Duluth Airport Master Plan

Taxiway Network and Apron Parking Technical Advisory Committee (TAC) Meeting #5

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Introductions

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Meeting Agenda

• Taxiway design considerations
• Air Traffic Control Tower preliminary siting analysis
• Apron and building area layout alternatives

Meeting Goals:
• Understand stakeholder views on highest and best use of certain areas
• Identify preferred layouts
• Identify flexible alternatives that can be adapted to other scenarios
Taxiway Design Considerations
## TDG requirements by aircraft type

<table>
<thead>
<tr>
<th>Civilian Aircraft Requirements</th>
<th>UFC / Military Aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDG 2 CRJ-700</td>
<td>Class A UC-35</td>
</tr>
<tr>
<td>TDG 3 A-319</td>
<td>Class B F-16</td>
</tr>
<tr>
<td>TDG 4 MD-90</td>
<td>Class B C-5</td>
</tr>
<tr>
<td>TDG 5 A-330</td>
<td></td>
</tr>
<tr>
<td><strong>Pavement Width</strong></td>
<td>50'</td>
</tr>
<tr>
<td>35'</td>
<td>75'</td>
</tr>
<tr>
<td>50'</td>
<td>75'</td>
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<td>50'</td>
<td>75'</td>
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<td>50'</td>
<td>75'</td>
</tr>
<tr>
<td>50'</td>
<td>75'</td>
</tr>
<tr>
<td><strong>Paved Taxiway Shoulder</strong></td>
<td>10'</td>
</tr>
<tr>
<td>Required</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Paved Taxiway Shoulder</strong></td>
<td>25'</td>
</tr>
<tr>
<td>Required</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Total pavement width</strong></td>
<td>125'</td>
</tr>
<tr>
<td>65'</td>
<td>95'</td>
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<tr>
<td>90'</td>
<td>95'</td>
</tr>
<tr>
<td>90'</td>
<td>95'</td>
</tr>
<tr>
<td>135'</td>
<td>95'</td>
</tr>
<tr>
<td><strong>Notes:</strong></td>
<td></td>
</tr>
<tr>
<td>1 Air Force taxiways devoted exclusively for fighter and trainer aircraft</td>
<td></td>
</tr>
<tr>
<td>2 Army and Air Force airfields</td>
<td></td>
</tr>
</tbody>
</table>
# Proposed Taxiway Design Standards

<table>
<thead>
<tr>
<th></th>
<th>Pavement Width</th>
<th>Shoulder Width</th>
<th>Accommodates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxiway A</td>
<td>75’</td>
<td>25’</td>
<td>Meets 148&lt;sup&gt;th&lt;/sup&gt; needs / exceeds critical aircraft</td>
</tr>
<tr>
<td>Runway 9/27 Connectors</td>
<td>75’</td>
<td>25’</td>
<td>Meets 148&lt;sup&gt;th&lt;/sup&gt; needs / exceeds critical aircraft</td>
</tr>
<tr>
<td>Taxiway C</td>
<td>50’</td>
<td>20’</td>
<td>Critical Aircraft (A319)</td>
</tr>
<tr>
<td>Runway 3/21 Connectors</td>
<td>50’</td>
<td>20’</td>
<td>Critical Aircraft (A319)</td>
</tr>
<tr>
<td>Taxiway D</td>
<td>75’</td>
<td>25’</td>
<td>Meets 148&lt;sup&gt;th&lt;/sup&gt; needs / exceeds critical aircraft</td>
</tr>
<tr>
<td>Taxiway F Network</td>
<td>75’</td>
<td>25’</td>
<td>Meets 148&lt;sup&gt;th&lt;/sup&gt; needs</td>
</tr>
</tbody>
</table>

A full-length Taxiway D alternative is still being evaluated and will continue to be considered.

It is proposed Taxiway C be designed to the standards of the Critical Aircraft (A319). Larger aircraft will be required to back-taxi on Runway 3/21 to the Guard Ramp.
Air Traffic Control Tower Siting Alternatives and Analysis
Air Traffic Control Siting Criteria

• Limit potential impacts on instrument approaches and their protected surfaces

• Limit impacts on potential communication, navigation and surveillance equipment

• Unobstructed view of all movement area
  • Visibility of all airport surface areas for ground operations of ramps, aprons and tie-down areas and test areas must be considered. Priority must be given to visibility of taxi lanes in non-movement areas.
Air Traffic Control Siting Criteria

• Control Tower Orientation
  • Must be orientated where the primary view faces north or alternately east, west and finally south
  • In areas where snow accumulates or the ATCT site is surrounded by sand or a large body of water, a southern orientation should be avoided.
  • Airport surfaces

• Economic considerations
  • Height, utilities, site access, etc.
  • Limit impacts to potential development and redevelopment sites

• FAA will have final say on placement and ultimate height of ATCT based on their analysis and operational requirements when the project is ready to be implemented.
Preliminary Tower Sites – SW Quadrant
Preliminary Tower Sites – NW Quadrant
Most Preferred ATCT Alternatives

Alternatives 1A, 1D, 1E, 1I, 1K
Preliminary building area layouts
Aeronautical Building Area Needs

- ~25 tiedowns
- Designated helicopter area
  - 3 to 4 helicopter parking spots
  - Large box hangar(s)
- Group development by use and similar sized aircraft
- Remove aircraft parking in Runway Visibility Zone (RVZ)
- Eliminate existing ATCT line of sight challenges and avoid future line of sight limitations
- Aeronautical manufacturing expansion space
- Larger hangars
- Ranch and T-hangars
Based and Transient Tiedown Needs

• Current Tiedowns
  • Fixed wing ~ 16
  • Helicopter – 3 (Tower Ramp and in the RVZ)
  • *Totals do not include Midfield Ramp or paved area south of Monaco that are used for tiedowns*

• Tiedown Facility Recommendations:
  • ~ 25 (Primarily ADG II with some ADG III)
    • Annual operations
    • Peak hour of transient and based aircraft operations
    • Includes non-air carrier commuter operations and non-FedEx cargo operations
    • Tiedown need stays relatively consistent through planning period
  • Large aircraft (ADG IV and V) parking options
Based Aircraft

• Type of Aircraft
  • 5 Jets
  • 50 Piston engine aircraft
  • 8 Helicopters
  • 5 Turboprops

• Airplane Design Group (ADG)
  • ADG I – 54
  • ADG II – 6
  • Helicopters – 8*

*Helicopter design standards are different from fixed wing. ADG I safety clearances exceed safety clearances for all based helicopters
Hangar Waiting List

• 19 Total aircraft on waiting list
  • 5 are current tenants looking for a larger hangar or different t-hangar
  • Net 14 new potential based aircraft

• Aircraft type on waiting list
  • ADG I - 57%
  • Unknown aircraft type - 43%
Shovel Ready Sites

North Business Development Area

South of Monaco
Shovel Ready Sites – SW Quadrant
Shovel Ready Sites – NBDA
Alternative 1A – Current ATCT Site
Alternative 1B – Current ATCT Site
Alternative 2A – South of the current ATCT Site
Alternative 2B – South of the current ATCT Site
Alternative 3A – Adjacent to the SRE
Alternative 3B – Adjacent to the SRE
Alternative 4A – North Business Development Area
Alternative 4B – North Business Development Area
Western Airport Road (West of Cirrus)
Questions and Discussion
Thank You!