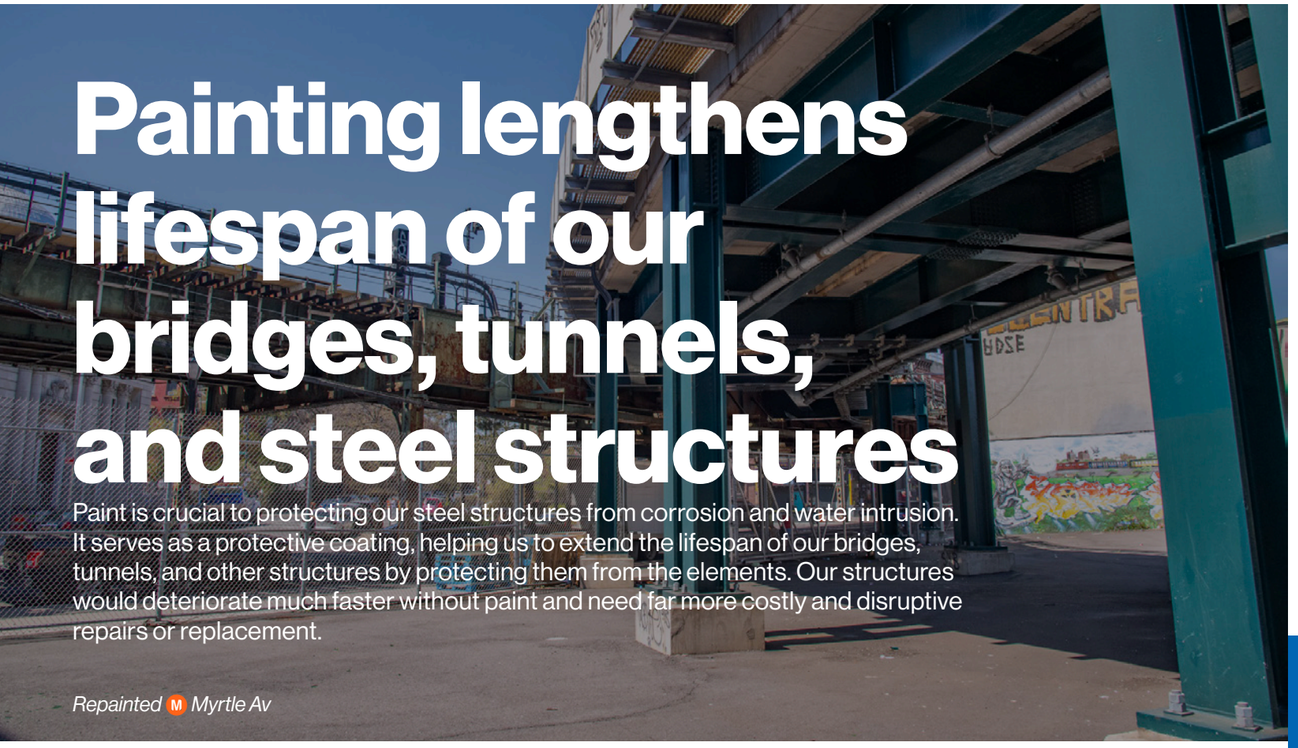
Painting Case Study



Painting lengthens lifespan of our bridges, tunnels, and steel structures

Paint is crucial to protecting our steel structures from corrosion and water intrusion. It serves as a protective coating, helping us to extend the lifespan of our bridges, tunnels, and other structures by protecting them from the elements. Our structures would deteriorate much faster without paint and need far more costly and disruptive repairs or replacement.

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Rust and deterioration on the West End Elevated

If you've ever taken the D train through Brooklyn's Borough Park, New Utrecht, Bensonhurst or Coney Island neighborhoods, you might have noticed the elevated steel structure holding up the tracks has seen better days. Peeling paint flakes along all 3.6 miles of the century-old structure, known as the West End Elevated, revealing rusted and corroded steel with warped surfaces and cracked foundations.

While we inspect these structures regularly to ensure that they remain safe and structurally sound, without intervention the deterioration will continue, leading to large, costly, and disruptive repairs or worse—a partial service shutdown while we install a full replacement.

Luckily, the solution to prolong its life is surprisingly simple: a new coat of paint.

What is happening?

Steel structures are vulnerable to corrosion or rusting from everyday exposure to the air, rain, snow, and salt water, where it exists. The stress of holding up continuous trains running along the tracks can cause additional deterioration. Without intervention, the combination of weather damage and daily usage can result in serious structural defects.

But, well-maintained exterior paint can provide significant protection—in some cases even doubling the lifespan of the infrastructure. It also has the added benefit of creating a cleaner, more vibrant look for the communities these lines serve.

To protect New York City Transit (NYCT), Long Island Rail Road (LIRR), and Metro-North Railroad (Metro-North) structures, we have a plan to paint—and regularly repaint—our exposed structures to prevent long-term damage and even more expensive corrective work.

Rusted steel structure

We're getting smarter

Over the past few years, we have overhauled our approach to painting our transit infrastructure, incorporating new techniques and materials to make these protections even more effective.

That's in part thanks to a new level of interagency collaboration, facilitated by the 2019 formation of the MTA Construction and Development (C&D) agency, which brought experts from all agencies under one roof to share best practices.

Our Bridges and Tunnels (B&T) division has had a robust and advanced painting program in place since the 1990s when they undertook a significant upgrade of their painting program. This effort dramatically reduced the level of deterioration across our seven vehicular bridges and two vehicular tunnels.

Now, MTA C&D has begun applying that knowledge and expertise to improve how we care for our bridges and elevated structures on the subway and regional railroads, too.

This includes using better performing and more varied sets of coatings, enabling us to tailor our approach to the specific environmental conditions. It also involves new and more efficient methods for stripping old paint, cleaning and prepping structures, and applying new coats of paint. Combined, this helps us more than double the service life of our structures without major reconstruction.

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How are we doing better?

By taking a new approach to structural overcoat painting:

» Our steel structures will corrode less quickly, preventing serious safety concerns and very costly repairs or even the full replacement of a structure. This will save customers from delays or service cancellations for lengthy periods of time while a structure is repaired or replaced.

» Our new coatings have a better bond with the structures, helping increase the painting cycle from every 15 years to every 30. Because the new materials are more in line with industry standards, there is more competition for the work, allowing us to find more competitive pricing. Both mean better-quality work at a lower overall price.

» In some cases, we must remove old lead-based paint which can pose health risks. Safely removing it from very old structures and replacing it with more environmentally friendly epoxy paints has real public health benefits for the communities these lines serve.

Metro-North overhead rehabilitation

Painting can be a part of a broader maintenance or upgrade job

We've applied B&T's approach to abrasive blasting to remove aging paint from our subway structures. These blasting rates are 4x higher than our previous power tool cleaning rates, and because abrasive blasting cleans steel more effectively than power tools, steel defects can be better identified for repair extending the structural service life.

Before and after photos of aged paint removed using abrasive blasting

We have a plan

The MTA has a plan for leveraging the power of paint to preserve our structures over the next 20 years and avoid costly repairs and disruptions.

Almost half of the subway's 61 miles of elevated line structures have been or will be painted in the current 2020-2024 Capital Plan. We will continue painting and recoating using high-performance paint over the next 20 years. We are integrating painting efforts with other major projects to accomplish multiple improvements at once, reducing overall costs and minimizing disruptions.

Our work also extends out to the commuter rail network. Over the next 20 years, LIRR will paint and waterproof up to 100 bridges and viaducts in greatest need of rehabilitation or replacement to prevent accelerated structural deterioration. Meanwhile, Metro-North is replacing and rehabilitating many of its undergrade and overhead bridges, including painting and waterproofing projects.