

Airport Concrete Pavement Technology Program

February 2025

IOWA STATE UNIVERSITY
Institute for Transportation



National Concrete Pavement
Technology Center



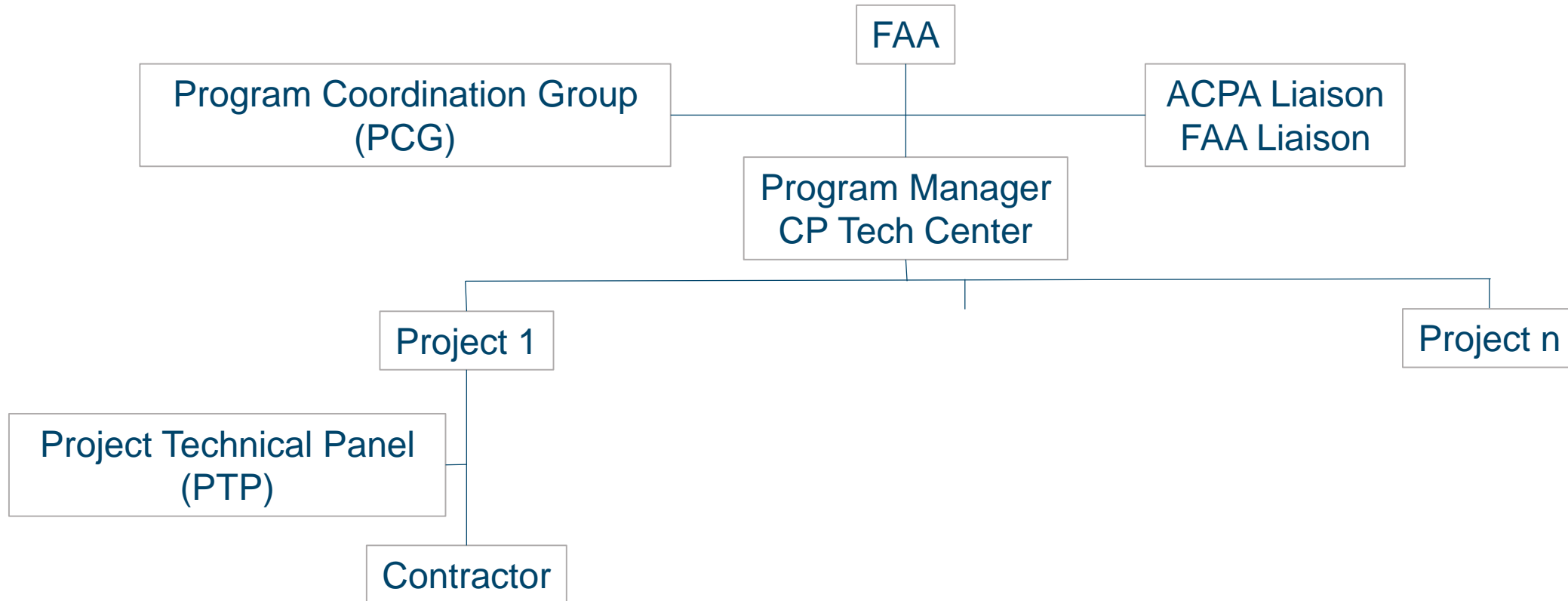
FAA Coop

Cooperative Agreement Research Agreement

- To identify airport pavement issues and problems
- To solve problems
- To pursue the technology transfer of new solutions and practices



Structure



Role of PCG

- Identify airport pavement issues and problems
- To recommend priorities
- Review findings of the program and recommend
 - Avenues of further research
 - Technology transfer for implementation
- Direct course corrections

1: Mitigation Procedures for ASR

- Test protocols for ASR are not ideal
- Needed:
 - Test methods for aggregates
 - Test methods for mixtures
 - Guidance on preventative actions
- Contract signed with Oregon State University
 - January 1, 2022 – March 31, 2025



2: Performance Engineered Mixtures



- Mixture design requirements for highways and airfields are different.
- Needed:
 - Procedures and best practices for concrete mixtures for airfield pavements
 - Define critical needs
 - Identify tests and limits
 - Specifications based on the findings
- Contract signed with Oklahoma State University
 - April 1, 2022 – June 30, 2025



3: Rapid Repair and Rehabilitation

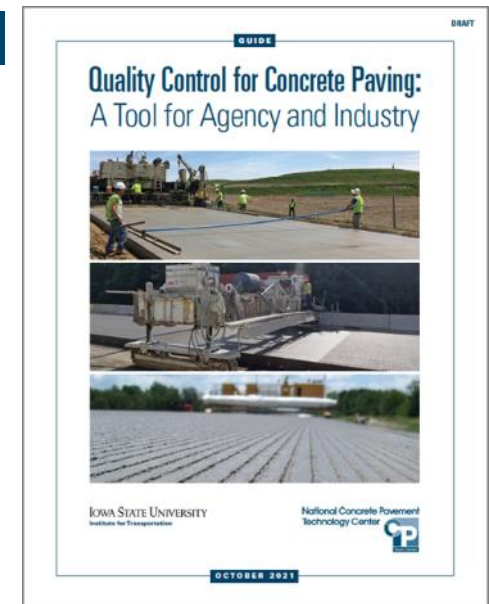


- Research is needed to develop best practices for rapid rehabilitation using current technologies
- Needed
 - When is accelerated work needed?
 - Full depth design and detailing
 - Materials and mixtures
 - Construction practices
- Contract signed with ARA
 - March 1, 2022 – May 31, 2025



4: Quality Control and Quality Acceptance

- Quality Control/Acceptance still misunderstood
 - Different agencies have different definitions
- Needed:
 - Define and document Quality Control parameters
 - Implementation guidance — Quality Control Manual
- Contract signed with University of North Carolina - Charlotte
 - August 1, 2022 – January 31, 2025



5: Rubber Removal Best Practices



- No standard specification or guidance
- Needed:
 - When is action needed?
 - How is rubber best removed?
 - How much removal is enough?
 - What about damage to the pavement?
- Contract signed with ARA
 - February 1, 2023 – July 31, 2025



6: Effects of Diamond Grinding



- What should be the limitations on grinding?
- Needed:
 - Grind vs remove and replace?
 - Thickness reduction impacts
 - Friction impacts
 - Durability
 - Other concerns
- Contract signed with NCE
 - February 1, 2023 – January 31, 2025



7: Design and Performance of Thin Concrete Airfield Pavement



- The overall goal of this project is to examine performance of GA airfield concrete pavements less than nine inches thick
- Needed:
 - Review performance of existing GA runways
 - Identify why some have lasted and others failed
 - Recommend design procedures
 - Recommend maintenance approaches
- Contract signed with ARA
 - July 1, 2023 – December 31, 2025



8: Paving Continuity

- Is it preferable to start/stop a paving machine or to slow it down if concrete deliveries are insufficient?
- Needed:
 - Recommendations for specification language
 - How slow is too slow?
 - Is it better to slow paver speed, or stop
 - Should vibrator speed be linked to paver speed?
 - Guidance for contractors and inspectors
- Contract with Fonte & Co



9: Flooding Resilience

- Flooding is increasingly likely
- Needed:
 - How do we design to minimize impacts
 - How to prepare
 - How to rapidly return to service
- Contract with AET 9/18/2024 – 9/16/2027



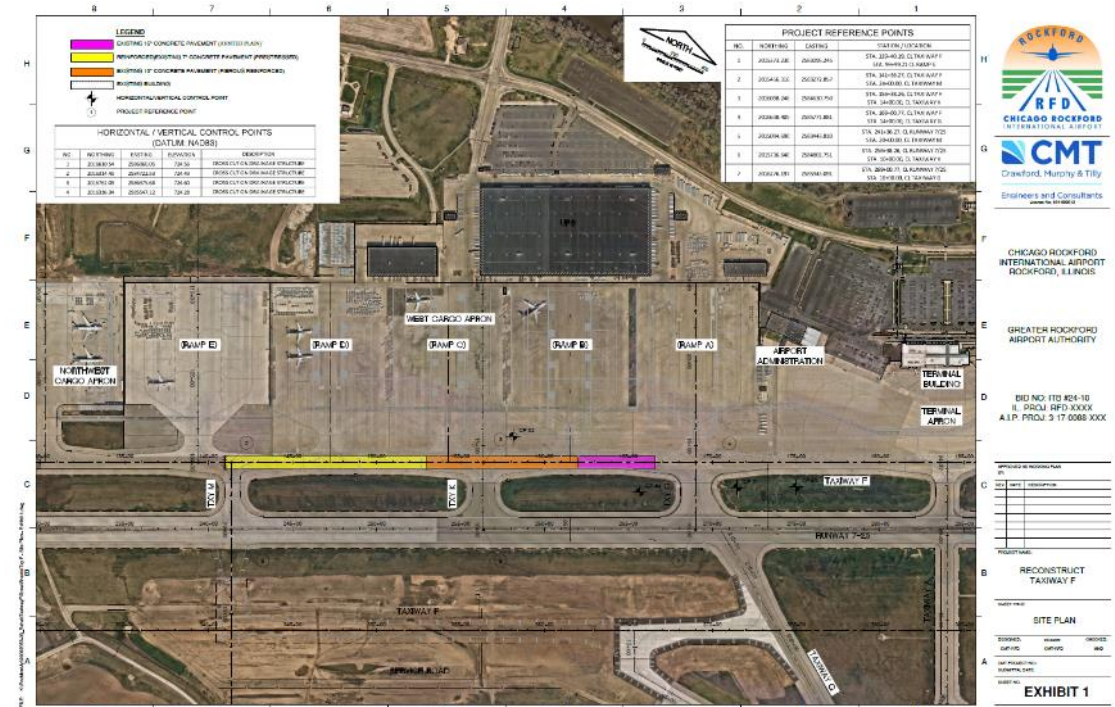
10: Load Transfer

- Are dowels needed in airfield pavements?
- Needed:
 - Answer inconsistencies in current design and construction specification guidance
 - Develop consistent guidance to engineers and designers
 - Best options for load transfer
- Negotiations with ARA
 - April, 2025 – March, 2028



11: Rapid Set Apron

- Experimental section in place in Rockford IL
- To be demolished in May
- Planning to conduct forensic review
- RFP on the street



Next?

- Acceptance
 - Effects of low clinker mixtures
 - Deicing new concrete
 - CLT Living Lab
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- Others?

Workshops

- Minneapolis, MN
- San Juan, Puerto Rico
- Kansas City, MO
- ASCE T&DI



Tech Transfer

- Low clinker mixtures
- Admixtures
- Aggregates