

TEAM ELMER'S PROJECT PROFILE | Cherry Capital Airport



PROJECT: Cherry Capital Airport

CHALLENGE: Handling a massive amount of work (approximately 38,000 labor hours) on an extremely compressed schedule; adhering to strict and demanding specification standards; working in temperatures ranging from 20 to 98 degrees Fahrenheit, due to the 24/7 work schedule

SOLUTION: Breaking the schedule into phases to make the project seem less daunting; recognizing the high stakes of adhering to spec standards; using different technology, crews, and an "all hands on deck" mentality to keep the work site running around the clock

OWNER: Northwestern Regional Airport Commission; Office of Aeronautics; MDOT

CONTRACT AMOUNT: \$10,298,076

DESIGN ENGINEER: Robert Neleson, Prein & Newhof

ENGINEER CONTACT: 231-946-2394

LOCATION: Cherry Capital Airport, Traverse City, MI

DATE STARTED: August 5, 2017

DATE COMPLETED: Spring 2018

MAJORITY OF WORK COMPLETED IN 30 DAYS

SELF-PERFORMED: 70%

PARTNERS: J Ranck Electric, PK Contracting, Action Traffic Maintenance, Carnal International Grinding and Grooving, North Slope, GEAB, Soils and Structures, Inland Seas, and GFA



The East-West Runway 10/28 at Cherry Capital Airport in Traverse City, Michigan dates back to a time when airports across the country were building shorter runways. At 6,500 feet, it was a bit too short for large commercial jets to take off with full capacity flights. The problem was especially pressing in the summertime, thanks to the heat and density of the air. Hotter air is less dense, which means airplanes need more runway length to take off. The only quick-fix option to get flights into the air safely was to reduce their weight, so the airport was consistently displacing up to 14 passengers per flight in the summertime — this added up to years of lost revenue.

After decades of planning, Cherry Capital Airport had to decide on a solution. In order for runway 10/28 to provide enough length for capacity jets to take off in the heat of summer, it needed to be over 7,000 feet long.

The first strides of the runway expansion project took place back in 2013, when Cherry Capital Airport added 400 feet to the east end of the 10/28 runway. However, the airport needed another 115 feet to meet the 7,000 feet requirement. That's where Team Elmer's comes in.

Challenges

One of the biggest challenges of this project was the tight deadline. Team Elmer's had to complete six months of work in three months, and only had a 14-day window to work on the east/west runway while it was closed. This led to the vast majority of the work being completed in 30 days.

To get all of the work done in such a short period of time, crews worked 24/7 with carefully coordinated shift changes. To keep a tight schedule, the project manager had to break it down to the minute to make sure everything kept running smoothly — communication and implementation really were the keys to this project.

Other challenges included:

- Gravel pits were closed on Sunday and after 10pm
- Complying with Hours of Service for truck drivers — 24/7 cycle and Hours of Service rules do not match

BY THE NUMBERS

Inspection hours: **over 3,000**

Labor Hours: **38,000**

122,000 cubic yards of earth moved

P-209 Base: **over 21,000 tons**

Millings: **over 30,000 tons**

P-401 & P-403 Asphalt: **over 41,000 tons**

346 airfield lights and signs

215 security badges

Work Zone Fence: **5 miles**



- HOT weather — over 95 degrees Fahrenheit in September, repeatedly
- Nationwide shortage of electrical material
- Work zone fragmentation — could not cross the operational north/south runway, so moving equipment to second work zone 2 miles away, and coming back, took 60+ minutes
- Labor shortage for 24/7 cycle
- Strict guidelines and requirements for materials used to construct the runway

Solutions

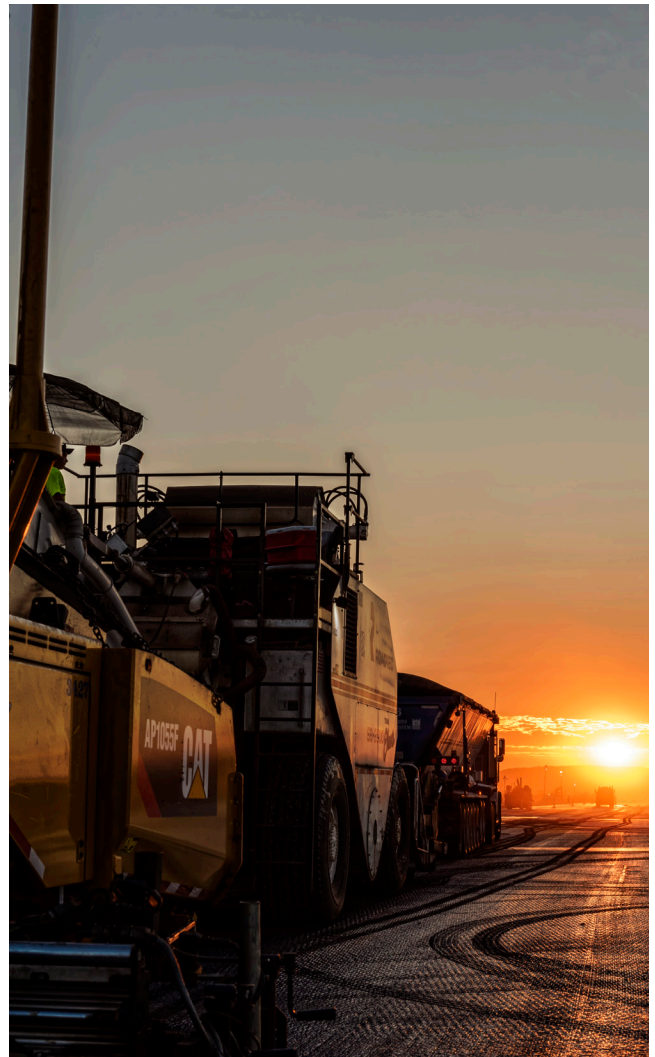
Team Elmer's rose to the challenge, created solutions, and added value for the project owner:

- Team work — Crew members each brought their individual tasks together to complete the project efficiently
- Utilized staff from the office and outlying plants, as well as subcontractors, to fill out the crews
- Locate alternative resources for electrical material
- Upgraded from 2" hosing on water tanks to a frac tank and 6" water pump with a riser pipe to stockpile water in between cycles, which reduced load times from 20 minute to 3 minute cycles per 5,000 gallon truck
- Communication, communication, communication
- Continuously testing gravel and asphalt to ensure absolute quality control
- Keeping backup equipment on site — no time to wait if there was a breakdown
- Preparing for gravel pit closure by hauling material out early
- Paying close attention to detail

Technologies & Specifications

With the Cherry Capital Airport project came new technologies. Team Elmer's implemented new automated machine guidance, as well as specialized gravel and asphalt.

P-209 — Also known as 21AA on steroids. P-209 is a 100% dense grade aggregate that is specified to hold up to the wear and tear of airport traffic. The FAA tested on grade every 800 tons with a 0" to 1/2" grade tolerance. Compared with MDOT testing of every 1,000 tons in a stockpile, P-209 comes with a more stringent standard than the usual materials Team Elmer's uses. P-209 requires 100% modified proctor density, which meant Team Elmer's had to have plenty of water handy with the extreme temperatures. 21AA has a 98% standard proctor from



MDOT — another example of the increased standard that comes with P-209.

P-401 & P-403 — A specialized asphalt mix used for airplane runways and designed for each airport based on airplane weights and flight frequency. The FAA requires an AASHTO accredited lab to produce the mix design and with the labs being limited nationwide, the process of producing P-401/403 mix design formula is about a 10-week process.

The testing requirements are rigorous for P-401/403— testing every 500 tons with a minimum of four tests every time you produce material. One day of paving required 16 full sets of tests, equaling about 32 hours of testing. Penalty of not meeting the specifications were to completely remove and replace the failed section, the pressure was on. Team Elmer's was vigilant and completed the project without any failures.

Automated Machine Guidance — To ensure Team Elmer's met the FAA grade tolerances, they used automated machine guidance for milling and paving for



the first time. The mill tapered from 2" cut to 0" cut with a 4/100th tolerance. By using a 3-dimensional tin loaded into global positioning system satellites or total robotic stations on-site, Team Elmer's was able to ensure that all milled surfaces removed the exact amount of material to meet future elevations (think more material removed in a high spot and less material removed from a dip in the runway). This 3-D milling and paving process was able to maintain elevations during the 115 foot addition, 800 foot reconstruction, and over 7,000 foot resurfacing.

Despite the challenges and careful planning, Team Elmer's got lucky: Inclement weather stayed out of sight. With no weather delays, Team Elmer's was able to get the job done — a Herculean feat given the extremely condensed schedule. The new 115-foot runway section wasn't the full extent of the work, either. Other highlights of the job included resurfacing all 7,015 feet of the runway (equivalent to 18 car lanes on a mile-long stretch of highway), plus a full removal and reconstruction of an abandoned intersecting 800-foot runway portion. Now, even passengers will be able to notice and appreciate the finished product — whether in the form of smoother landings or fewer displacements on summer flights.

SERVICES PROVIDED

- Extended the 10/28 runway 115 feet westward
- Updated and replaced the entire runway circuit — this included 346 airport lights and 139 signs, along with several miles of conduit & wire
- Updated all non-replaced lights to LED
- Installed MALSR and PAPI navigational aides
- Regraded areas off the ends of the runways
- Extended taxiways Delta and Golf
- Full-depth reconstruction of an 800-foot runway section
- Turned 20' shoulders into 25' wide shoulders, equaling about 2 miles of full reconstruction
- Resurfaced, grooved, and striped all 7,015 feet of the runway



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