AIP Project Costs Explained and State Specifications

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Tom Neigum, PE
Rod Senn, PE
Our goal is to discuss costs associated with an Airport Improvement Project (AIP) project.
AIP Project Costs Explained
Today, we will discuss the following costs:

- Administrative costs
- Planning costs
- Environmental costs
- Project development costs
- Construction costs
Administrative Costs

- Capital Improvement Program Planning and Meetings
- Grant Pre-application Checklist
- Detailed Scope of Services Review and Approval
- Airport Layout Plan Updates
- Develop Disadvantaged Business Enterprise Plan
  - Required on a three-year interval
- Monthly Program Meetings
- Independent Fee Estimates (where required)
- Attorney Fees (grant review and signature, advice)
- Quarterly FAA Progress Reports
- Project Closeout Reports
Planning Costs

- Not all problems are known when developing the detailed scope of services
- Planning grants are not amendable
- Level of effort on forecasting operations at an airport can vary greatly on airports of similar size
- Navigating through the “gray area”
- Runway Protection Zone policies not well-defined
- Stakeholders have different opinions/alternatives that will need to be evaluated - can be many and vastly different (everyone has an opinion, and the goal is to build consensus, which can be a quick or slow process)
- All airport development must be shown on an approved Airport Layout Plan (ALP)
Environmental Costs

Level of Clearance
- Categorical Exclusion (CATEX)
  - Majority of projects
  - Process has evolved to require additional levels of effort
  - Form is now a 14-page document
- Environmental Assessment (EA)
- Environmental Impact Statement (EIS)

Tribal Consultation and Tribal Cultural Specialists

Wildlife Hazard Assessments
- General Aviation Airports - may be a three-day study
- Commercial Service Airports - year-long study with monthly site visits

Historical buildings
Asbestos surveys
Archaeology/paleontology studies
In general, obtaining environmental clearance can be a lengthy process
Project Development Costs

- Project Justification Statements
- Engineering Design Reports
  - Analysis of FAA Standards
  - Pavement Design/Life Cycle Cost Analysis
  - Must be approved by FAA before proceeding
- Plan/Specification Reviews
  - Required by FAA on most projects
  - Can be multiple meetings depending on project complexity
- Modifications to Standards
  - Becoming more difficult to obtain
  - Examples:
    - Mine/blend projects even if geotechnical recommended
    - P-501 concrete pavement fly ash “compromise”
Construction Costs

Airport Improvement Program (AIP) vs non-Federal Projects
- Davis-Bacon Wage Rates
- Buy American Requirements
- Survey/Staking
  - Construction survey and finished pavement verification by Contractor
  - Verification survey of non-pavement layers by Owner

FAA specifications versus DOT or even local
- Typically used DOT base course and paving material specifications do not meet the corresponding FAA material specifications
- FAA testing frequencies are greater
- FAA density requirements are higher
- FAA pay factor deductions for work not meeting 100% payment are more aggressive, and some FAA specifications require complete removal and replacement of material not meeting the specifications
Construction Costs

- FAA specifications are far more stringent than DOT specifications, thus cost more.
- **Aggregate Base Course**
  - SDDOT 260 Granular
    - Acceptance based on:
      - Density requirement = 97% for asphalt paving
      - Density requirement = not required for concrete paving (gravel cushion)
  - FAA P-208 Aggregate Base
    - Acceptance based on:
      - Density requirement = 100%
      - Thickness - plan depth to minus 1/2”
      - Smoothness - cannot exceed 3/8” in 12 feet
Construction Costs

- **Asphalt Pavement**
  - SDDOT 320 asphalt pavement
    - Requires 92% mat density
    - No joint density requirement
    - No thickness requirement
    - Smoothness cannot exceed 1/4” in 10 feet
    - No grade requirement
  - FAA P-403 specification
    - Requires 96% mat density
      - If density is not achieved, Contractor must remove and replace
    - Requires 94% joint density
    - Thickness may not exceed 1/4” per lift
    - Smoothness cannot exceed 1/4” in 12 feet
    - Grades cannot exceed 1/2” from design on more than 15% of measurements within a lot
    - Grades cannot exceed 3/4” at any location
What are State Specifications?

- FAA AC 150/5100-13B Development of State Standards for Nonprimary Airports
- FAA allows states to develop state standard specifications
- “State” means a state of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, the Northern Mariana Islands, the Trust Territory of the Pacific Islands and Guam, for the purposes of developing “State” standards
# Highway versus Airport Pavement

The Federal Aviation Administration (FAA) specification eliminates Foreign Object Debris (FOD) at airports, focusing on significantly higher loads and speeds compared to highways.

<table>
<thead>
<tr>
<th></th>
<th>Highways</th>
<th>Airports</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applied Wheel Load</strong></td>
<td>~4,500 lbs</td>
<td>&gt;60,000 lbs</td>
</tr>
<tr>
<td><strong>Tire Pressure</strong></td>
<td>80-120 psi</td>
<td>150-300 psi</td>
</tr>
<tr>
<td><strong>Ground Speed</strong></td>
<td>55-70 mph</td>
<td>&gt;150 mph</td>
</tr>
<tr>
<td><strong>Grooved</strong></td>
<td>n/a</td>
<td>¼” by ¼”</td>
</tr>
<tr>
<td><strong>Loose Materials</strong></td>
<td>Tolerated</td>
<td>FOD</td>
</tr>
<tr>
<td><strong>Repairs</strong></td>
<td>Lane Closure</td>
<td>Pavement Closed</td>
</tr>
</tbody>
</table>

*Source: FAA*
What Does FAA Allow?

What does FAA allow and on what airports?

- FAA AC 150/5300-13B allows for development of State Specifications on airports with runways of 5,000 feet or shorter serving aircraft of 60,000 pounds gross weight and under.
- FAA is required to determine that:
  - Safety will not be negatively affected
  - The life of the pavement will not be shorter than it would be if constructed using FAA standards
- In general, Sponsors may not seek AIP funds for runway rehabilitation or reconstruction of any airfield pavement constructed using State highway specifications for a period of 10 years after construction is completed.
### State Specifications

#### TABLE A1-1. MINIMUM PAVEMENT STRUCTURAL SECTIONS

<table>
<thead>
<tr>
<th>Aircraft Gross Weight Category</th>
<th>Recommended State Standard Equivalent Pavement Sections When Using State Highway Materials and Specifications.</th>
<th>Portland Cement Concrete (PCC) Pavements</th>
</tr>
</thead>
</table>
| **12,500 and Under**          | AC = FAA design thickness +¼"  
50-blow Marshall equivalent | 5" PCC  
Minimum compressive strength of 4,400 psi and minimum cementitious material content of 564#/CY |
|                               | Base = FAA design thickness +1"  
Subbase = Thickness required to meet FAA design total thickness. | 4" Subbase |
| **30,000 and Under**          | AC = FAA design thickness +½"  
50-blow Marshall equivalent | 6" PCC  
Minimum compressive strength of 4,400 psi and minimum cementitious material content of 564#/CY |
|                               | Base = FAA design thickness +1"  
Subbase = Thickness required to meet FAA design total thickness. | 4" Subbase |
| **60,000 and Under**          | 50-blow Marshall equivalent when tire pressure less than 100 psi. AC = FAA thickness +1"  
75-blow Marshall equivalent when tire pressure more than 100 psi. AC = FAA thickness +½" | FAA Design thickness based on 600 psi flexural strength.  
Minimum cementitious material content of 564#/CY |
|                               | Base = FAA design thickness +2"  
Subbase = Thickness required to meet FAA design total thickness. | 4" Subbase |
Why is this important to a Sponsor?

- The FAA Modification of Airport Standards Request Form (MTS) must be submitted for every project on every airport, adding additional effort and time to each project.
- FAA approved State Specifications
  - Once approved, State Specifications would be able to be utilized by every consultant in that respective state without the need for a MTS request to the FAA.
Currently, an FAA MTS Request Form contains:

- Airport Information
- Affected Runway/Taxiway
- Title of standard being modified
- Standard/requirement
- Proposed change
- Explanation of why the standard cannot be met
- Discussion of viable alternatives
- Statement of why the modification would provide an acceptable level of safety, economy, durability, and workmanship
- Attach required supplemental information (sketch, additional justification)
- Must be signed by the Sponsor (not the consultant)
- Submit to FAA, and wait for their review and comment, or their approval

If State specifications were developed, MTS would not need to be processed for those specifications where utilized
State Specification Maintenance

- Specifications would need to be updated with changes to state or FAA specifications
- FAA maintains a listing of approved State standards at http://www.faa.gov/airports/
- Currently, there aren’t any FAA approved state specifications
ND Aeronautics Commission Efforts

- KLJ working with ND Aeronautics Commission and 3 other consultants in ND to get ND State Specifications for airports serving aircraft less than 12,500 pounds

- Ultimate ND State Specifications:
  - Advertisement for Bids to meet ND Century Code
  - P-180 geogrid
  - P-181 soil stabilization fabric
  - P-208 Class 5 aggregate base course
  - P-225 recycled base course
  - P-230 geotextile fabric
  - P-401 NDDOT 430 asphalt pavement
  - P-403 NDDOT 430 asphalt pavement
  - P-501 NDDOT 550 concrete pavement (fly ash and aggregates)
  - P-610 NDDOT 602 concrete structures (fly ash and commercial grade concrete)
  - D-705 underdrain fabric
  - No FAA specification - full-depth reclamation
  - No FAA specification - blended base course
ND Aeronautics Commission Efforts (continued)

ND State Specifications - Phase 1:
- Advertisement for Bids to meet ND Century Code
- P-180 geogrid
- P-181 soil stabilization fabric
- P-208 Class 5 aggregate base course
- P-225 recycled base course
- P-230 geotextile fabric
- P-401 NDDOT 430 asphalt pavement
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ND Aeronautics Commission Efforts

- Draft specifications have been developed and reviewed by consultants.
- Next step is to review information with ND Aeronautics Commission staff.
Summary

◊ Hopefully we have provided some valuable insight into:
  ◊ Why FAA projects cost more
  ◊ FAA allowance of State Specifications

◊ Sponsors (and their consultants) are always being asked to do more to complete their projects

◊ If you’re uncomfortable with cost or why something costs what it costs, please ask!
Thank You for Your Time!

Who has the first question?