

EXECUTIVE SUMMARY

Airport Master Plan Update

Manchester-Boston Regional Airport
Manchester, New Hampshire



Prepared For:
City of Manchester
Department of Aviation

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URS

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1.0 INTRODUCTION

1.1 PURPOSE OF AN AIRPORT MASTER PLAN UPDATE

- An airport master plan is a tool used to guide development to meet the current and future needs of an airport.
- The City of Manchester Department of Aviation is required to undertake an Airport Master Plan Update to remain eligible for federal funding.
- The Federal Aviation Administration recommends an Airport Master Plan Update periodically, typically every 7 to 10 years.
- The master planning time period is typically 20 years, but may also look beyond the 20-year period.
- The airport is required to maintain and update the Airport Layout Plan (ALP) periodically.

1.2 GOALS AND OBJECTIVES

Goals

- Provide guidance for the future development and operation of the airport through the identification of initiatives which optimize operational capacity, enhance safety, and strengthen the economic aspects of the airport.

- Create a dynamic decision-making management tool which addresses the region's future aviation needs.
- Provide a phased, demand-driven implementation plan for development, in an environmentally sensitive and financially responsible manner.

Objectives

- Realistically project passenger enplanements and aircraft operations, consistent with reasonable economic and airline service assumptions, and present future facility requirements based on activity levels.
- Optimize terminal space and passenger processes and flow patterns from curbside to gates.
- Plan for the connectivity of the airport with future multi-modal options.
- Focus on the highest and best use of the airport's landside property.
- Consider environmental factors and constraints throughout the planning process and promote the development of sustainable plans and programs.
- Integrate financial capacity limits into the alternative planning process.
- Foster the exchange of information between airport management and stakeholders, users, neighbors, and the general public.

1.3 MISSION STATEMENT

To be the premier airport of choice serving the air transportation needs of the Boston-North market. To surpass the expectations of the traveling public by delivering excellence in service and reliable performance based on the supporting principles of:

- Customer Service and Convenience – To deliver a friendly, affordable travel experience to the public, providing easy access and increasing airline services.
- Professional Standards – To maintain the highest levels of professional integrity and ingenuity in managing and operating the airport and to exhibit a sense of pride and ownership in the services we offer.
- Community Service – To partner with area businesses and communities in developing infrastructure that supports economic development while preserving and protecting New Hampshire values.
- Safety and Security – To meet or exceed all federal and state standards to ensure the safest and most secure airport operation possible for our customers.
- Environmental Responsibility – To balance sustainable, responsible airport development with quality of life elements of our neighboring communities.

- Operational and Fiscal Efficiency – To maintain the highest and best use of all our resources, leading to cost-effective and demand-driven decisions.

1.4 STAKEHOLDER/PUBLIC INVOLVEMENT

Stakeholder/public involvement included:

- Four Study Advisory Committee (SAC) Meetings
- Three Public Informational Workshops
- Two Airport Authority Meetings
- Two Special Aldermanic Committee Meetings
- One Londonderry Town Council Presentation (Noise Exposure Map (NEM))
- One New Noise Contour Public Meeting
- One Presentation to the Manchester Board of Mayor and Alderman

1.5 MAJOR DELIVERABLES

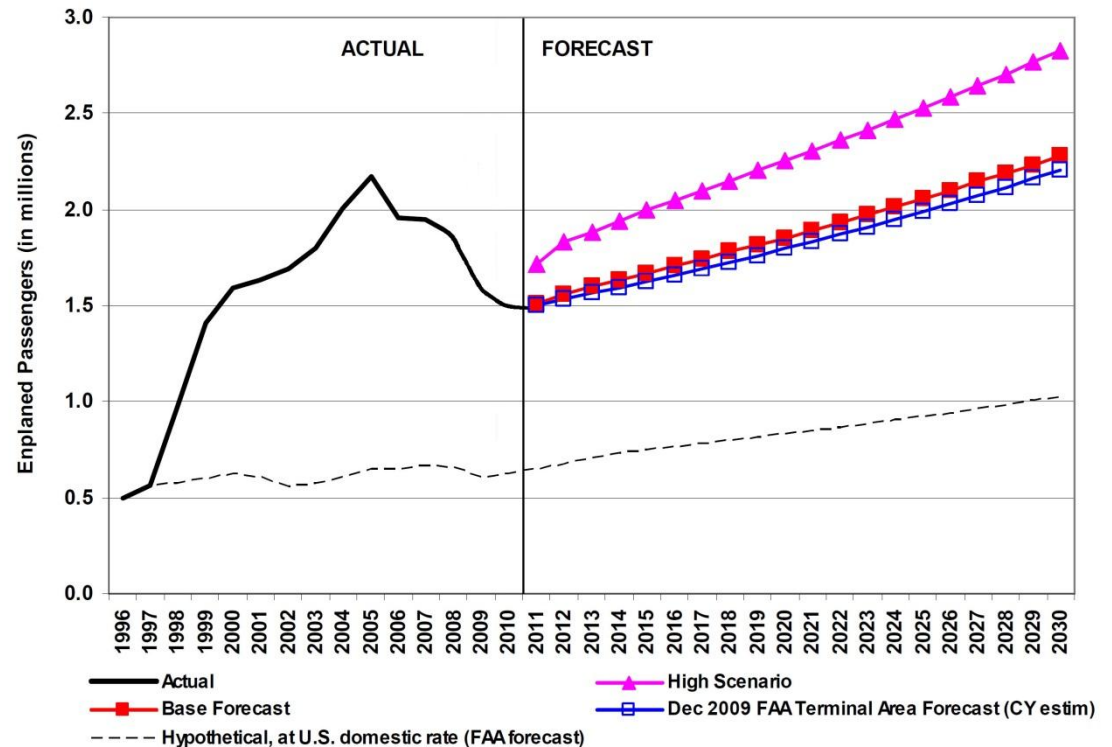
- Airport Master Plan Update (Technical Report)
- Executive Summary
- Technical Appendices
- Airport Layout Plan (ALP) Set
- Noise Land Inventory/Reuse Plan (Report)
- New Noise Contours (Noise Exposure Map (NEM) Report)

2.0 FORECAST

2.1 PASSENGER ENPLANEMENTS

- The historical peak year was 2005 with 2.1 million enplanements
- Forecast assumption - passenger activity at MHT will be a slow positive growth over the planning period
- Projected range of passenger growth:
 - ❖ Airport Master Plan base year (2009) enplanements was 1.5 million
 - ❖ Projected enplanements for the year 2020 is 1.9 to 2.3 million enplanements
 - ❖ Projected enplanements for the year 2030 is 2.3 to 2.8 million enplanements

COMPARISON OF ENPLANED PASSENGER FORECASTS
MANCHESTER-BOSTON REGIONAL AIRPORT
(CALENDAR YEARS)



Sources: Actual—City of Manchester Department of Aviation.
Estimate and Forecast—Jacobs Consultancy.

2.2 FLIGHT OPERATIONS

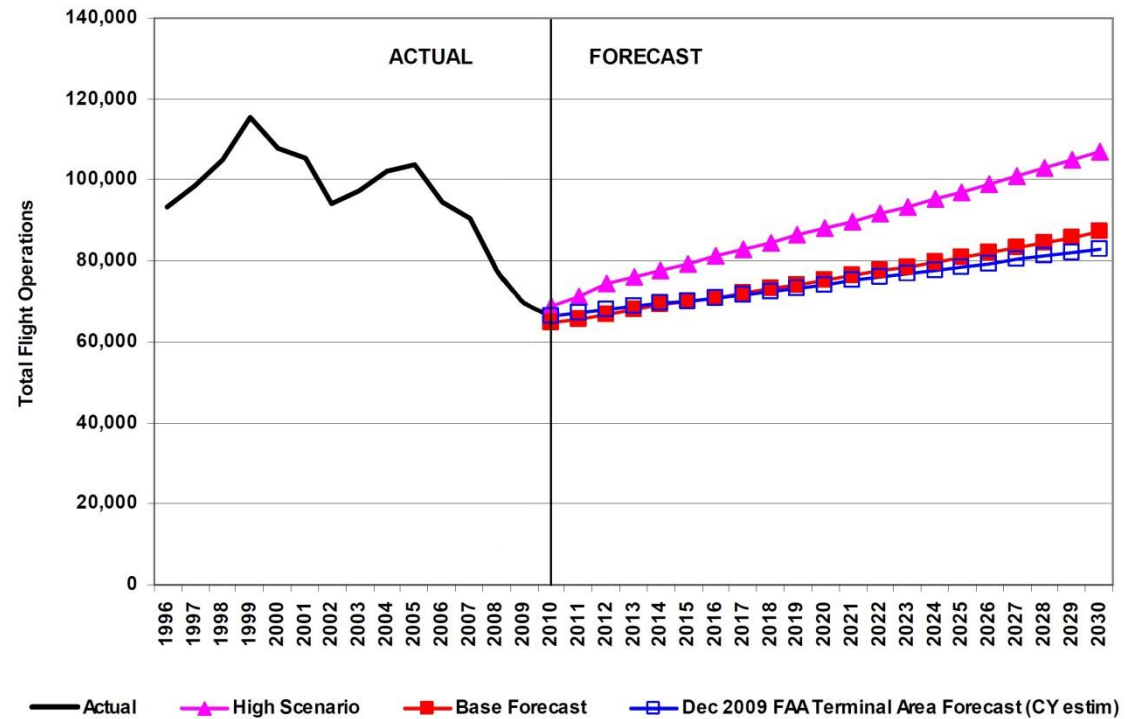
- The historical peak year was 2005 with 103,190 flight operations
- Projected range of flight operations growth:
 - ❖ Airport Master Plan base year (2009) flight operations were 64,000
 - ❖ Projected flight operations for the year 2020 is 75,000 to 88,000
 - ❖ Projected flight operations for the year 2030 is 87,000 to 106,000

2.3 AIR CARGO

Air Cargo operators anticipate it will be 5 to 7 years before they recover the mid-2000 volumes

- The historic peak cargo tonnage year was 2007 with 96,744 tons
- Airport Master Plan base year (2009) cargo tonnage was 78,050 tons
- Projected cargo tonnage for the year 2020 is 92,720 tons
- Projected cargo tonnage for the year 2030 is 102,005 tons

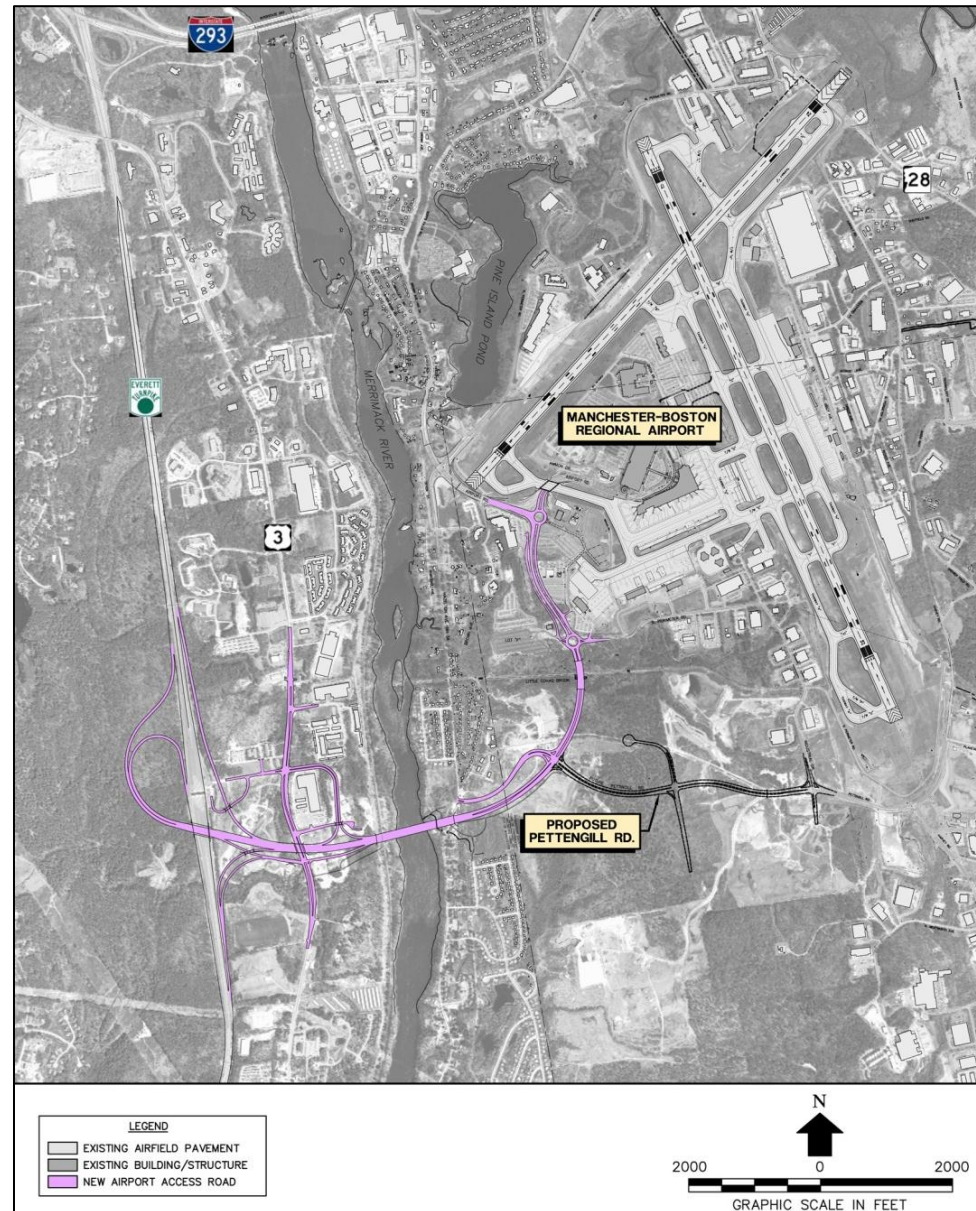
COMPARISON OF FLIGHT OPERATIONS FORECASTS
MANCHESTER-BOSTON REGIONAL AIRPORT
(CALENDAR YEARS)



3.0 SURFACE TRANSPORTATION

3.1 AIRPORT ACCESS ROAD

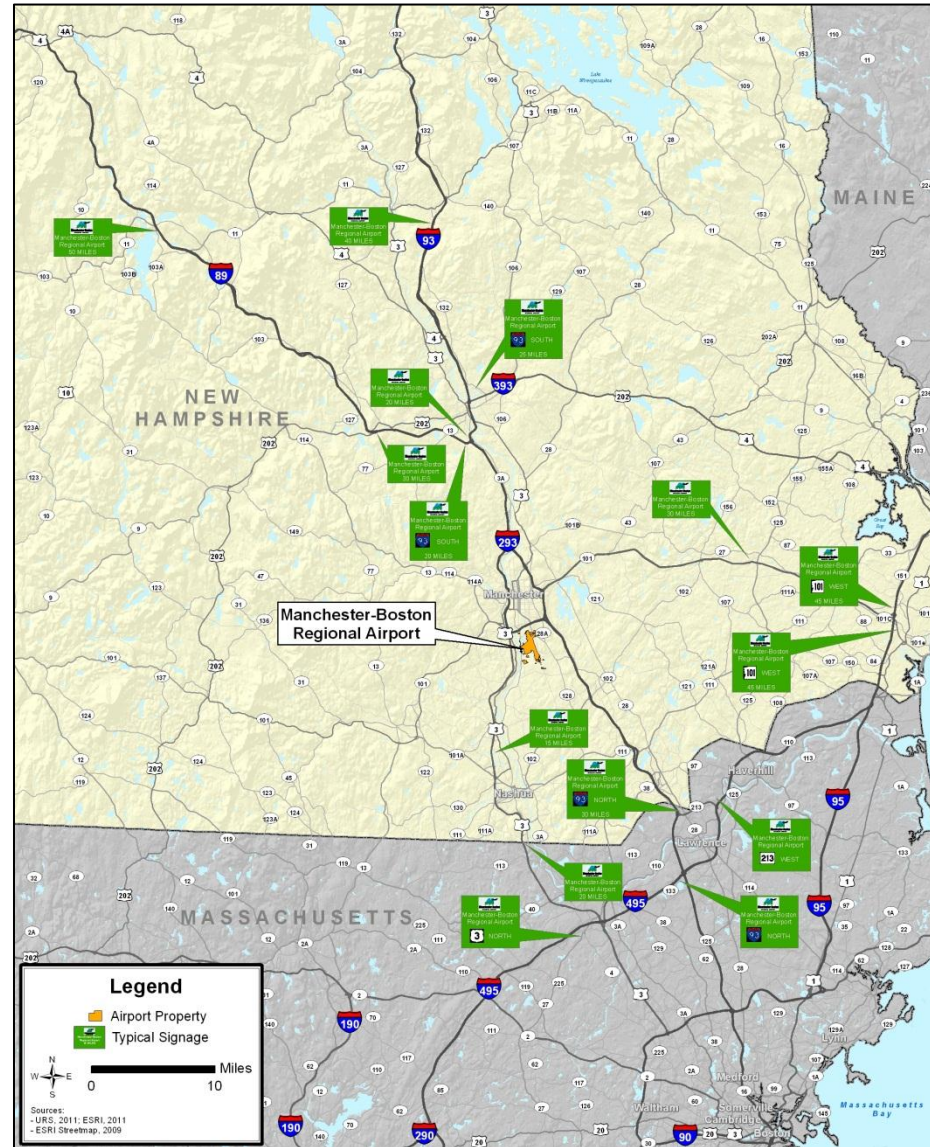
- New Airport Access Road provides an enhanced and efficient entrance to the Terminal Complex.
- New Airport Access Road will have two roundabout-designed intersections.
- The airport roadway system, including the New Airport Access Road, has the capacity to accommodate current and forecasted traffic demand.
- Levels of Service (LOS) is projected to remain at acceptable levels.
- Existing and expanded parking lots have the capacity to handle current and future parking demand.



3.2 PROPOSED REGIONAL TRAILBLAZING/SIGNAGE (WAY FINDING)

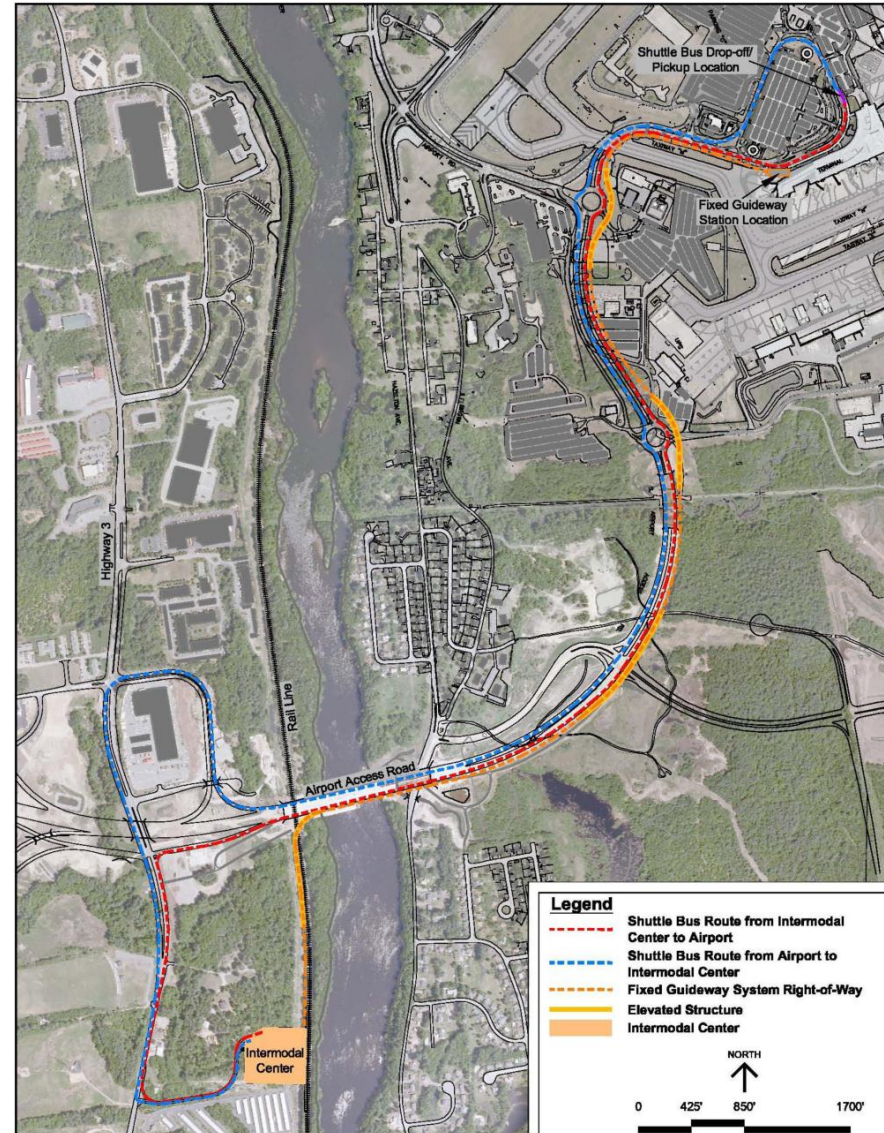
- This was a Master Plan fast track assignment completed in the summer of 2009.
- Program proposed regional airport sign locations.
- Program proposed enhanced regional sign format.
- Airport signage enhancement program was submitted to New Hampshire Department of Transportation (NHDOT) for implementation.

Signage Sample



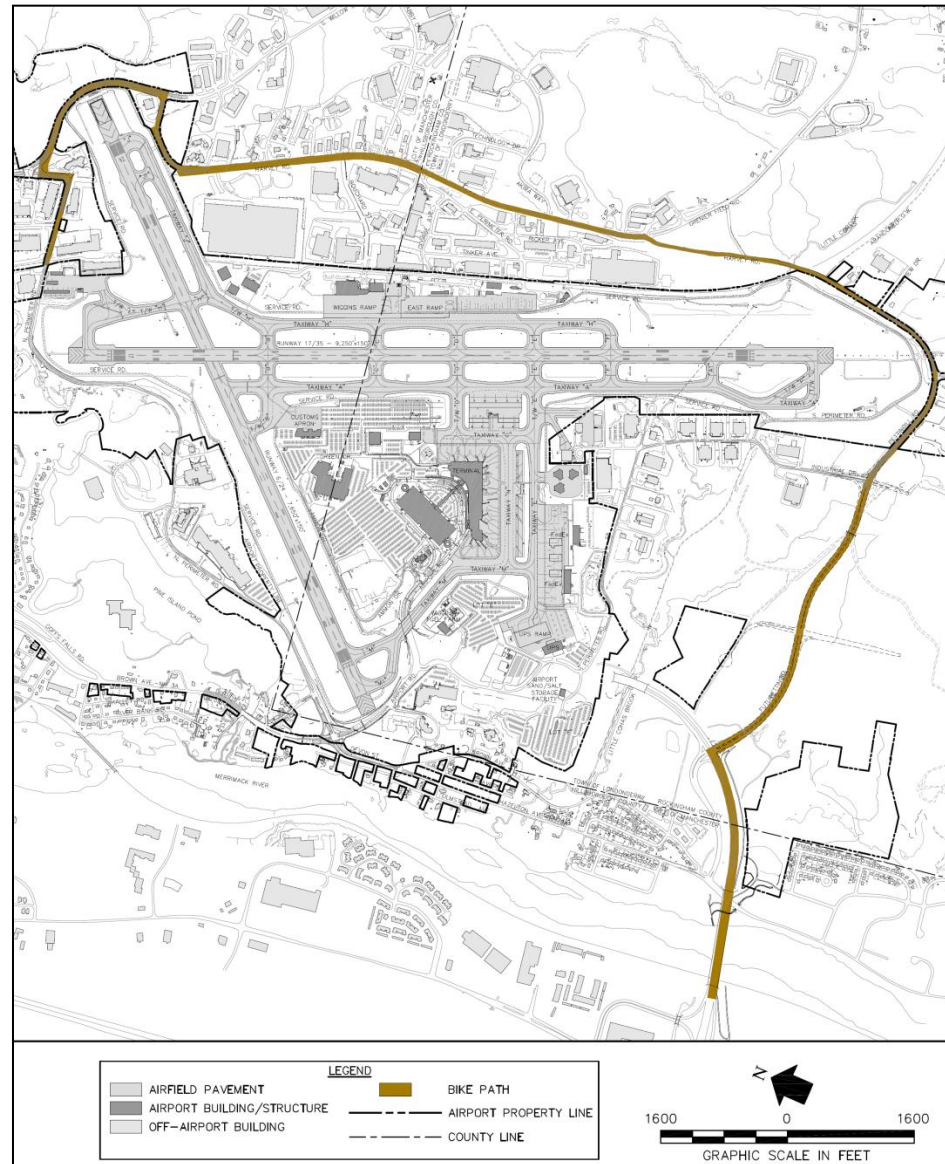
3.3 INTERMODAL CONNECTION

- New Hampshire Rail Transit Authority (NHRTA) is studying the feasibility of new rail service in southern New Hampshire.
- The new passenger rail service being studied is between the City of Concord, New Hampshire and Lowell Station in Lowell, Massachusetts.
- Under consideration is a new rail (Intermodal Center) station in the vicinity of the airport (the Bedford-MHT Station).
- A Bedford-MHT Station location has been identified adjacent to the Merrimack River and New Airport Access Road.
- The airport would provide shuttle bus service between proposed Intermodal Center and the airport terminal.



3.4 COMMUNITY BIKE PATH ADJACENT TO AIRPORT

- The airport supports a new community bike path adjacent to airport property.
- From north to south, the identified bike path connects an old, abandoned railroad corridor/community path around the east side of the airport to New Airport Access Road.



4.0 TERMINAL PLANNING

4.1 TERMINAL PLANNING FOCUS AND CONSIDERATIONS

- Capacity to accommodate current and projected passenger activity
- Look for efficiencies/optimization of space
- Customer-friendly facility/passenger circulation
- Better use of existing terminal space and facilities
- Be positioned to handle future passenger increases and new opportunities

4.2 OPTIMIZATION OF EXISTING TERMINAL SPACE

This includes items that need replacement, upgrades, and areas of renovation that are not based on passenger growth.

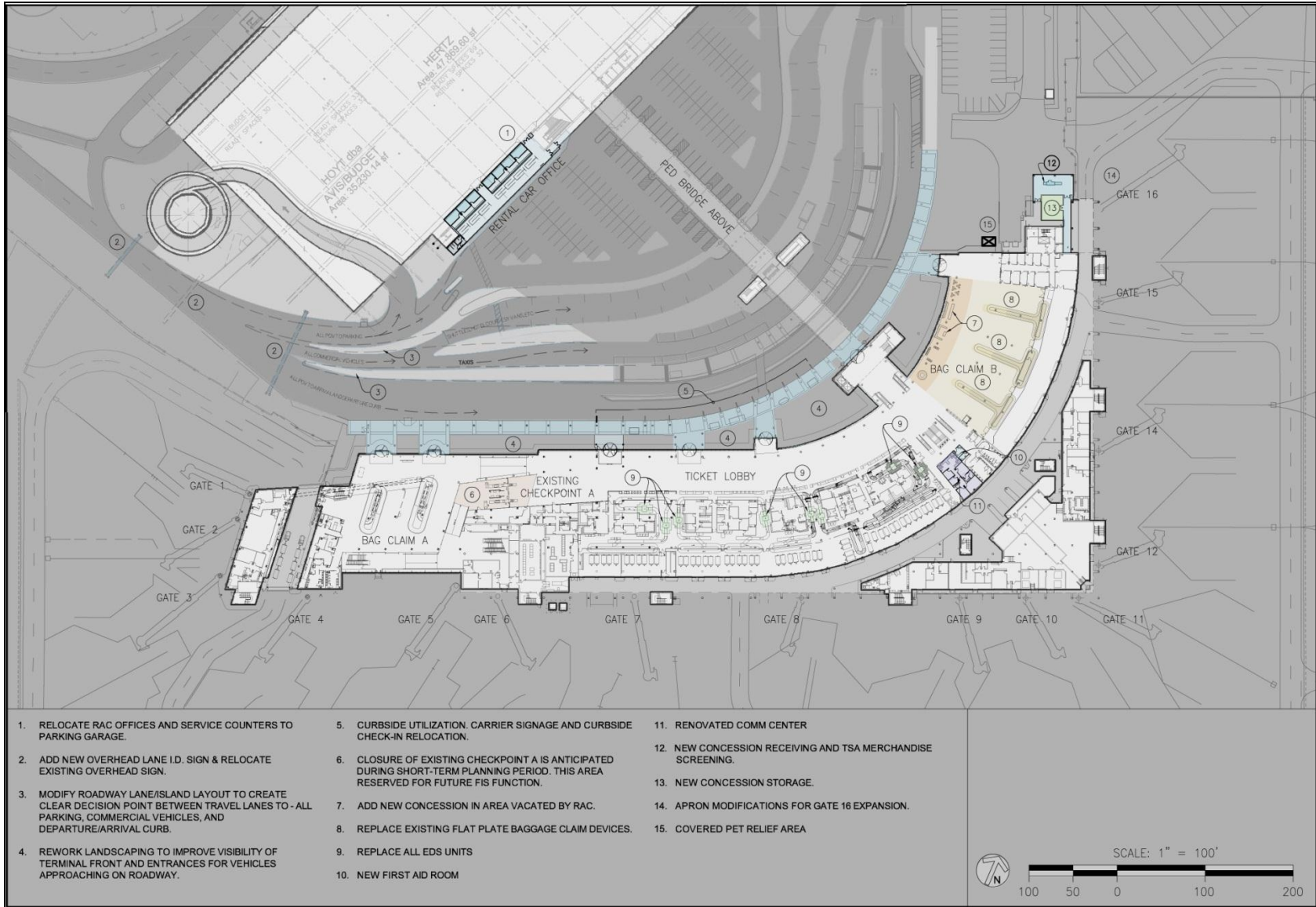
- Curbfront
- Passenger circulation and meeter/greeter areas
- Overall existing terminal floor space
- Security checkpoints
- Holdrooms
- Concessions/concession storage
- Bag claim area

- Rental car counter relocation

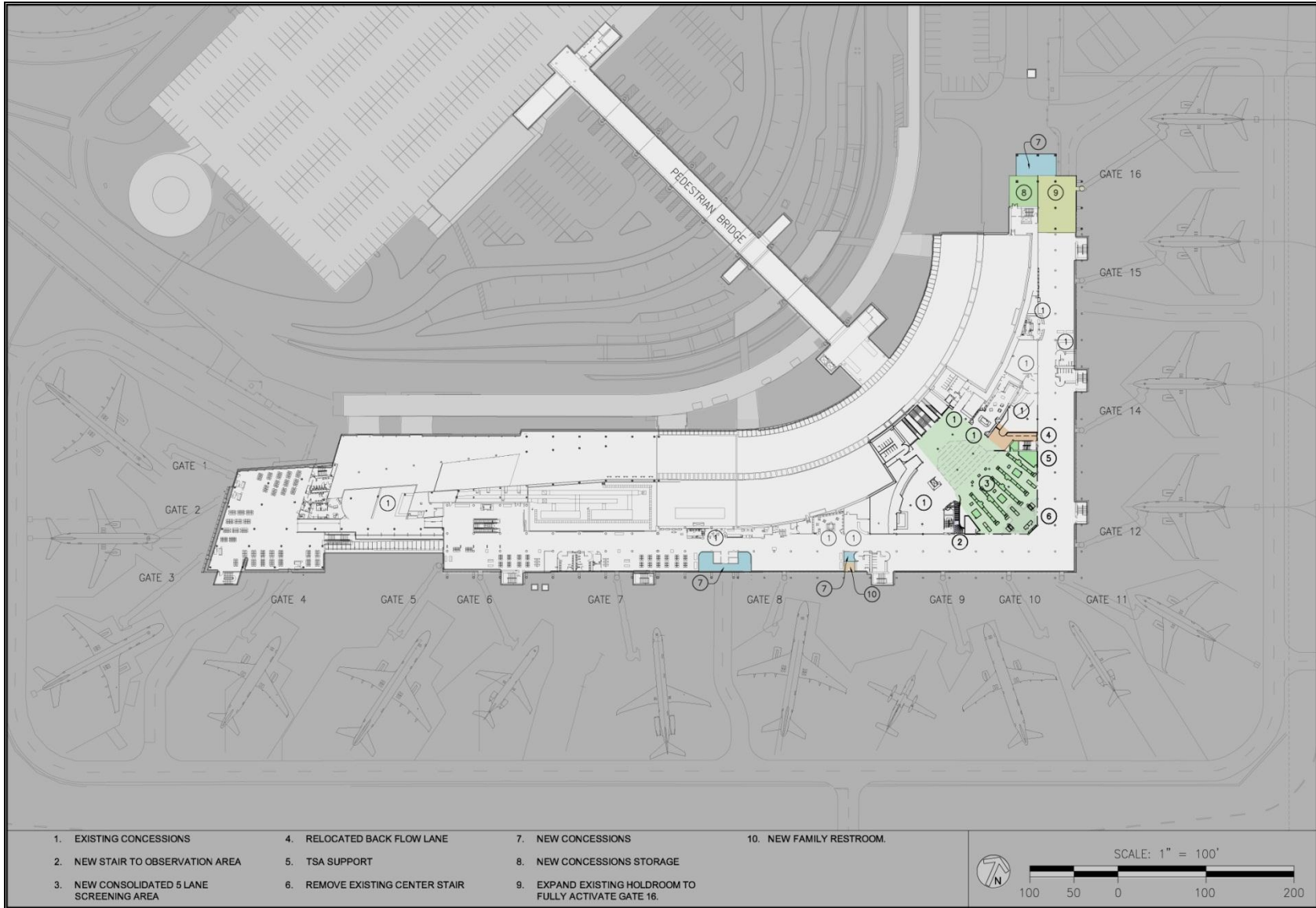
4.3 SHORT-TERM TERMINAL PLANNING

- Relocation of rental car counters to the parking garage
- New concession space in the vacated rental car counter area
- Replacement and expansion of flat plate baggage claim devices
- Replacement of checked baggage screening equipment
- Improved curbside airline signage
- Renovated communication center
- New first aid room
- New concession screening and storage area
- Consolidated passenger screening checkpoint
- New stairway to observation area
- New airside concessions areas
- Ticket lobby area

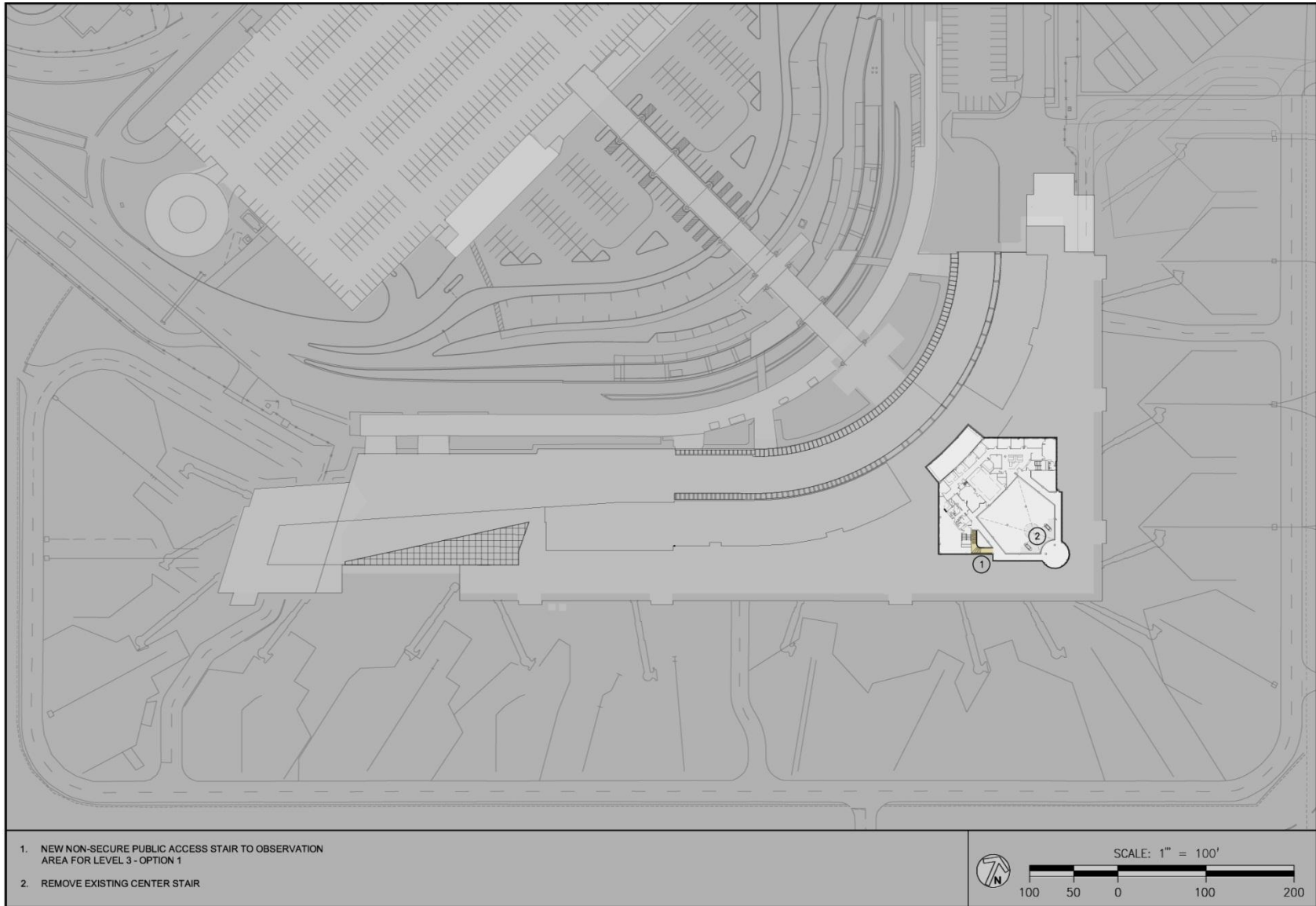
Short-Term Overall Plan Level 1



Short-Term Overall Plan Level 2



Short-Term Overall Plan Level 3



4.4 LONG-TERM TERMINAL PLANNING (PAL 2)

Long-term terminal planning items are future projects identified to be needed when annual enplanements reach a projected passenger activity level (PAL). PAL is a form of bench marking. PAL 2 is 2.25 million annual enplanements. These items include:

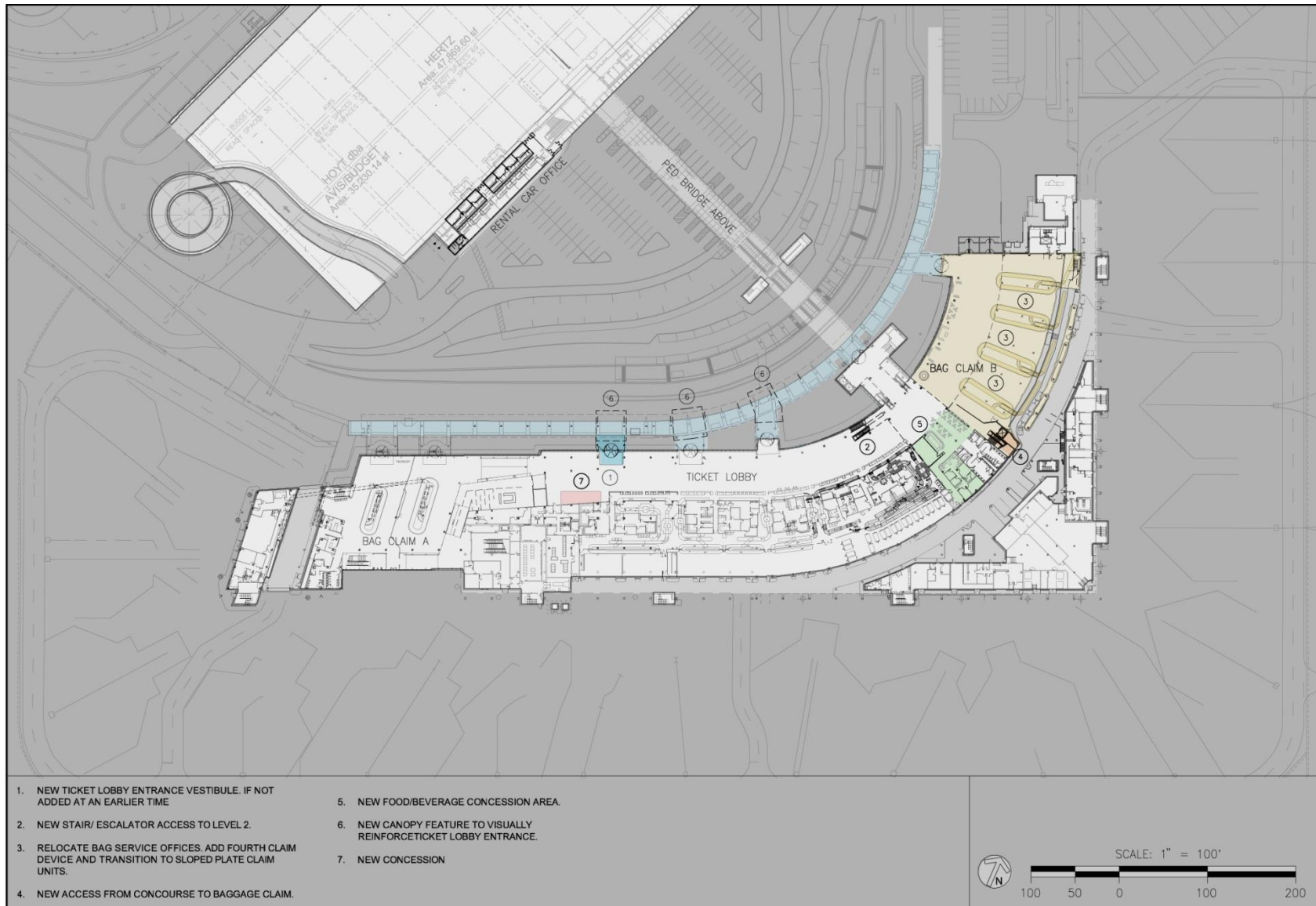
- New ticket lobby vestibule
- Possible relocation of communications center and first aid room
- Expanded bag claim area
- Direct access to bag claim area from concourse
- New landside concession area
- Expanded passenger screening area
- Relocated stairway to observation area
- Pedestrian bridge connector and expanded passenger screening queuing area
- New/renovated airside concession areas
- Airport administration office expansion

4.5 POTENTIAL NEW FEDERAL INSPECTION SERVICE (FIS) FACILITY

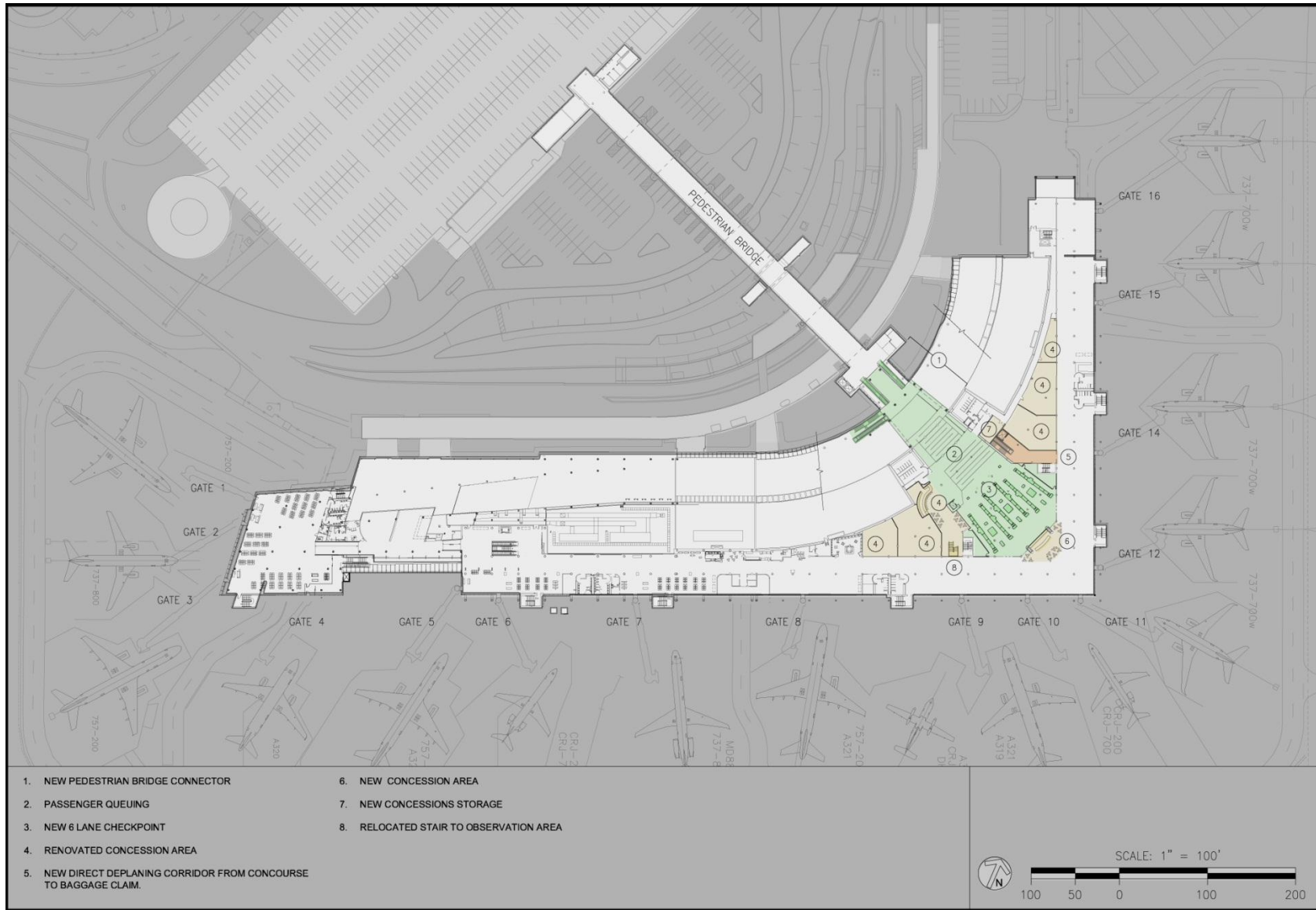
- MHT has an FIS with limited space in the Ammon Center
- MHT management has been actively marketing international service

- MHT wants capability to accommodate international passenger service (i.e., Boeing 767-300 aircraft) in passenger terminal
- New FIS facility within the terminal relates to demand-driven opportunity
- 2008 FIS concept plans by others and reviewed and modified by the Airport Master Plan Update team
- Gate 4 can be utilized to accommodate new international service (i.e., Boeing 767-300 aircraft)
- Two FIS facility plans were prepared 1) Temporary FIS facility and 2) Permanent FIS facility
 - ❖ Temporary FIS Facility – Maximizes the use of the existing terminal space, minimizes new construction, less capital investment, and design and construct a temporary FIS facility so it could be incorporated into a permanent FIS structure
 - ❖ Permanent FIS Facility – If international start-up passenger service is successful, the airport can construct a permanent FIS facility at Gate 4

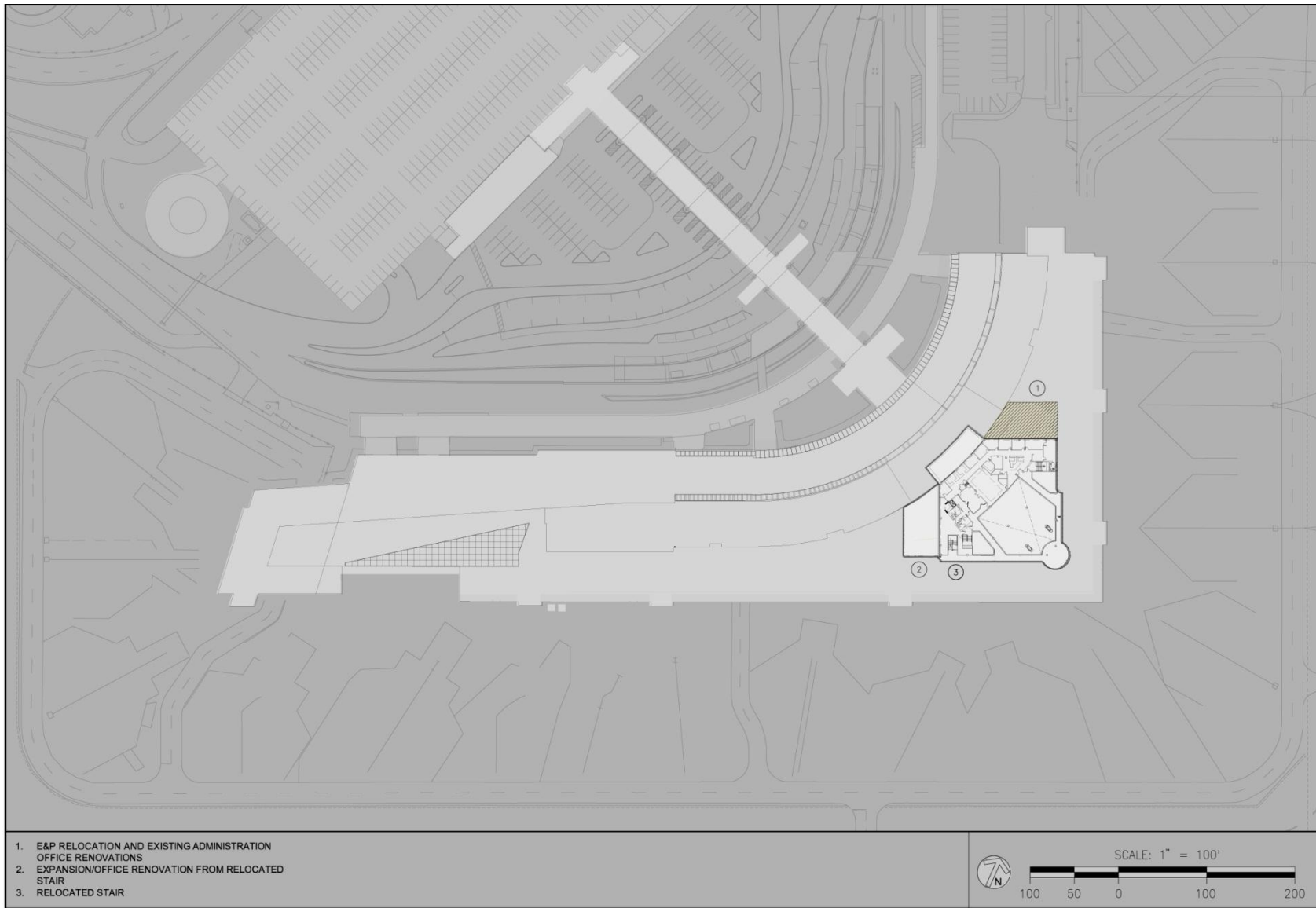
PAL 2 Overall Plan Level 1



PAL 2 Overall Plan Level 2



PAL 2 Overall Plan Level 3

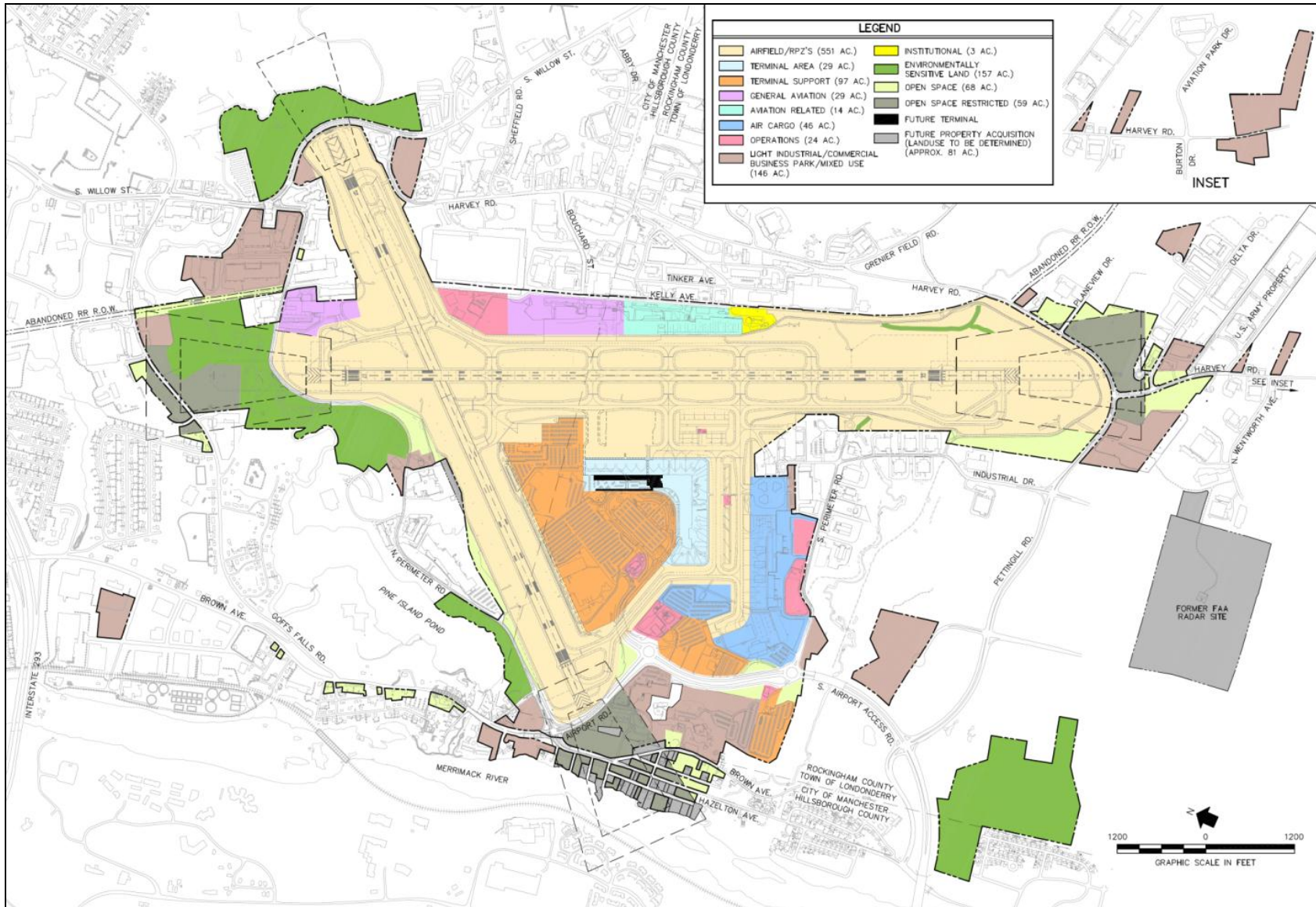


5.0 DEVELOPMENT PLANNING

5.1 FUTURE AIRPORT LAND USE PLAN

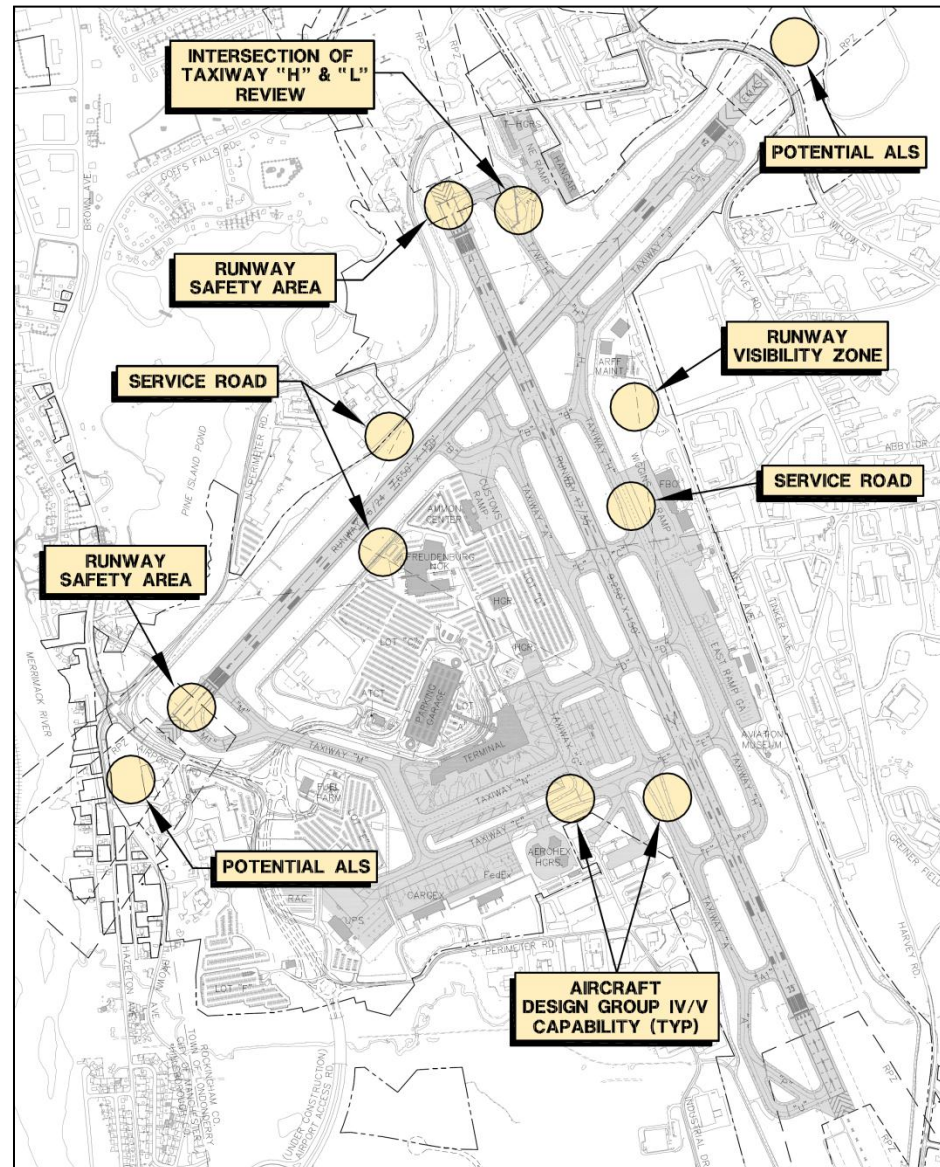
- Future land use plan depicts changes over the 20-year planning period.
- Key aviation-related land use classifications identified include: airfield, terminal area, terminal support area, building areas, air cargo area, and general aviation area. They can all accommodate growth.
- Other key land use plan items include:
 - ❖ Environmentally sensitive land consists of approximately 157 acres
 - ❖ Additional land is identified to be acquired when available
 - ❖ Approximately 146 acres are available for non-aviation use (potential development/revenue producing)

Future Airport Land Use Plan



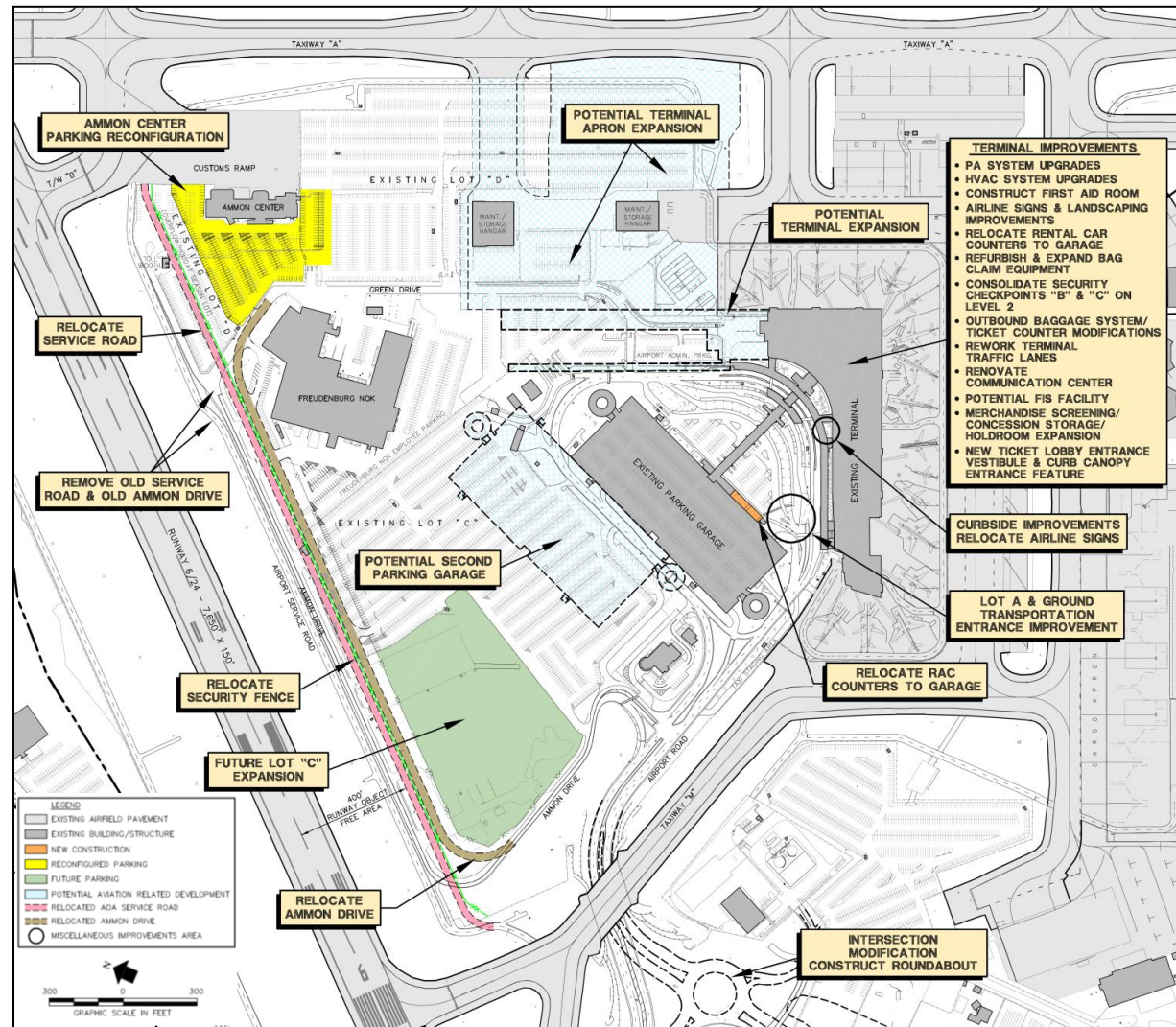
5.2 AIRFIELD PLANNING CONSIDERATIONS

- The previous (1997) Airport Master Plan Update focused on the airfield improvements.
- Most of the proposed 1997 airfield improvements were completed over a 10-year period which included extensions to both Runways 17/35 and 6/24.
- This Airport Master Plan Update airfield element focused on reviewing several items that included:
 - ❖ Airfield Service Roads within the Object Free Areas (OFAs)
 - ❖ Installing addition Approach Lighting Systems (ALS) on Runway 6/24
 - ❖ Taxiway system ability to accommodate large Airplane Design Group (ADG) V aircraft ground movement



5.3 ULTIMATE TERMINAL AREA ELEMENTS (MAAR)

- As part of Manchester Airport Access Road project, access to terminal area will be enhanced.
- Relocation of Ammon Drive
- Parking modification to Parking Lots C, D, and Ammon Center parking
- Expansion of Long-Term Parking Lot C
- Proposed terminal curbside drop-off enhancements (airline signs)
- Proposed terminal entrance vehicle traffic flow improvements and signage
- Ultimate terminal concourse/gate/apron expansion identified (if needed)
- Ultimate second parking garage identified (if needed)

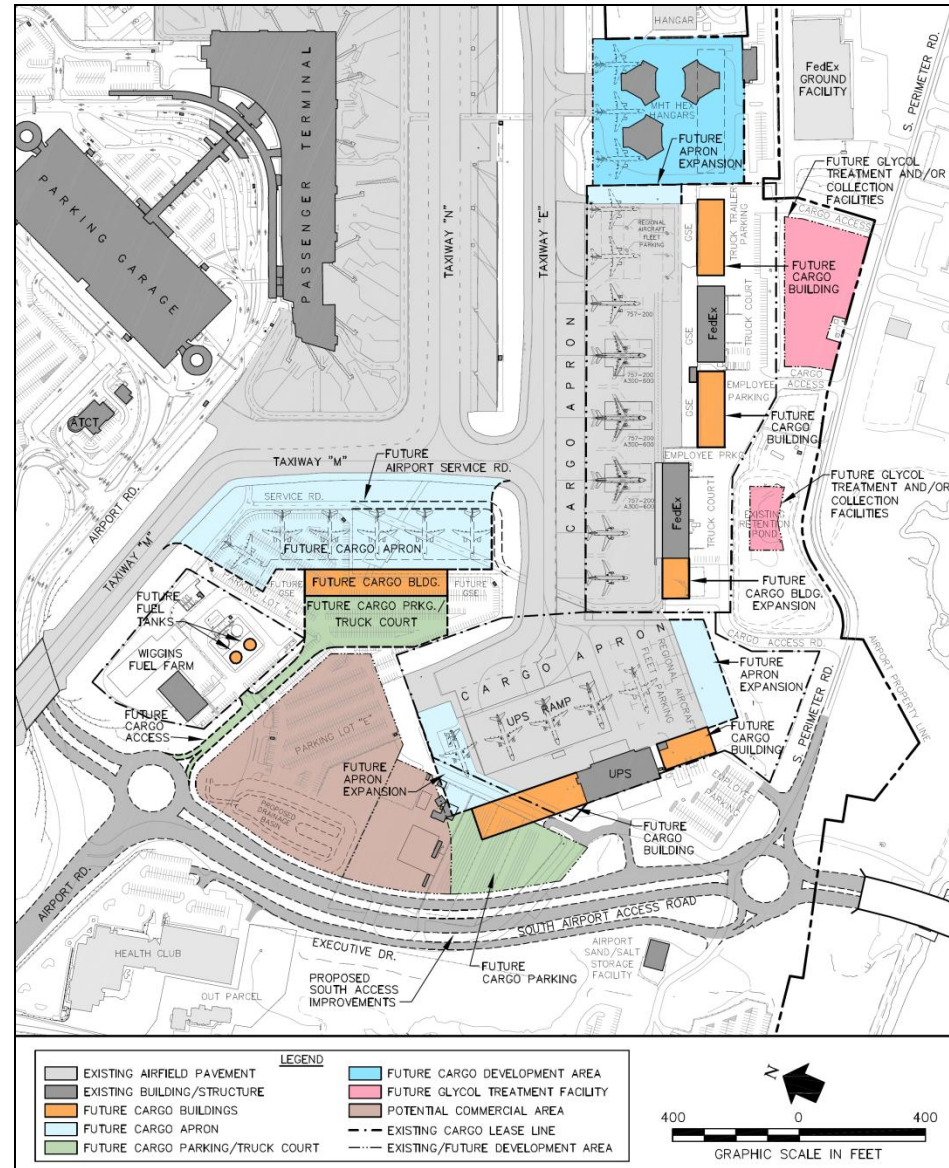


5.4 ULTIMATE AIR CARGO ELEMENTS

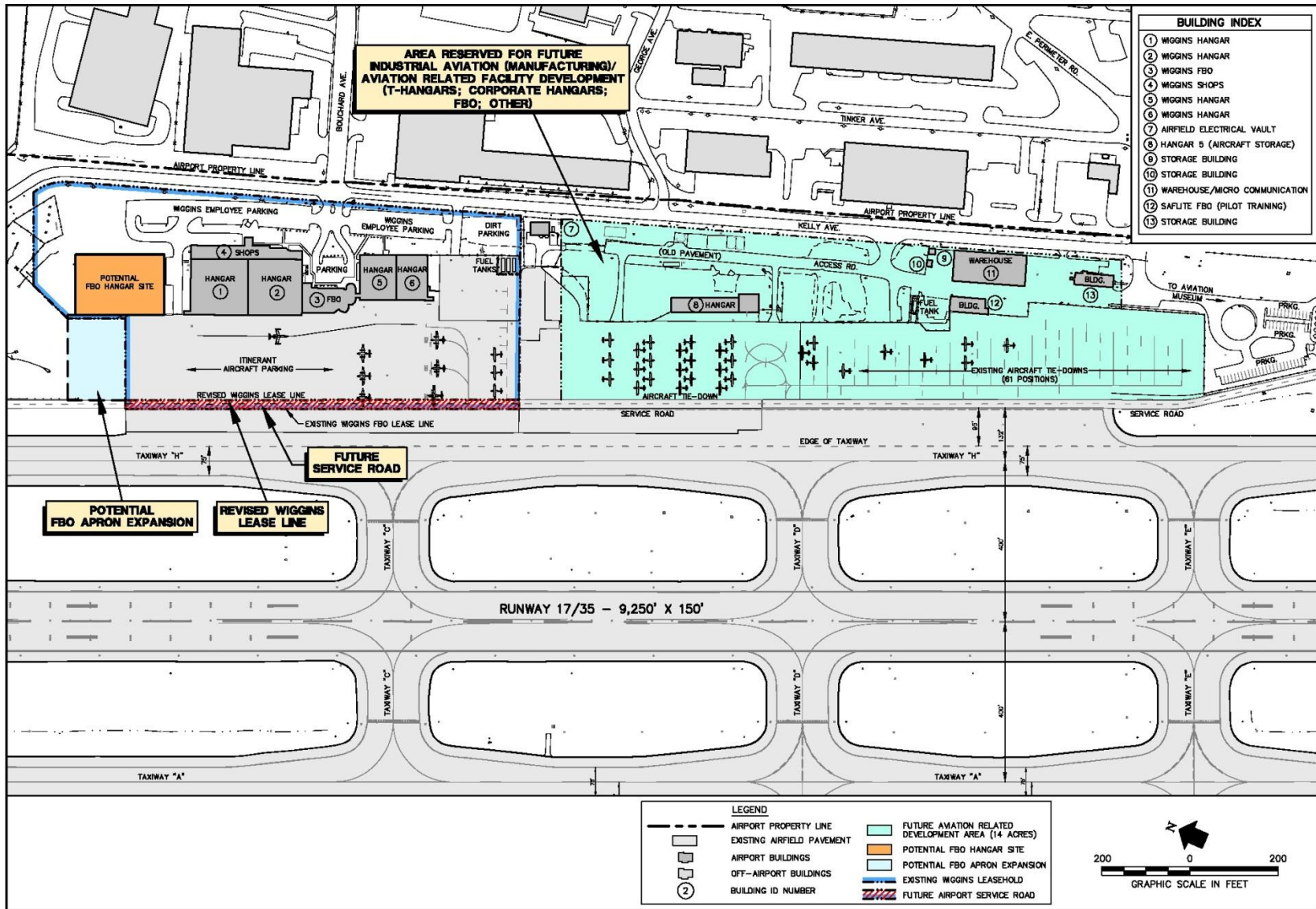
- Existing cargo facilities have surplus space
- Existing cargo facilities accommodates 2007 peak year tonnage levels (96,744)
- Existing air cargo facilities are sufficient through the Intermediate-Term
- Expansion of existing cargo facilities will satisfy projected 10 to 20 year growth
- Ultimate air cargo facility expansion has been identified (if needed)
- Ultimate air cargo facilities will be approximately 46 acres
- Ultimate air cargo potential aircraft parking positions will be 20

5.5 FUTURE GENERAL AVIATION AREA ELEMENTS

- Highest and best use of East Ramp land
- Expansion of Wiggins FBO site has been identified (if needed)
- East Ramp redevelopment opportunity (14 acres) aviation-related revenue-producing opportunity for this site (general aviation)
- Existing Hex hangars could be removed or relocated (if land is needed for air cargo expansion)
- North General Aviation Area - vacant lot expansion opportunity (aircraft storage or special use)



Future General Aviation Area



6.0 CAPITAL IMPROVEMENT PROGRAM (CIP) HIGHLIGHTS

6.1 KEY ELEMENTS OF THE 20-YEAR CIP

- Airfield – Life-cycle pavement rehabilitation projects
- Terminal – Customer service improvements and phased capacity enhancements
- Other – Parking and roadway rehabilitation, land acquisition, and equipment and facility expansion

6.2 CIP SHORT-TERM (YEARS 2011-2015; \$59M)

- Highlander redevelopment site work
- Glycol management program
- Relocate service road and Ammon Drive
- Relocate rental car counters to the parking garage
- Curbside enhancements
- Snow removal equipment storage building
- Refurbish and expand bag claim equipment
- Terminal ramp replacement and taxiway rehabilitation
- Select terminal system upgrades

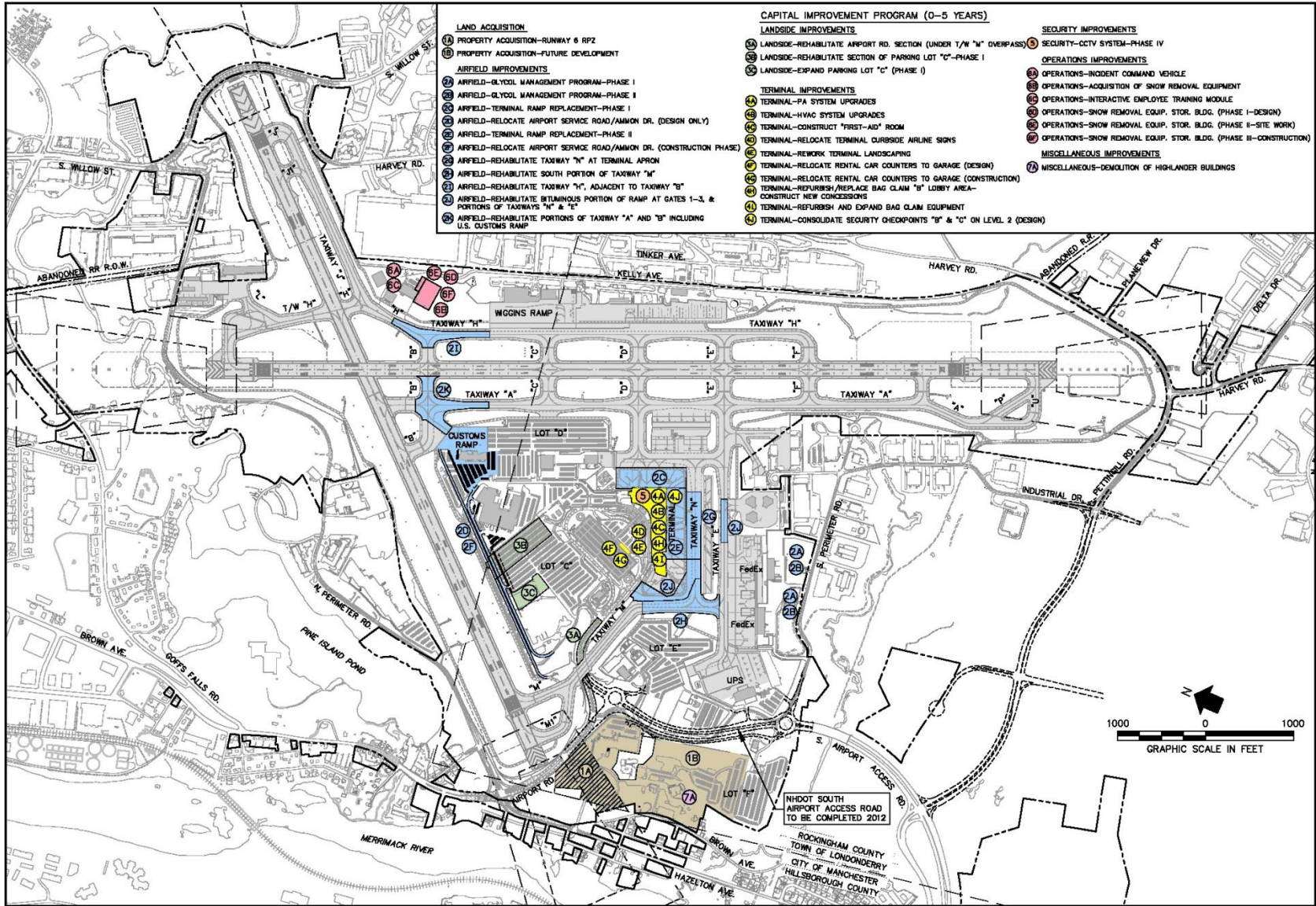
6.3 CIP INTERMEDIATE-TERM (YEARS 2016-2020; \$43M)

- Approach runway lighting system Runway 6
- Consolidated security checkpoint
- Outbound bag system upgrades
- Interim FIS facility
- Terminal loop road
- Parking lot rehabilitation
- Taxiway rehabilitation
- Merchandise screening/concession storage/holdroom expansion

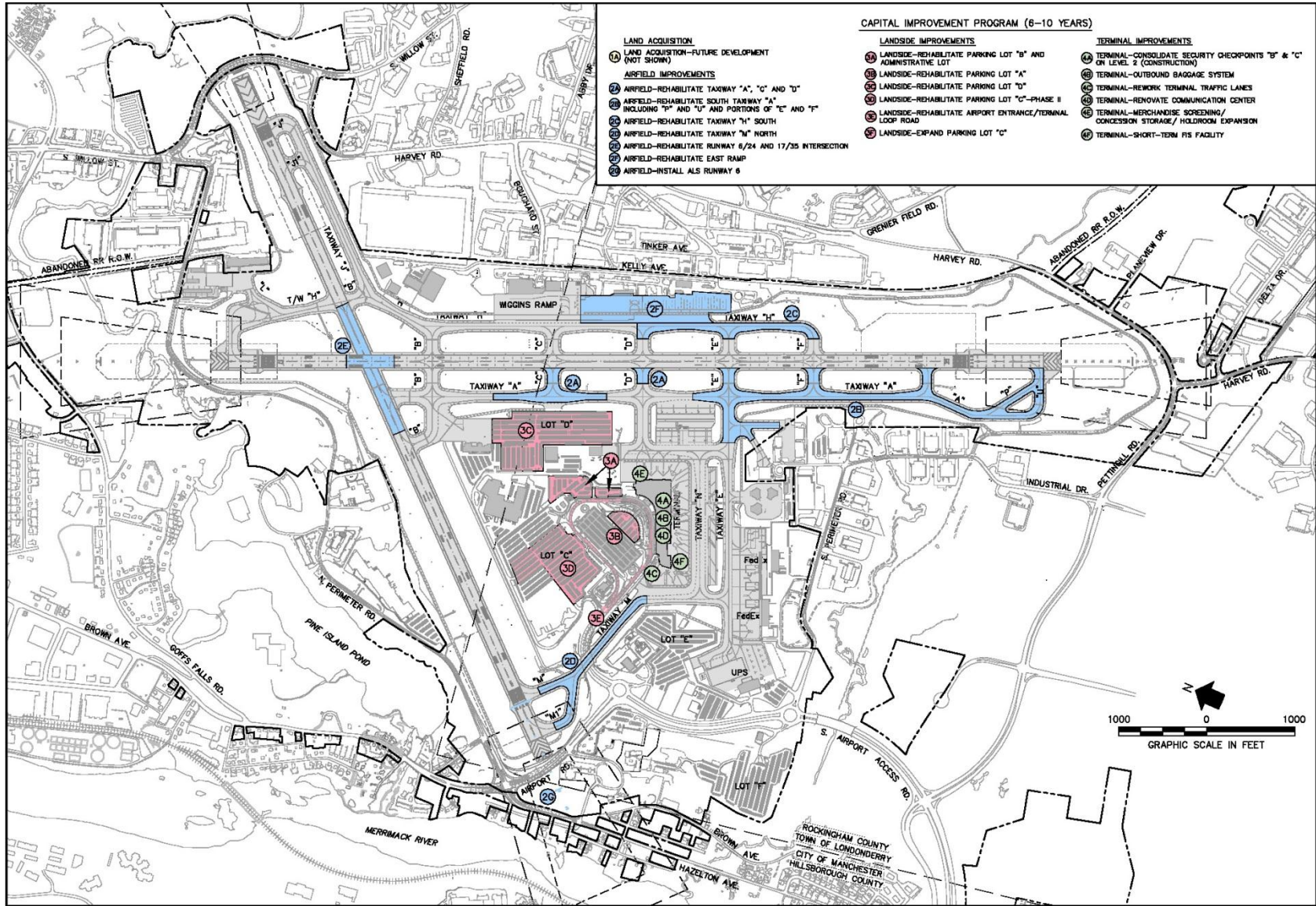
6.4 CIP LONG-TERM (YEARS 2021-2030; \$71M)

- Expand bag claim
- Expand security checkpoint
- Improve passenger flow to bag claim area
- Taxiway rehabilitation
- Possible permanent FIS facility
- Administrative office expansion

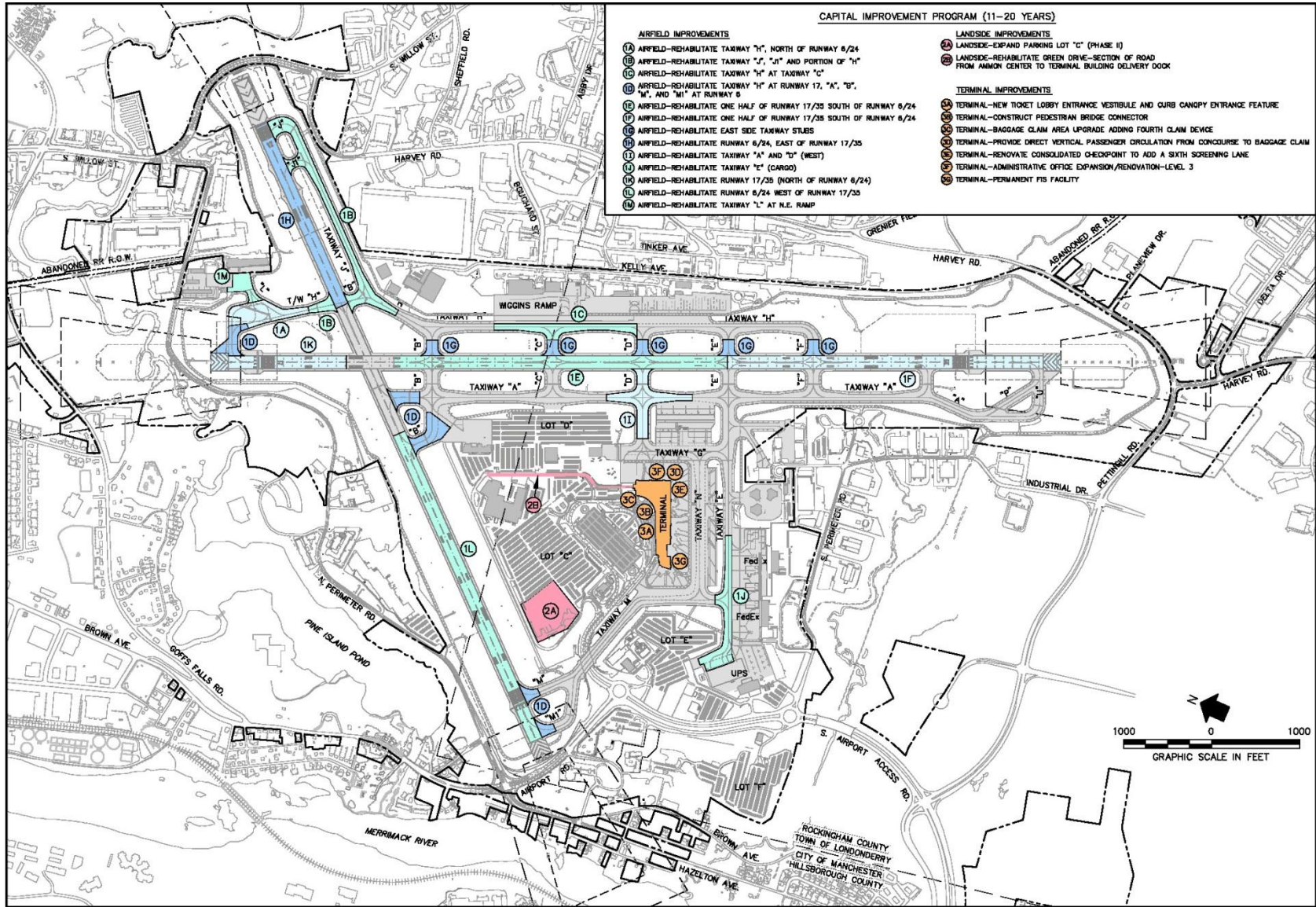
CIP Short-Term (Year 2011-2015; \$59M)



CIP Intermediate-Term (Year 2016-2020; \$43M)



CIP Long-Term (Year 2021-2030; \$71M)



7.0 ENVIRONMENTAL CONSIDERATIONS

Environmental-related issues were analyzed to assess potential impacts which may occur with the implementation of proposed airport improvements. The following environmental considerations were reviewed:

- **Land Acquisition**
 - ❖ Possible environmental due diligence audits
- **Road Relocation**
 - ❖ Alteration of terrain permit
 - ❖ Construction National Pollutant Discharge Elimination System (NPDES) permit
- **Snow Removal Equipment Building**
 - ❖ Wetland permitting issues and mitigation
 - ❖ Construction NPDES permit
 - ❖ Alteration of terrain permit
 - ❖ Activities and use restrictions
- **Highlander Demolition**
 - ❖ Asbestos and lead paint surveys and abatement
 - ❖ Universal waste removal
- ❖ Historic review
- **Runway 6 Approach Lighting System**
 - ❖ Wetland permitting and possible mitigation issues
- **Stormwater Issues**
 - ❖ Effluent limitation guidelines/glycol management program
 - ❖ Best Management Practices (BMPs) to address impaired waters issues
 - ❖ Section 308 information request response
- **Parking Lot Reconfiguration**
 - ❖ Construction NPDES permit
 - ❖ NHDES coordination
- **Runway/Ramp/Taxiway Rehabilitation**
 - ❖ Construction NPDES permit
 - ❖ Alteration of terrain permit
- **Sustainability Issues**

8.0 FINANCIAL CAPACITY

8.1 FINANCIAL GOALS AND OBJECTIVES

Objectives of the financial planning process include :

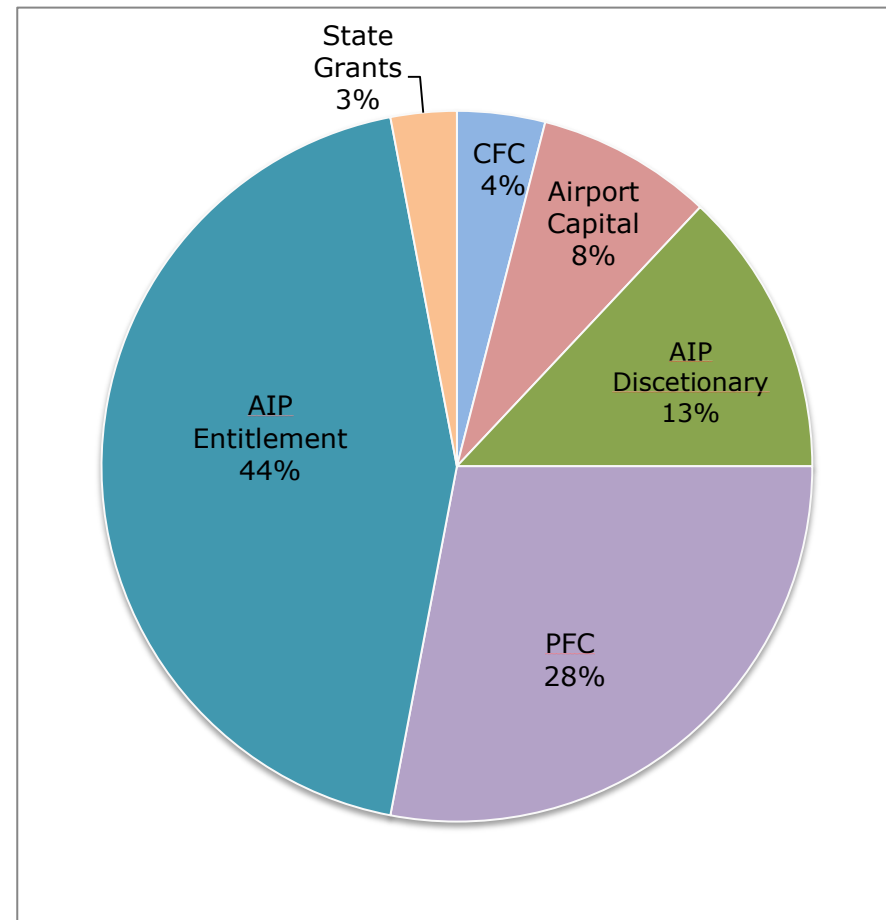
- Maximize pay-as-you-go contributions to minimize future debt requirements
- Align funding sources with development priorities
- Remain financially competitive with regional airports
- Maintain financial strength relative to airports nationwide

8.2 SOURCES OF FUNDING

MHT is entirely self-sustaining and receives no City funding. Capital project funding sources include:

- FAA Airport Improvement Program (AIP) grants
- Passenger Facility Charges (PFC)
- Customer Facility Charges (CFC)
- Airport capital
- State of New Hampshire grants

**Source of Funding for
20-Year Capital Plan**

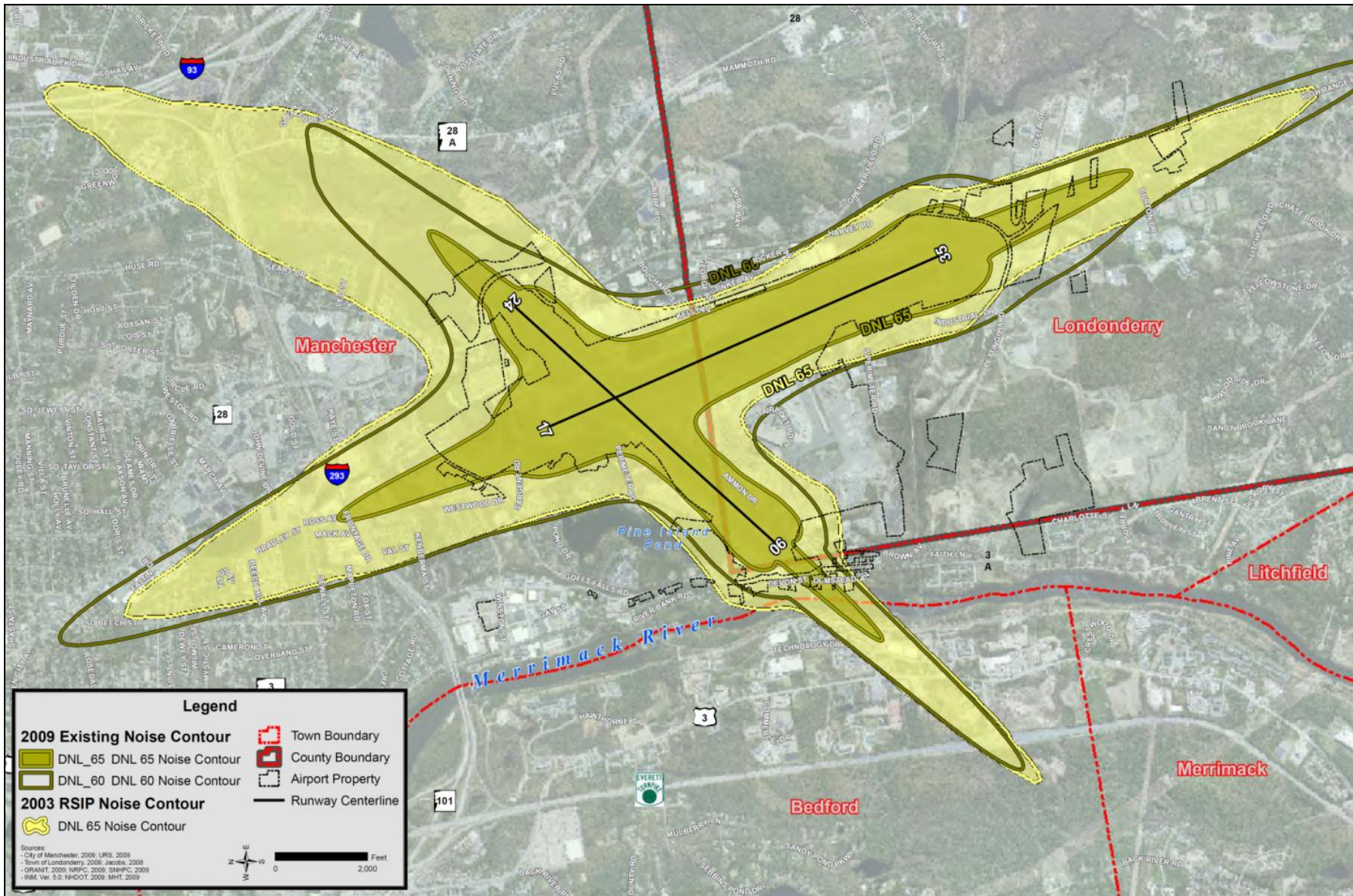


Leigh Fisher, 2010.

9.0 AIRCRAFT NOISE ANALYSIS UPDATE

- Model – Use of FAA’s Integrated Noise Model (INM)
- Unit – Noise metric is average annual Day-Night Noise Level (DNL)
- Input – Operations, aircraft type, runway assignments, flight tracks, time-of-day
- Analysis – Contours for 2009 and 2018 are smaller than 2003 Residential Sound Insulation Program (RSIP) contours – due to less operations and quieter mix
- Approval – Noise Exposure Map (NEM) was submitted to FAA September 29, 2010

Existing Noise Exposure and 2003 RSIP Contours



Future Noise Exposure and 2003 RSIP Contours

