

FAA Efforts to Improve Airport Safety

Presented at:
NTSB Forum on Runway Incursion Safety Issues

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Federal Aviation
Administration



Airport Safety & Standards Initiatives

- **Focus on improved geometry by design**
- **Initiation of Runway Incursion Mitigation (RIM) program**
- **Hot Spot solutions**
 - Geometry changes
 - Taxiway naming convention
 - Runway guard lights / Runway Status Lights
 - Approach/Departure hold signs
- **Training**
- **Technology mitigations**



Improved Geometry

Advisory Circular AC 150/5300-13; Airport Design:

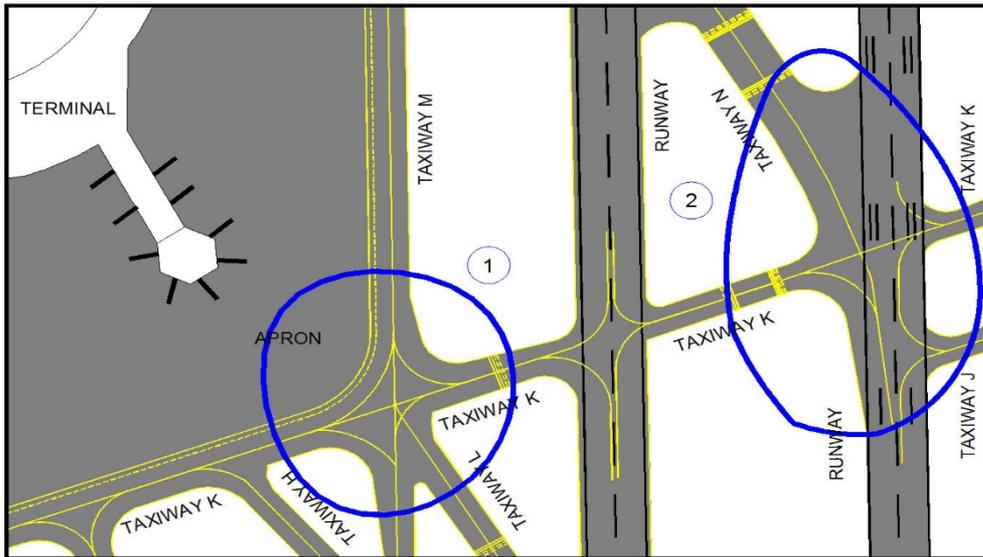
• Three-Node Concept

- Reduction in complex geometry /multiple intersecting taxiways
- Increase pilot's situational awareness (standard taxiway width)

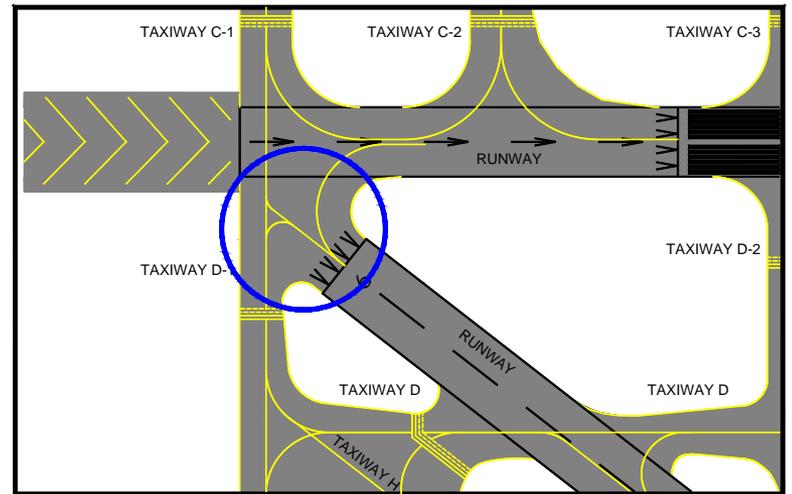
- 90-degree Intersection angles
- Avoid wide expanse of pavement
- Limit runway crossings
- Avoid high-energy intersections
- Design indirect access from a ramp to a runway



Identification of Problematic Geometry



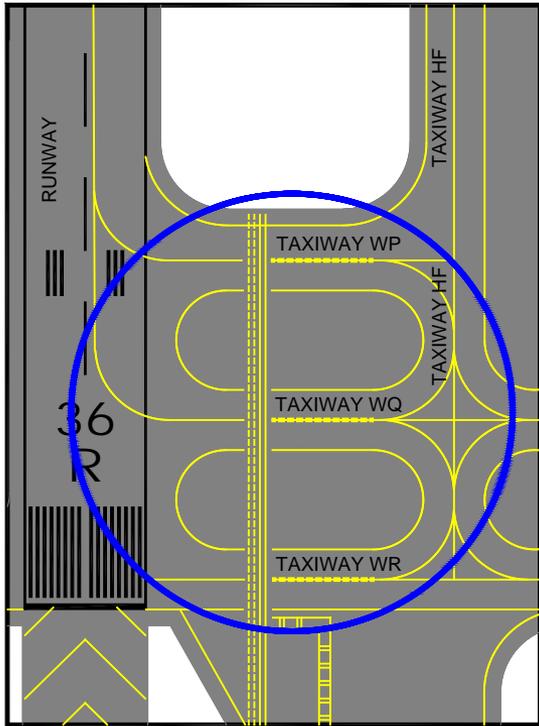
1 Taxiway intersection exceeds "3-node" concept
2 Taxiway intersecting a high-speed exit from runway.
(h)



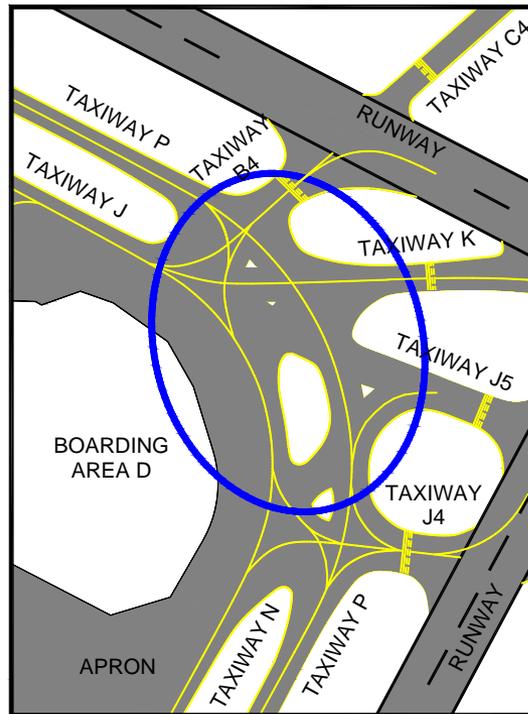
(e) Aligned taxiway between two closely spaced runway ends



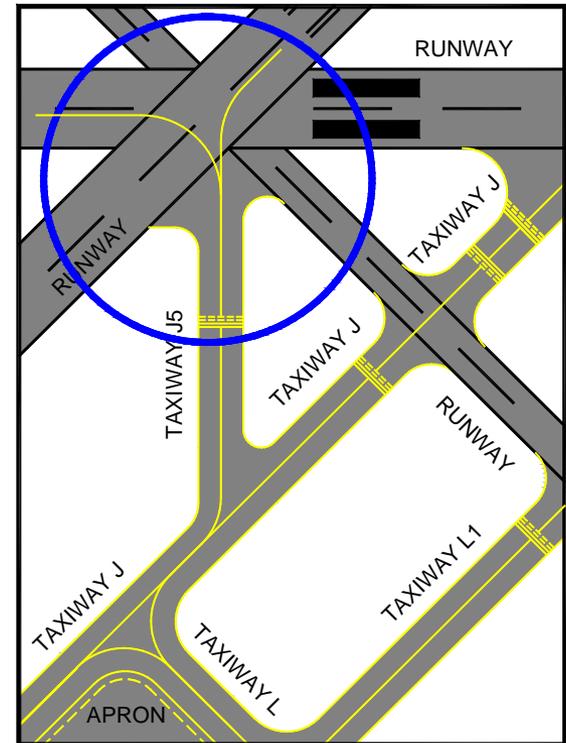
Hot Spots



(f) Two or more taxiway entrances lacking "No Taxi" islands



(c) Taxiway intersection exceeds "3-node" concept



(d) Taxiway intersecting two or more runways

Runway Incursion Mitigation Program

- The RIM program determines which runway/taxiway intersections have increased occurrences of Incursions.
- The RIM program uses:
 - Runway Incursion (RI) data
 - GIS geo-referencing, *and*
 - Risk-based Decision Making
- Locations Determined by:
 - 3 or more RIs in a Calendar Year
 - Average of 1+ RIs per year over study period
 - Field validation of locations, RIs, & geometry
 - Generates RIM Inventory



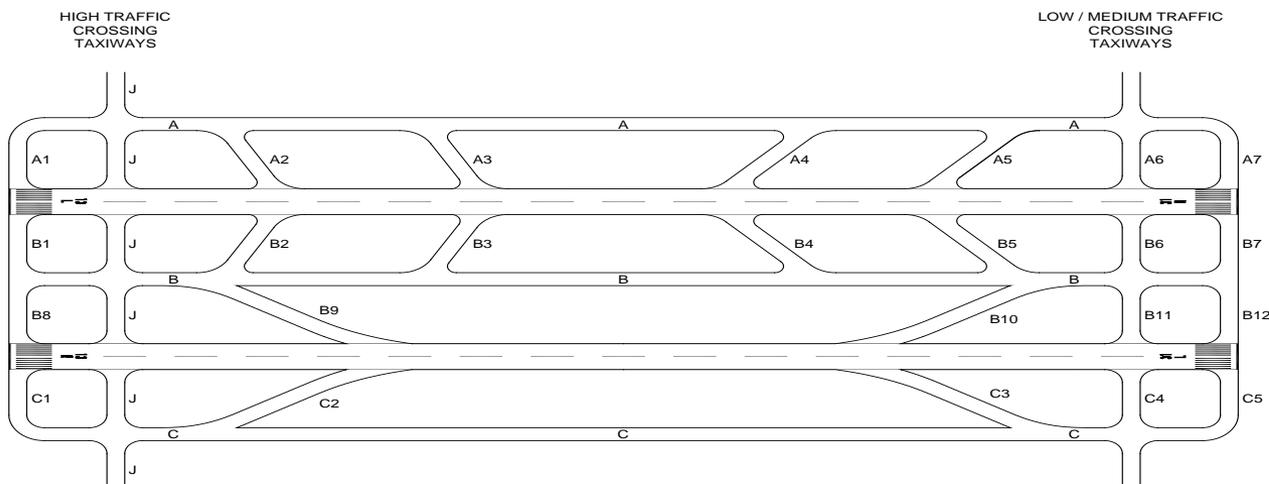
Runway Incursion Mitigation Program

- **Statistics at a glance:**
 - 518 towered airports
 - Almost 6300 runway/taxiway intersections analyzed
 - More than 8800 RIs analyzed since October 1, 2007
 - 90 airports of all sizes have at least 1 RIM location
- **December, 2016: CY 2015 RIM Points verified**
 - Inventory – 137 RIM locations
 - Available at: http://www.faa.gov/airports/special_programs/rim/
 - Updated annually – new inventory by end of FY17
- **Projects initiated at approximately 75 RIM locations**



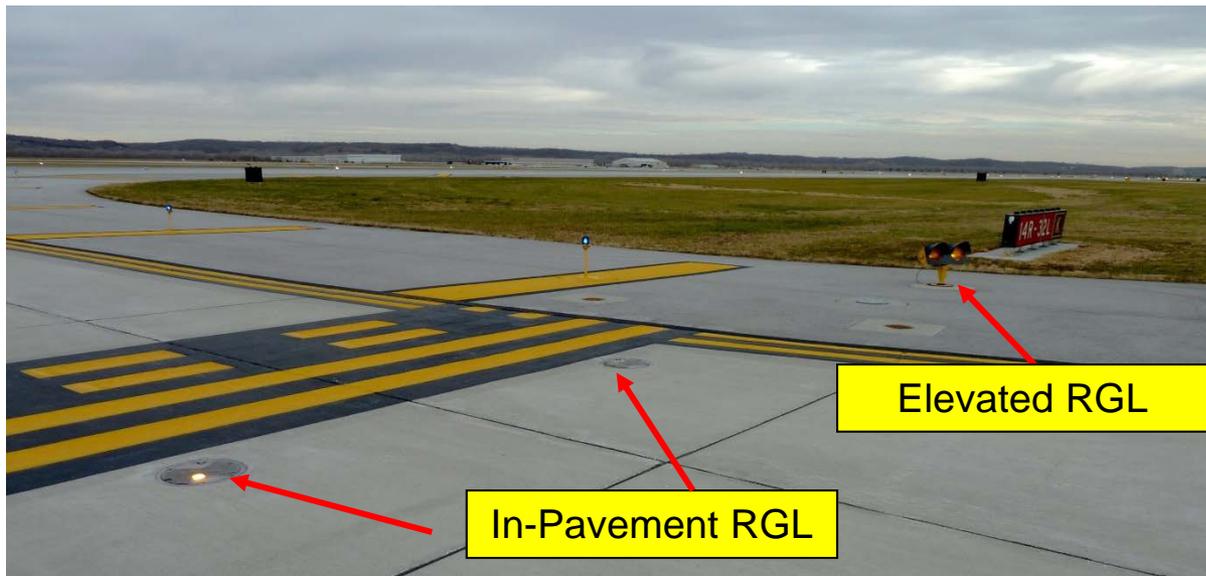
Taxiway Naming Conventions

- Single alphabet letters
- Double-same alphabet letters (AA, BB, ..., ZZ)
- Two-character alphanumeric designator (A1, B4, ..., Z9)
- Double-different alphabet letters (such as AB, NM, etc.) are no longer allowed



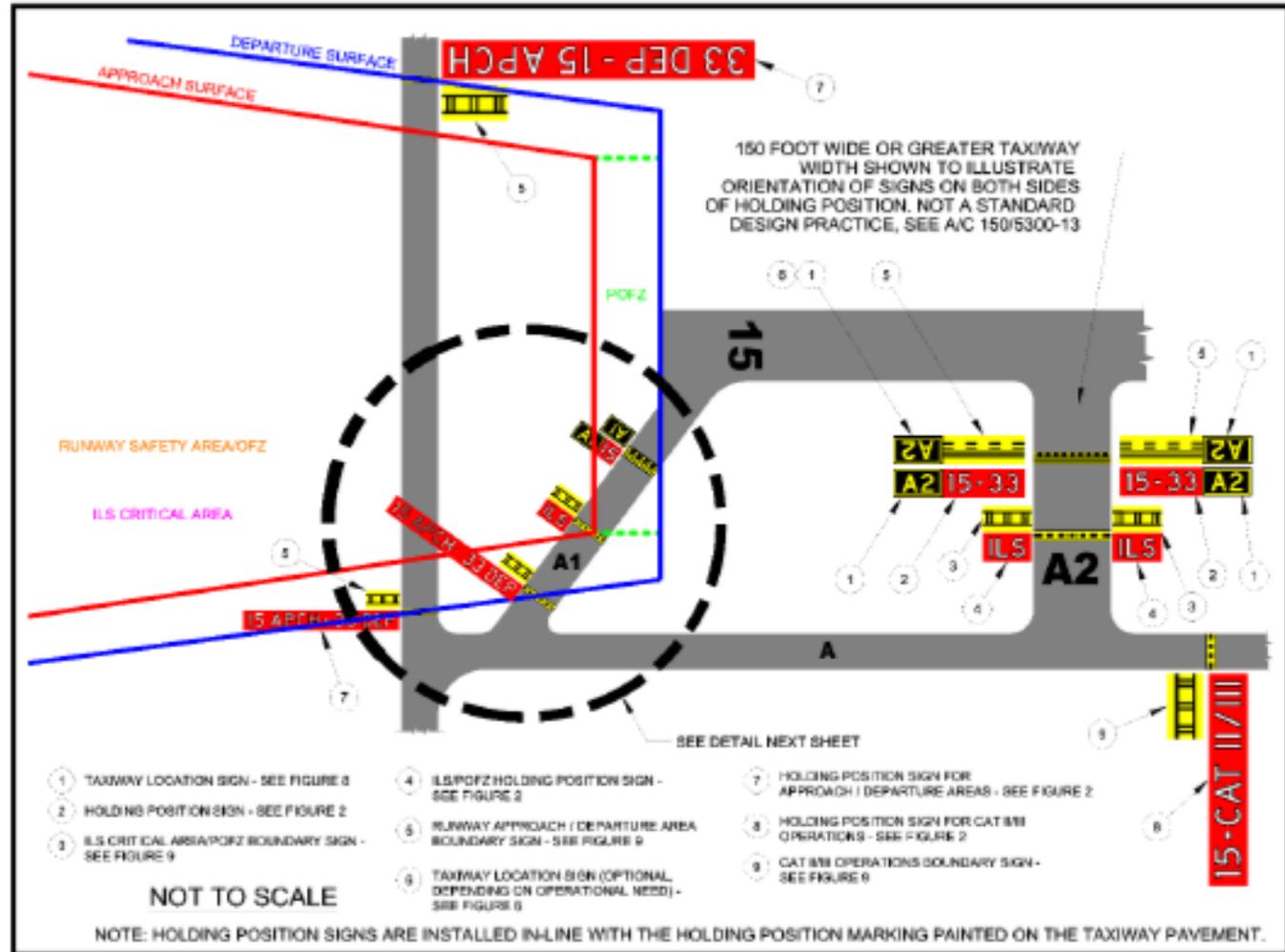
Taxiway/runway visual aids include: (RGL)

- Elevated and sometimes in-pavement runway guard lights (RGL).
- Elevated and in-pavement RGLs serve the same purpose and are generally not both installed at the same runway holding position



New Approach / Departure Signs

Proposed





Training and Guidance – VPD Mitigation

- *FAR Part 139.329* requires airport operators to create a safe and orderly environment for ground vehicle and pedestrian operation in the airport movement and safety areas.
- Limit access to the movement area
- Train those with unaccompanied access every 12 calendar months.
- Advisory Circular (AC) 150/5210-20A *Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports* provides guidance to airport operators to develop a training program for safe pedestrian and ground vehicle operations on an airport.
- FAA recommends that each airport operator evaluate their program on how it may apply to the size, complexity, and scope of operation.
- “**Just Culture**” – Don’t automatically fire people. Investigate why they made a mistake.



Runway Incursion Warning System

- Runway Incursion Warning System (RIWS) produces an alarm to vehicle drivers when the vehicle is near or is inside the protected area of a surface that is designated for the aircraft landing and takeoff operations.
- RIWS uses GPS data to provide the vehicle location information to generate alarms.
- The performance specification of RIWS is defined in FAA AC 150/5210-25.
- The updated AC will provide guidance on all AOA protection area alarm and App development requirements:
 - Runway Safety Area (RSA)
 - Holding Position markings on taxiways and runways
 - ILS Critical area/POFZ



Conclusion

- **Improving safety through our Advisory Circulars**
 - Airport Design AC 150/5300-13A
 - Standards for Airport Markings AC 150/5340-1M
 - Adoption of the taxiway nomenclature method by ICAO
 - Performance Specification for Airport Vehicle Runway Incursion Warning System AC 150/5210-25
 - Advisory Circular (AC) 150/5210-20A Ground Vehicle Operations



Questions ?

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Director

**FAA Office of Airport Safety & Standards,
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