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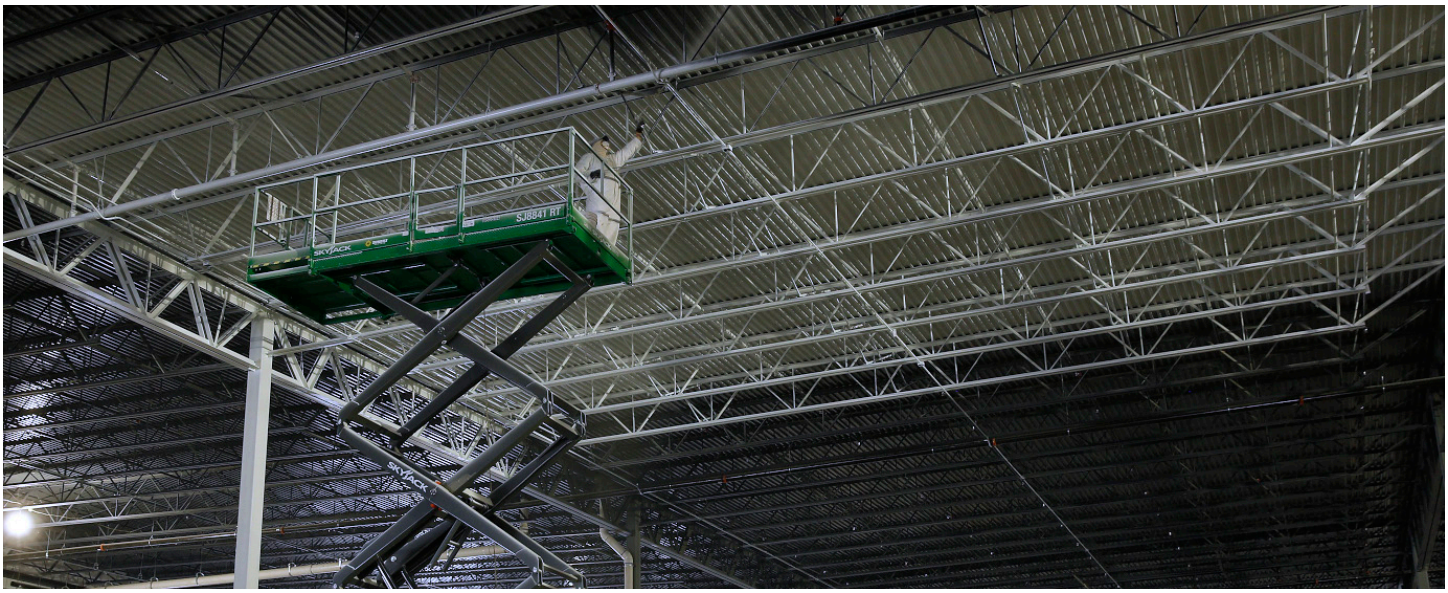
Steel Coatings and Finishes

Extreme environmental conditions need to be taken into consideration when planning the finish of the steel elements of an application.



Protecting steel girders, joists, and deck from the environmental conditions of the application site are critical to preserve the longevity of the project.

Will the product be exposed directly, or even indirectly, to ultraviolet light? Is the application in a marine environment with potential exposure to corrosive salt spray? These environments require special finishes or coatings to protect the steel. For example, using a factory-applied fluoropolymer or aliphatic polyurethane paint system over galvanized metal deck will help protect the deck. Plus, the coating will last longer due to better paint integrity than a typical epoxy paint system.

Steel can be finished or painted in one of three ways:

1. Painted in the field

After delivery, steel products can be painted or finished in the field.

Advantages: Least expensive. Easiest if the joists and deck are going to be coated in the same color.

Disadvantages: Accuracy of field applying topcoats may be difficult. Alternating colors of structural steel may be more labor intensive to paint in the field. Masking or taping off structural members sacrifices time and consistency. There is a risk of sealing or clogging the perforated holes of the acoustical deck if an inexperienced painting contractor is used.

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Finishing or painting steel while still at the factory can protect it from corrosive environments or to match the aesthetic vision of the architect.

2. Painted at the factory

Steel can also be painted while still at the factory, such as in a spray-booth or dipped in a primer tank. During the spray-booth application process, newly rolled metal deck is run through a long, enclosed booth within the factory and sprayed or coated with a specified paint finish. Joists may similarly be coated prior to delivery to the job site.

Advantages: Saves time in the field. The exposed interior edges of the perforated holes within acoustical deck or sun screens will be coated with paint in this process, which is especially important for natatoriums and other applications exposed to moisture. This will prevent the perforated holes from rusting.

Disadvantages: Factory pre-finishing may be cost prohibitive. It takes the proper coordination with the contractor and sub-contractor to ensure the deck is protected and installed with minimal scratching or marring of the finished surfaces to mitigate touch-ups in the field.

Coil-coating is just one of several methods of painting or finishing steel construction materials that can protect them from harsh conditions.

3. Coil-coated

The coil for steel deck can be coated with a paint system prior to being rolled into a deck profile shape or perforated for acoustics or aesthetics. Large steel coils are positioned at the beginning of a paint line, unwound at a constant speed, and passed through the various pre-treatment and coating processes before being recoiled. Strip accumulators at the beginning and end of the paint line enable the work to be continuous, allowing new coils to be added by a metal stitching process without having to slow down or stop the line.

Advantages: Deck is pre-painted prior to delivery, saving time in the field. Coil-coating often produces the most durable finish and is more corrosion-resistant than most post-painted metal.

Disadvantages: Coil-coating, as with any pre-finished deck, can scratch, and should be coordinated with installers. It may be cost-prohibitive. Coil-coating cannot be used for cellular deck; shop-applied welds prohibit this strategy. Also, perforations in acoustical deck would need to have a field-applied topcoat if used in a corrosive environment.

To learn more about how finishes can protect an application in a harsh environment, read our YMCA "Air-nasium" case study in the Design Ideas section of the October 2017 edition of Roof-Lines. Contact your New Millennium representative at **www.newmill.com** to discuss which finish method will be best for your next exterior application.

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