Capital Project Partnering

Lessons Learned from DFW Airport and American Airlines

Moderator: Smitha Radhakrishnan, DFW Airport
Terminal Renewal and Improvement Program (TRIP)

Tom Sparks & Jack Zill
Renovate 35 year old terminal systems
Dated and worn finishes
Energy efficiency
Inefficient traffic flow
Changes in aviation industry
Competitive landscape
Concessions Program needs
TRIP

Goals

Building systems replacements to extend terminal life
Leverage technology
Expand security checkpoint to improve passenger operational efficiency
Expand, redistribute and optimize the Concessions program
Address baggage handling system needs
TRIP Program Highlights

**Installed**
- 670K SF Terrazzo Flooring
- 220K SF Exterior Windows

**Renovated**
- 2.9M SF Total Space, of which 1.3M SF was public space

**Spent on Terminals A, B, and E Renovations**
- $1.9B

**Spent on New Garages, Stinger, B/D Connector, and DART**
- $449M

**Years in Construction**
- 7

**Claims**
- 0

**Total Gates**
- 116

**Gates Renovated**
- 106

**New Gates Constructed**
- 10

**Ticket Halls Renovated**
- 9
TRIP Program Highlights

- 719 DMWBE FIRMS WORKED ON TRIP
- $947M CONTRACT DOLLARS PAID TO DMWBE FIRMS
- 16M MAN HOURS WORKED
- 42.7% DMWBE PARTICIPATION
TRIP

Lessons Learned

Update CMAR contract language
Establish effective stakeholder involvement process
Streamline CMAR delivery process
Involve appropriate Board staff for oversight
Institute formal Change Management process
TRIP

Areas Handled Well

Inspection process
Facilities / operational acceptance, transition and move-in
Coordinating work between TRIP with ETAM
Communicating design and scope to stakeholders
Design team construction support services
17C, 18R, & Future Airfield Projects

George Vittas & Pat McCollom
American Airlines
Concerns, Goals and Opportunities

Protect and enhance the global hub
• Over 900 daily departures on AA
• 233 destinations
• Network dependability - infrastructure

Aging Airfield Infrastructure
• Seven runways / taxiways / electrical
• Over 75 million square ft. of airfield pavements
• In service 45 years!

Runway 17C-35C as the forerunner project
• Rehabilitate not replace
• Extend service life
• Evaluate all alternatives
  • Methods and materials
  • Operational and cost impacts

Six (6) More Runways?
• Airfield Assessment Study
• Master capital improvement plan
• Landing fees and AIP grants
• Predictive performance monitoring
• Preventive maintenance
2017 Majority in Interest (MII) Approval Request

Reconstruction of Runway 17C-35C
- Full length - 13,401 ft.
- Full width - 150’ + new 35 ft. shoulders
- Full depth - PCC, CTB, LTS

01. Lighting Systems Replacement
02. Reconstruction of blast pads
03. Add new TXY N1 (35 east HS exit)
04. Parallel TXY M Improvements

MII Request Totals
$253 million
12 months construction
DCC Evaluation of Alternatives

NDT and Geotechnical Investigation
Cost Impact (initial and life cycle costs)
Operational Impact - Minimize runway closure durations (initial and long-term)
Preserve good performing assets

Scenario 1
Full-depth, full-width PCC reconstruction

Scenario 1A
Full-depth, full-width Hot Mix Asphalt (HMA) reconstruction

Scenario 2
Full width

Scenario 3
Keel (50 ft.) and western outboard (50 ft.)

Scenario 4
Keel + selected outboard areas

Scenario 5
Keel ONLY PCC repairs from Taxiway A to Taxiway Y

Scenario 6
Same PCC repairs + a HMA overlay from north of Taxiway B to south of Taxiway Z

Scenario 7 – Keel ONLY reconstruction ~ 6,000 ft. + a full width and full length six-inch thick HMA overlay
Concerns Eased, Goals Achieved, Opportunities Created

Benefits of the 17C Project

More Efficient and Economical Investment
Minimizes Operational Impact
Preserves Existing Asset
Strengthens and Imparts New Life to Existing Asset
Established Engineering Approach
Airfield Capital Program
Triggered Airfield Assessment Study
Selected Scenario 7

50 ft. PCC keel replacement x 6,000 ft. + 13,401 ft. x 150 ft. HMAC overlay
Low IC / Low NPV of LCC including future milling / resurfacing costs
Engineer’s estimate $152 million / Low bid $104 million
Runway 17C/35C Rehabilitation

Opened March 10

CMAA Award Winner (Projects >$100M)

First major rebab of original runways

PCC keel replacement + miscellaneous panel repairs

Hot mix asphalt overlay ~220K tons

Full-width and depth shoulder reconstruction

Taxiway N1 (east high-speed exit)

Complete lighting system replacement

East airfield runway status lights
Lessons Learned

- Developed small group and one-on-one approach
- Interviewed 150+ Stakeholders
- Identified trends and developed recommendations
- Taking steps to embrace a Lessons Learned culture

- Numerical PCI Ratings can be useful for preventive maintenance planning and budgeting
- Major capital reconstruction improvement budgeting requires engineering investigation and evaluation
2019 Airfield Pavement Assessment

Visual Pavement Condition Index (PCI)

Rolling Dynamic Deflectometer (RDD) testing

Heavy Weight Deflectometer (HWD) testing
Runway 18R/36L Rehabilitation

Next Runway

Implement Lessons Learned from Runway 17C/35C Rehab

- 100M+ major rebab of critical arrival runway
- PCC keel replacement + miscellaneous panel repairs
- Hot Mix Asphalt (HMA) overlays
- Full-width and depth shoulder reconstruction
- Complete lighting system replacement
- Possible conversion to landside
Airfield Assessment Status - Pavement and Electrical

Airfield Vault Locations and Electrical System Design Standards

- Equipment, Transmission, Controls

Predictive Pavement Performance with Planned Maintenance
Future of DFW

Kiran Merchant & Chris Arman
Get Ready for Takeoff
Future Airport Development

A collaboration with DFW and American Airlines
DFW and AA Future Growth and Objectives

- Meet Year-Over-Year Gate Growth
- Be Efficient
- Be Cost-Effective
- Minimize Disruption
- Don’t Degrade Existing Operations
DFW and AA Partnership: Team of Professionals

- Leadership Team
- Planners
- A/E Designers
- Cost Estimators
- Schedulers
- Modeling/Simulation
Upcoming DFW Upgrades
Airport Opportunities

Terminal C
Enabling Projects
Incremental Gates
TERMINAL F

- up to 24 New Gates
- Open as soon as 2025
DFW and AA Journey to Date

RIGOROUS PLANNING
- Alternatives Analysis
- Fleet Mix Considerations
- Demand/Capacity Analysis and Simulations

INNOVATION
- Passenger Journey
- Technology Trends
- Processing Redesign
- Landside Ops and Trends

DELIVERY
- Operational Planning
- International and Domestic Gates
- Constructability & Phasing
- Scalability

OPTIMIZATION
- Maximize Existing Assets Optimization
- Operational Efficiency (MCT)
- Cost Per Enplanement
Thank You