

Weather conditions often challenge KAN STEP projects

Changeable weather conditions always present a risk during any construction project. Weather conditions impact everyone every day. In late December 2008 for example, ice jams on the Raccoon River forced the city of Des Moines, IA to begin drawing water out of the Des Moines River. “What we’re seeing now is the break up of ice; looks like the crater of the moon. Really churns up the river, turns up the silt that’s settled on the bottom and it’s kinda nasty water to treat,” Randy Beavers with the Des Moines Water Works reported to WHO-TV News. Flooding took place in low-lying areas of Des Moines. Ice jams usually happen in early spring in Iowa – not late December.

When it comes to KAN STEP projects, changing weather conditions affect construction of buildings and also when installing a water system. Whether the project is a building or a waterline, part of the installation or construction process requires that trenches be dug. Often, soil must be moved and/or compacted to achieve a proper pad for the building to sit on. Concrete footings, floors and walls must be poured; steel and wood need to be hoisted into proper place. Large amounts of rain, extreme heat or cold, snow, and high winds can all delay the construction process. If those weather conditions occur prior to the winter season, the delay can last for months.

Since a large number of construction activities are limited to the warmer months, an excessive amount of rain can result in a decrease in activity on the job site. The delay can be even more detrimental on a volunteer-based project especially during the winter months. Many of the KAN STEP project volunteers are often farmers from the area. If rainy weather hits in September and October, their fieldwork also is delayed. Then when field conditions improve, those farmer/volunteers want to get their crops in first. The Kansas Department of Commerce recognizes all these issues; their programs such as KAN STEP allow ample time to complete projects. Two years from the project award date to completion is the standard timeframe. As I write this article on January 2, there are several projects that are planning to proceed with dirt work, digging and pouring footings. With any luck, they’ll be able to pour floors and start building sometime soon – but their schedule is highly dependent on the weather conditions. We cannot forget – it’s January!

Large amounts of rain, extreme heat or cold, snow, and high winds can all delay the construction process. If those weather conditions occur prior to the winter season, the delay can last for months.



Even snow can slow down progress when setting trusses. The crane operator on the city of Highland’s KAN STEP fire station just finished setting the last truss and is loading the outrigger supports.

Watch the clouds, check NOAA’s weather site

I worked for many years for a professional contractor. As a concrete crew foreman in charge of scheduling load after load of concrete for jobs, I watched the weather a lot. Professional contractors must watch the weather even more than volunteer-based jobs such as the KAN STEP projects are. That’s obviously because there’s an owner who expects a job to be completed and done right – and a contractor that has to make a profit in order to stay in business. But there are similarities.

Key issues need to be addressed to proceed through an excessively cold winter. Will a delay in an early phase create additional problems down the line? For example, will the dirt work be completed before the typical cold snaps happen in December? It’s not the pocketbook that’s affected on a KAN STEP project as it is with a professional contractor – but in either case, the

morale of the workers and owners sure goes down.

The U.S. Department of Commerce estimates that nearly one-third of the U.S. economy, or \$3.5 trillion, is modulated by the weather. Financial statements are awash (no pun intended) with comments such as “income decreased \$7.2 million as a result of wetter than normal conditions” or “shipments were down 5.5% due the cooler temperatures during the summer months.” In the past, statements such as

these were accepted as part of doing business, however, blaming poor results on weather is no longer an excuse that's accepted by many owners. As a result, some companies that do work which is sensitive to weather conditions actually manage some of their risks by purchasing "weather based risk management products" to mitigate the adverse effects of weather on business revenues and expenses.

Weather risk for a volunteer project does not carry a financial risk unless due diligence is not practiced. For example, it's essential to ensure that freshly poured concrete does not freeze. No one wants to deal with the problems of having a rainstorm suddenly wash out a newly-poured slab. There have been some close calls in the years I have worked on KAN STEP projects. On the Hartford, KS Community Center, we waited out a heavy thunderstorm. Several loads of concrete were loaded and onsite, ready to unload. But we ordered them not to unload – and they didn't. Special chemicals were added to retard the set. We waited for two hours while it rained. Fortunately the base rock was in excellent order; there was a culvert that drained 90 percent of the rainwater. Other projects were not so lucky. On the fire station at Hedville five miles west of Salina, volunteers and I were rained out after the footings were dug. On Glasco's Fire Station, water was pumped from the footings, and the muck was dug out so that we could proceed with the pours. In December 2008, volunteers and KRWA Tech Mike Fisher and I worked some long days at Dennis, KS, west of Parsons on a fire station. Additives and hot water were put into the concrete mix to speed the set. Even with the additives the concrete wasn't finished until 8 p.m. each of three nights. Then insulation blankets had to be added to prevent freezing.



Temperatures were expected to drop to the lower 20's on December 10, 2008. The sub-grade on the Fire Station in Dennis, KS was covered to allow a pour the next morning. Concrete can be poured during colder weather conditions but necessary precautions need to be taken.

Present projects waiting on concrete work are at Altoona, Damar, Horton and Miltonvale. Altoona has approximately half of the dirt pad built. Damar has the pad built but is in the process of bidding the project. Horton is in the process of starting the pad. Miltonvale has the pad built but unfortunately the city needs to rebid the project because the first round of bids was over-budget. With work in various parts of the state, perhaps a couple of these projects will luck out and be able to proceed during the winter months. One thing we'll make sure of – that is, that it's done right.

KRWA has posted these projects on the Association's Web site at www.krwa.net. Go to "Technical Assistance" and then to "KAN STEP" to access the various projects. Many photos of each project are posted. KAN STEP has completed 48 projects; 14 are in construction.

Shane Holthaus has been a KAN STEP Tech Assistant for KRWA since November 2002. He previously worked for 13 years for a professional contractor. He has been involved in 50 KAN STEP projects; he enjoys the challenges of the projects and is pleased to work with volunteers in community across the state.



GUIDELINES FOR CONCRETE WORK, AS SUMMARIZED FROM WWW.GUARANTEEDWEATHER.COM

Precipitation

- Any rain over approximately one-tenth inch during the time of the pour – contractor cannot pour, or may only pour if concrete is covered
- Any significant rain during the hours before the pour, resulting in a very damp or saturated sub base – contractor cannot pour, or may only pour may be delayed until the base has dried
- Excessive precipitation can flood project sites before drainage systems are in place
- Excessive precipitation can cause increased erosion control costs

Temperature extremes

- Regardless of precautions taken, the contractor shall assume all risks and the damaged concrete shall be replaced at the contractor's expense:
- Ambient air temperature less than 32° F at the time of the pour, or air temperatures that are above 32° F but are anticipated to fall below 32° F during the pour – contractor may be able to pour, but with restrictions
- Previous night's minimum temperature between 25° and 28° F – requires contractor to place plastic down before pouring
- Previous night's minimum temperature between 22° and 25° F – requires contractor to place two layers of plastic and straw before pouring
- Previous night's minimum temperature below 22° F – contractor cannot pour.
- Ambient air temperature greater than 90° F at the time of pour – contractor cannot pour
- Ambient air temperature less than 32° F for 5 or more days after concrete is applied – contractor must provide adequate freeze protection
- A decrease in the length of the working season due to early/late frozen ground in the fall/spring
- Cold temperatures can freeze fire sprinkler systems before structure has heating capabilities

Wind

- Wind speed greater than approximately 25 mph — Contractor cannot pour
- Excessive wind can damage project structure while in early stages of production