Information Sharing with

Committee for a Study on the Feasibility of Wheelchair Restraint Systems in Passenger Aircraft

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Wheelchair Restraint Systems in Passenger Aircraft

Considerations

- Regulatory Requirements
  - Mandatory
  - Apply to All Occupants and Configurations
- Airline Operations
  - Space and Time Management
    - Retrofit Activity
    - Daily Operations
- Aircraft Design
  - Reflects Balancing of Regulatory and Operational Considerations
- Dealing with Variability
  - Aircraft Design
  - Wheelchair Design
  - Operations

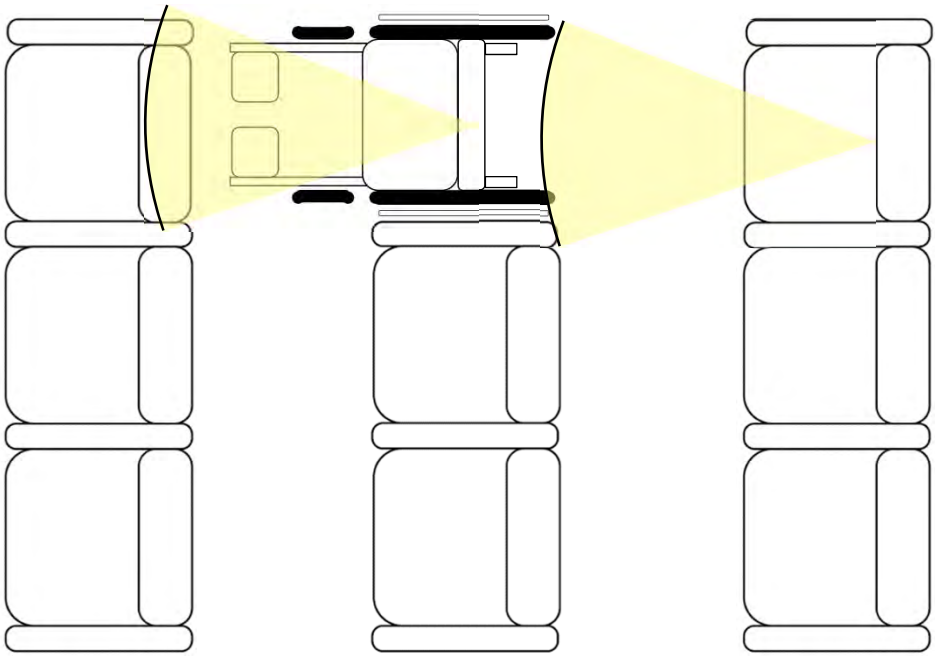
Wheelchair Restraint Systems in Passenger Aircraft

Considerations – Examples

Wheelchair Restraint Systems in Passenger Aircraft

Considerations – Cabin Safety, Usability and Certification

- Injury Protection for All Occupants
  - Emergency Landing Events
    - Protecting Wheelchair Occupant and Other Passengers
    - Determining Wheelchair “Best Location” in Cabin

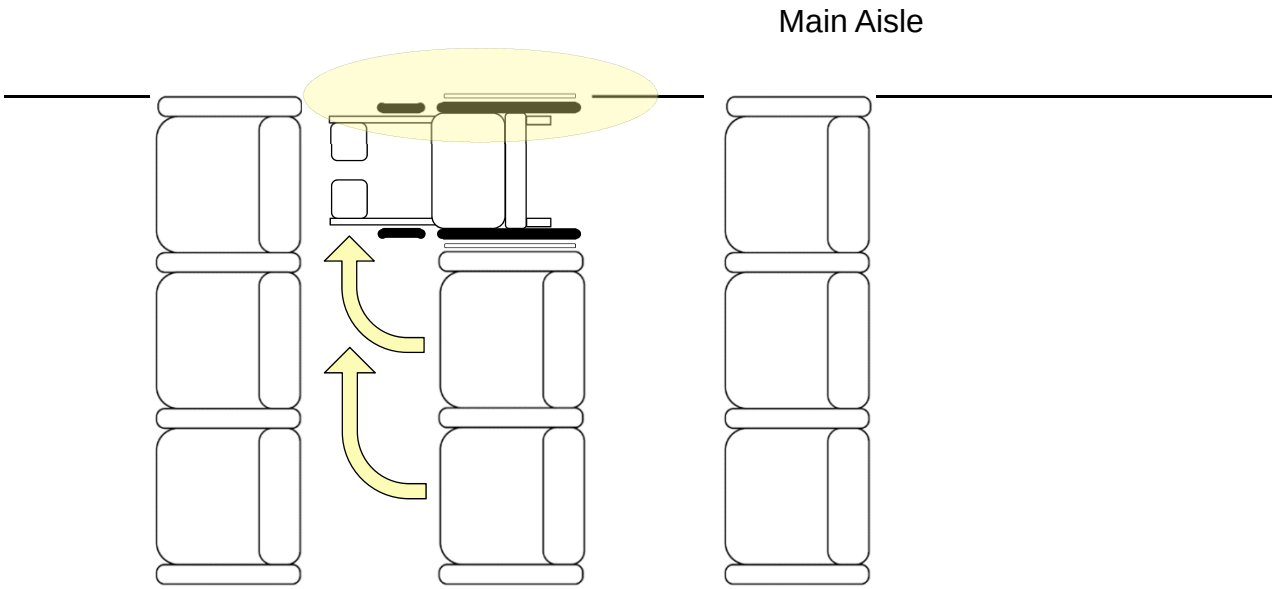


Seat Layout with Wheelchair Installed
(Notional Only)

Wheelchair Restraint Systems in Passenger Aircraft

Considerations – Cabin Safety, Usability and Certification

- Aircraft Evacuation
  - Aisles - Lighting, Handholds, Trip Hazards, Deformation
  - Passageways for Adjacent Seats
  - Evacuation Procedures, Passenger Briefings



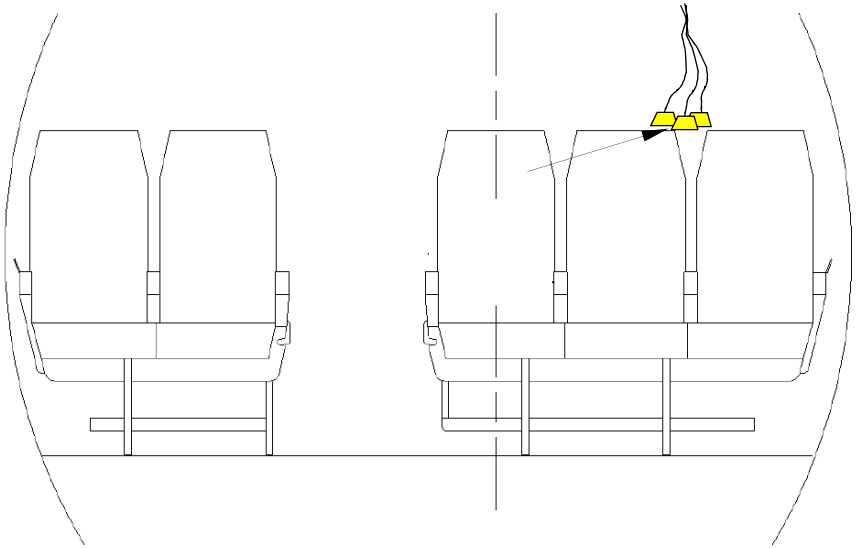
Seat Layout with Wheelchair Installed
(Notional Only)

Wheelchair Restraint Systems in Passenger Aircraft

Considerations – Cabin Safety, Usability and Certification

- Access and Visibility
  - Life Vests, Oxygen Masks, Information Signs
  - Attendant Call, Reading Light, In-Seat Power, In-Flight Entertainment

Life Vest Location
(Notional Only)

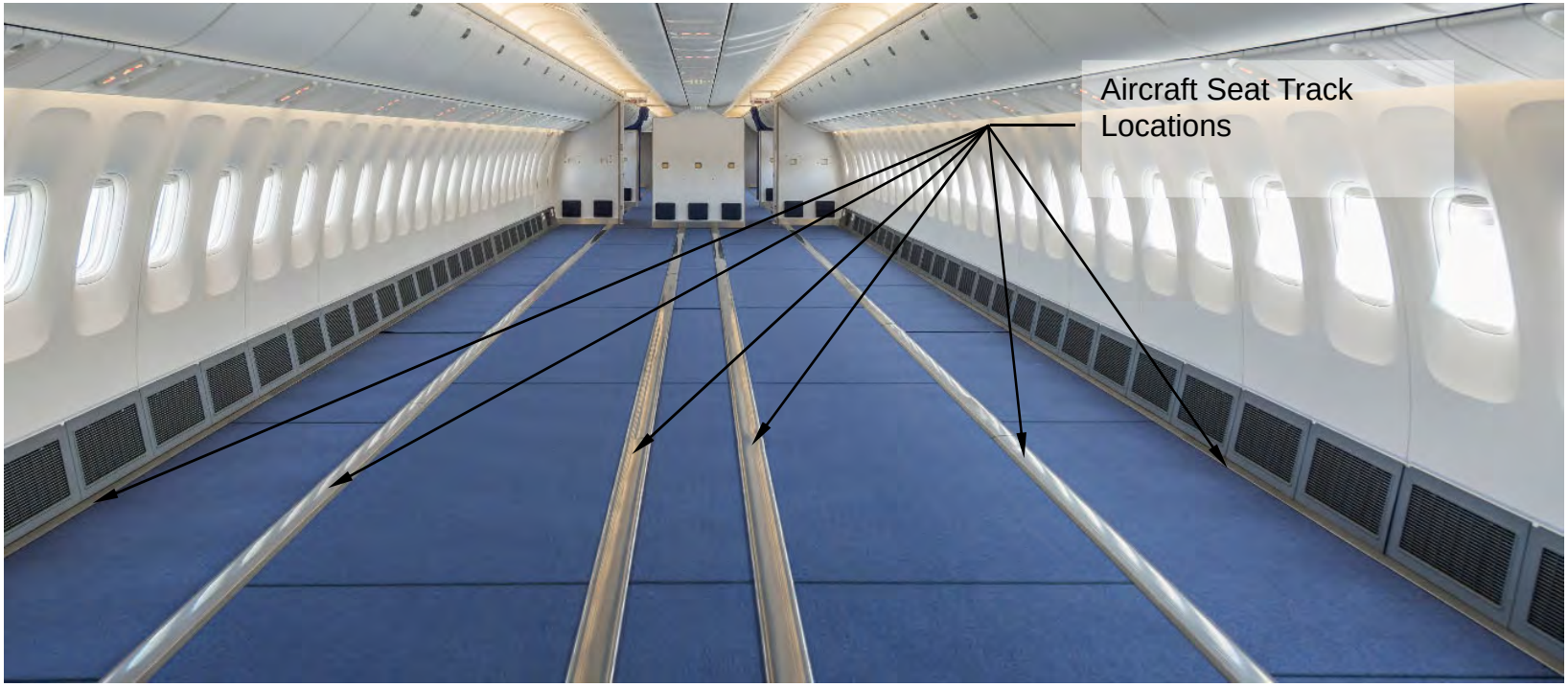


Passenger Reach Distance and Access to Oxygen Masks
(Notional Only)

Wheelchair Restraint Systems in Passenger Aircraft

Considerations – Aircraft Design and Certification

- **Structural Configuration**
  - Structural Interface of Seat/Wheelchair to Aircraft – Seat Track

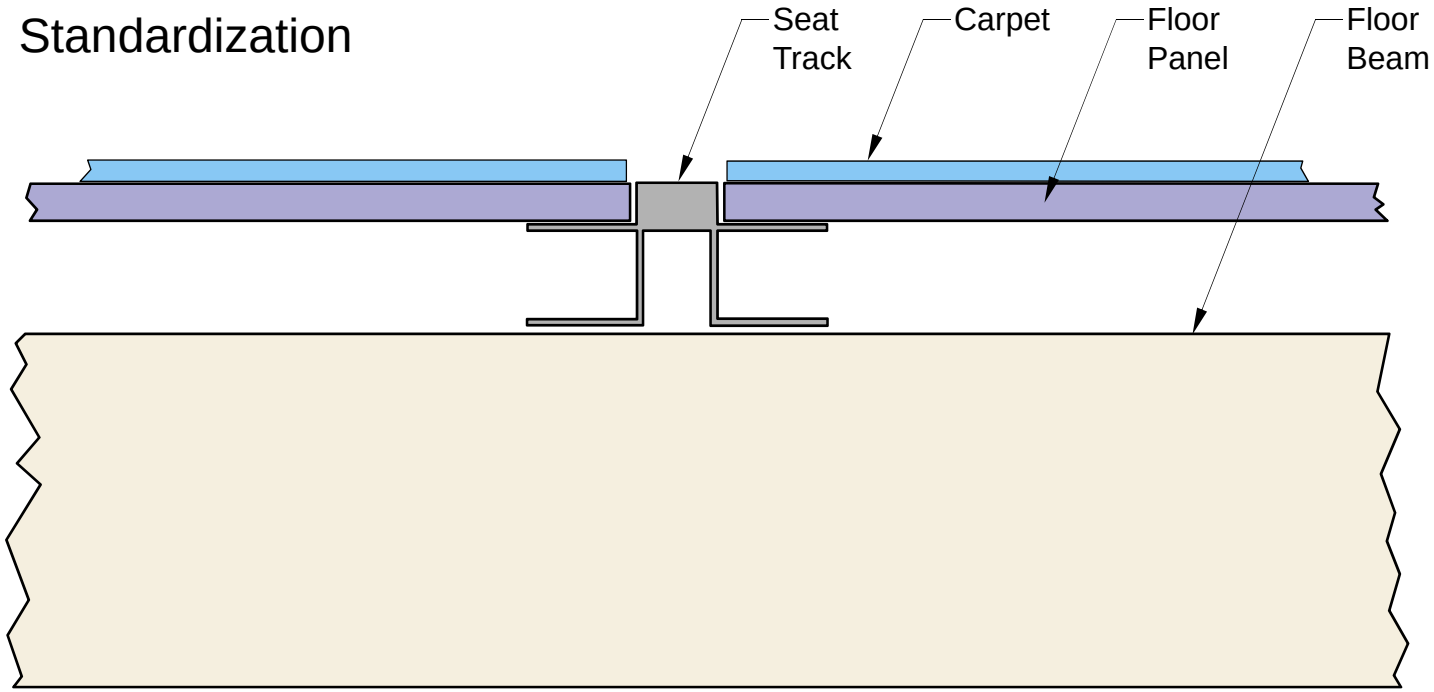


Seat Track Locations in a Widebody Aircraft
(Notional Only)

Wheelchair Restraint Systems in Passenger Aircraft

Considerations – Aircraft Design and Certification

- **Structural Configuration**
  - Load Paths – Restraint System, Wheels
  - Retrofit Modification
  - Standardization

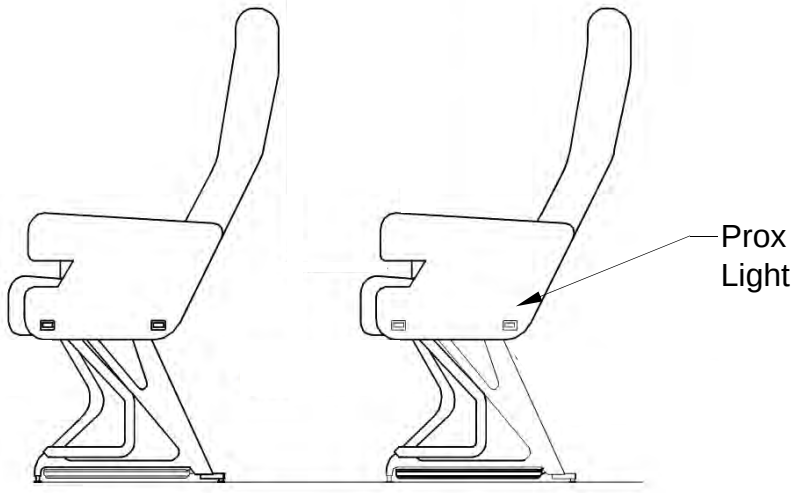


Cross Section of Aircraft Floor Structure (Looking Fore/Aft)
(Notional Only)

Wheelchair Restraint Systems in Passenger Aircraft

Considerations – Aircraft Design and Certification

- **Electrical Systems in Seats**
  - Emergency Escape Path Marking System i.e. “Prox Lights”
  - Seat Power and Data Systems
    - Flight Attendant “Call” Functions
    - In-Flight Entertainment Systems
    - In-Seat Power



Prox Lights on Aisle Seats Guide Passengers to the Aircraft Exits
(Notional Only)

Wheelchair Restraint Systems in Passenger Aircraft

Considerations - Dealing with Variability

- Aircraft Variability
  - Structural Characteristics - Seat Track Spacing, Location, Design
  - Cabin Configuration – Seating Arrangement, Dividers, Partitions, Monuments
  - Systems – Electrical, Oxygen, Information

- Wheelchair Variability
  - Size, Shape and Weight
  - Turning Radius
  - Strength, Deflection, Deformation, Energy Absorption

- Operational Variability
  - Aircraft Models and Configurations
  - Aircraft Allocation Changes – “Swaps”
  - Non-Direct Flights: End-to-End Support