H-1 Main Rotor Blade Rollover Dolly

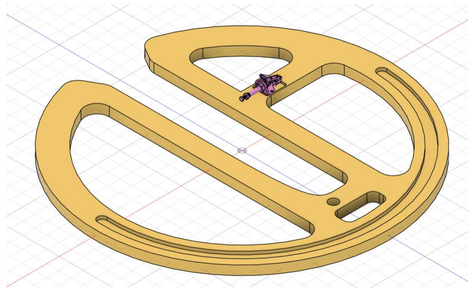
NAVAIR Fleet Readiness Center - East

PROBLEM STATEMENT

NAVAIR chose to sponsor this project because they have identified the need for a dolly that can transport and support the main rotor blade of an H-1 helicopter during repairs. Currently, no equipment meets this requirement. The team will design and develop a dolly capable of securely transporting and supporting the blade during maintenance operations.

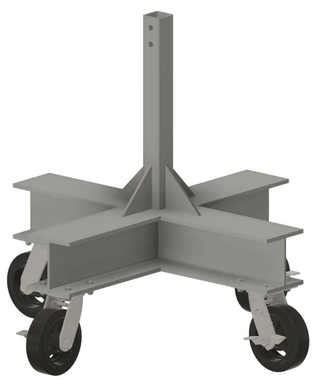
REQUIREMENTS

#	Description
1	180° Rotation of Blade
2	Holds 200lb blade
3	Support at minimum two locations
4	No larger than 36” wide
5	Must have lifting and tie down provisions
6	Must hold 20ft blade
7	Complies with MIL-S-8512D
8	Must withstand tipping force of 50lbs
9	Must hold blade 44” above ground

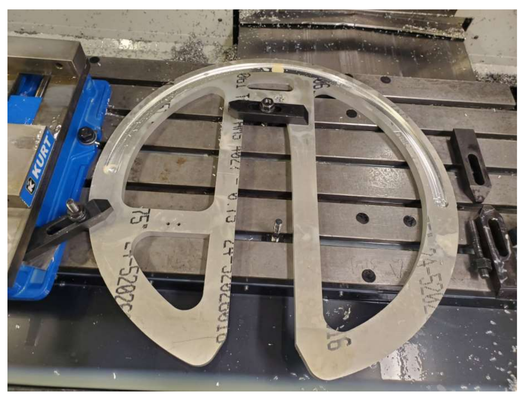


Head/Ring

Base



RESULTS



SUMMARY AND CONCLUSIONS

- The final design will be two stand-alone dollies that can hold the main rotor blade in two locations.
- The dolly will be made of two main subassemblies including the top portion, the ‘ring’ and the bottom portion, the base.
- The ring will be cut on the waterjet out of ¾” aluminum plate and will spin on a roller assembly. The main ring will be made from a laser cut and milled plate aluminum. The ring will sit on rollers inside of a housing. The housing will also be made from aluminum plate cut on the waterjet. The main part of the roller will be lathed out of an HDPE cylinder to hold sealed bearings and the shaft. Only one knob will hold the ring at a specific angle using friction. The ring will have neoprene foam to protect and hold the blade.
- A cam clamp will secure the blade in place. Two-inch square tubing will be upright to hold the roller housing. The upright will be welded to the base, and the roller housing will bolt to it at the top. The base will be made from steel H-beams. The base will be at least 50lbs to prevent tipping. FRC provided casters to enable mobility.

TEAM & ACKNOWLEDGEMENTS

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