



Federal Aviation
Administration

Improved Taxiway Designs for Greater Airfield Safety and Efficiency

Update to Airport Design – AC 150/5300-13A
Industry Day

Presented To: Aviation Industry Representatives

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Federal Aviation
Administration

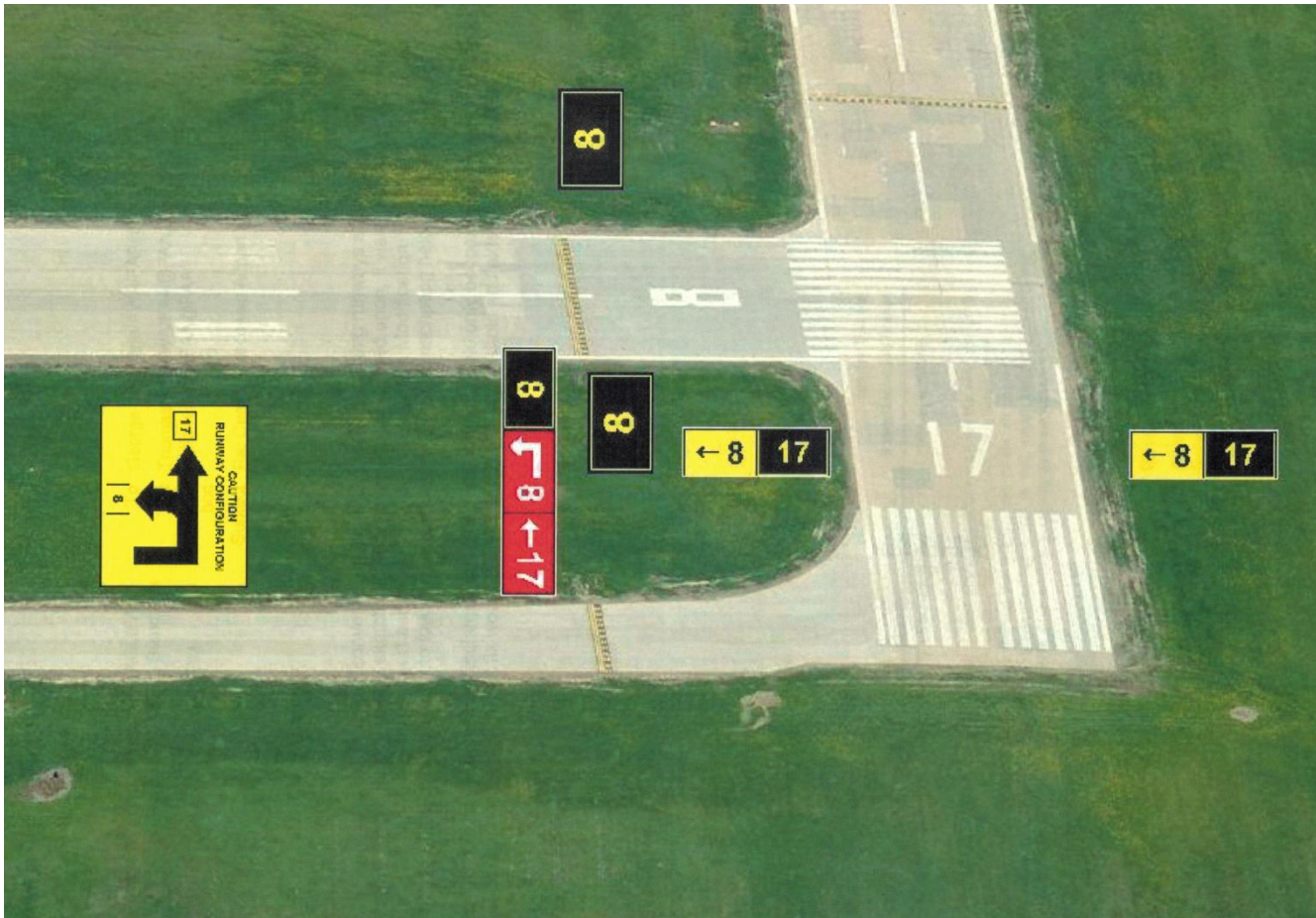
Taxiway Design Objectives:

- **New Taxiway Geometric Standards**
 - Reduce
 - Airfield Confusion and HOT SPOTS
 - Mitigate
 - Runway Incursions; Wrong Runway Takeoffs; and Landings on Taxiways
 - Improve
 - Recognition of Marking, Signage, and Lighting Standards



Poor Taxiway or Runway Designs Impact Marking, Signage and Lighting Standards





This AC Revision should eliminate such designs



Taxiway Design Objectives:

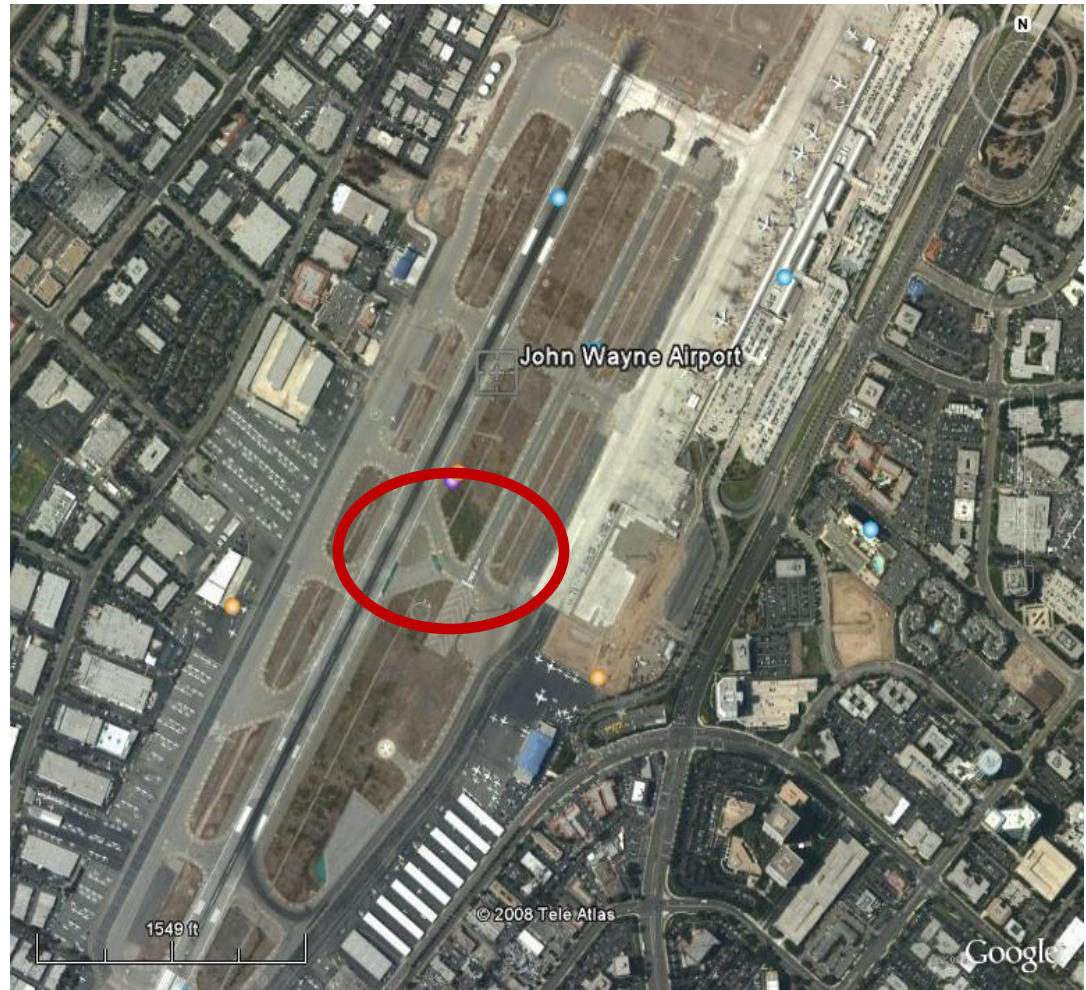
- **Incorporate Existing Engineering Briefs:**
 - FAA Engineering Brief No. 75
 - *Incorporation of Runway Incursion Prevention into Taxiway and Apron Design – 11/08/2007*
 - FAA Engineering Brief No. 72
 - *Positive Identification of Runways for Landing – 11/02/2007*
 - http://www.faa.gov/airports/engineering/engineering_briefs/
- **Increase Situation Awareness**
- **“Design Out” Problem Geometries**



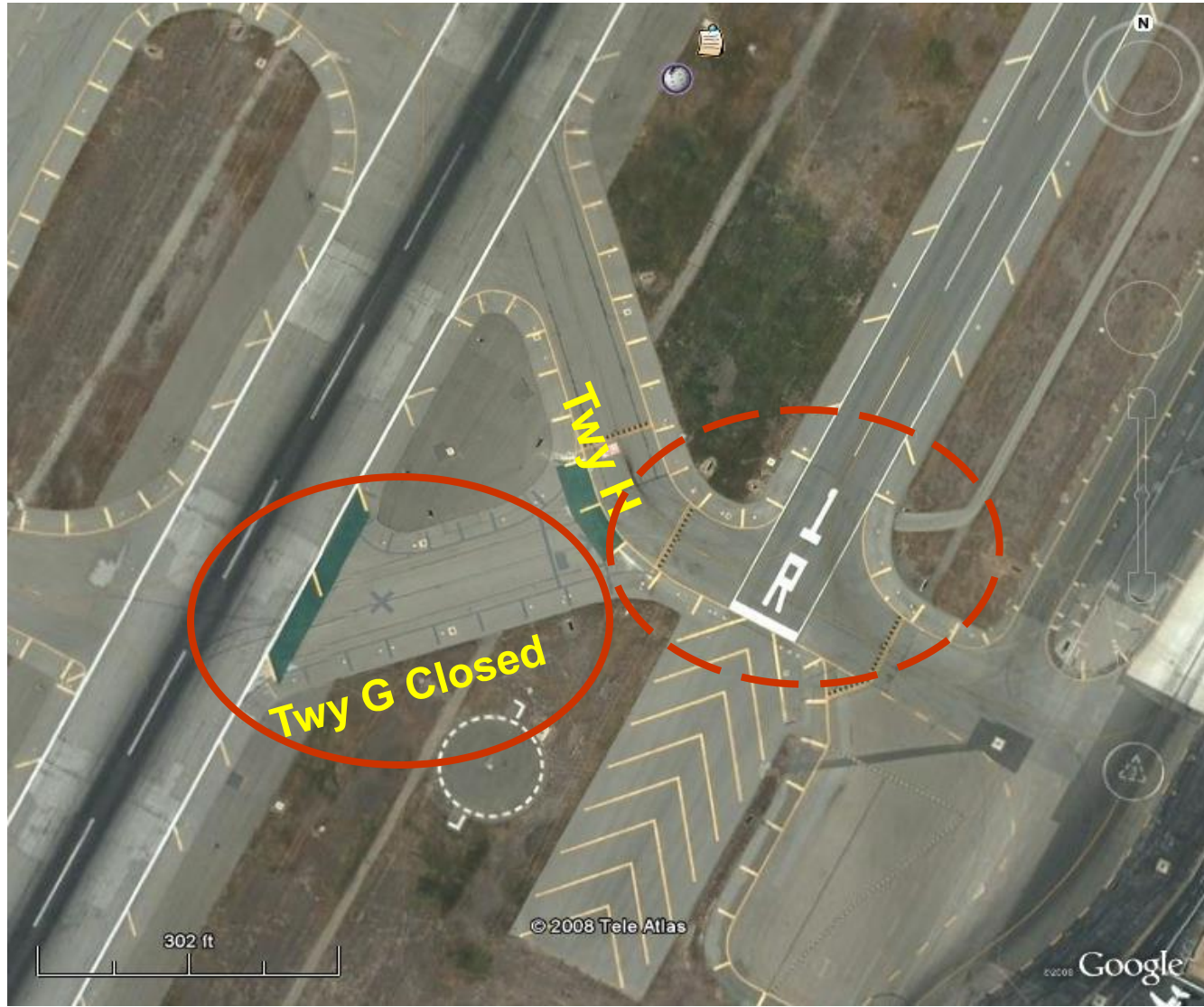
Any Specific, Problematic Taxiway Geometries? **One Example: The “Y”**

Previous Yrs: 1997-2000

- Entire Airfield - 33 Runway Incursions
- 12 Operational Errors
- 18 Pilot Deviations
- 3 Vehicle / Ped Deviations



SNA: Total 15 incursions; 10 PDs



Partial Listing: Airports with Y-Shaped Taxiway Connectors For Same Time Period

- ***STL [variant]: 1-PD, 1-OE; 1-V/PD, 2-OEs***
- ***MEM: 1-PD***
- ***LGB: Closed the Y-Taxiway/Rwy 6R/34L***
- ***LGA: 1-PD, 1-V/PD; 1-PD; 2-OEs***
- ***JFK: 1-PD***
- ***FLL: 1PD; 1-PD, 1-OE, 1-V/PD***
- ***DAB: 1-PD, 2-OEs***
- ***CVG: 1-PD, 2-OEs - Now resigned***
- ***BWI: 1-PD***
- ***BOS: 4-PD, 2-OEs - redesigned***
- ***SFO; HNL; DTW; DCA; CMH***



Result: Change 17 and New Chapter 4

- New and Strengthen Taxiway Design Geometric Standards:
 - “3 - Node” Taxiway Intersection Design Principle
 - Taxiway / Runway Interface Design Principle
 - Entrance Taxiway Criteria At Runway Ends
- Listed Specific Problematic Taxiway Geometries Not Recommended for Construction



“3-Node” Taxiway Intersection Principle

- **A Taxiway Intersection has at most 3 directions to proceed after the intersections**
 - Best Design - one Left Turn, one Right Turn, and Proceed Forward
- **Multiple 30 and 45 Degree Intersecting Angles**
 - 30, 45, 60, 90, 120, 135, and 150 degrees from the traveling taxiway

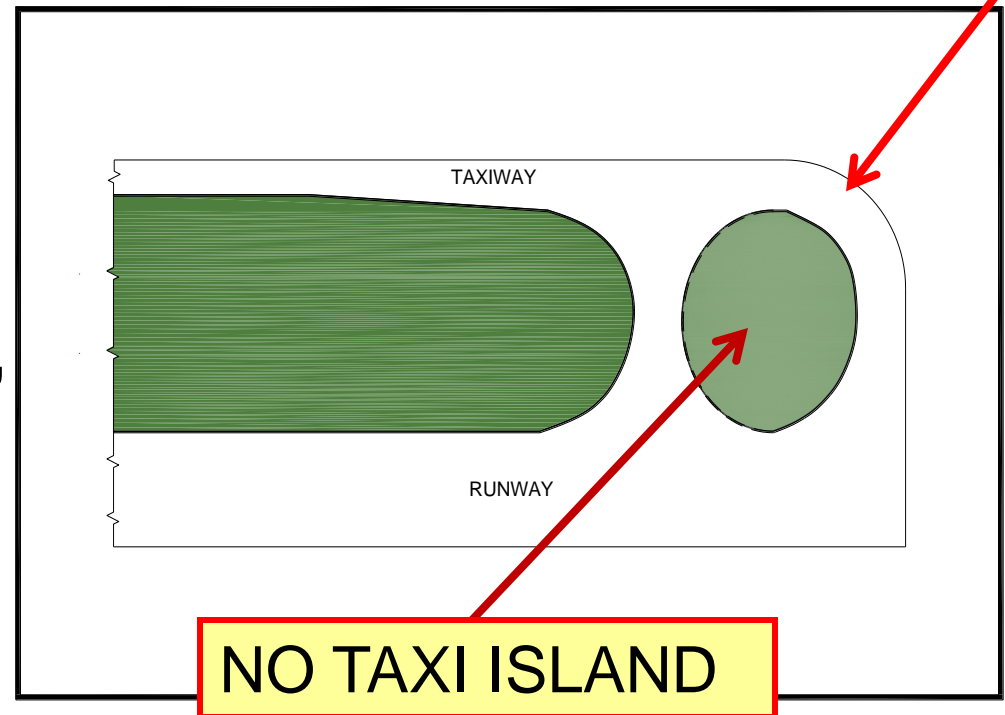


Entrance Taxiway and NO TAXI Islands

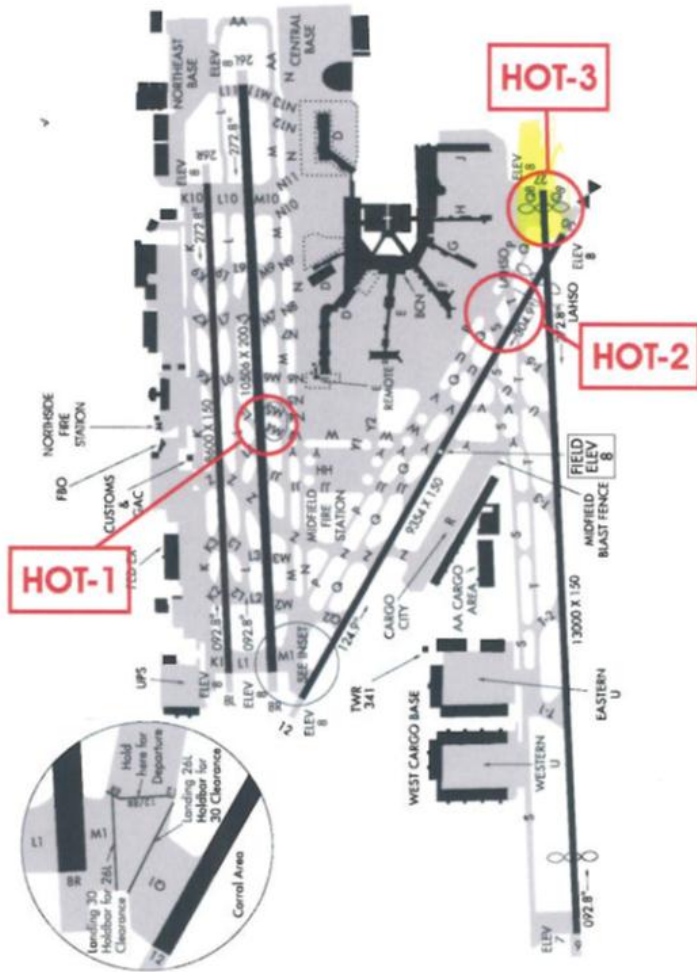
All Versions of AC
150/5300-13 Showed:

- Std Width Taxiway Entrances
- Non-paved “Island” Between Entrance and Bypass Taxiways

Curved “Outer-Edge” to Mitigate Taxiway Landings



Hot Spot Chart



- **Convert Extra Wide Paved Entrances to Std Twy Widths plus a NO TAXI Island(s)**
- **End Result: Apply Green Paint or Artificial Turf to NO TAXI Island(s)**
- **End Result: Each Taxiway Entrance has own:**
 - ID Designator
 - Markings
 - Signage
 - Lighting/Reflectors - when required

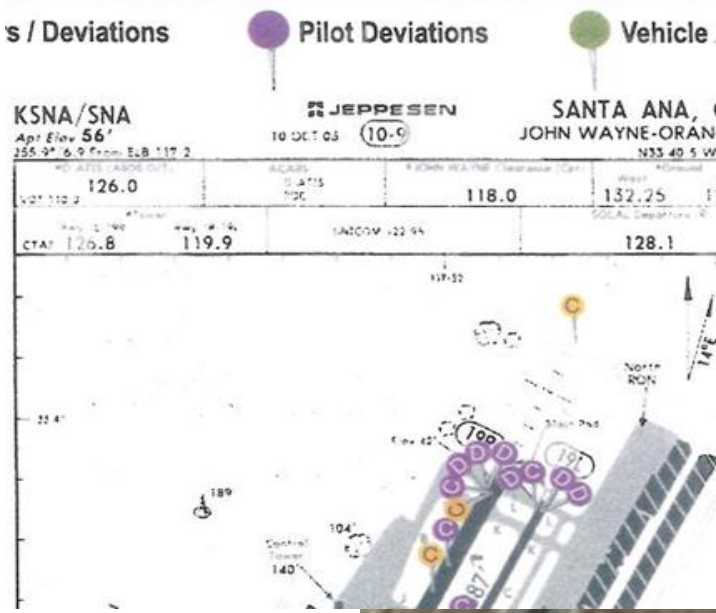
Taxiway Design Concepts

- **Examples of Basic Concepts:**
 - Avoid Wide Expanses of Paved Entrances to Runways
 - Round Outer Edge [Corner] of Entrance Taxiways Located at Runway Ends
 - Limit Runway Crossings - Avoid “high energy” Areas
 - Avoid “dual purpose” Pavement – Runway used as a Taxiway
 - Avoid Direct Access from Apron to a Runway
 - Avoid Mixing Asphalt and Portland Cement Concrete at Taxiway / Runway Interfaces



Avoid Excessive Paved Taxiway Widths Mitigate Runway Incursion Potential

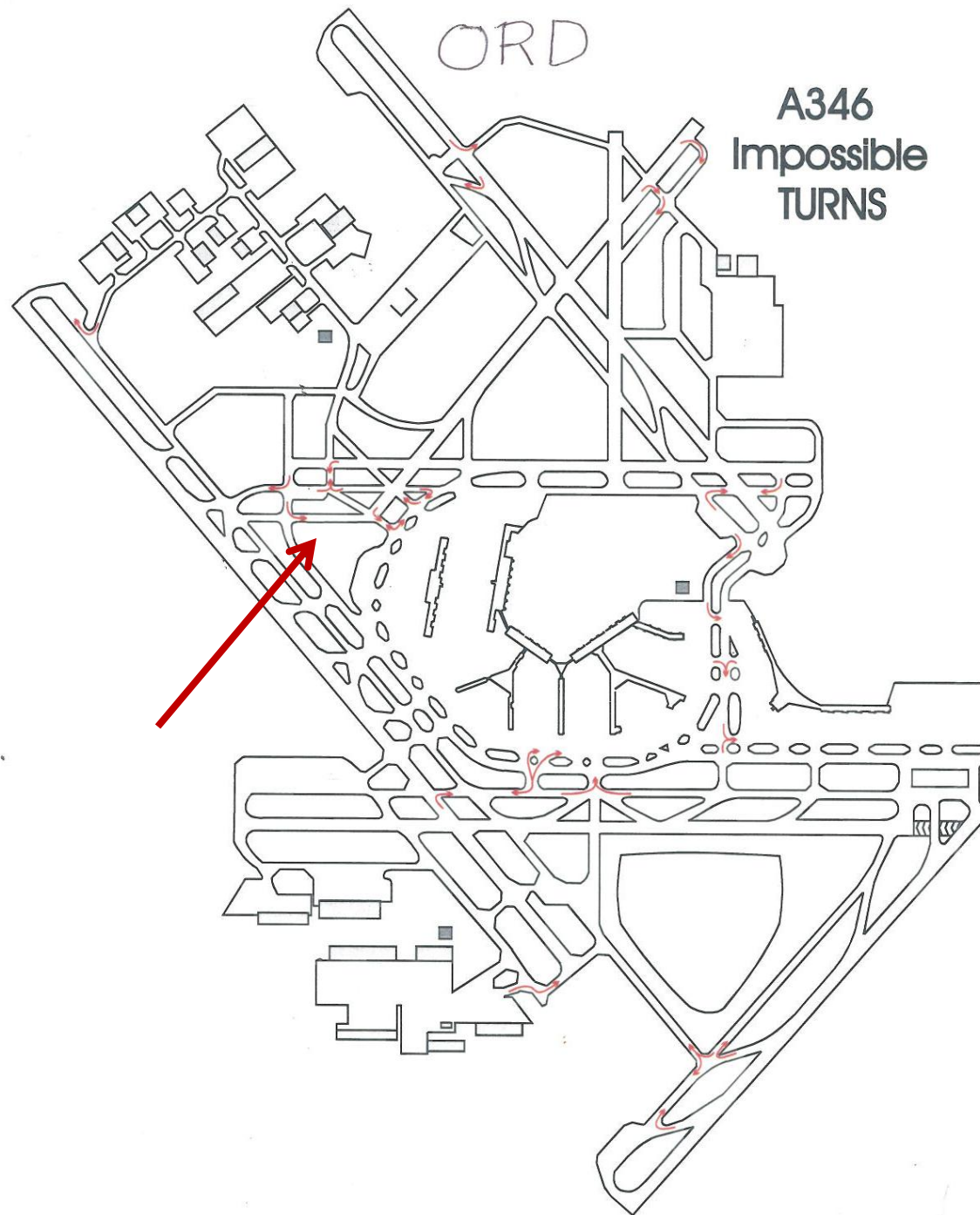
2000 through FY 2003 Runway Incursion
John Wayne - Orange County Airport



**Resolved
Disconnect
Between Airplane
Design Group and
Fillet Design:**

**Re-introduce
Taxiway Design
Group Concept**

**(Cancelled
AC 150/5335-1)**



Transition Period

- **It will take some time, years in some cases, to fully comply with the various taxiway items in Change 17 and AC 150/5300-13A. For Example: 3-Node Designs**
 - New Construction
 - Existing Geometries? First Item for Re-construction
 - Designated “HOT SPOT” Locations - Then
 - Non HOT SPOT” Locations, to Maximum Extent Practicable, During Next Capital Project Opportunity at that Location



Thank You

Questions

