

Hybrid Hatches Solve VDOT Salt Storage Challenge

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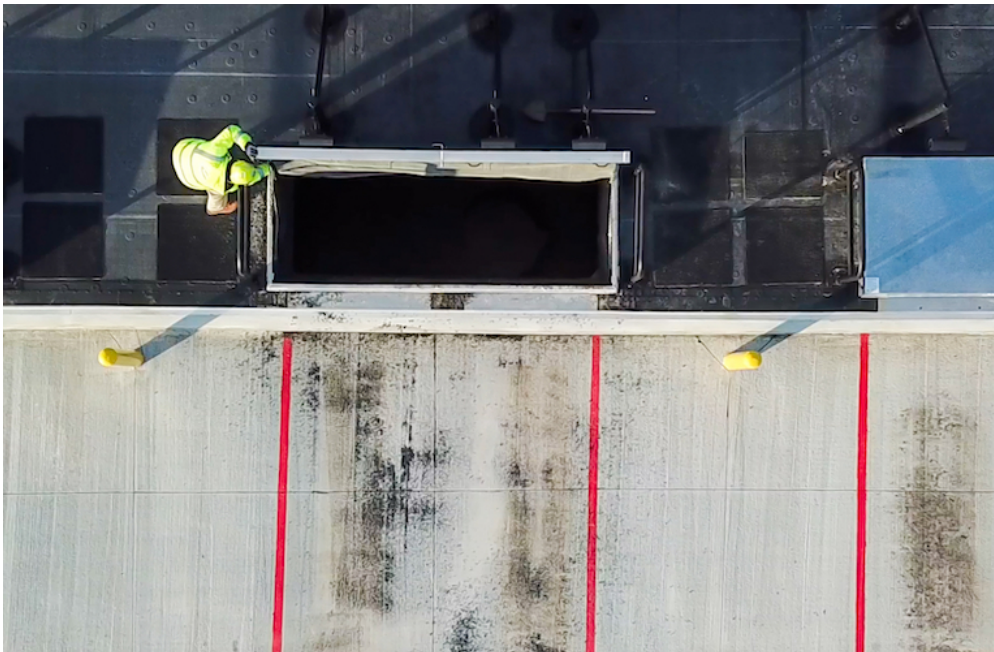
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The Virginia Department of Transportation (VDOT) faced a complicated roofing problem at its hazardous chemical storage building in Cross Junction, where it stores salt and de-icing products to help keep roadways clear during dangerous winter conditions.

Architect and project engineer Gauthier Alvarado Associates designed an innovative hybrid solution that is creative, cost-efficient, and expected to provide decades of service, meeting the most critical requirements of the state agency.



Architects from Gauthier Alvarado Associates designed a unique hybrid roofing solution for hazardous chemical storage building for the Virginia Department of

Transportation in Cross Junction, VA. The solution included three roof hatches from BILCO that were equipped with a liner to protect against corrosion caused by salt that is stored in the facility. (Photo: Dylan Francis Photography)

“Since this is a government project, longevity was a priority,” said Stephanie Stein, the lead architect on the project for Gauthier Alvarado. “As a result, any surface that comes into direct contact with the salt needed to be corrosion resistant to increase the lifespan of the building in this extremely corrosive environment. “

CORROSION FROM SALT

While salt that is spread on roadways helps drivers, its impact on building materials is less desirable.

When Dinks Construction started the project, workers found issues with decay in some concrete walls caused by salt corrosion. Teams tore out a portion of the wall and rebuilt it before replacing the roof.

Salts remove moisture from an environment, causing a hygroscopic reaction. The mineral retains water, which then promotes condensation. The water absorption allows corrosion to occur at lower humidity and for longer periods than otherwise expected. Salt also increases water’s ability to carry current and speeds up the corrosion process.

As the building ages and the overall salt content of the building increases, the building fabric tends to become damper over time. When the wet salt dries out, it crystalizes and expands, creating pressure that over time breaks down the building fabric. Crumbling, spalling, flaking, and cracking of the building fabric is largely related to the crystallization of salts.

That breakdown over time is precisely what happened at the VDOT facility in Cross Junction, especially in the roofing materials. Salt is the primary ingredient stored in the building to help VDOT keep the roads clear. Anti-icing, de-icing, and snowmelt products, all of which contain salt, are also stored at the facility..

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