Developing Arresting Systems for Small Aircraft at General Aviation Airports

ACRP Staff Comments
This problem statement has been submitted previously.

TRB Aviation Committee Comments
AIRCRAFT/AIRPORT COMPATIBILITY: Small airports need additional options for arresting aircraft that won't strain their budgets. Include a safety case and a benefit-cost analysis for a low-cost arresting system or systems.

Review Panel Recommendation and Comments
Not recommended. The FAA has defined the standard of safety, so it's not going to be different for GA's.

AOC Disposition
There was no discussion. No funds were allocated.
2017 ACRP Problem Statement

ACRP

Problem Number 17-04-16

I. PROBLEM TITLE

Developing Arresting Systems for Small Aircraft at General Aviation Airports

II. RESEARCH PROBLEM STATEMENT

Throughout the country, there are 2,942 General Aviation Airports. A reasonable number of these may not have proper runway safety areas in accordance with FAA standards. In Massachusetts, of thirty-six General Aviation Airports, three fall into that category. For one reason or another, the runway safety area standards cannot be met whether because there is a steep slope or a public roadway very close to the end of the runway(s). The purpose of the research would be to find simpler and lower cost arresting systems for smaller airports that can used to save the lives of the pilots and passengers as well as the general public travelling on public highways, while minimizing damage to the aircraft.

Currently very costly arresting systems have been designed and utilized at large commercial airports. They have only been installed for FAA Part 139 certified airports. Arresting systems should be developed for small aircraft to provide the same protection as for their larger counter parts throughout the country. ACRP Report 29 addressed the EMAS for these larger airports while not addressing the issues at GA airports. In Massachusetts, there are several EMAS systems at FAA Part 139 certified airports, but none at GA airports. The cost for these arresting systems does not make sense for small airports and the ongoing maintenance costs associated with EMAS systems would become a burden for GA airport sponsors.

Providing low cost and simpler alternatives to the more elaborate arresting systems would not only enhance safety but at the same time be affordable for small airports.

III. OBJECTIVE

This research should provide guidance for airport sponsors and their consultants to prepare plans and specifications for the installation of low cost arresting systems for airports serving general aviation aircraft. This guidebook should provide sketches as well as design criteria to the type of aircraft that may land at the airport.
IV. RESEARCH PROPOSED

It is unknown whether or not there are any literature and/or materials available that can be used for this type of a system. Has there been any testing of different materials or systems that will stop a GA aircraft with minimal injury to passengers or damage to the aircraft? Have any systems been installed across the US? What are the parameters should be used in the design of a system?

As part of the research, the different scenarios should be studied to determine the effects on airspace and safety - especially if a fence is concerned. A low fence could be an obstruction and would necessitate displacing the threshold.

These are some of the unanswered questions that need to be answered.

V. ESTIMATE OF THE PROBLEM FUNDING AND RESEARCH PERIOD

Funding: $350,000
Project Duration: 18 months

VI. URGENCY AND PAY-OFF POTENTIAL

Since research seems to be limited, the urgency is there. If we can save one life or minimize injury then it is worth the investment.

VII. RELATED RESEARCH

ACRP Report 29  Developing Improved Civil Aircraft Arresting Systems
FAA Advisory Circular 150/5220-9a  Aircraft Arresting Systems on Civil Airports
FAA Advisory Circular 150/5220-22a  Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns
FAA Order 5200.8  Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems
FAA Order 5200.9  Runway Safety Area Program

VIII. PERSON(S) DEVELOPING THE PROBLEM

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IX. PROCESS USED TO DEVELOP RESEARCH STATEMENT

One of the airport managers in Massachusetts indicated there was no guidance regarding this issue and he took it upon himself for his airport to install a 4 foot high chain link fence at the end of his runway because it abutted a public roadway. Instead of the typical chain link fence with posts spaced at 10 feet, he installed posts at a 5 foot interval with the fabric on the inside. In 2010, an aircraft overshot his runway and was caught by the fence. The aircraft stopped before the roadway. There were no injuries sustained by either the pilot or his passenger as well as the public on the roadway. His system worked.

As stated earlier and based upon my research efforts, there are three (3) airports in Massachusetts with runway ends very close to public roads and safety would be enhanced from some sort of overrun protection.

X. DATE AND SUBMITTED BY

March 20, 2015 by Thomas F. Mahoney, PE

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