Federal Aviation Administration

RPA S1.4

Evaluation of Trapezoidal-Shaped Runway Grooving

Presented to: REDAC Subcommittee

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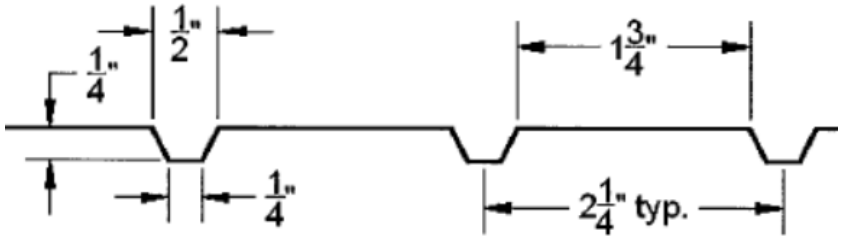
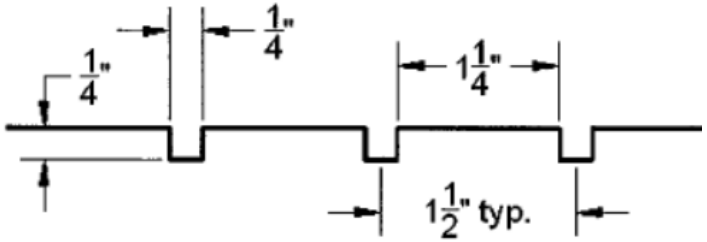
Trapezoidal Grooving Research

- **Evaluate Performance of Trapezoidal-Shaped Runway Grooving Relative to FAA Standard Grooving for Maintaining Skid-Resistance and to Prevent Hydroplaning of Aircraft Tires During Wet Weather Conditions.**
- **Instrumented B727 Aircraft (R&D 40) to be Utilized in Conducting High Speed Braking Test Runs on Wetted Transverse Grooving Test Bed.**
- **Test Bed will Include Both Trapezoidal-Shaped Runway Grooving and FAA Standard Grooving Sections on ACY Runway 4-22.**
- **Objective is to Determine Whether Trapezoidal-Shaped Runway Grooving Should be Identified in FAA AC's 150/5320-12 and 150/5370-10 as an Acceptable Alternative to FAA Standard Grooving.**

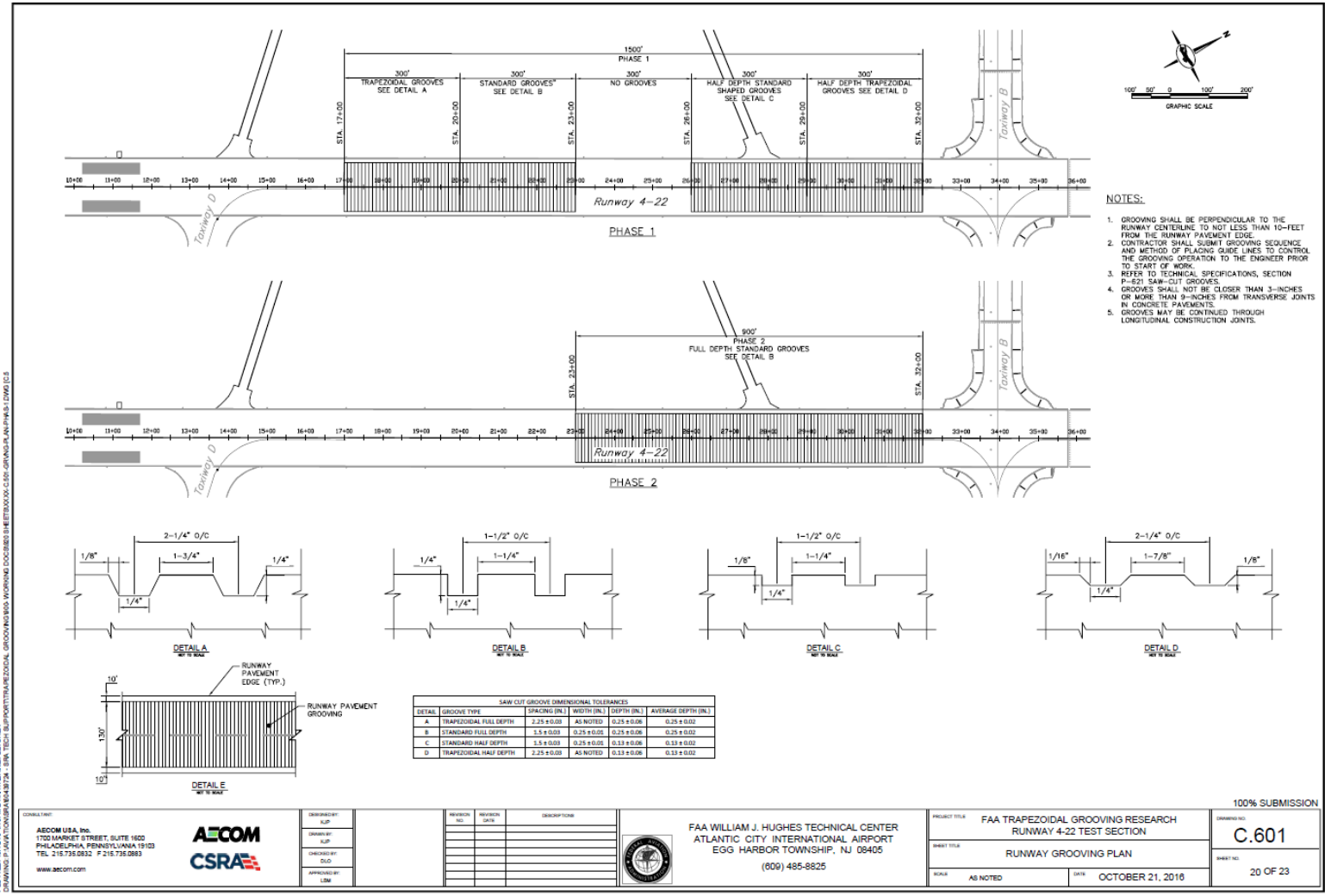




Transverse Runway Grooving Test Bed

- **Runway Grooving Test Bed to be Constructed on ACY Runway 4-22.**
- **Test Bed will be 1,500 Feet in Length and Composed of Five Test Sections.**
- **Test Sections will Each be 300 Feet in Length and Include Trapezoidal-Shaped and FAA Standard Grooving (Full and Half-Depth) and Non-Grooved Section.**

Transverse Runway Grooving Test Bed



Project Status

- **FAA Contractor (CSRA) Solicited Proposals from Five Potential Prime Contractors for Construction of Trapezoidal Grooving Test Bed.**
- **CSRA Received Only One Cost Proposal for $2,295,608.50, which is Approximately 250% of the Government Cost Estimate.**
- **Significant Cost Items Included Mobilization Costs, Grinding and Slurry Removal Off-Site, Existing Pavement Repairs, and Required Removal and Replacement of Light Bases and Light Sensors.**
- **Construction Contract Has Been Cancelled.**

Project Challenges

- **Cost of Constructing Trapezoidal Grooving Test Bed.**
- **Very Limited Window (60 Days) Being Offered by ACY for Conducting of Full Scale Performance Testing.**
- **ACY has Concerns Regarding Use of Runway 4/22 with Half-Depth Grooving and Un-grooved Section Under Wetted Runway Conditions.**
- **Cost of Construction Coupled With Limited Window for Conducting Effective Testing Cannot be Justified.**

Project Challenges

- **Length and Location of Trapezoidal Grooving Test Bed Impose Constraints on Effectiveness of Testing.**
- **Technical Working Group has Concluded that Testing Under Friction Limited Conditions Must Achieve Modern Landing and Braking Speeds.**
- **Testing Requires Ground Speeds of 140 Knots and 3 Seconds of Friction Limited Braking.**
- **Location of Trapezoidal Grooving Test Bed Only Allows Aircraft to Achieve a Speed of 90 Knots.**
- **Aircraft Main Landing Gear Wheels will Travel Through Individual 300 Foot Test Sections in Approximately 2 Seconds at 90 Knots.**
- **Anti-Skid Brake System on B727 Aircraft Cannot be Effectively Used for Testing Based on Long Initialization Period of 1.5 to 2 Seconds.**
- **Programmable Braking on B727 Aircraft will Only Allow for 1- 2 Ramped Braking Applications of Approximately 1 Second Each in Duration.**

Moving Forward

- **Airport Technology R&D will Review Status of Trapezoidal Grooving Project with Our Research Sponsor (Office Of Airports AAS-100).**
- **Airport Technology R&D Will Present Alternatives Regarding Future of Research Effort.**

QUESTIONS?