Don’t Get Blown Away

Strategies to Protect Construction Sites from Jet Blast & Prop Wash

Dan Sherer, PE, ENV SP | April 7, 2022

Presenters

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Company *Overview*

Firm Overview

- 100% employee-owned Engineering, Architecture, and Planning firm
- 112-year old firm headquartered in Saint Paul, MN
- Providing Aviation Engineering and Planning Services for over 70 years

Mission Statement (Why we do it!)

To provide services that build upon our tradition of creating value for our Clients, Communities, and Employee-Owners.

Core Values

- Dedicated to excellence, professionalism and ethics
- Long-standing trusted relationships
- Reputation for confidentiality
- Committed to employee development and collaboration

WHY IS THIS TOPIC IMPORTANT?

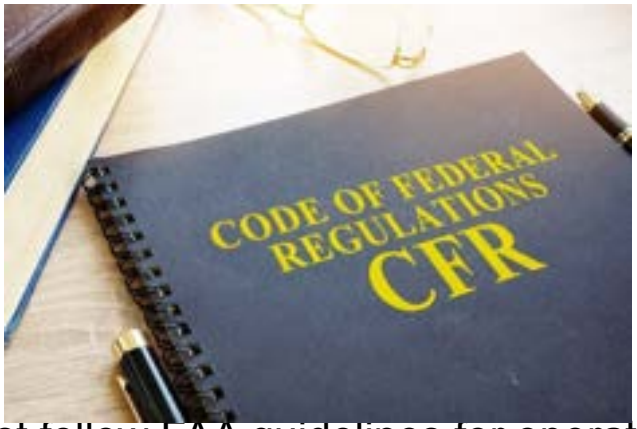
- Loose objects can become dangerous projectiles.

- Regulations obligate Airport operators to protect the public and property.

WHY IS THIS TOPIC IMPORTANT?

WHY MITIGATE THE RISK?

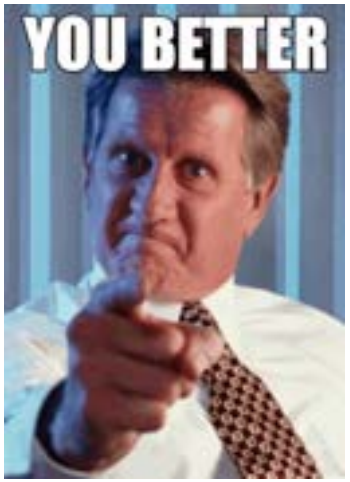
- 14 CFR Part 139 requires that airports provide "reasonable protection of persons and property from aircraft blast".



- Airport projects receiving AIP funds must follow FAA guidelines for operational safety during construction (AC 150/5370-2G).

Federal Grant Assurance No. 34

34. Policies, Standards, and Specifications. It will carry out the project in accordance with policies, standards, and specifications approved by the Secretary including but not limited to the advisory circulars listed in the Current FAA Advisory Circulars for AIP projects, dated _____ (the latest approved version as of this grant offer) and included in this grant, and in accordance with applicable state policies, standards, and specifications approved by the Secretary.



STRATEGIES TO MITIGATE

- Runway, Taxiway, or Aircraft Gate Closures

- Jet Blast Fences

- Modifications to Airport Procedures

MODIFICATIONS TO AIRCRAFT PROCEDURES

- Restrict type of aircraft allowed near work area.
- Restrict use of single-engine taxi (dual-engine only).
- Require aircraft to be towed into certain gates from taxiway control points.
- Require aircraft to be pushed back and towed to taxiway control points.

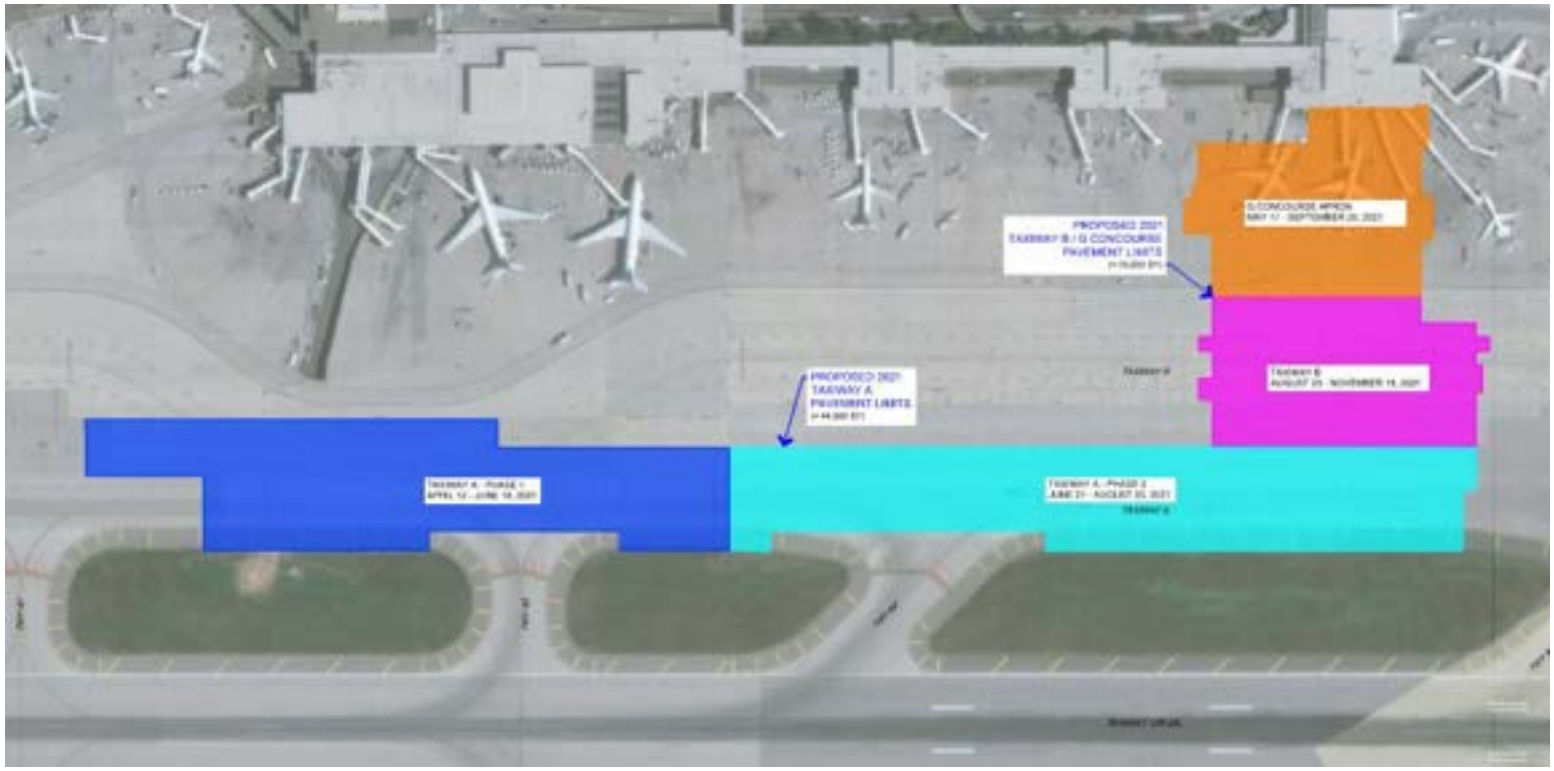
MSP INTERNATIONAL AIRPORT

MSP INTERNATIONAL AIRPORT

- 42 miles of concrete runways and taxiways
- 118 aircraft gates
- 406,000 aircraft operations (2019)
- 39,555,035 passengers (2019)

TAXIWAY A/B & G APRON PROJECT

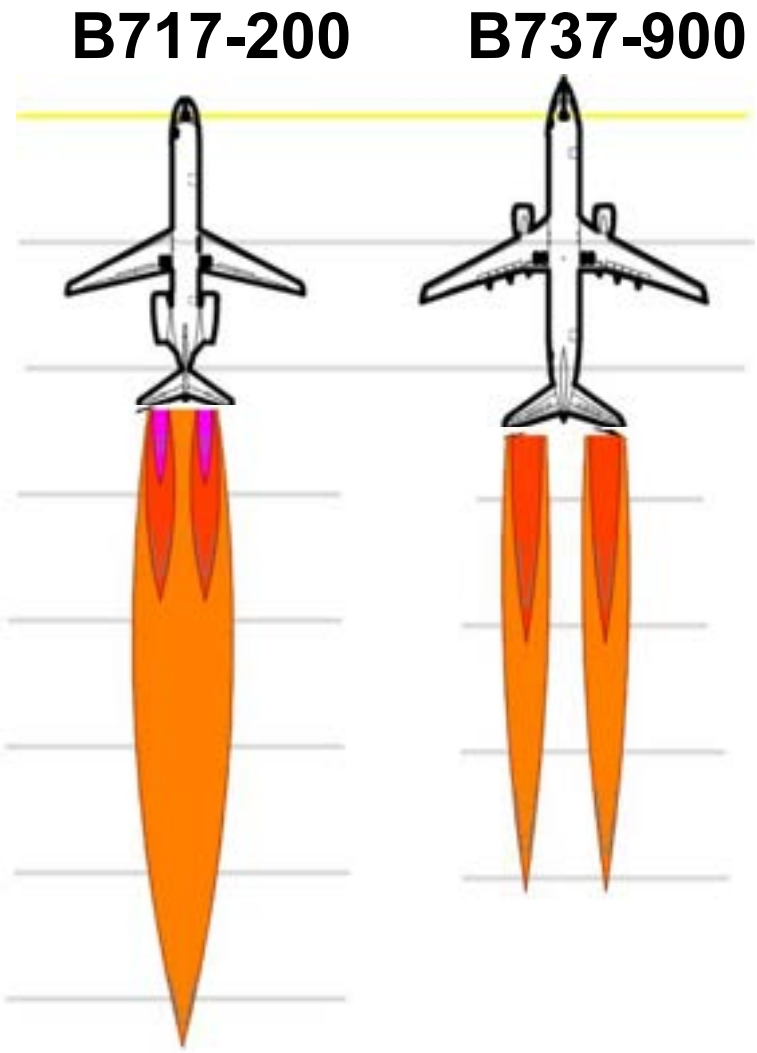
- Concrete pavement reconstruction of Taxiway A, Taxiway B, & G Apron
- Passenger Boarding Bridge replacement of Gates G15-G18.
- Replacement of fuel system, storm sewer, glycol collection, electrical.
- 3 separate projects combined into 1 and accelerated due to pandemic.



SAFETY DURING CONSTRUCTION

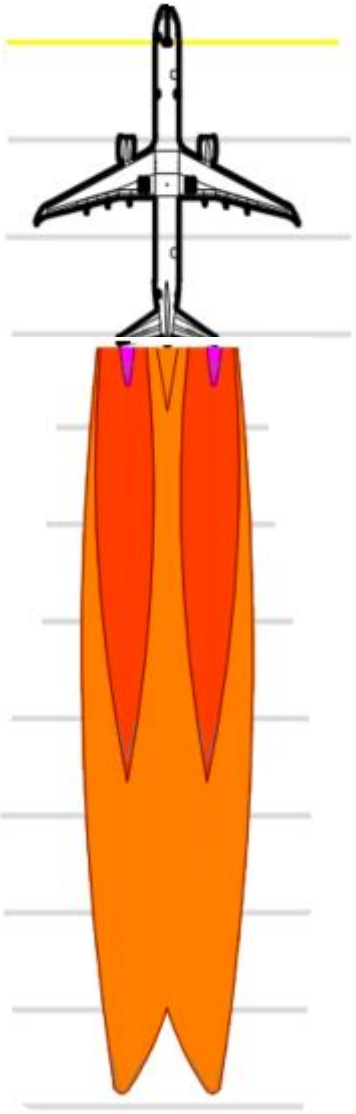
- Coordination with FAA ATCT, Airlines, Airside Ops, Airport Police, TSA
- Safety Risk Management (SRM) review
- Construction Safety Phasing Plan (CSPP)
- Training of airport and construction personnel

Which narrowbody aircraft is worse?

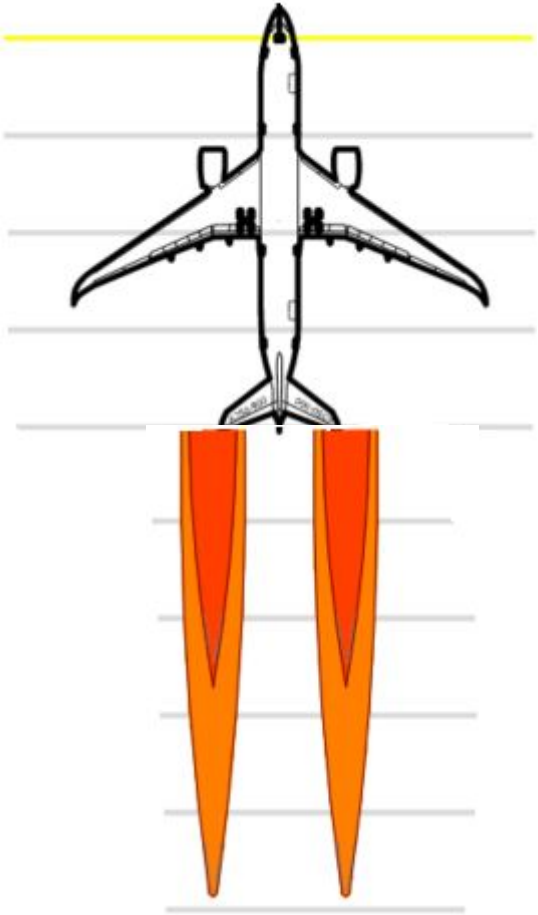


Which widebody aircraft is worse?

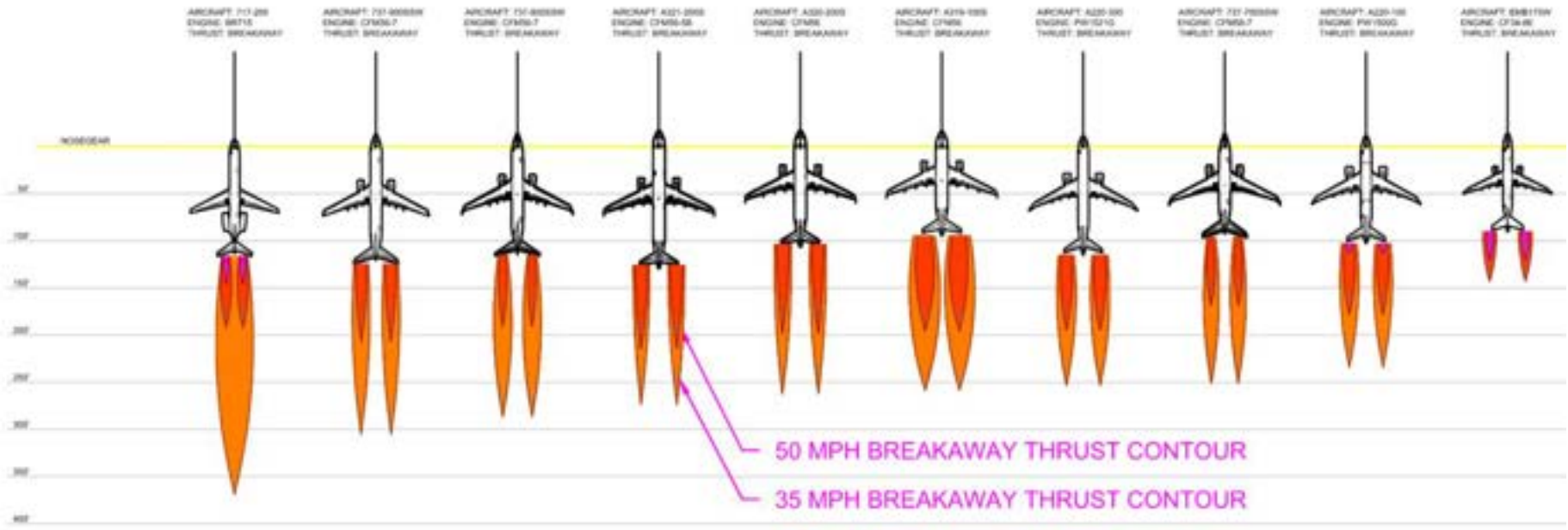
B757-300



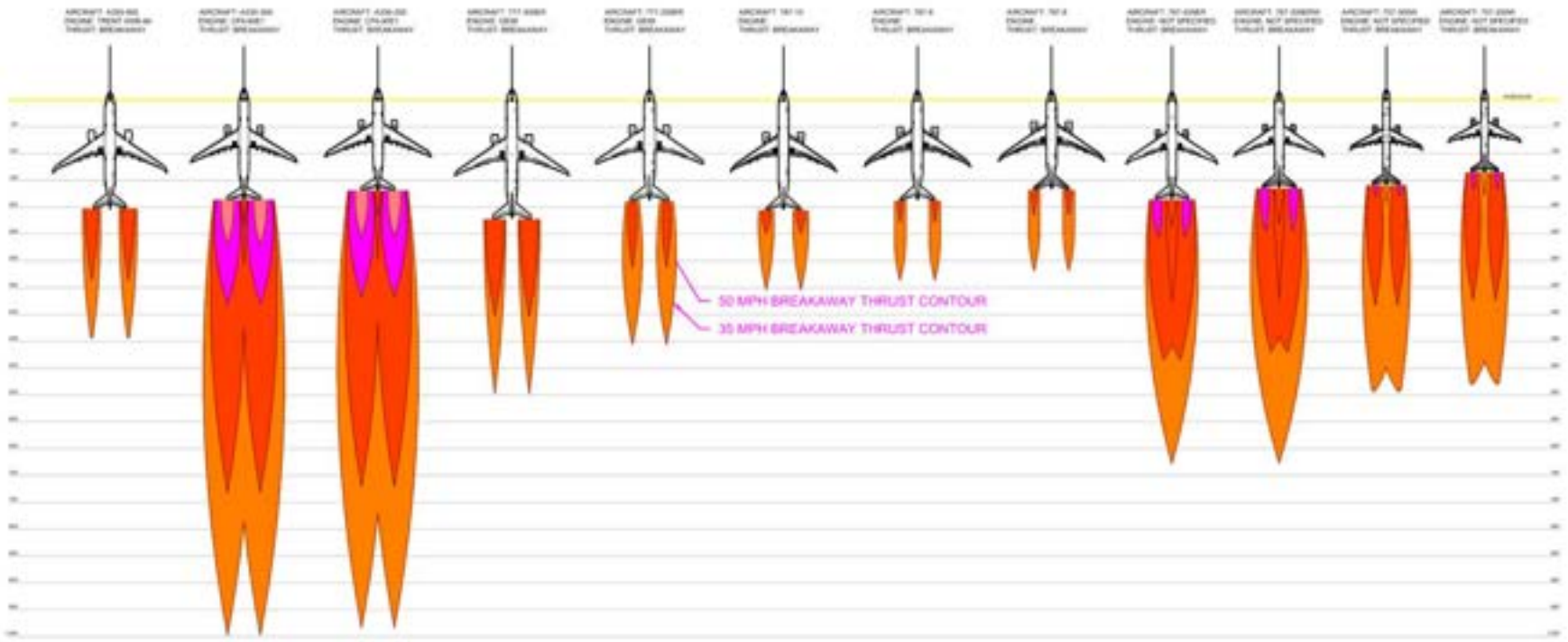
A350-900



Jet Blast Contours – Narrowbody Aircraft



Jet Blast Contours – Widebody Aircraft

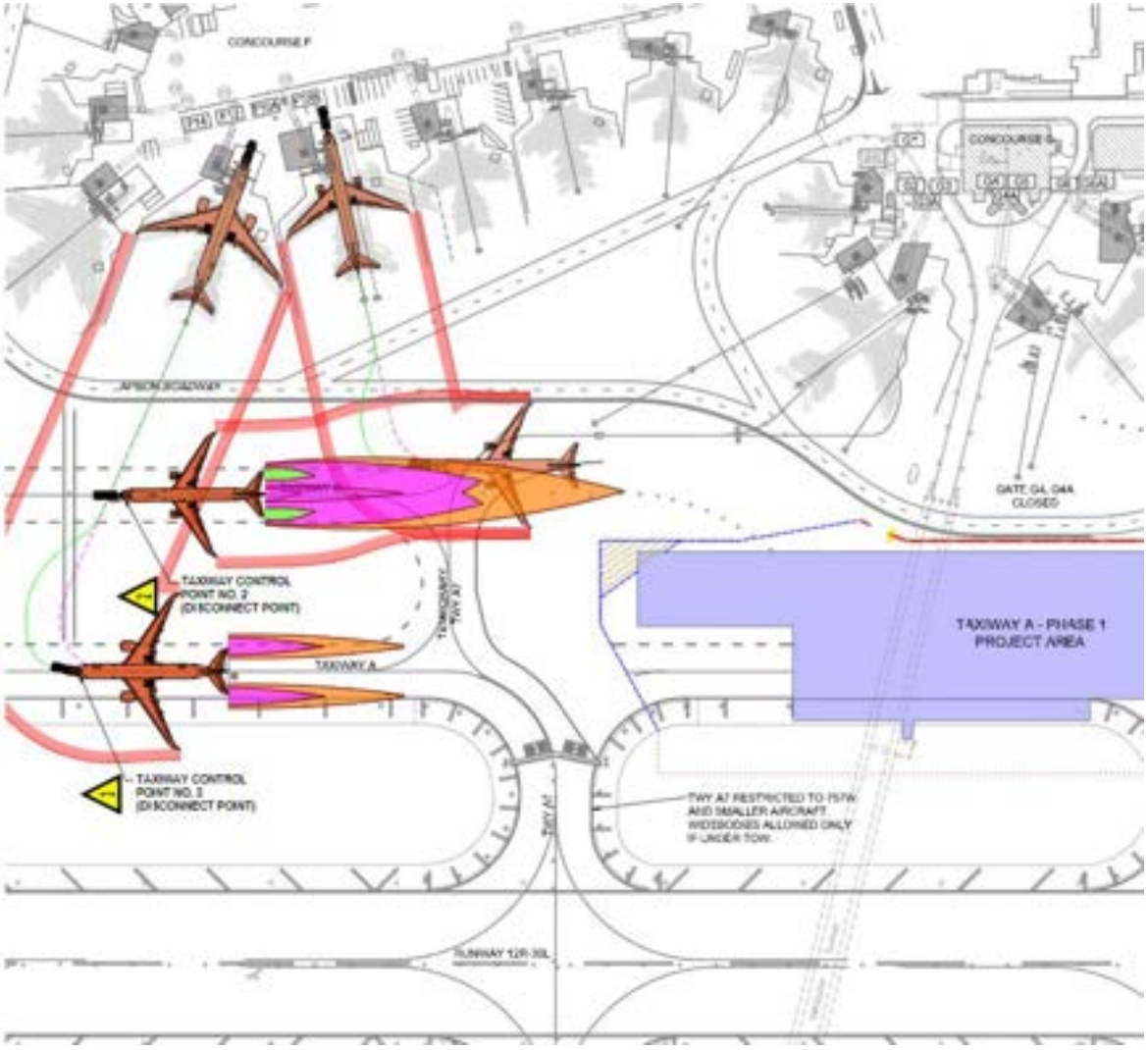


MSP TAXIWAY A/B & G CONCOURSE APRON

MODIFIED AIRCRAFT PROCEDURES

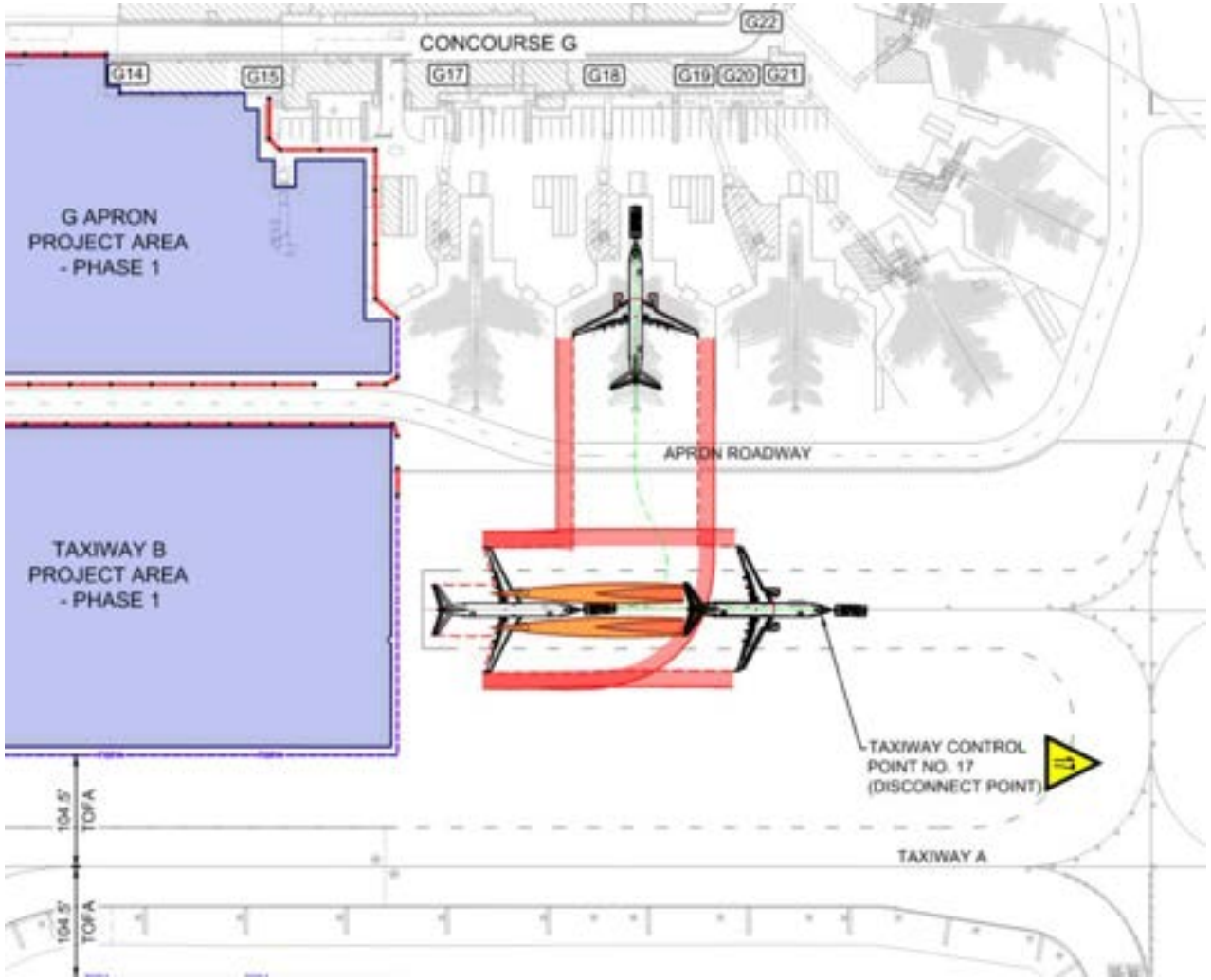
- Taxiway B restricted to B757-300 & smaller aircraft.
- Aircraft towed into certain gates near work area.
- Aircraft pushed back and towed to control points before starting engines.
- Modified procedures at gates where aircraft allowed under engine power.

Pushback & Tow to Control Point



Simulation: Pushback and Tow

Tow Forward to Control Point



MSP TAXIWAY A/B & G CONCOURSE APRON

KEYS TO PROJECT SUCCESS

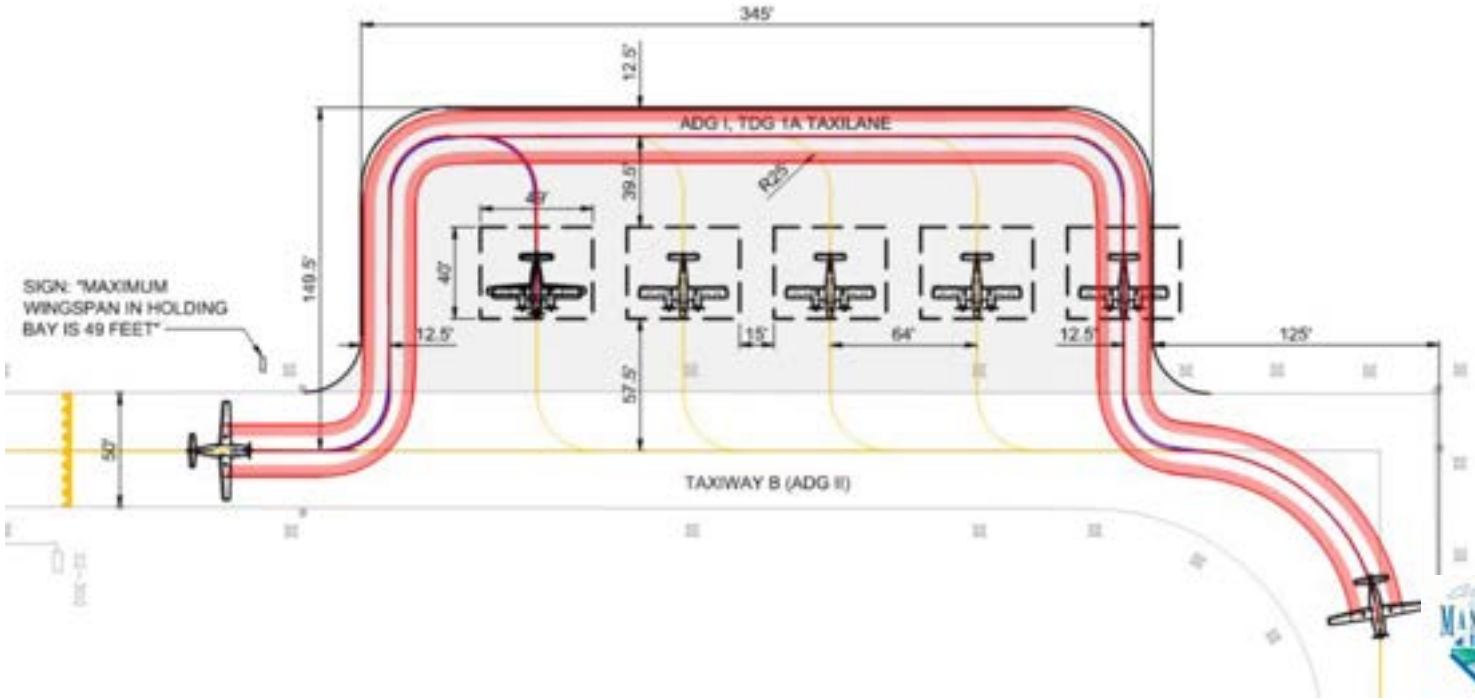
- Early coordination with FAA ATCT, TSA, Airside Ops, & Airline Tenants.
- Flexibility and compromise is needed from all affected parties.
- Develop a well-structured CSPP that is useful during construction.
- Barrier lighting (more is better!)

MANKATO REGIONAL AIRPORT (MKT)

- 2nd busiest Airport in the Minnesota! 126,000 aircraft operations (2019).
- Minnesota State University-Mankato Flight School (~70% of operations)
- No Airport Traffic Control Tower

MKT HOLDING BAY PROJECT

- Multi-year project to install 4 Holding Bays and 3 new Taxiways.
- Holding Bays enable aircraft to stage for run-ups, pre-flight checks, and ATC clearance.
- Allow aircraft ready for departure to bypass to maintain operational flow.
- New exit Taxiways reduce runway occupancy time, increasing airfield capacity.



PROJECT CHALLENGES

- Maintaining safe aircraft operations at busy airport.
- Mix of flight training aircraft, business jets, and helicopters (no ATC!)
- Protecting workers and equipment from prop wash and jet blast.

MITIGATION STRATEGIES

- Primary runway closures at night or on weekends to enable work in RSA.
- Full-time radio monitoring of airport traffic by on-site engineer.
- "Give way" to aircraft to protect from jet blast / prop wash.

QUESTIONS?