PORT EVERGLADES MASTER PLAN

APPENDIX B

PRELIMINARY OBSTACLE CLEARANCE ANALYSIS BY JACOBS CONSULTANCY




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Briefing

Broward County Administration Airport / Port Technical Working Group

Preliminary Obstacle Clearance Analysis

Port Everglades Cranes and Transient Vessels
Fort Lauderdale – Hollywood International Airport

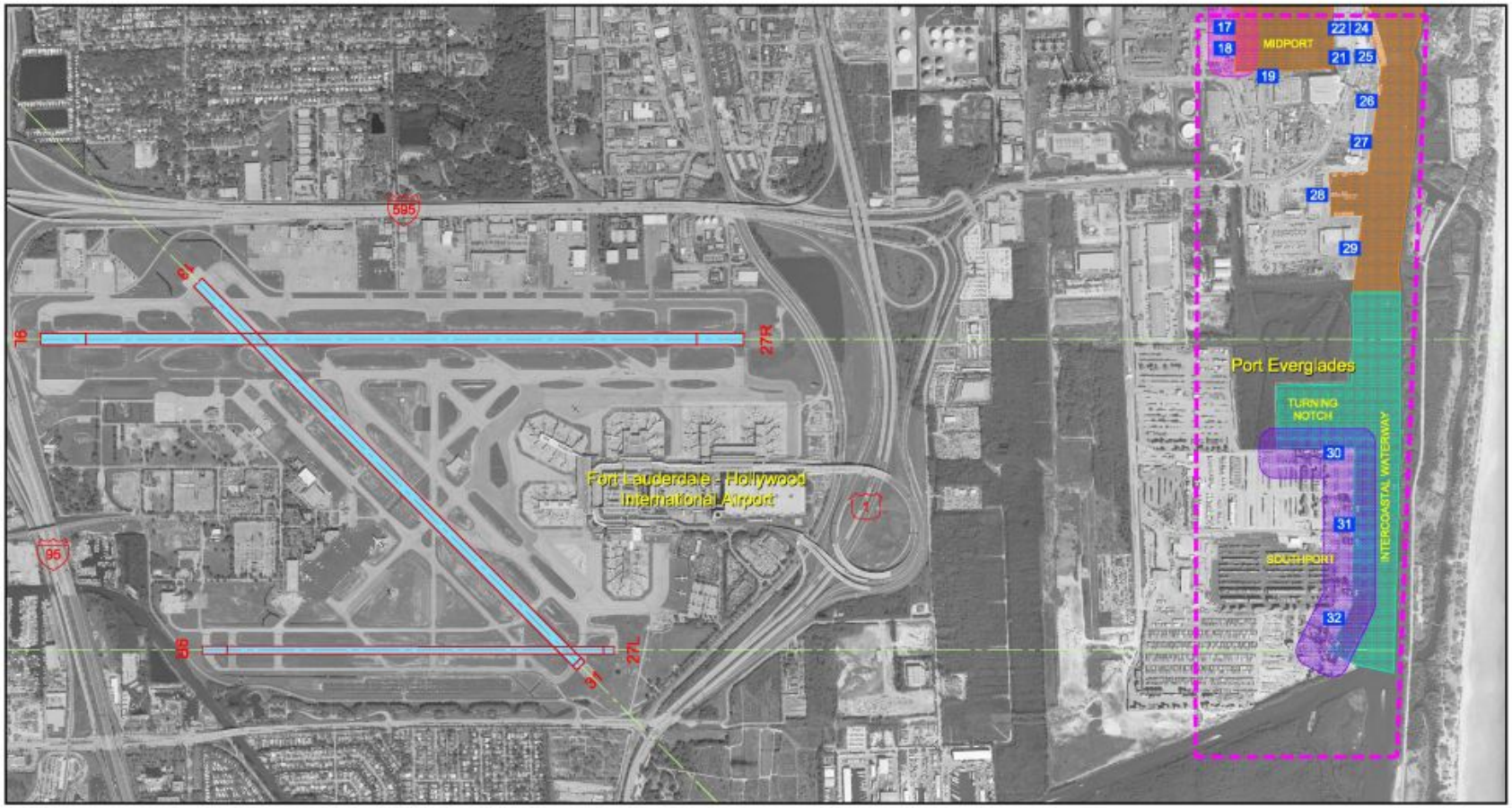
November, 2006

Draft: November 16, 2006

Purpose of Study

- **To evaluate obstacle clearance specifications associated with current and proposed future airfield operations at Fort Lauderdale – Hollywood International Airport.**
- **Focus on study area: Location of Cranes and movement of transient vessels at the Mid-Port and South-Port areas of Port Everglades**
- **To identify areas where port cranes and transient vessels may be operating that may require further coordination with airport operations, with respect to obstacle clearance standards**

Study Area: South Port and Mid Port, Current Airfield Configuration



AIRPORT

- Existing runway
- Proposed new runway / runway extension (1)
- Decommissioned runway
- Extended runway centerline

SEAPORT

- Study area
- 25 Berth number
- Crane envelope of operation, approximately 180 feet AMSL
- Crane envelope of operation, approximately 280 feet AMSL
- Cargo ships, up to 55m (180 feet) above waterline
- Cruise ships, up to 62m (203 feet) above waterline

NORTH

0 600' 1200' 2400'

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Figure 1
STUDY AREA
IN RELATION TO AIRPORT
EXISTING CONDITIONS
Airspace Obstruction Study
Port Everglades Cranes and Ships
Fort Lauderdale-Hollywood International Airport
November 2006

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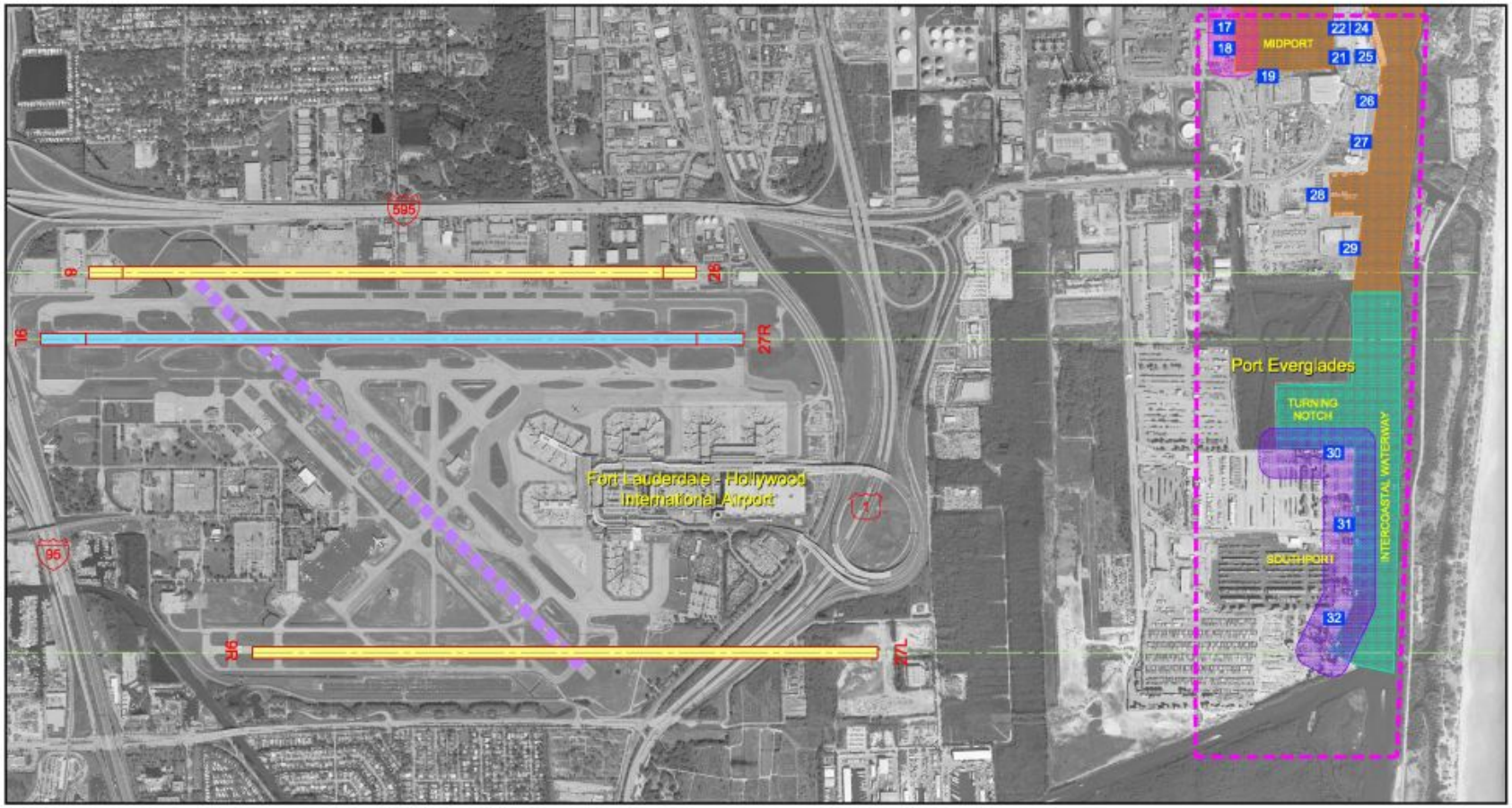
Study Area: South Port and Mid Port, Future Airfield Alternatives



Study Scope: Three Types of Obstacle Clearance Standards

- **Obstruction Standards**: "Land use Planning Guidelines"

  As defined by 14 CFR Part 77 – Objects Affecting Navigable Airspace

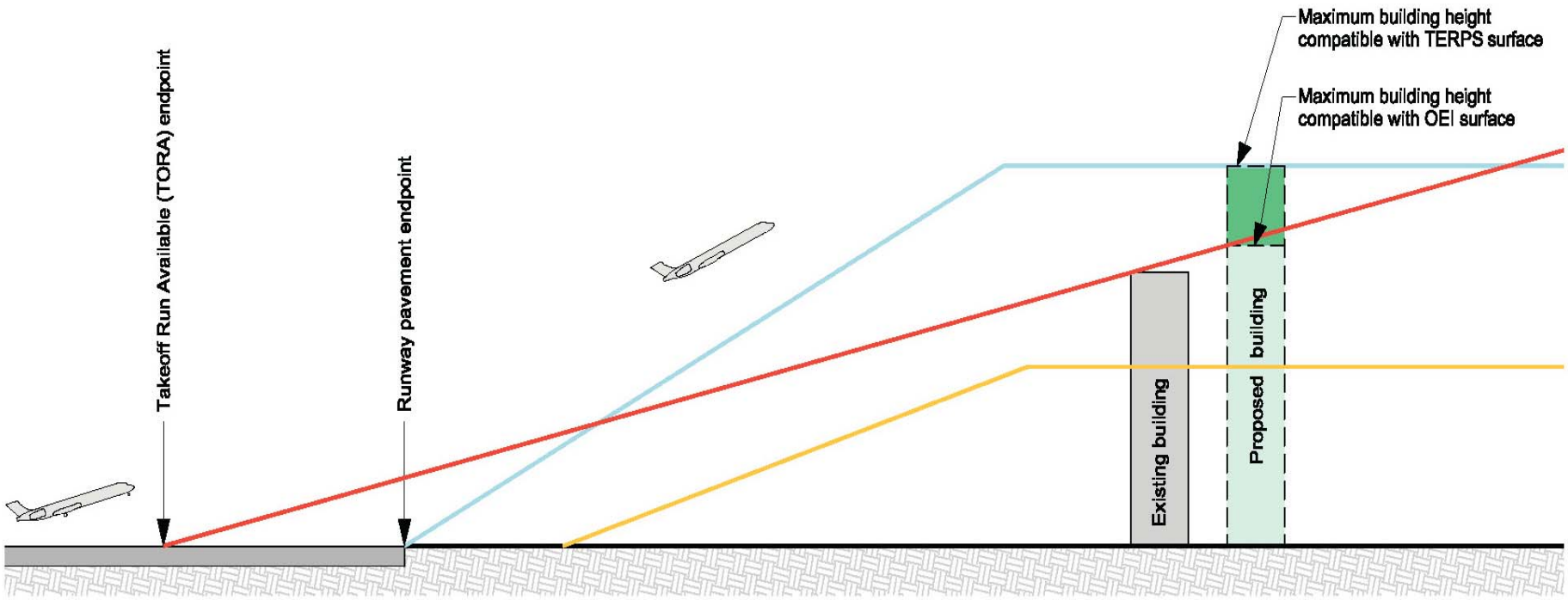
- **Hazard Standards**: "Safety Guidelines"

  As defined by FAA Order 7400.2E "Procedures for Handling Airspace Matters"
  IFR Procedures as defined by FAA Order 8260. series (TERPS)
  VFR Procedures & Clearances

- **Air Service Capability Standards**: "Air Service Guidelines"

  14 CFR Part 25.121 – One Engine Inoperative Climb Procedures
  14 CFR 121.189 – Airplanes – Takeoff Limitations

Study Scope: Three Types of Obstacle Clearance Standards



NOTES

FAR Part 77 Civil Airport Imaginary Surfaces - Used by FAA to determine obstruction status. If obstruction standards are exceeded, FAA performs further aeronautical study to determine hazard status.

TERPS - Obstacle Clearance Surfaces (OCSs) protecting published instrument procedures as defined in FAA order 8260.3B, *US Standard for Terminal Instrument Procedures* . In FAA studies, this is the most common factor for determining hazard status.

Obstacle Accountability Area (OAA) for One-Engine Inoperative (OEI) - An emergency procedure developed by individual airlines to establish air service capability. When performing obstruction evaluation studies, FAA does not recognize OEI as a factor for determining obstruction status or hazard status.

Note: The relationship between Part 77 obstruction standards, TERPS and OEI surfaces are different at different locations. At some areas, TERPS and/or OEI surfaces can be lower than Part 77 obstruction standards.

LEGEND

FAR Part 77 obstruction surface

TERPS surfaces

OEI surfaces

See below for further explanation

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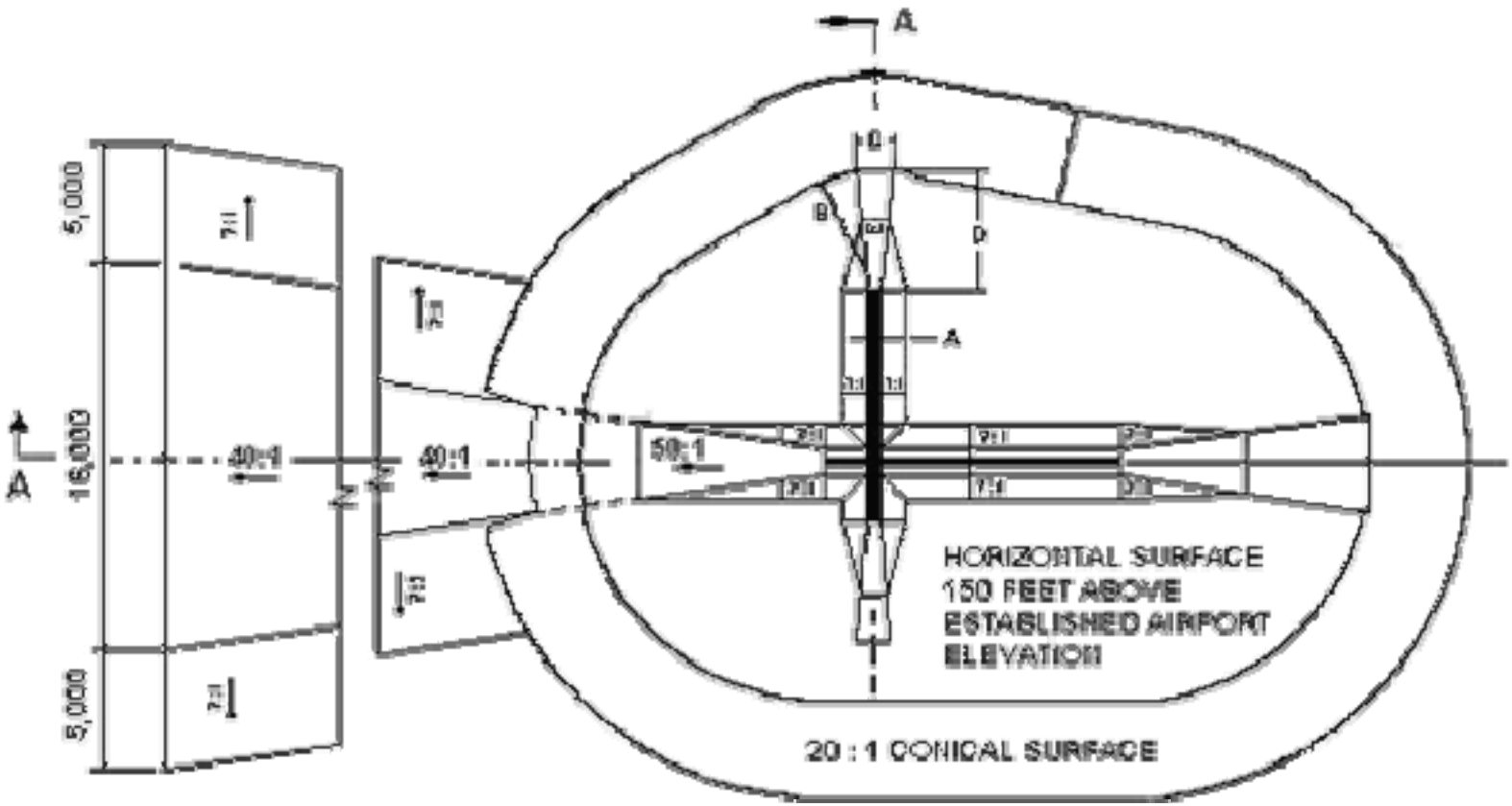
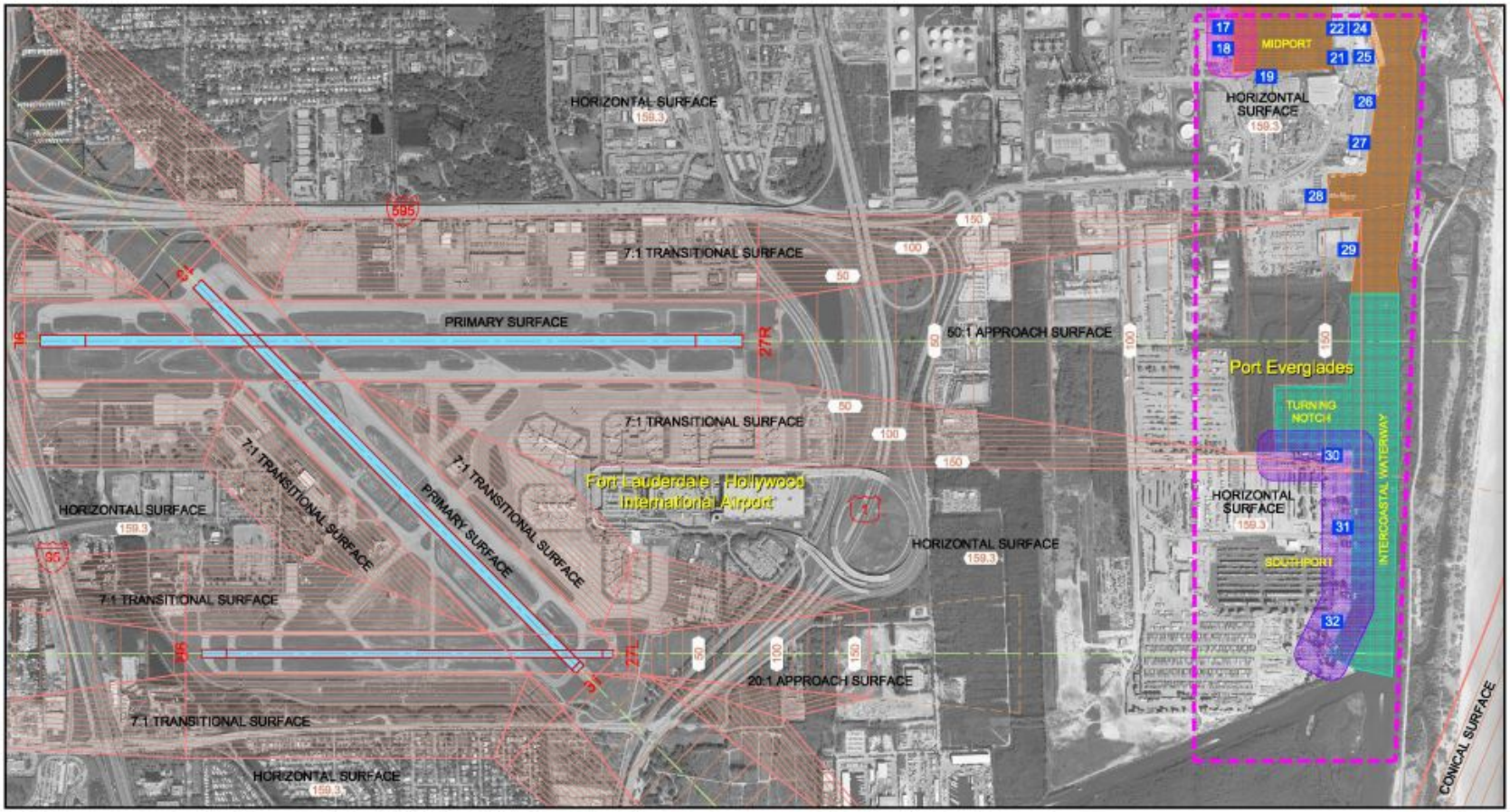
Obstruction Standards: 14 CFR Part 77: Objects Affecting Navigable Airspace

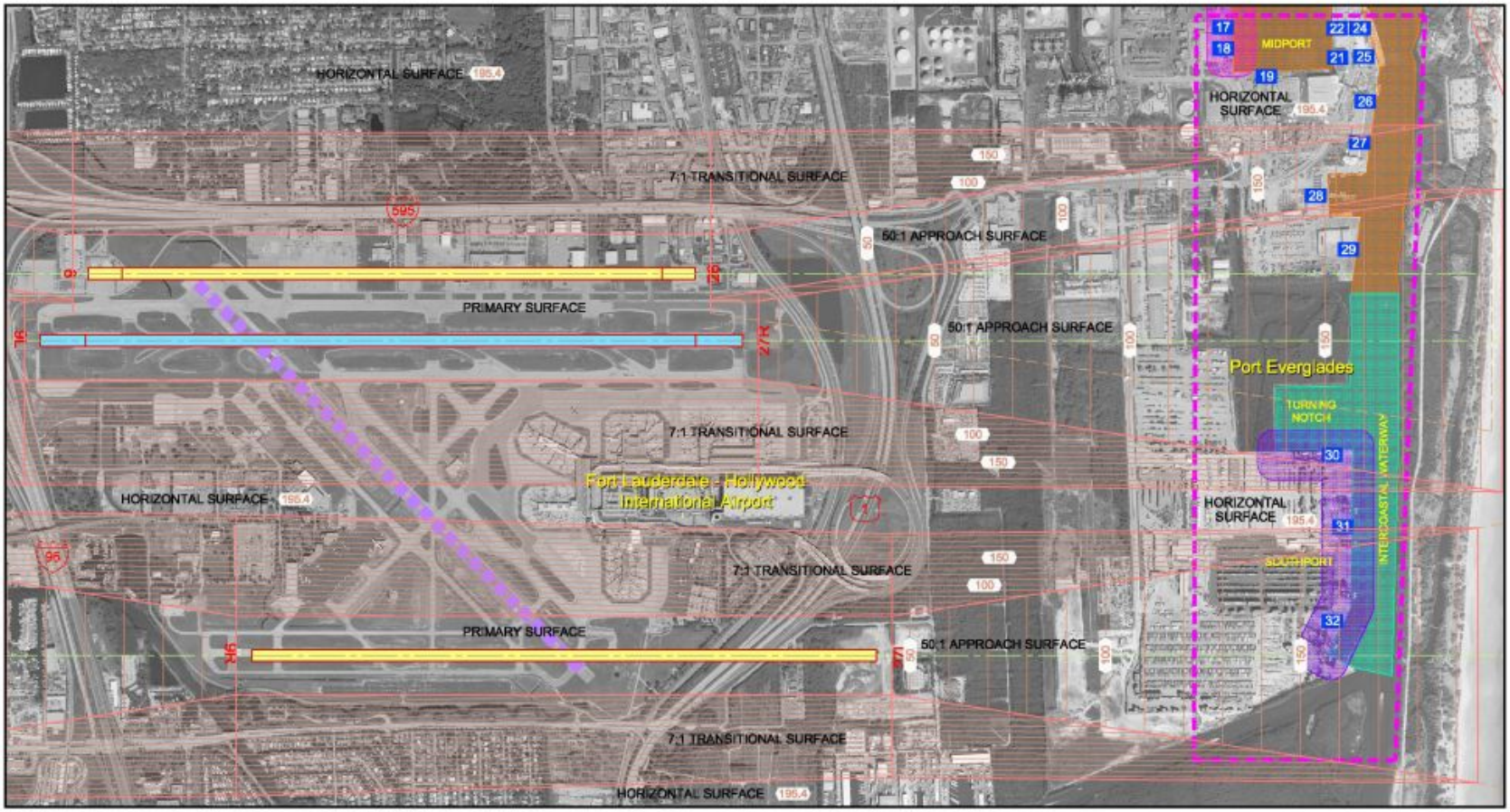
Regulation used to determine if an object is or is not an “obstruction to air navigation” based on “imaginary surfaces”



Obstruction Standards: 14 CFR Part 77 - Current Airfield Configuration



Obstruction Standards: 14 CFR Part 77 – Future Airfield Alternatives



Hazard Standards: FAA Order 8260.3: TERPS

Determines:

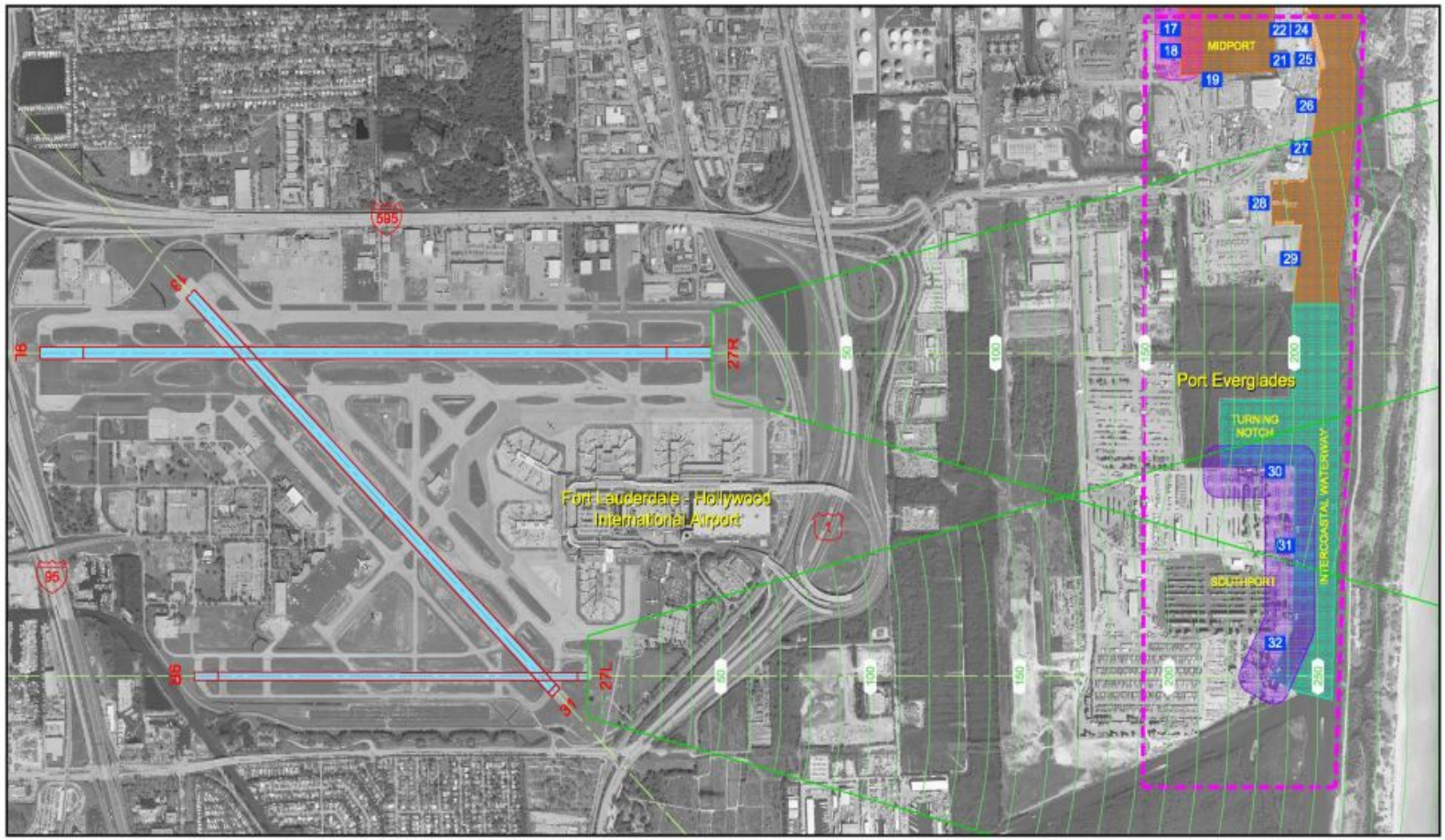
1. Approach and Departure procedures for aircraft using Instrument approach technology (ILS, GPS, etc.) for navigation.

2. Establishes minimum climb gradients for departures. (200 ft/nm)

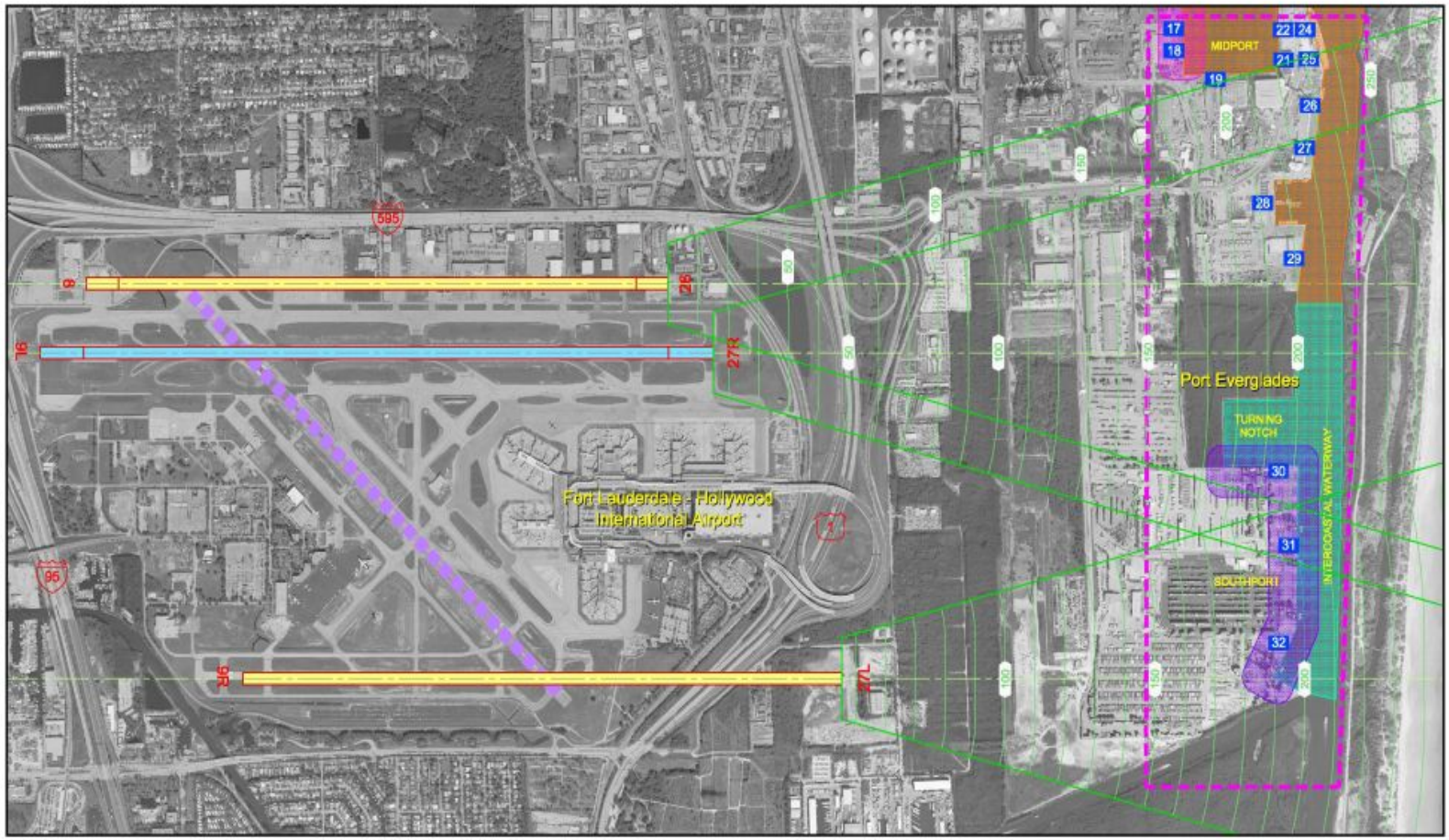
3. Establishes minimum safety surface to evaluate obstructions (40:1 slope)

Presence of obstacles penetrating 40:1 surface implies need to re-design instrument procedures, modify runway usage, or to declare a hazard to air navigation.

Hazard Standards: FAA Order 8260.3: TERPS – Current Airfield Configuration



Hazard Standards: FAA Order 8260.3: TERPS – Future Airfield Alternatives



Air Service Capability Standards: OEI's

Standards used by individual airlines to establish emergency procedures under one-engine-inoperative conditions.

Air carriers determine maximum allowable weight of aircraft at operation based on established emergency procedures and area obstacles

Based on: 14 CFR Part 25.121 – One Engine Inoperative Climb Procedures
14 CFR 121.189 – Airplanes – Takeoff Limitations

Initial evaluations based on ICAO standard OEI surface of 62.5:1

If obstacles penetrate an OEI surface
air carrier service to certain markets may be affected.

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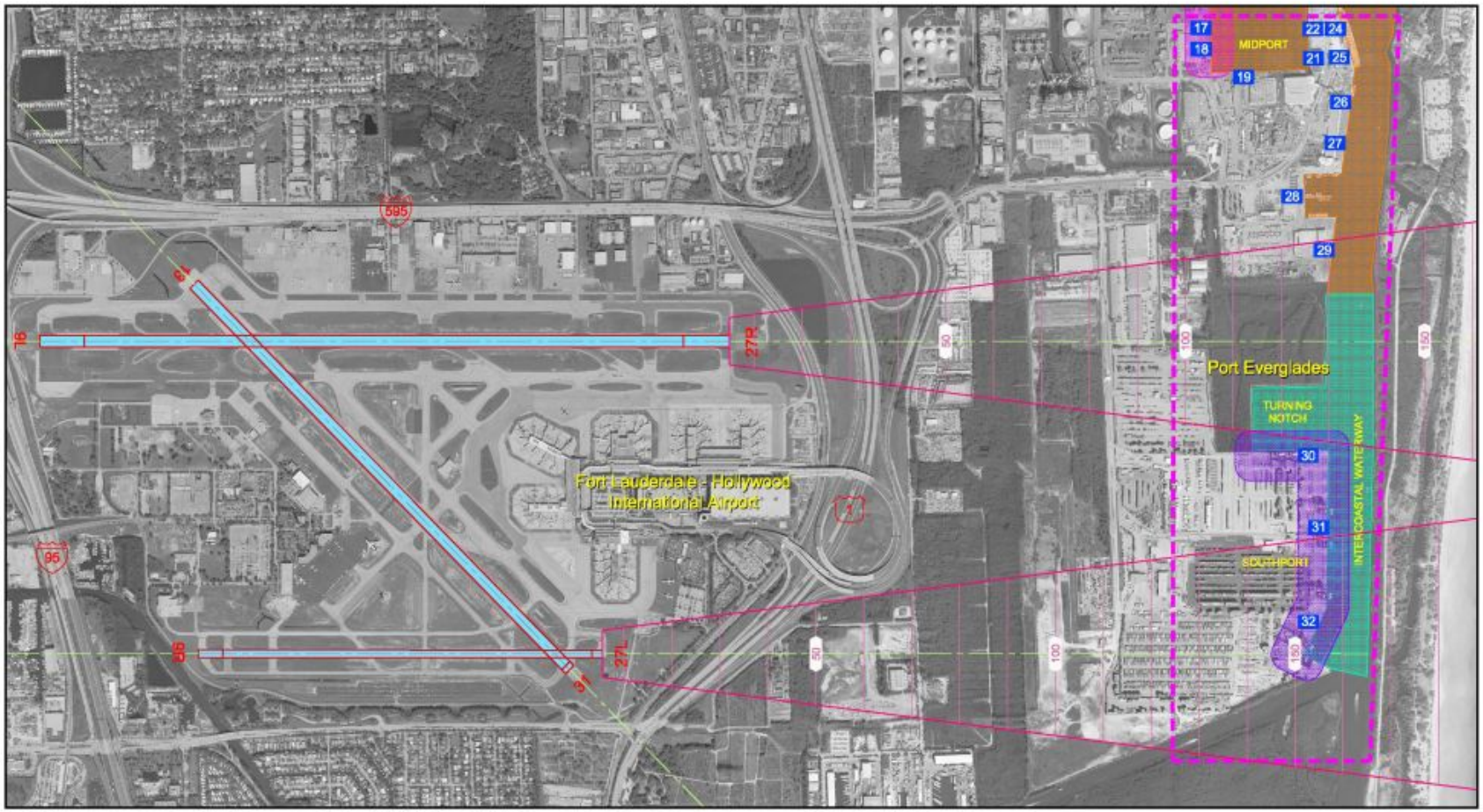
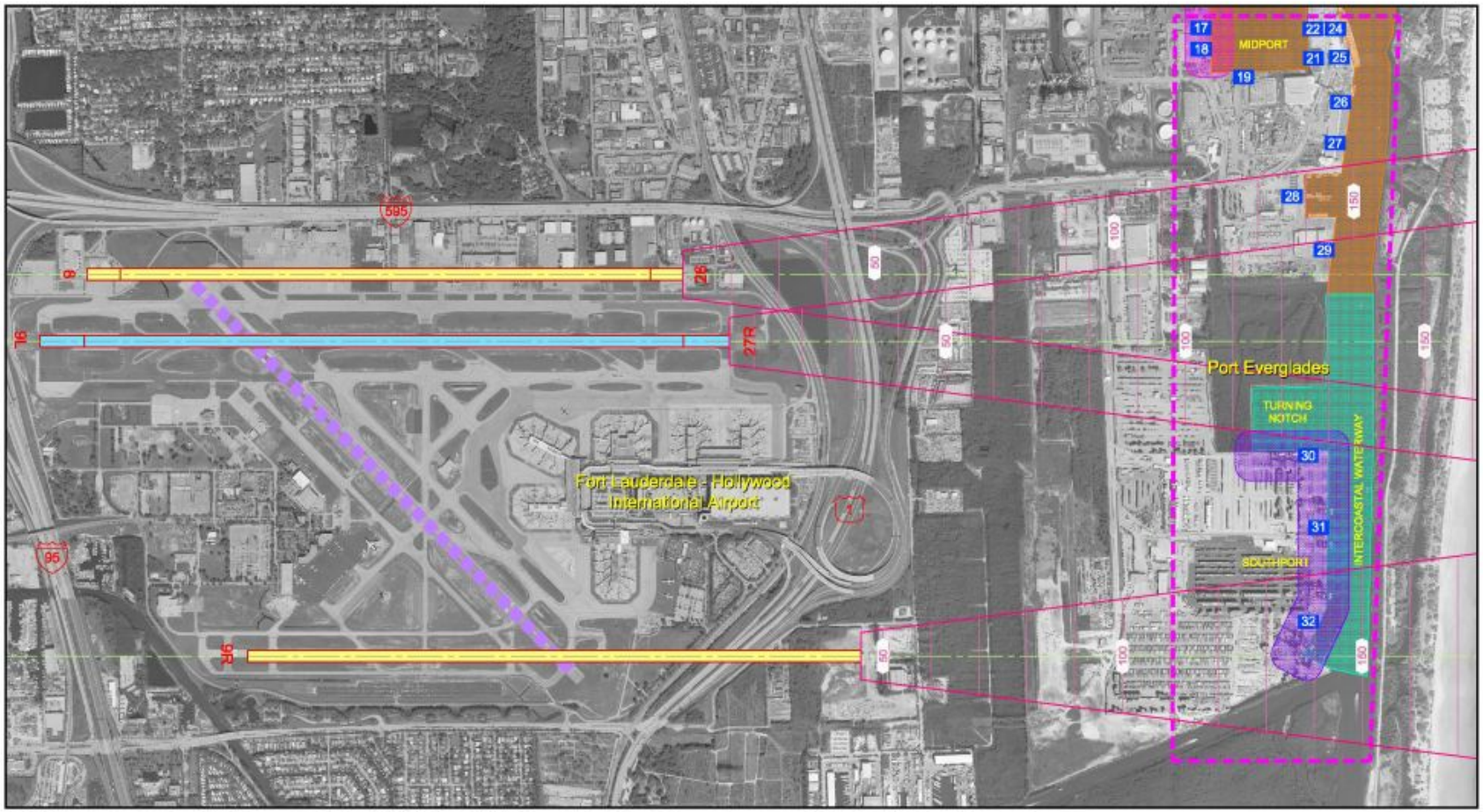
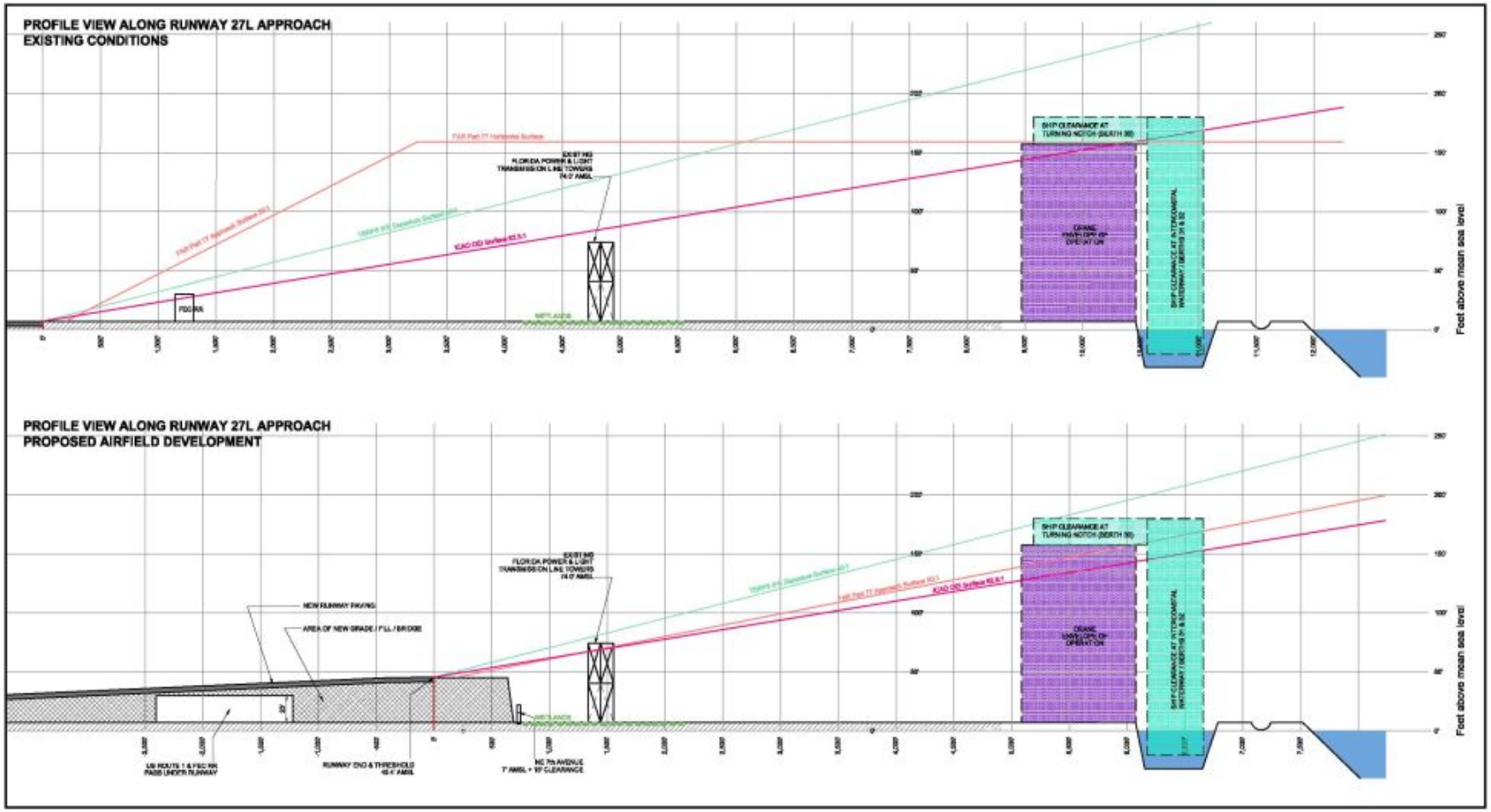
Air Service Capability Standards: OEI's – Current Airfield Configuration



Air Service Capability Standards: OEI's – Future Airfield Alternatives



Summary: Profile View Along Runway 27L: Existing and Future Cases



0 400' 800' 1600'

WITH 10x VERTICAL EXAGGERATION

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Figure 9
PROFILE VIEW
Airspace Obstruction Study
Port Everglades Cranes and Ships
Fort Lauderdale-Hollywood International Airport
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Conclusions

Heights of future proposed port cranes and vessels require:

- Submission of Form 7460 to FAA – “Notice of Proposed Construction”
- Coordination with FAA on design and use of Instrument Procedures
- Coordination with Airlines’ air service desires and capabilities

Implications of higher cranes combined with future airfield include:

- Potential Obstruction determinations at South and Mid Port
- Coordination with FAA required to avoid Hazard Determinations
- Potential for Air Service implications on future 9R – 27L
  due to South ends of South and Mid Port cranes, and existing FPL lines

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Suggested Action Items

- **Incorporate language addressing obstacle clearance standards in Port Everglades Master Plan Document**
- **Pursue more detailed analysis based on published EIS**
- **Eventually contact FAA for TERPS analysis**
- **Research current airline OEI procedures at FLL**

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