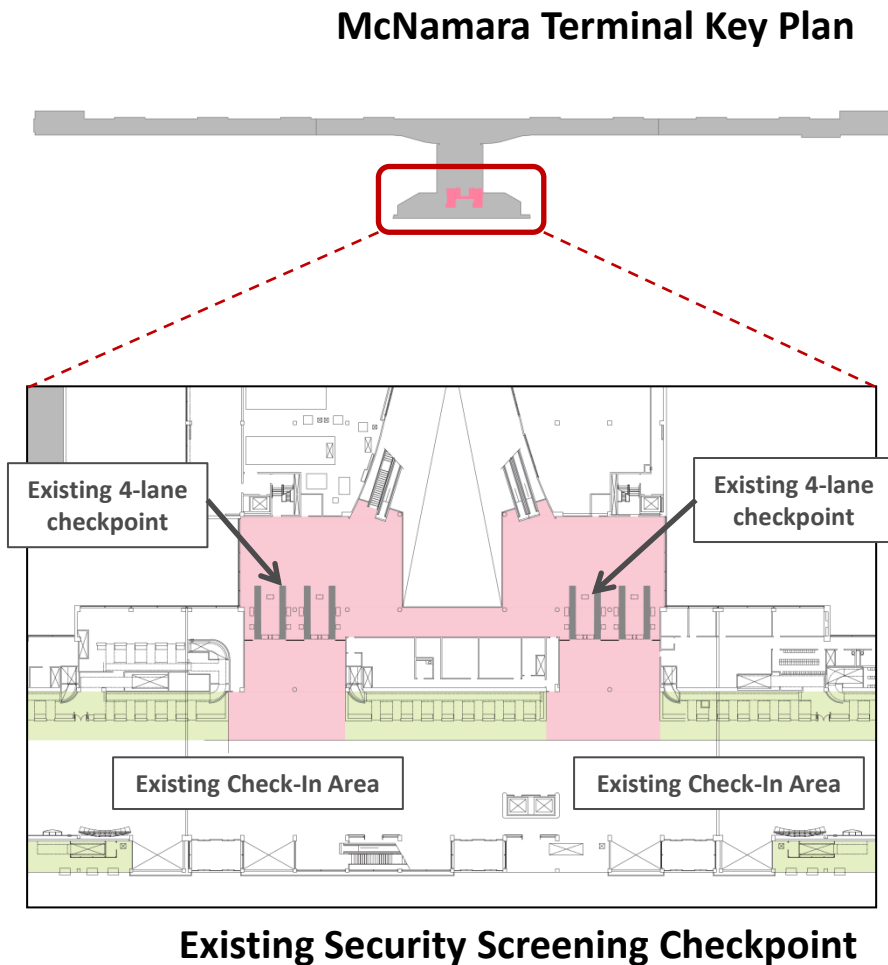


# McNamara Terminal Security Screening Requirements

Security screening checkpoints are insufficient to meet 20-year demand

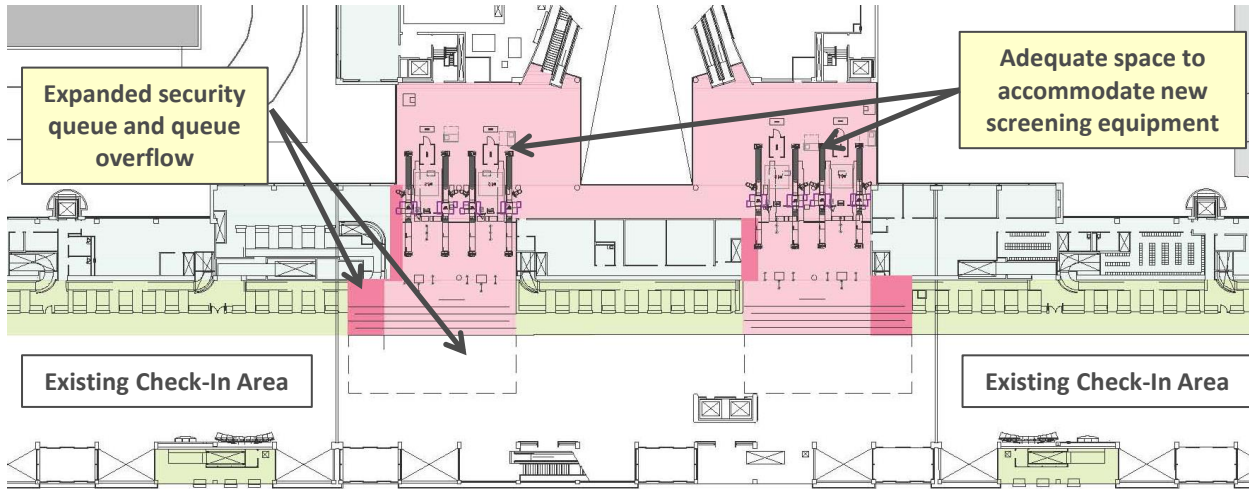


- No additional lanes are required but screening equipment are getting longer and wider
- Additional queue areas should be provided

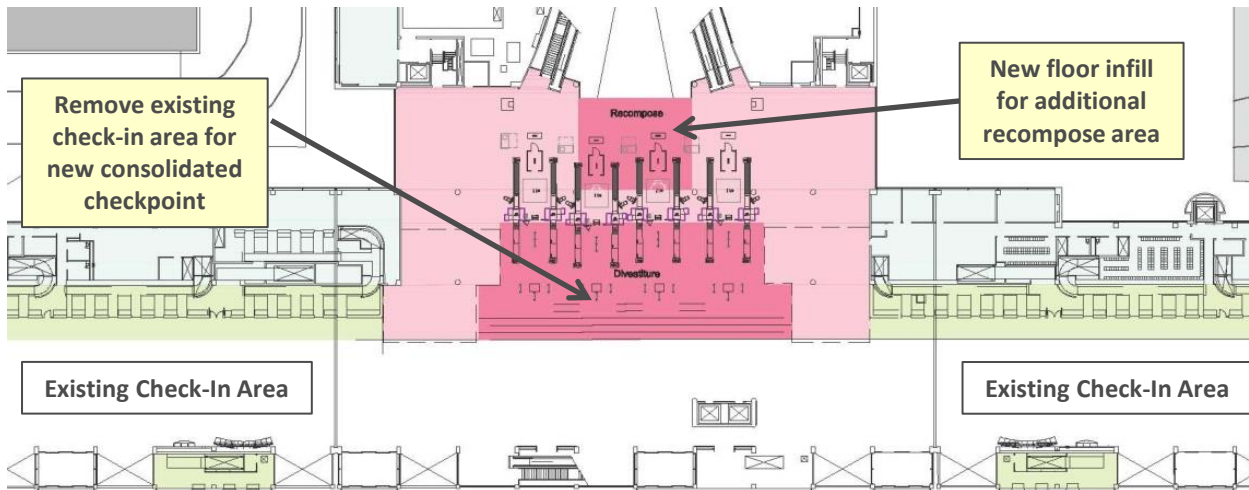


# McNamara Terminal Security Screening Options

## Expanded Dual Security Screening Checkpoint



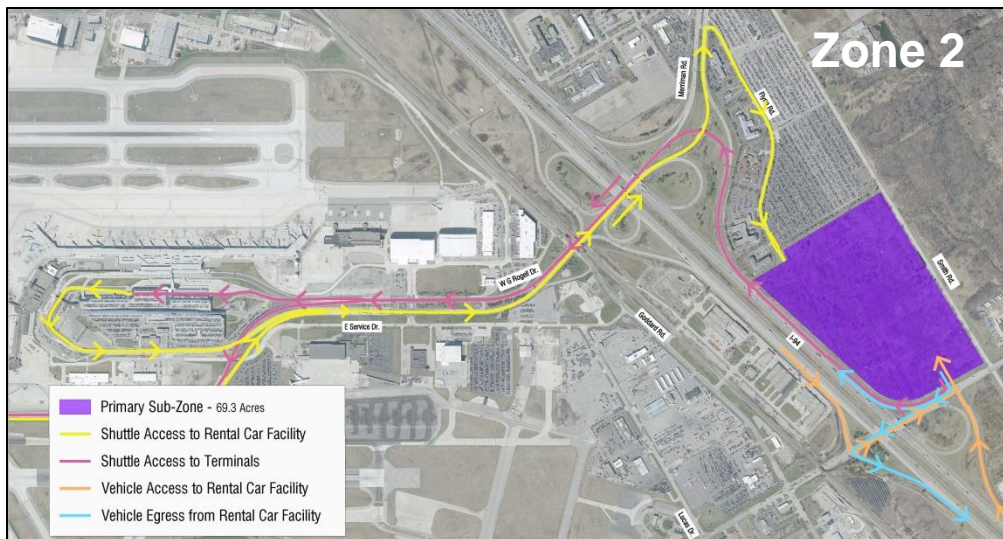
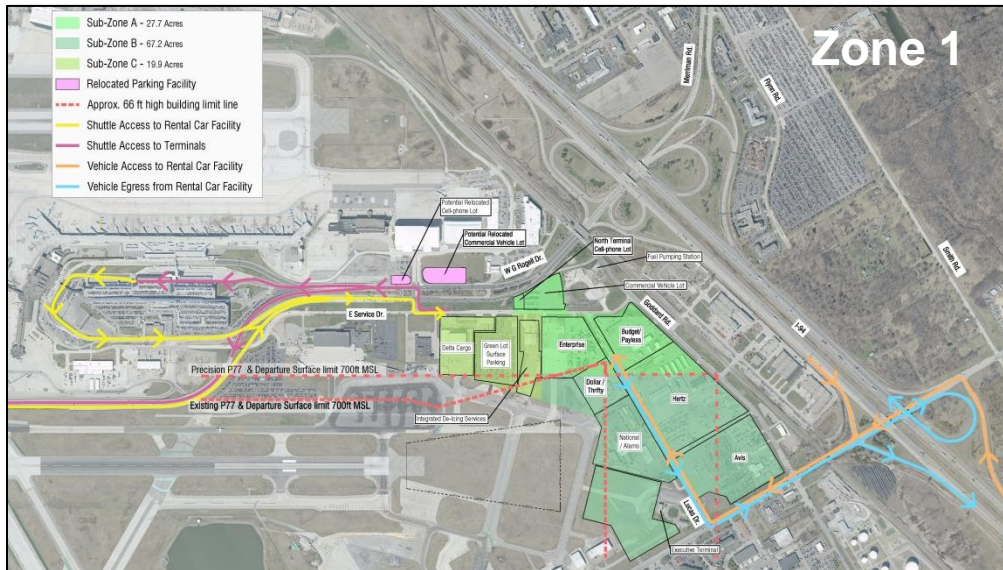
## New Consolidated Security Screening Checkpoint



*Alternatives Development:  
Ground Transportation Facilities*



# Consolidated Rental Car Facility Site Evaluation



- Development considerations
  - Total area
  - Airspace obstructions
  - Expansion opportunity
  - Infrastructure
  - Construction phasing
  - Environmental/ site conditions
- Accessibility considerations
  - Ease of egress from site
  - Ease of return to site
  - Existing and future shuttle times (North and McNamara terminals)

# Curbside Considerations

Dwell times and traffic volumes impact curbside demand; managing dwell times will reduce required curb length

	Existing dwell time		Recommended dwell time
	McNamara Terminal	North Terminal	
Private Vehicle Arrivals	6.0 min	5.3 min	2.5 min

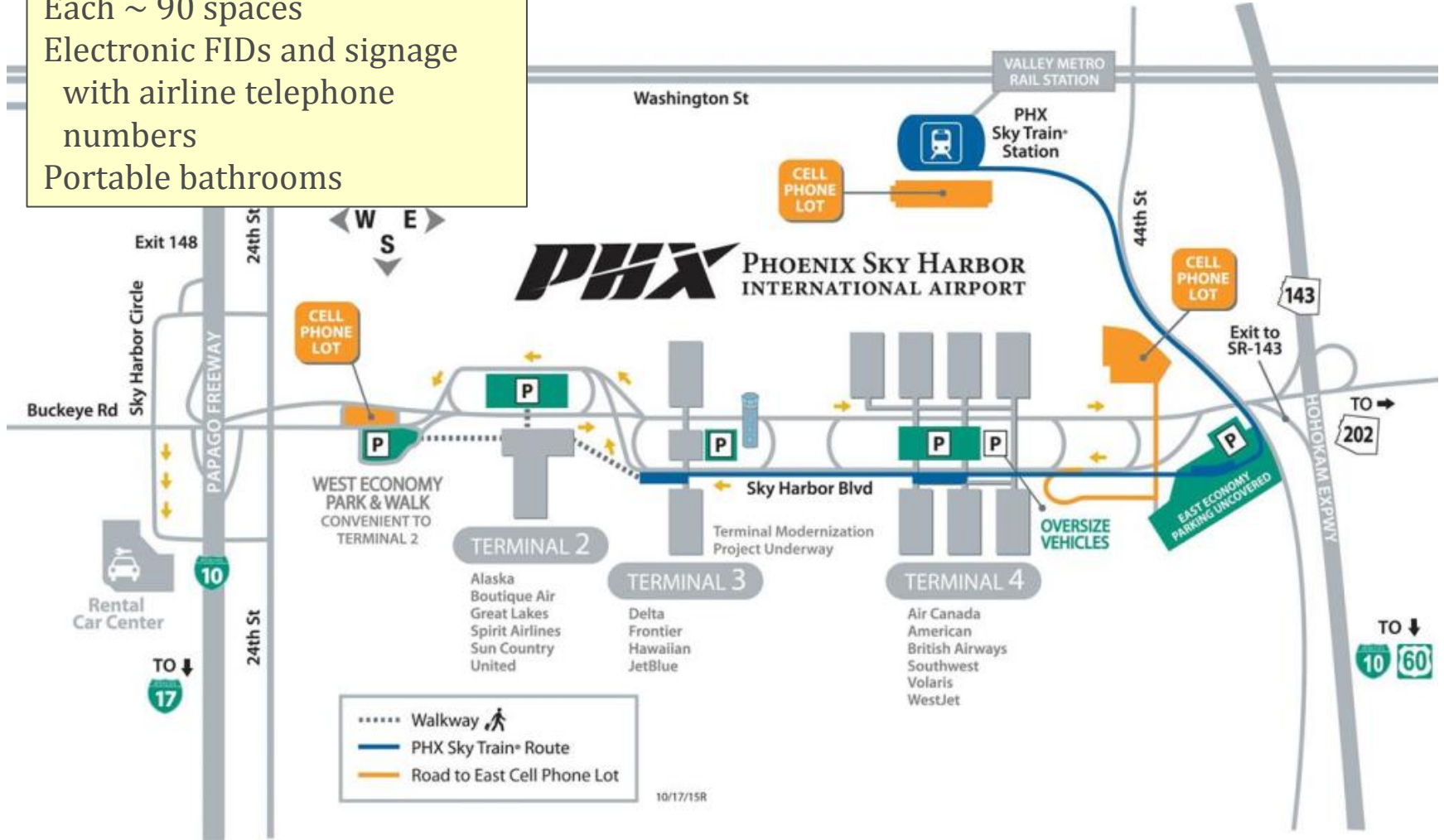
- Arrivals curb lengths can meet demand if dwell times reduce
- Cell phone lots recommended
  - Rogell Drive (main Airport access)
  - Supplemental lot located on Eureka Road
  - Serve both terminals
  - Potential commercial development / travel plaza



# Cell Phone Lots: Phoenix Sky Harbor International Airport

Three (3) newly created cell phone lots

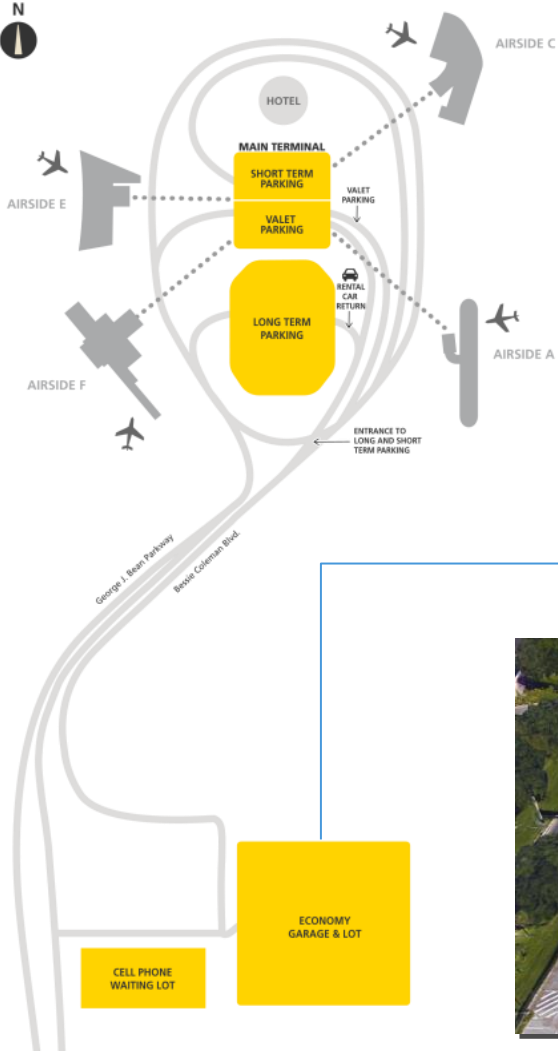
Each ~ 90 spaces  
 Electronic FIDs and signage  
 with airline telephone  
 numbers  
 Portable bathrooms





# Cell Phone Lots: Tampa International Airport

Single cell phone lot located south of the main terminal



~550 spaces  
5 minute drive to the terminal  
Electronic FIDs  
Restrooms; vending machines; free wi-fi  
Two electric vehicle charging stations



# Cell Phone Lots: Denver International Airport

## Single cell phone lot called “Final Approach”



“Travel plaza”  
Three restaurants  
Lounge seating and children’s area  
(tabletop iPads and games)  
Indoor restrooms  
Fueling station

Located 3 miles west of terminal  
250 spaces  
Electronic FIDs  
Free wi-fi in building and lot

# Ground Transportation and Access

**The planning Team is investigating numerous additional improvement to the Airport's roads, parking lots, and GTCs**

**Roadway improvements** – Improve access to the Airport; provide necessary capacity for the future

**Parking expansion** – Enhance the customer experience; provide necessary capacity for the future

**Ground Transportation Centers** – Provide necessary operational space; improve operations





*Alternatives Development:  
Air Cargo*

# Two Potential Consolidated Air Cargo Sites Previously Examined

Consolidated cargo sites identified in the *Integrated Airport Land Use Strategic Plan*



- Facility requirements can be accommodated at various tenant sites
- Consolidated cargo facilities provided for various reasons:
  - Greenfield construction
  - Operational efficiencies
  - Re-purpose land for better uses
  - Locate cargo operations in strategic areas



- There are no known market drivers or operational needs to provide a consolidated facility at DTW

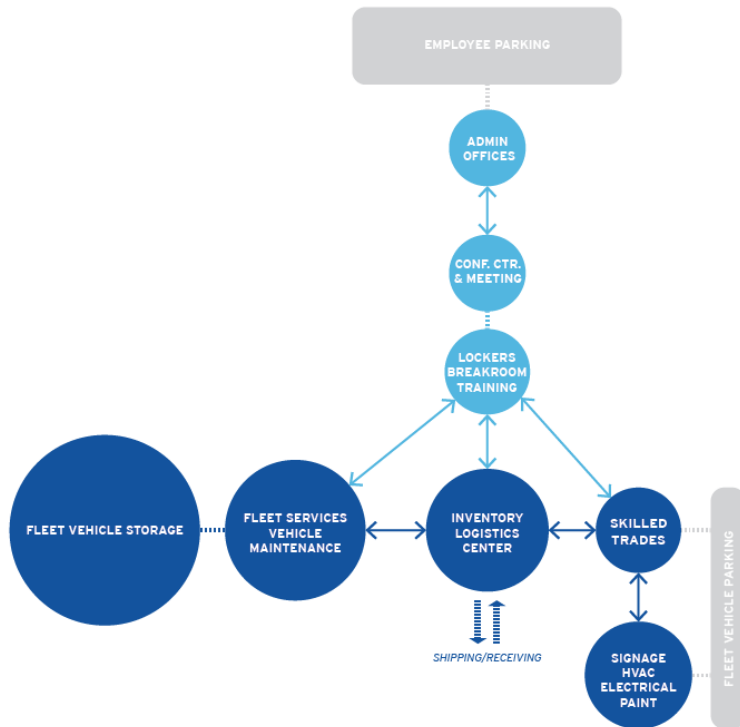
# *Alternatives Development: Airport Maintenance Campus*



DETROIT METRO • WILLOW RUN  
WAYNE COUNTY AIRPORT AUTHORITY



# Maintenance Facility Analysis



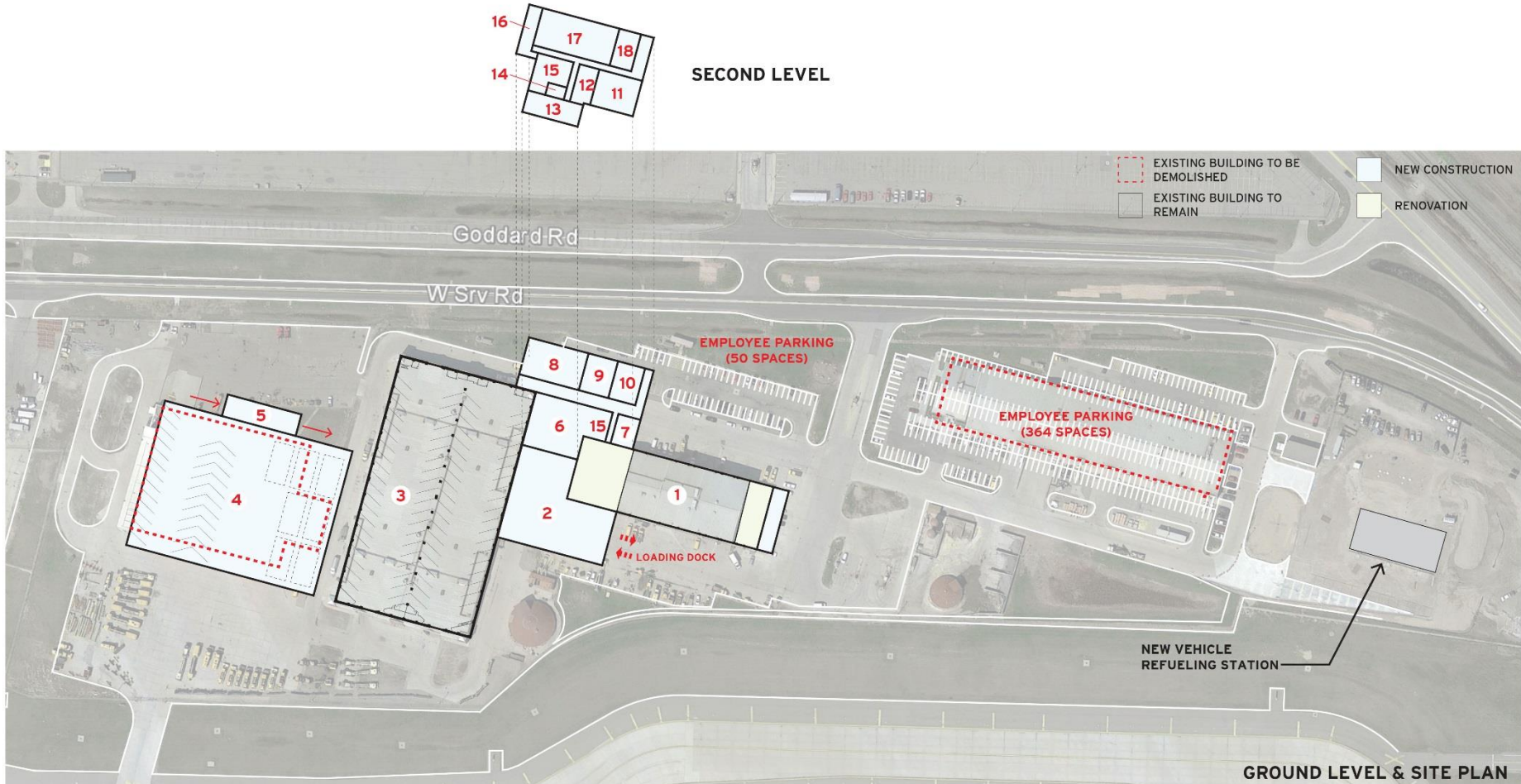
DTW Maintenance Complex

- Existing Maintenance Campus does not meet current needs of WCAA
- Alternative solutions to renovate, infill and/or construct new facilities to meet an expanded program
- Analyzing costs and operational efficiencies of alternative solution

# Maintenance Facility Space Requirements

Facility Requirements Summary				
NAME	Existing Area (S.F.)	Deficit (S.F.)	Airport Maintenance Requirements (Total S.F.)	Comments
<b>Maintenance Campus</b>				
Administration Offices	6,600	900	7,500	
Conference/Meeting Rooms	600	1,500	2,100	Conference space for Division Meetings up to 90 people
Restrooms	2,400	500	2,900	
Mens Locker Room	1,900	1,000	2,900	
Womens Locker Room	200	0	200	
Breakrooms with Rec	2,100	700	2,800	Includes centralized fitness area for staff
Training & Learning Center	1,300	600	1,900	
Inventory Logistics Center	15,100	5,400	20,500	
Skilled Trades	9,400	0	9,400	Carp., Plumb., Key Shop, Recycle
Sign Studio	1,300	1,600	2,900	
HVAC Shop	1,700	0	1,700	
Electrical Shop	6,300	0	6,300	
Paint Shop	1,800	900	2,600	
Fleet Services Maintenance	20,200	13,700	33,800	
Fleet Vehicle Storage	133,800	22,300	156,100	Total required for buildings 705 and 711 indoor storage. Includes new 4,000 SF vehicle wash bay (120'x35')
Support/Circulation	13,800	1,800	15,600	
Satellite Maintenance Facility	0	2,000	2,000	New Building located on Superior Rd (SE corner of the campus) with equipment parking for 30 vehicles
<b>TOTAL BUILDING AREA</b>	<b>218,500</b>	<b>52,900</b>	<b>271,200</b>	
Employee Vehicle Parking	268	134	402	Parking Spaces. Increase 50%
<b>TOTAL PARKING AREA</b>	<b>75,040</b>	<b>37,520</b>	<b>112,560</b>	280 SF/space (9'x18' parking space & 1/2 driving aisle)

# Existing Facility Infill Scheme



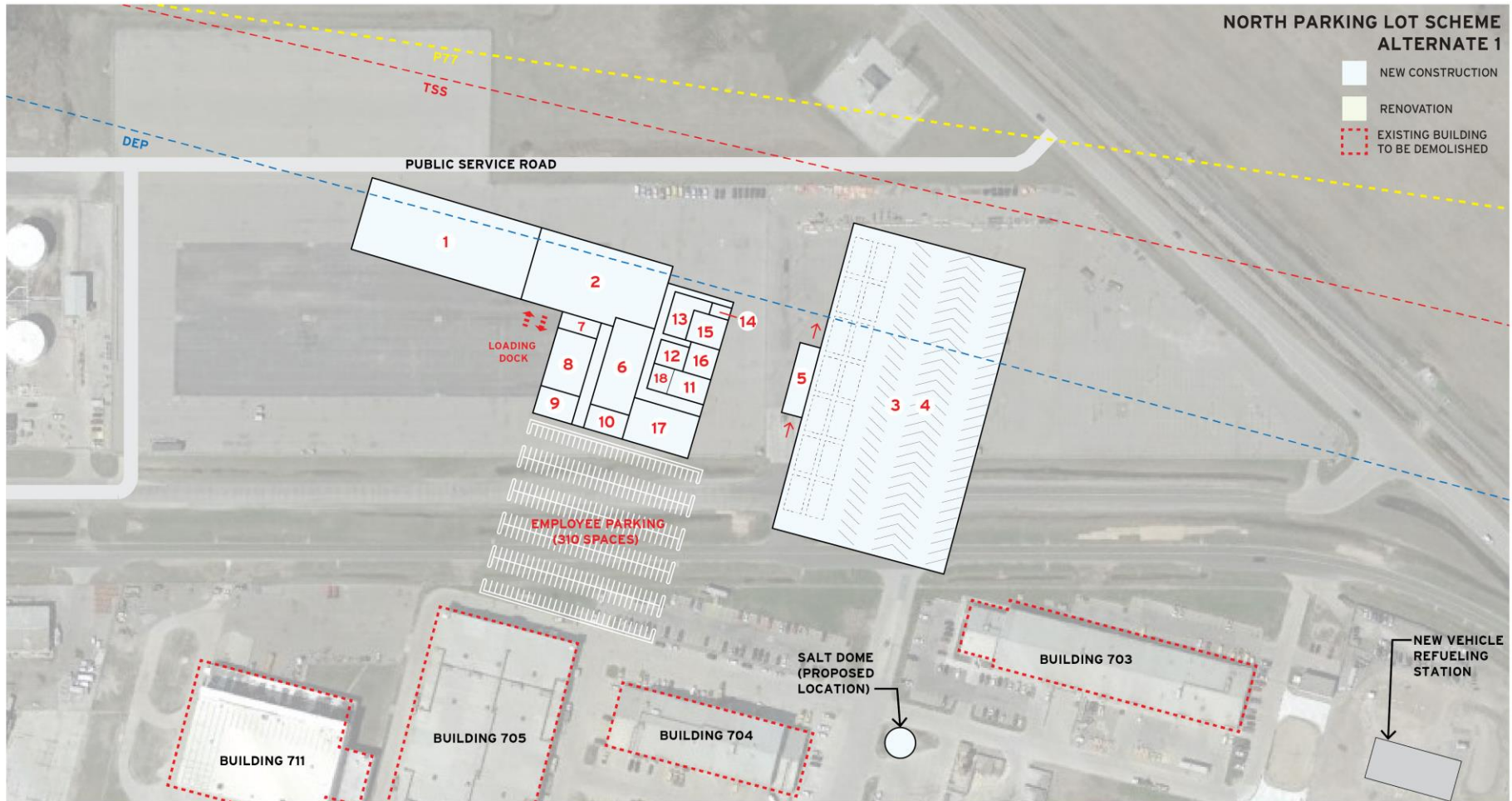
**LEGEND**

- |    |                                    |    |                        |
|----|------------------------------------|----|------------------------|
| 1  | FLEET SERVICE MAINTENANCE          | 11 | CONFERENCE CENTER      |
| 2  | INVENTORY LOGISTICS                | 12 | TRAINING/LEARNING      |
| 3  | FLEET VEHICLE STORAGE - SHORT TERM | 13 | LOCKERS                |
| 4  | FLEET VEHICLE STORAGE - LONG TERM  | 14 | EXERCISE FACILITY      |
| 5  | VEHICLE WASH BAY                   | 15 | RESTROOMS              |
| 6  | SKILLED TRADES                     | 16 | BREAKROOM              |
| 7  | HVAC SHOP                          | 17 | ADMINISTRATION OFFICES |
| 8  | ELECTRICAL SHOP                    | 18 | MEETING ROOMS          |
| 9  | SIGN SHOP                          |    |                        |
| 10 | PAINT SHOP                         |    |                        |



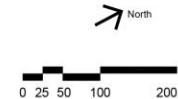


# North Parking Lot Scheme - Alternate 1



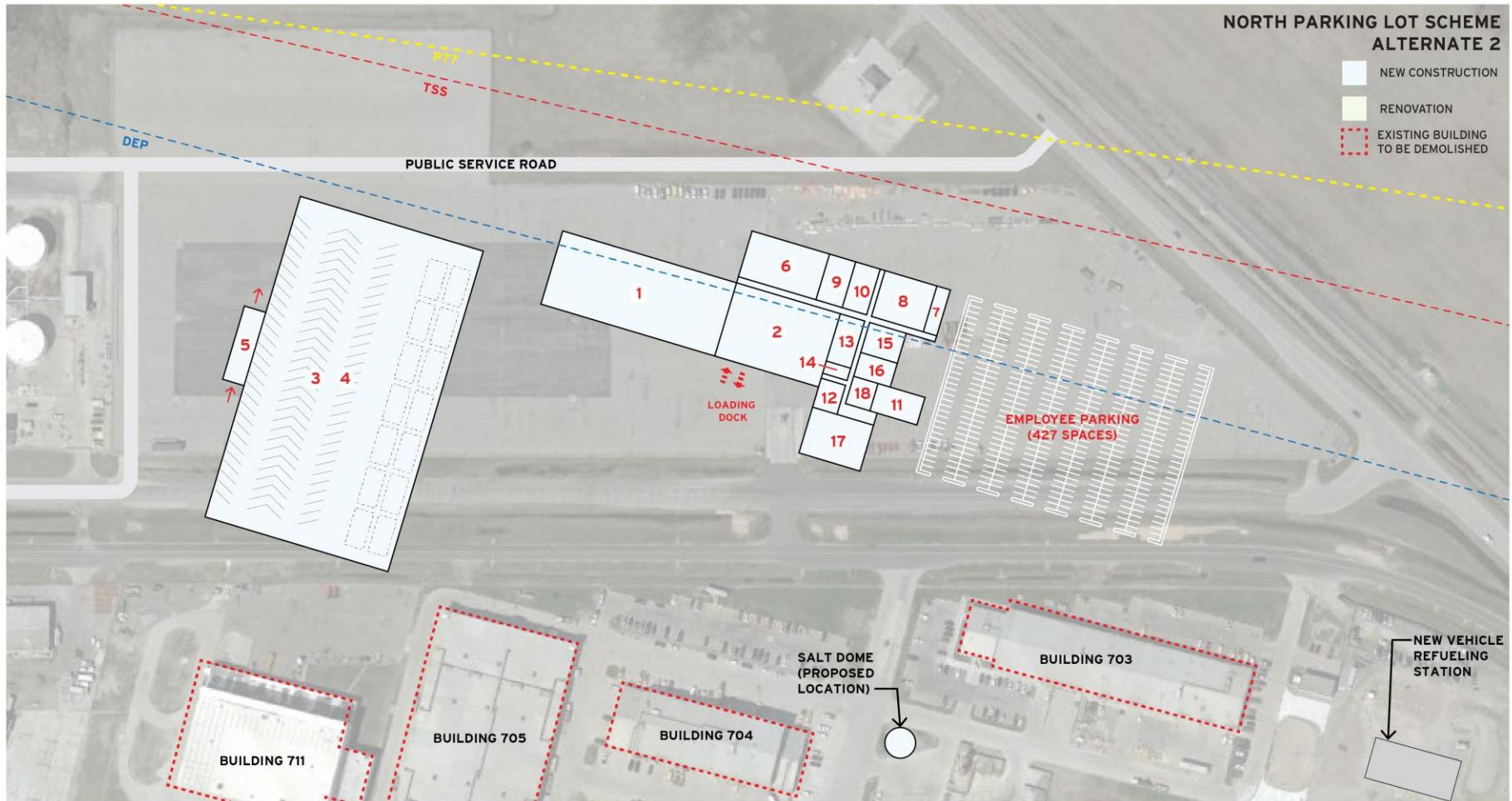
## LEGEND

1	FLEET SERVICE MAINTENANCE	11	CONFERENCE CENTER
2	INVENTORY LOGISTICS	12	TRAINING/LEARNING
3	FLEET VEHICLE STORAGE - SHORT TERM	13	LOCKERS
4	FLEET VEHICLE STORAGE - LONG TERM	14	EXERCISE FACILITY
5	VEHICLE WASH BAY	15	RESTROOMS
6	SKILLED TRADES	16	BREAKROOM
7	HVAC SHOP	17	ADMINISTRATION OFFICES
8	ELECTRICAL SHOP	18	MEETING ROOMS
9	SIGN SHOP		
10	PAINT SHOP		



MAINTENANCE FACILITIES  
Development Alternative  
Airport Master Plan Update - August 2016  
Detroit Metropolitan Wayne County Airport

# North Parking Lot Scheme - Alternate 2

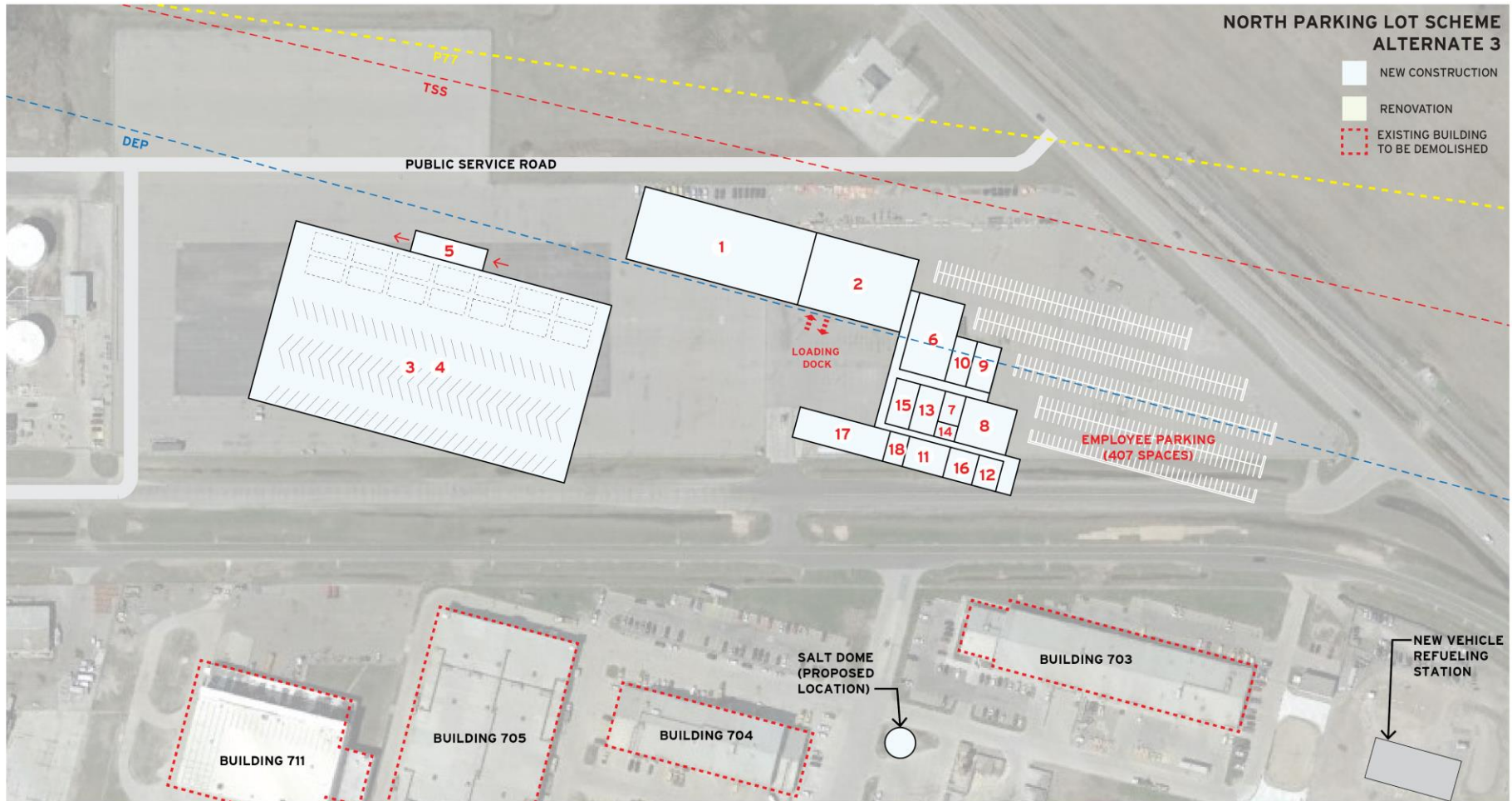


## LEGEND

1	FLEET SERVICE MAINTENANCE	11	CONFERENCE CENTER
2	INVENTORY LOGISTICS	12	TRAINING/LEARNING
3	FLEET VEHICLE STORAGE - SHORT TERM	13	LOCKERS
4	FLEET VEHICLE STORAGE - LONG TERM	14	EXERCISE FACILITY
5	VEHICLE WASH BAY	15	RESTROOMS
6	SKILLED TRADES	16	BREAKROOM
7	HVAC SHOP	17	ADMINISTRATION OFFICES
8	ELECTRICAL SHOP	18	MEETING ROOMS
9	SIGN SHOP		
10	PAINT SHOP		



# North Parking Lot Scheme - Alternate 3



## NORTH PARKING LOT SCHEME ALTERNATE 3

- NEW CONSTRUCTION
- RENOVATION
- EXISTING BUILDING TO BE DEMOLISHED

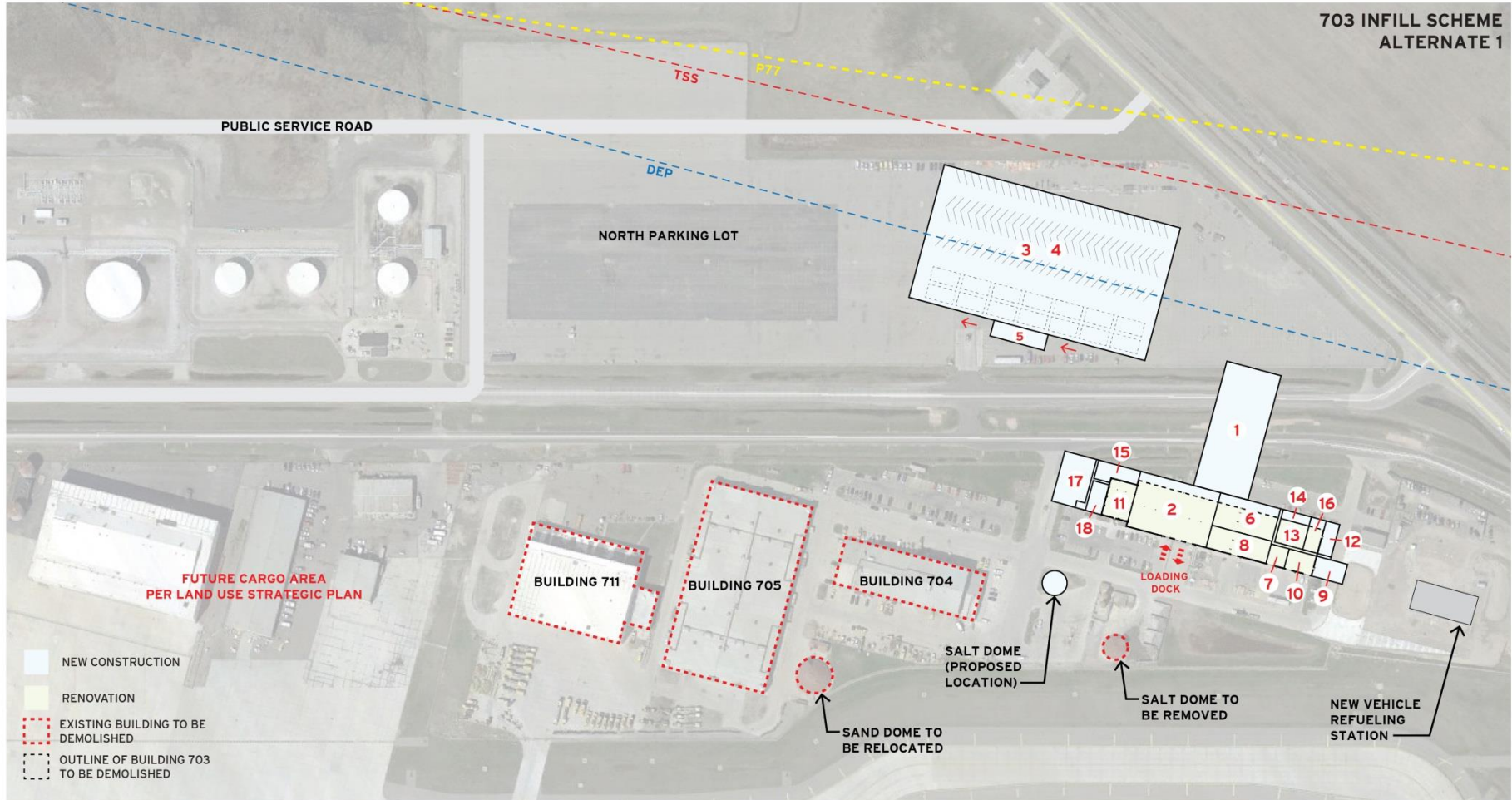
### LEGEND

- |    |                                    |    |                        |
|----|------------------------------------|----|------------------------|
| 1  | FLEET SERVICE MAINTENANCE          | 11 | CONFERENCE CENTER      |
| 2  | INVENTORY LOGISTICS                | 12 | TRAINING/LEARNING      |
| 3  | FLEET VEHICLE STORAGE - SHORT TERM | 13 | LOCKERS                |
| 4  | FLEET VEHICLE STORAGE - LONG TERM  | 14 | EXERCISE FACILITY      |
| 5  | VEHICLE WASH BAY                   | 15 | RESTROOMS              |
| 6  | SKILLED TRADES                     | 16 | BREAKROOM              |
| 7  | HVAC SHOP                          | 17 | ADMINISTRATION OFFICES |
| 8  | ELECTRICAL SHOP                    | 18 | MEETING ROOMS          |
| 9  | SIGN SHOP                          |    |                        |
| 10 | PAINT SHOP                         |    |                        |





# 703 Infill Scheme - Alternate 1

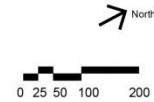


703 INFILL SCHEME  
ALTERNATE 1

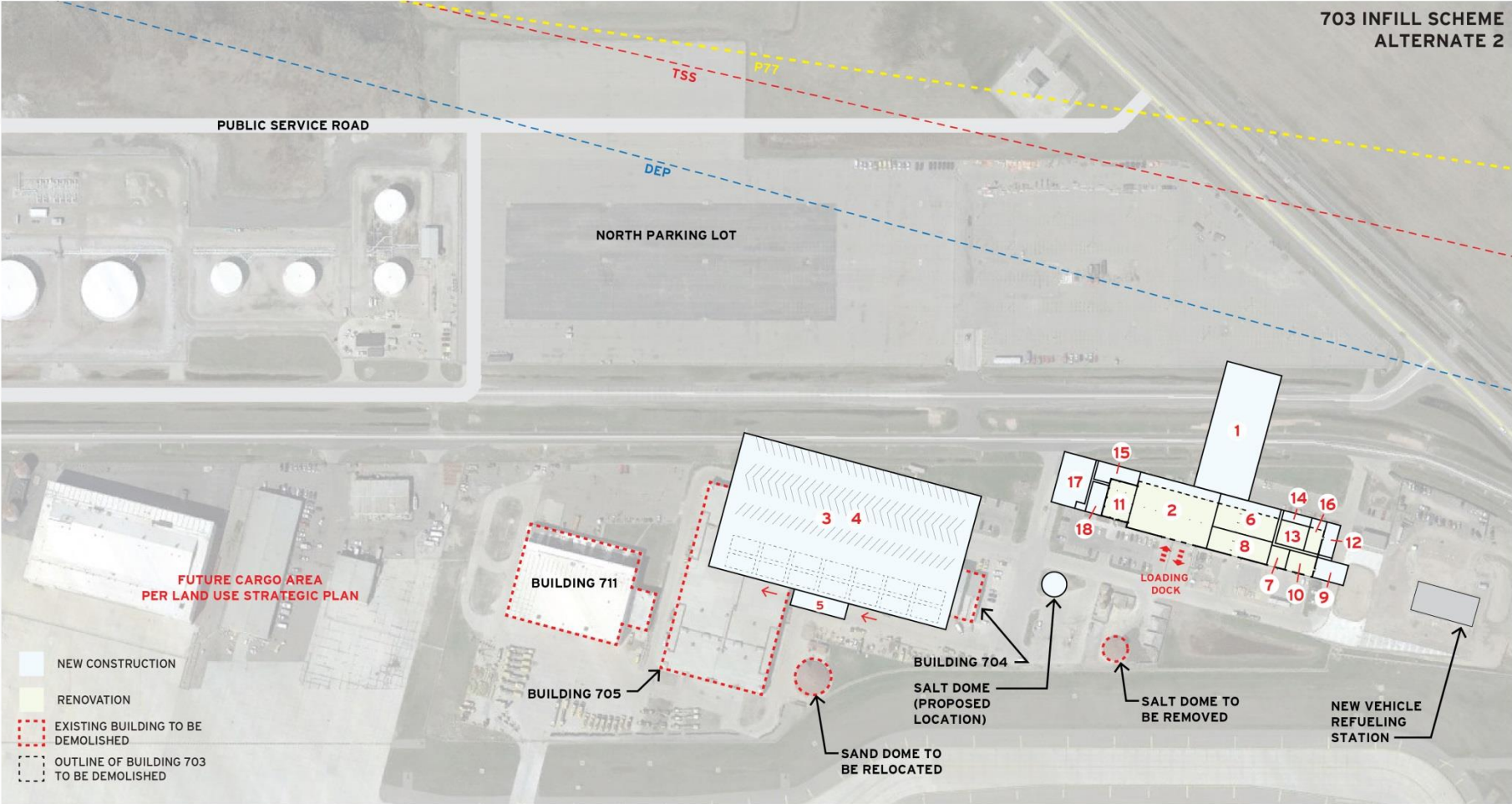
- NEW CONSTRUCTION
- RENOVATION
- EXISTING BUILDING TO BE DEMOLISHED
- OUTLINE OF BUILDING 703 TO BE DEMOLISHED

**LEGEND**

- |                                      |                           |
|--------------------------------------|---------------------------|
| 1 FLEET SERVICE MAINTENANCE          | 11 CONFERENCE CENTER      |
| 2 INVENTORY LOGISTICS                | 12 TRAINING/LEARNING      |
| 3 FLEET VEHICLE STORAGE - SHORT TERM | 13 LOCKERS                |
| 4 FLEET VEHICLE STORAGE - LONG TERM  | 14 EXERCISE FACILITY      |
| 5 VEHICLE WASH BAY                   | 15 RESTROOMS              |
| 6 SKILLED TRADES                     | 16 BREAKROOM              |
| 7 HVAC SHOP                          | 17 ADMINISTRATION OFFICES |
| 8 ELECTRICAL SHOP                    | 18 MEETING ROOMS          |
| 9 SIGN SHOP                          |                           |
| 10 PAINT SHOP                        |                           |



# 703 Infill Scheme - Alternate 2



703 INFILL SCHEME  
ALTERNATE 2

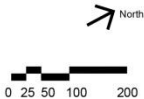
- NEW CONSTRUCTION
- RENOVATION
- EXISTING BUILDING TO BE DEMOLISHED
- OUTLINE OF BUILDING 703 TO BE DEMOLISHED

**LEGEND**

- |                                      |                           |
|--------------------------------------|---------------------------|
| 1 FLEET SERVICE MAINTENANCE          | 11 CONFERENCE CENTER      |
| 2 INVENTORY LOGISTICS                | 12 TRAINING/LEARNING      |
| 3 FLEET VEHICLE STORAGE - SHORT TERM | 13 LOCKERS                |
| 4 FLEET VEHICLE STORAGE - LONG TERM  | 14 EXERCISE FACILITY      |
| 5 VEHICLE WASH BAY                   | 15 RESTROOMS              |
| 6 SKILLED TRADES                     | 16 BREAKROOM              |
| 7 HVAC SHOP                          | 17 ADMINISTRATION OFFICES |
| 8 ELECTRICAL SHOP                    | 18 MEETING ROOMS          |
| 9 SIGN SHOP                          |                           |
| 10 PAINT SHOP                        |                           |



Source: HNTB



MAINTENANCE FACILITIES  
Development Alternative  
Airport Master Plan Update - August 2016  
Detroit Metropolitan Wayne County Airport





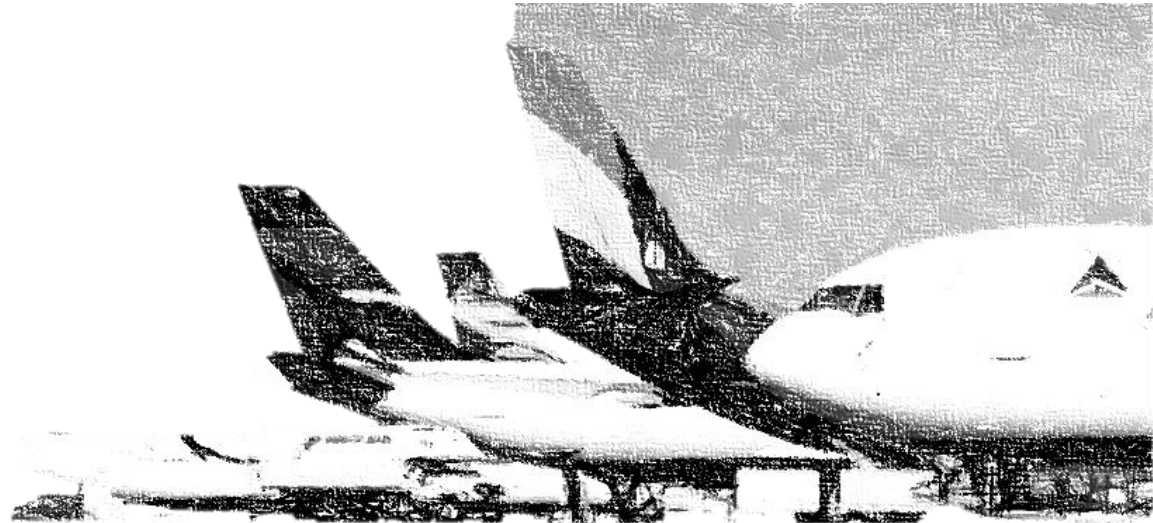
# Satellite Maintenance Facility



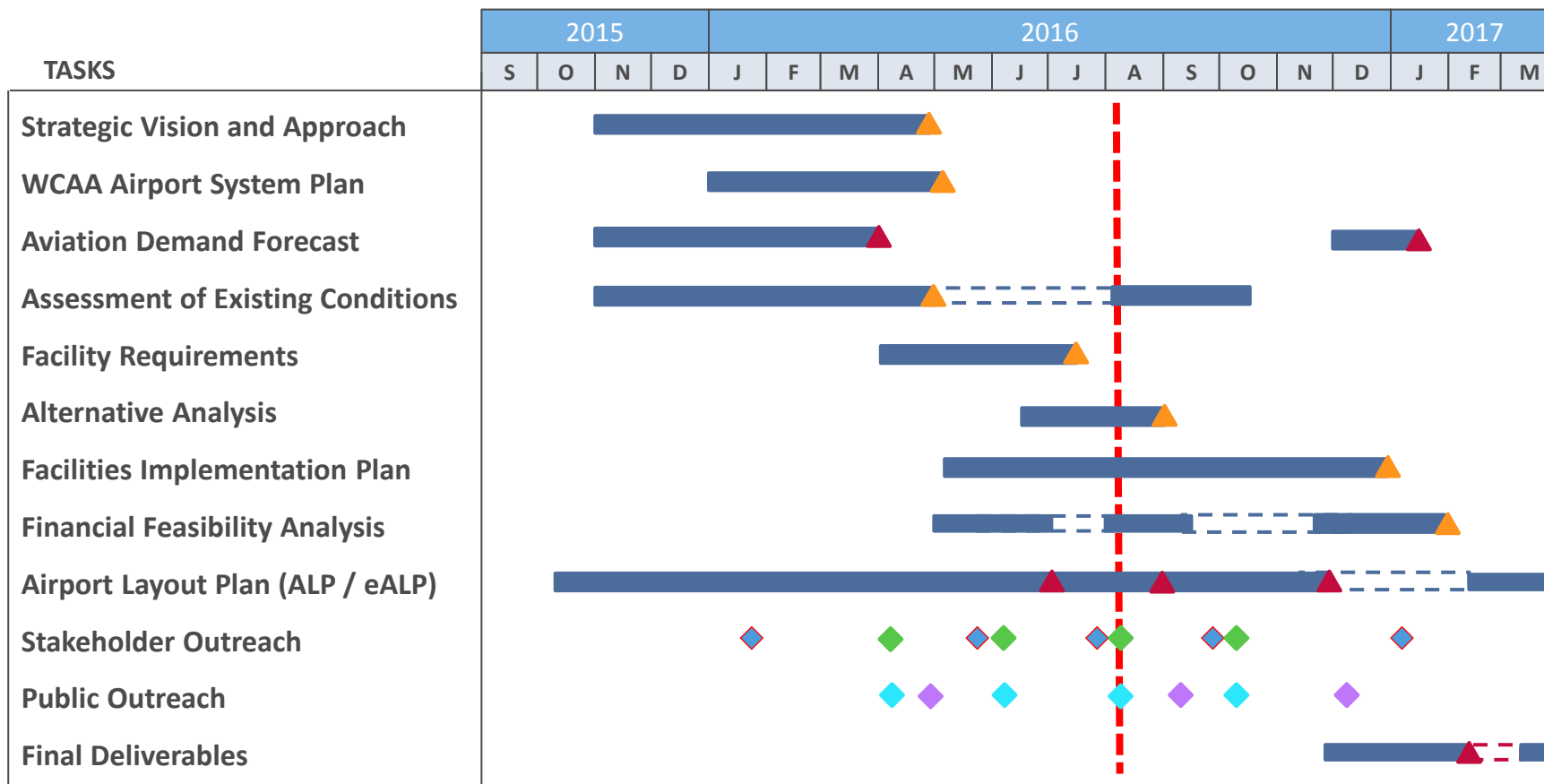


*Closing / Summary*

1. Finalize alternatives and prepare a Recommended Development Plan (RDP)
2. Financial assessments and development of the Capital Improvement Program (CIP)
3. Existing ALP for FAA review
4. Public Information Workshop 9/8/16



# Master Plan Project Schedule



◆ Project Steering Committee (PSC) meeting

◆ Technical Advisory Committee (TAC) meeting

◆ Citizen Advisory Committee (CAC) meeting

◆ Public workshop

▲ Draft Technical Memorandum

▲ FAA review and approval

Note: Not all Scope of Work tasks are depicted; some tasks assumed to occur within the primary tasks shown above.



# Committee Meetings and Topics for Discussion

Dates are tentative and subject to change

Target dates	Discussion topics
<b>April 6</b> ✓	Project kick off; Airport Master Plan introduction; project progress and initial findings
<b>June 8</b> ✓	Facilities needed to accommodate future demand; initial alternatives
<b>August 25</b> ✓	Alternatives
<b>October</b>	Recommended Development Plan
<b>September 8</b> <b>December 8</b>	Public meetings to present master plan findings
<b>Subcommittees</b>	Ongoing and being scheduled

# Questions and Closing Remarks

