

Ice Road Construction

What Does Not Work

What Works

What is Needed for the Future

By: Jeff D. Miller – General Manager – Cruz Construction, Inc.

Contractor's Project Goal

- Provide our client a safe and efficient project that leaves them with a sense of outstanding service and value, while having no negative impact on the environment.

***PLANNING

***COMMUNICATION

What Does Not Work

N 68°41'31.9"
W 149°19'45.6"

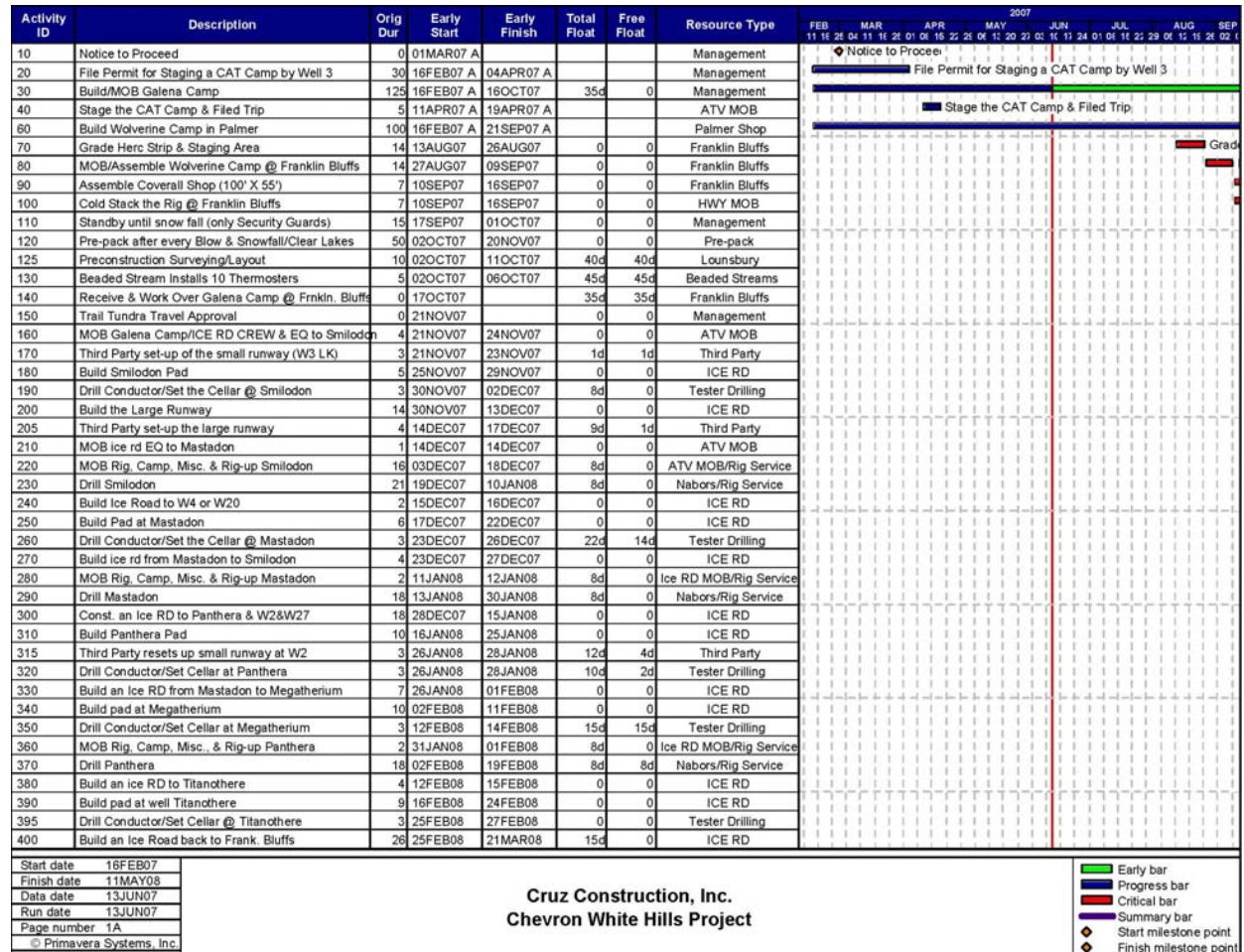


What Works

- Planning/Coordination
- Spring/Summer Field Reconnaissance
- Install Ground Temp. Monitoring Devices
- Pre-pack/Profiling
- Pre-Construction Surveying
- Innovative Material Manufacturing
- Pre-water
- Applicable Construction Methods
- Maintenance
- Spring Closeout
- Follow-up Inspection in the Summer
- Project Closeout Review

Planning & Coordination

- Create a CPM Schedule, indentify and communicate critical dates (*i.e. completion of lake studies and bathometric surveys*)
- Evaluate the make-up of the kit and their associated costs as it pertains to the CPM Schedule
- Identify the appropriate type or combination of ice road/trail
- Teaming meetings with the appropriate agencies (*involve all key people*)
- Ascertain historical data from people with knowledge of the project area
- Treat your schedule as a living document



Spring & Summer Field Reconnaissance

- Spring & Summer Alignment Field Trip

- Analyze maintenance conflicts
- Crossing limitations
- Sedge meadows vs. tussocks
- Water source access
- Brackish vs. clear sources
- Possible snow fence zones

- Lake Studies/Bathometric Info (***It is critical to get this information turned around quickly***)

- Possible Historical Conflicts

- Drill Pad and Runway original ground survey

- Update the CPM schedule assumptions with real data once it is consolidated

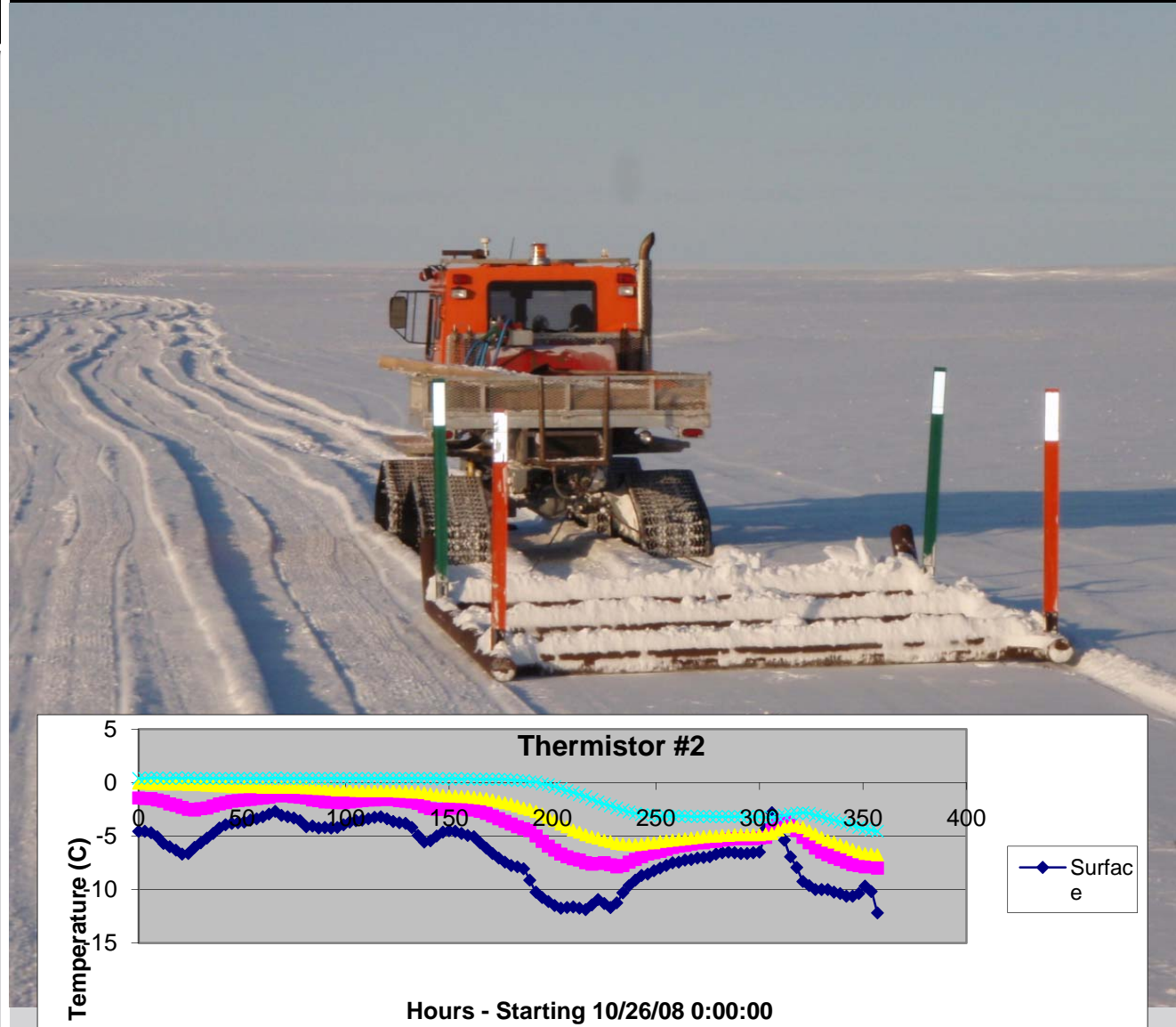


Install Ground Temperature Monitoring Devices & Weather Stations

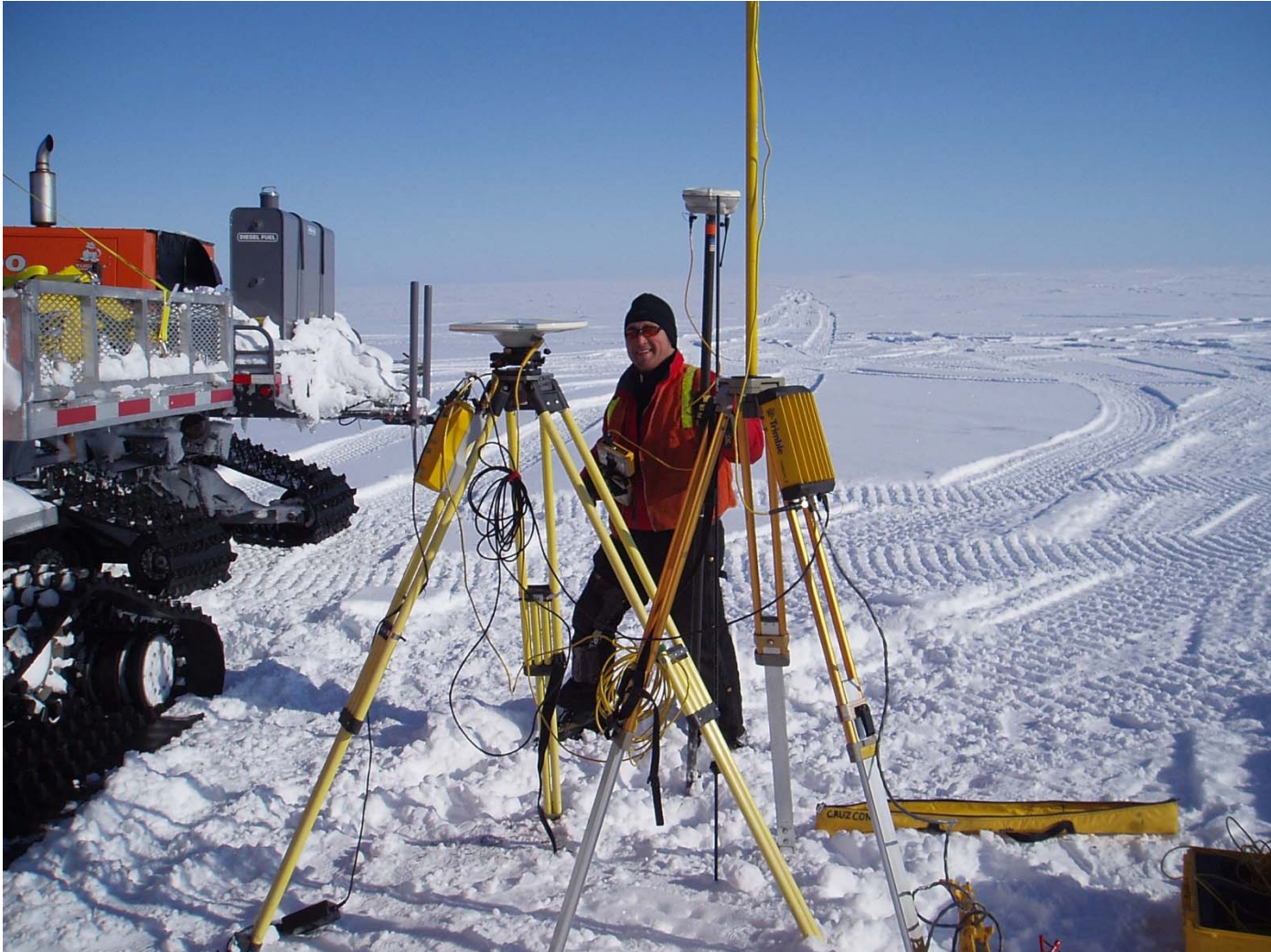


Pre-Pack & Profiling

- Pre-pack with summer approved ATV's
 - Smooth Track Tucker
 - Smooth Track Haglund
 - Tracked Argo
 - RD-85 Rollogon w/o trailer
- Profile Water Sources & Crossings Constantly
- Clear Allowable Areas of Water Sources
- Start the project's document control for all recorded data
- Utilize an outpost survival shelter
- Maintain daily report communication with the agencies (***pictures, production, weather, trail conditions, ground temp.***)
- Weather Forecasts



Pre-Construction Surveying



Innovative Material Manufacturing

**MANUFACTURE SNOW &
BUILD ICE**



CAPTURE SNOW



Pre-water

*****DO NOT BURN THE COVER*****



Applicable Construction Methods

- **Basic Kit includes:** loaders, trimmers, motor graders, haul trucks, pioneering water trucks, finish water trucks, heaters, light plants, water source houses, Tuckers, groomers, pick-ups, fuel/mechanic trucks, dozer/Steiger, envirovac, ice drills, and pumps
- Maintain sound tracking documents (*i.e. densities, product yield, source quantities, profile logs, schedule etc.*)
- Straighten out pre-pack alignment where possible when installing signage & delineation
- Invest time and patience during construction and it will pay off during the maintenance phase



Applicable Construction Methods (Densities & Yields)

- Avoid structural Failures & higher Maintenance costs
- Added tool for the blade hands having to use snow for fill material (***they will need 20% to 30% more water***)
- Customer assurance
- Helps control the irregularity created by a blow
- Avoid permit violations for material sources
- Accurate updates of the CPM schedule



Maintenance

- Do not neglect the road of water (*even distribution across the running surface*)
- Traffic Control for through traffic when conducting maintenance lifts
- Immediately remove standing drifts from the surface to avoid blowouts & unnecessary wear
- Only use clear water for late season maintenance
- Keep the shoulder wrinkles at a minimum, but do not remove to much to where you limit your late season whitening material
- You may have to limit road travel to night time only



Spring Closeout

- Pick-up all the delineators, lathe, secondary containment, etc
- Remove Stream Crossings



Follow-up Inspection & Clean-up in the Summer



Project Closeout Review



What is Needed for the Future

Continual Communication between Agencies, Clients, & Contractors

