How colder weather affects synthetic turf installs and repairs

Editor's note: *We asked some experts these questions: Is there a temperature threshold below which it is considered "too cold" to install or repair synthetic turf? How can cold weather affect installation time lines? What exactly is affected—building the base, for example, or using the adhesive? Is sewing seams recommended in cold weather vs. using adhesives? Is sewing that much of a slower process?*

Steve Smetana, a former professional baseball player and current high school baseball coach in northern Ohio, is a partner with former STMA president David Frey in a venture called Pro Turf Clean.

He has been installing artificial turf surfaces since 2004 and now is maintaining synthetic fields as well as installing them. "For installation purposes I have always gone by trying to install turf in above-50 degree temperatures," he says. "I guess it might be possible to install when its colder but you run the risk when the temperatures go back up into the 80's and 90's that the material will expand and create issues for you.

"The cold weather definitely will affect timelines with installations. Up here in the northern states the most hectic months are end of May until the end of August. The schedules of the colleges and high schools greatly dictate the installation timeline," Smetana says.

"There are pros and cons to each sewing and using adhesives when bonding seams. Sewing is less expensive but a lot more labor intensive than gluing," he says. "For example, sewing will require 10-12 laborers and multiple days; sewing is a good way to seam turf but to glue the belly of a field can take as few as four laborers and one day to complete.

"Another reason why some people do not sew is because a turf with a real thick backing would be difficult to sew. Secondly, when you sew a seam it has a prominent lump on that edge that can be buried in the aggregate underlayment. If you use a drainage mat for your drainage then you can't sew," Smetana says.

Patrick Maguire is principal for the sports division of Stantec Consulting, which specializes in civil engineering services for outdoor athletic facilities. "We typically recommend that no work take place unless the temperature is 40 and rising," he says. "Clearly that is a luxury in some climates and at certain times of the year. When it is colder we ask that the installers make provisions to deal with the temperatures. For example it is never a good idea to roll out a frozen carpet. The secondary backing can crack, which can be a big problem.

"Cold weather—like any inclement weather—can affect installation timelines because it can cause delays in getting started in the morning due to frost or ice and in waiting for materials to reach workable temperatures," says Maguire. "Additionally human beings generally are not as efficient in cold weather, particularly for things like

> I have seen needles get brittle and break in cold temperatures. . .There is nothing that slows a job down like a broken sewing machine.
> — *Patrick Maguire*

Wisdom from The Guru of Glue

THE SYNTHETIC TURF BUSINESS has expanded to a point where there is not enough time to limit installations to just warm-mild weather. More time is needed which translates into installations and repairs in the cool and/or cold weather of early spring, late fall and throughout the winter. However, there is some cold weather factors that should be kept in mind regardless of the methods and/or products used.

Almost everything slows down when it gets cold. Rain water evaporates slower in Winter than in the Summer; automobile batteries get weaker, their oil gets thicker and they perform better after they "warm up"; chemical reactions, such as adhesive curing, either slows down or stops, depending on the adhesive; turf get stiffer and harder to handle; sewing get tougher, etc.

While the laws of physics regarding cold vs. hot can't be changed there are some products and methods that can not be used when cold; others that are extremely slow and difficult; and others which although slower are useful for cold weather installations and/or repairs.

REGARDING ADHESIVES: There are some that freeze, crystallize or otherwise solidify in their container when cold. Hot melts adhesives are designed to go from solid to liquid when heated but they often prematurely re-solidify when applied to a cold sub-surface; paste adhesive become almost impossible to spread when cold; others do not cure when the temperature falls below otherwise workable temperatures. However, there also is a group of one-part urethane adhesives in which the manufacturer says can be used at any low temperature in which the installer can work.

REGARDING SEWING: Sewing machines become sluggish, plus the turf and sewing thread gets stiffer, which makes sewing much more difficult.

REGARDING INSTALLATION AND REPAIR: They proceed slower when cold than when hot because, installers can not work as efficiently; cold is also often accompanied by wind; the turf gets stiffer and harder to handle plus the options for sewing and/or adhesives selection are greatly reduced.

Cold weather installations and repairs are slower than when warm, but in cold weather it's much better and more profitable to work than the alternative of not starting or stopping an installation while waiting until it gets warm. However, investigate first and then be selective on the products and methods to use in cold weather. ■

Norris Legue, aka The Guru of Glue®, is president of Synthetic Surfaces Inc.

Below: Adhesive being sprayed to bond number inserts during a cold weather turf installation. **Right:** Adhesive coated seaming tape for bonding a loose-laid seam.

seaming which requires a certain skill and dexterity that can be compromised by lower temperatures.

"As it relates to adhesives versus sewing, each have their own issues with temperature extremes. Clearly the chemistry of a particular adhesive can be affected by colder temperatures and or rapid swings in temperature from cold to warm or warm to cold," he says. "These can affect cure time and the ultimate long-term strength of the bond. It is critical that the right glue be used for the particular situation.

"Sewing is not immune however. I have seen needles get brittle and break in cold temperatures. This could be attributable to the metal getting cold, or the carpet materials getting harder as the temperature drops. There is nothing that slows a job down like a broken sewing machine.

"The answer to what is recommended really comes down to the selected system and the particular installer. Different carpet and backing systems are meant to work with chemical bonds and certain systems are meant to have mechanical bonds. In a perfect world the answer is really a combination of the two. Given the choice I really like a butt-sewn seam with a heat activated or other adhesive and cordura fabric," says Maguire.

Darren Gill is vice president of global marketing for FieldTurf. He says, "FieldTurf operates in over 40 countries around the world with some of the harshest climates. We have taken every possible step to ensure that we can install our product, no matter the temperature. Specifically, FieldTurf utilizes "hot melt" adhesion and bonding technology; the adhesive is heated and applied at 300-350 degrees F . . . virtually there is no limit to ambient temperatures for successful adhesion.

Regarding how cold weather can affect installation time lines, Gill says, "Other than the human resource factor, requiring additional personal protection equipment (gloves, coats, foul weather gear) there are no limits.

"From a base construction stand point, freezing is the threshold for concrete placement, grading of earthen materials and aggregate moisture content for long term performance," he says. "From an adhesive stand point, the FieldTurf fully sewn and hot melt adhesive technology has no limits other than precipitation.

"Many other turf companies use 'cold applied' adhesive; these products are highly susceptible to failure due to ambient temperatures, humidity, moisture, freeze/ thaw and other variables from nature," Gill says. "It is not advisable to use 'cold adhesives' in ambient temperatures less than 45 degrees Fahrenheit, high humidity or wet conditions.

"Sewing seams in cold weather [below freezing] can be challenging as the sew needles break more often; a properly sewn seam will virtually never release in any weather conditions. When applied in cold/wet weather cold adhesives have had issues with bonding and are not recommended for use below 45 degrees," Gill says. "We believe that fields that are not sewn and are glued in their entirety have more than 1 mile or 5,280 feet of seams, the long term performance and risk is certainly compromised." ■