



# Wild Stallions at River Haven

Navasota, Texas



Prancing with a gleam over a rocky outcrop, the “Wild Stallions” at River Haven welcome residents and visitors to the Navasota neighborhood. The three hot-dip galvanized steel horses are artistically wrought, with windblown manes and outstretched limbs capturing the wild essence of the galloping trio.

The artist, who has specified hot-dip galvanizing for past projects, chose hot-dip galvanized steel to protect this outdoor sculpture from exposure to the elements. Given the humid southeast Texas climate, the decision to galvanize was the soundest option to prolong the life of the project with little or no maintenance. Settled in a suburban environment, the wild horses are expected to last 75 years or more with no maintenance – this means the life-cycle cost of the project was greatly reduced when compared to the lifetime of maintenance costs necessary with paint applications.

With the fragile nature of the sculpture and high possibility of warping, the stallions required special handling to ensure the end product reflected the artist's vision. The 1,522 pounds of stallion steel, including the fabricated welded body plates and hoof-like base anchors were galvanized and ready for placement in just two days.

Though the artist originally planned to utilize a duplex system of galvanized steel and paint to protect the project from the elements, the artist was so impressed by the aesthetics of the gleaming zinc coating, he opted to forgo painting and let the sunlight play off of the natural metallic sheen of the horses. The natural zinc coating blends in with the pastoral surroundings and is also 100% recyclable, enhancing the environmentally friendliness of this project.

With no maintenance for 75+ years, the aesthetic gift of this sculpture will continue to complement the grassy Texas plains. Thanks to the durable, resilient zinc coating, these stallions will shine proudly, corrosion free, long into the future.



**Galvanizer**  
Southwest Galvanizing, Inc.

**Specifier, Architect, Engineer**  
Russell Cushman

artistic



# Women of the Future

Sherbrooke, Quebec



Perched in a peaceful, grassy park, "Women of the Future" reaches heavenward with a graceful, glinting twist of steel ribbons. The piece was commissioned to mark the 30th anniversary of "L'escalpe de L'estrie," a women's shelter in Sherbrooke founded by Lauretty Demontigny, and represents the first time the city of Sherbrooke accepted a structure gifted to the city. The feminine metal forms depict the spirits of two women, freed from the conditions of abuse and, step by step, finding security, dignity, and independence.

The statue is placed in a position of great prominence in Jacque Cartier Park, the principal park of the city and site of many cultural events and celebrations throughout the year. Both the creator and the city insisted on galvanizing the sculpture for two different but compatible reasons. First, the city wanted to ensure their acceptance of the structure would not impose an upkeep cost on the taxpayers. Because hot-dip galvanized steel requires little or no maintenance for 75+ years in a suburban environment, the taxpayers will not have to fund costly touch ups to maintain the piece's appearance over the years.

Second, the artist wanted assurance his work would not diminish unduly with age. The durability of the zinc coating will protect the piece from the appearance of rust, and perhaps worse, deterioration of the structure itself. The complexity of the design, comprised of flowing, artfully entangled steel strips, could never have been painted properly and would have resulted in rusting at the overlaps almost immediately. The galvanizing process promised full zinc penetration of all complex joints, guaranteeing the lovely ladies will remain unmarred by unsightly rust stains.

The artist also appreciated how the coating will age slowly and naturally in a dignified way, approximating the human condition itself. Despite constant exposure to sunlight, rain, and snow, "Women of the Future" will carry on for many years with continued grace and beauty, unmarred by the ravages of corrosion.



**Galvanizer**  
Corbec Corp.

**Specifier**  
City of Sherbrooke

**Artists**  
Creations Tetro Inc.  
Annie Bilodeau

artistic



# Bergen County Bridge

Fairlawn/Patterson, New Jersey



Breaking through a lush grove of trees to connect the cities of Fairlawn and Patterson, New Jersey, the Bergen County bridge is one of several in the state to utilize hot-dip galvanized steel for corrosion protection. A natural surface appearance was desired by both communities to help the gently arcing bridge complement and not supersede the surrounding vegetation.

This goal was achieved by incorporating a new truss design to replace the previous view-obscuring plate design, so the public could continue to enjoy the scenic view of the creek flowing through the trees. In keeping with this natural emphasis, the soft, gray appearance of the zinc coating blends seamlessly into the surrounding environment.

Not only will the galvanized coating provide a pleasing aesthetic, it will also keep the appearance of the bridge unmarred by the unsightly effects of rust and corrosion. The barrier and cathodic protection developed during the galvanizing process will keep the bridge both structurally sound and free of dripping or streaking rust stains.

The large size of the trusses necessitated a progressive dip, where first one end and then the other are dipped into the molten zinc bath to provide full coverage for oversized elements. Special care was taken during the progressive dipping of the truss material to conceal any dip lines for an attractive, uniform zinc coating. All two tons of trusses, floor beams, flooring, diaphragms, supports, rail, and plates were hot-dip galvanized, ensuring the bridge will remain an attractive, functional addition to the two communities for generations to come.



### Galvanizer

V&S Columbus Galvanizing LLC

### Specifier

Bergen County/ Maser Consulting

### Engineer

Maser Consulting

### Fabricator

US Bridge

### Additional

Dopp & Dopp Associates

bridge & highway



American Galvanizers Association



# El Andaluz Commercial Offices & Residences

Santa Barbara, California



Step into architect Jeff Shelton's El Andaluz courtyard and prepare to be transported to a far away world of color and whimsy. A bold kaleidoscope of ornately colored ceramic tile floors, fountains, ledges and stairs are strikingly juxtaposed with the glinting metal of laser-etched hot-dip galvanized steel balconies and support structures. The commercial offices of El Andaluz, coupled with residential condominiums, prominently display hot-dip galvanized steel elements in Shelton's adaptation of a similar picturesque courtyard six blocks from the Pacific Ocean in Santa Barbara.

Handling of the elaborately designed pieces provided a challenging opportunity for the galvanizer to apply his skills. Because of the exposed nature of the galvanized features, special handling was required to ensure the finished product complied with the architect's vision. Large, three-dimensional plate frames had to be specially secured on dedicated racks to guarantee a quality finish. Despite complicated handling and scheduling procedures implemented for this project, the 26 tons of embed angle frames, laser-cut plates, flat bar braces, and threaded studs were completed on time with quick turnaround.



With a reputation for favoring galvanized steel elements in his creations, the architect was depending on the zinc patina finish, which develops in the months after galvanizing, to enhance the look of his artistic creation. As the patina develops, the galvanized steel will not only take on a uniform matte gray appearance to complete the architect's vision, but will also ensure long-lasting protection for the project. The galvanized steel was incorporated to assure the structural integrity of the architectural display for decades to come, as it will stand strong and uncompromised by the ravages of corrosion for 75+ years.

The intricate pieces were then incorporated into the final design of the courtyard. El Andaluz interlaces the aspects of galvanized steel with a collection of colorful tile artwork and ceramic flower pots for a one-of-a-kind architectural experience that elevates traditional courtyard design to that of artistic masterpiece.



In addition to a long life for the structure, another high priority for El Andaluz was a maintenance-free corrosion protection system. Unlike other corrosion protection systems, such as paint, galvanized steel remains maintenance-free for 75+ years. No maintenance means no need for costly, interruptive, and repetitive touch-ups, as well as less impact on the environment – the 100% natural zinc coating will not require any of the volatile and wasteful energy outputs associated with continuous repair.

## Galvanizer

Valmont Coatings – Calwest Galvanizing

## Specifier

Dan Upton

## Architect

Jeff Shelton

## Engineer

Leon Olsen

## Fabricator

Angeles Steel Services

building & architecture



American Galvanizers Association



# "Signals" Rutgers Running Man

New Brunswick, New Jersey



Welcoming visitors to the Rutgers University campus in New Jersey, "Running Man" stands mid-stride at the entrance of the Biomedical Engineering building. Captured in a sprint, the amalgamation of various sized tubes generates a sense of suspended motion as the viewer's eye flows across the ringed body.

With the tubular nature of the basic elements of the structure, Running Man needed a corrosion protection system that would protect the sculpture inside and out. As pieces are dipped into molten zinc during the galvanizing process, zinc flows in and around the tubes, providing equal coverage for both the interior and exterior in one fell swoop. With the durable, protective metallurgical bond created by the galvanizing process, rust will not find any weak spots to begin corrosion.

This is especially important given the sculpture will have to withstand the harsh winters and wet springs of the East Coast year in and year out. This structure actually utilizes a duplex system for corrosion protection, which combines the superior protection of galvanized steel with the additional benefits of another corrosion protection system such as powder coating or paint to extend the life of the piece even further. Because of the additional durability created when using these two systems in tandem, the repetitive, scheduled maintenance for paint on bare steel will be significantly reduced.

Originally, the specifiers were concerned the unusual piece would never survive the galvanizing process, or at least be distorted beyond recognition. With good communication and design help, the galvanizer was able to show almost anything can

be successfully hot-dip galvanized. This effective communication led the whole structure to be hot-dip galvanized, including fasteners and all steel components. The cost of galvanizing was donated to the artist, who then passed the sculpture on to Rutgers University.

The sculpture posed many challenges, including an unusual type of pipe product and coordinating to ensure the correct weld material was used. The pieces were also carefully vented to prevent distortion and prevent any skimmings from being trapped on the surface during the dipping process. With good ventilation, the zinc was able to flow freely through and around the piece, creating a perfectly smooth finish.

An exceptional finish was one of several strictly monitored design criteria set up to achieve the artist's vision. As all who visit Rutgers will pass by this sculpture, it is particularly important for the piece to stay attractive and corrosion free – and the durable protection of hot-dip galvanized steel promises protection for years to come.

## Galvanizer

V&S Lebanon Galvanizing LLC

## Artist

Ralph Helmick

## Steel Fabricator

Bob's Welding and Fabrication  
Jamaica Plain, MA



civic contribution



American Galvanizers Association



# Holocaust Memorial Name Plates

Skokie, Illinois



Shining through the night in remembrance of those who suffered in one of history's greatest tragedies, the Illinois Holocaust Museum & Education Center Name Plates bear the monikers of a group of people whose legacy will not be forgotten. After three years of construction on the museum itself, these name plates were some of the final elements to complete this project of heart and memory.

Expected to be one of the last memorials to be constructed with input from and collaboration with living Holocaust survivors, the museum took great care in selecting the materials that would create the final product. Museum officials had to choose between stainless steel, copper, painted, and galvanized plates for the 72 memorial pieces. With careful consideration, they chose hot-dip galvanized steel as the medium for their vision.

Desiring a natural, attractive finish that would age with grace, the officials chose a durable, 100% natural and recyclable zinc coating that will protect the plates from any undue signs of rust or corrosion for the next 75 years or more. The dependable hot-dip galvanized coating will protect the pieces from the daily onslaught of exposure to the elements and spray from the surrounding reflection pool fountains.

The letters for each name were carved out by waterjetting, then each plate was wired and hung to create a uniform removal pattern when drawn from the zinc bath; as a result, all of the plates had a smooth finish similar in appearance. Then the plates were mounted over plastic and lit from behind to illuminate the names in the darkness.

A quick turnaround was necessary for the pieces to be mounted and ready for the grand opening of the site in April 2009. The opening gala was attended by Former Secretary of State Colin Powell, Illinois Governor Pat Quinn, and Holocaust survivor and author Elie Wiesel. As the name plates age and endure sun and storm, the galvanized coating will continue protecting the tribute for generations.



**Galvanizer**  
M.W. Galvanizing, Inc.

**Specifier**  
Skyline Design

**Architect**  
Dan Waters

civic contribution



# Woodwards Building W Tower

Vancouver, British Columbia

Reaching high into the Vancouver sky, the windowed walls of the Woodward Building “W” Tower are laced with columns of intricately etched decorative panels depicting tangled branches. These panels take advantage of the increased corrosion protection of a duplex system. For projects that require a particular color scheme, duplexing is a good way to get the corrosion-resistant protection of galvanizing, while allowing a structure to incorporate any color desired. Duplex systems combine the superior protection of galvanized steel with the additional benefits of another corrosion protection system such as powder coating or paint to extend the life of the piece even further.

The extended time-to-first maintenance of galvanized steel, combined with the additional durability created when using these two systems in tandem, means the typical repetitive, scheduled maintenance for paint on bare steel will be significantly reduced, and no unsightly paint peeling or rust bleeding will occur. Instead, the galvanized steel will protect the core of the panels, preventing unsafe deterioration created by corrosion. With this protection, ivy-filled planter boxes on every third floor of the building will be free to grow and mimic the floral patterns on the screens themselves, unperturbed by touch-up crews and high-rise maintenance equipment.

With more than 760 housing units, as well as the David Suzuki foundation and Simon Fraser University Downtown campus, currently occupying the “W” Tower, the building owners can little afford to waste time and money on maintenance. The duplex system will protect the steel panels from the inside out, while allowing the bright coloring consistent with the architect’s vision to exist free of corrosion.

## Galvanizer

Silver City Galvanizing, Inc.

## Specifier

Clearbrook Ironworks

## Architect

Henriquez Partners

## Engineer

Glottman Simpson

# duplex system





# Candelabra Tower

Miami, Florida

Piercing the cloudy heights of the Miami sky, the Candelabra communications tower is the tallest structure in the city at 1,042 feet. The structured tangle of more than 460 tons of tubular members, solid bar leg structures, fasteners, anchor bolts, and angle bracing was so impressive, it was featured in the October 2009 issue of Modern Steel Construction highlighting the challenging size and design of the project. A structure of this size had to slip-fit and all bolted holes needed to align and be clean and useful at the extreme height the material was to be assembled (more than 1,000 feet).



With the height of Candelabra, corrosion could be structurally devastating – and the highly corrosive saltwater environment of Miami meant every precaution must be taken to protect the steel from the potential threat. For more than a decade, the owner has chosen to hot-dip galvanize their radio and communication towers because of the consistently proven durability for this application. Given this experience, the owner felt there was no better way to combat the corrosive sea air and seasonal storms typical to the city than to hot-dip galvanize all of the critical structural components.

Galvanized steel is the most effective means of protection against the harsh sun, rain, and salty sea air of Miami. Specifiers in southern Florida now have a structure to inspect and examine in the future when determining what corrosion protection system to utilize, as the Candelabra will stand head and shoulders above the rest, corrosion-free, for generations to come.

**Galvanizer**

V&S Delaware Galvanizing LLC

**Specifier, Fabricator**

Stainless LLC

**Engineer**

Tom Hoenninger

electrical, utility, & communication



American Galvanizers Association



# Allen Canning Company

Van Buren, Arkansas



Originally planning to use only select galvanized pieces, the owners switched to implementing an all-galvanized steel facility after a structural failure created a 90-day critical deadline to bring the plant back online. Because the hot-dip galvanizing process is a factory-controlled process independent of limitations caused by weather or humidity, the quick turnaround of galvanized steel made it the only viable choice to complete the canning warehouse on time. The dedication of the galvanizer and speed of the galvanizing process led the project to be finished three days ahead of schedule and within budget.

This is the first all-galvanized structure Allen Canning has erected. Galvanized steel was the best return-on-investment alternative, compared to life-cycle cost projections for stainless steel and various other coatings. The company had specified galvanized steel for several other projects, producing excellent results worth repeating in similar food-grade environments.



Durability was a key consideration, because of the need for resistance to chemical contaminants in the food-processing environment. Chemical contaminants and constant exposure to high humidity with active steam make galvanized steel the ideal choice to meet USDA mandated standards for high corrosion resistance. The barrier protection of the metallurgically bonded zinc coating will protect the enclosed steel from corrosion that can lead to structural failure or food contamination.

Thus, 391 tons of anchor bolts, base-plates, columns, beams, bracing, joist girders, roof joists, fasteners, and miscellaneous steel were galvanized and erected to create a gleaming, structurally safe, and corrosion-free facility. The company has noted this facility as a showpiece for the parent corporation's clients, who plan to utilize galvanized steel in future projects as a result of the Allen Canning success story.



The height of the facility also necessitated a maintenance-free corrosion protection system to avoid inconvenient and impractical touch ups or repair. Hot-dip galvanized steel will keep the structural elements of this warehouse corrosion free, with no maintenance, for 75+ years.

### Galvanizer

Valmont Coatings – Oklahoma Galvanizing

### Specifier

Burrough-Brasuell Corporation

### Architect

Robert Bowen

### Engineer

Dale Brasuell

### Additional

Don Peters Construction  
MBM Enterprises  
NUCOR-Vulcraft

## food & agriculture



American Galvanizers Association



# Martin Midstream RPG Unloading Facility

Baytown, Texas

With railcars stretching into the distance, the Martin Midstream Rail Terminal has the capability to unload 100 refinery propylene (RPG) rail cars per day. As the terminal unloads the cars, it sends the product into storage or directly into pipelines supplying the nearby propane/propylene facility, which is part of the world's largest natural gas liquid fractionation complex, featuring approximately 100 million barrels of liquid storage capacity.

Because galvanized steel is maintenance-free, unlike other corrosion protection systems, no energy or materials will be wasted on costly upkeep. The petrochemical industry is very conscious of environmental regulations and welcomes products like galvanized steel that magnify their efforts to demonstrate the desire to become environmentally responsible.

Three-hundred and fifty thousand pounds of structural steel, stairs, ladders, handrail, and grating were galvanized in 100% natural, recyclable zinc. The longer stairs and rails had to be spliced to provide the highest quality dip, and the tubular rails were left open on the end to provide drainage – this attention to design means the pieces are now able to be protected by the strength and durability of a quality zinc coating. Durability, low maintenance, and cost effectiveness made this project a success, one Martin Midstream plans to repeat in the future.

With such a busy, industrial operation underway, the rail terminal undergoes many dings and dents from tools and equipment, not to mention personnel traffic. Hot-dip galvanized steel combats this in two ways: first, the galvanizing process develops a metallurgical bond between the steel and zinc that creates an abrasion resistant coating ideally suited to prevent small nicks and scratches from compromising the structure. The durable zinc coating can also withstand the corrosive Baytown humidity and nearby brine storage water.



photo by: Sean Brecht

photo by: Sean Brecht

**Galvanizer**  
AZZ Galvanizing Services

**Engineer**  
John Martin, Martin Midstream Partners

**Manufacturer**  
The Bullard Company

industrial



# First Energy Summit

Stratton, Ohio



The gypsum pipe conveyor, constructed on the Sammis River site, is a portion of the \$1.5 billion project expected to reduce emissions of sulfur dioxide by 95% and nitrogen oxide by at least 64% at First Energy's largest coal-burning electric generating plant. The 2.4 mile long hot-dip galvanized conveyor stretching through the countryside is part of a hollow rock waste gypsum disposal facility built on a reclaimed strip mine.

Limestone is used in the scrubbers as a reagent to remove SO<sub>2</sub> from the emissions. During the process, the limestone is converted to synthetic gypsum. The synthetic gypsum is dried and then transported to the facility on the enclosed conveyor belt. The "scrubber sludge" gypsum is then used to make wallboard, further reducing waste.

In keeping with these green efforts, utilizing a 100% natural, recyclable zinc coating for corrosion protection means no VOC's or wasted energy will be expended on maintenance. Hot-dip galvanized steel is highly durable, and will remain maintenance free for 75+ years. Even through the structure's constant exposure to sun, rain, and snow.

The durability of the coating was also necessary because the conveyor was built over steep terrain surrounding the power plant – difficult access for touch-ups and maintenance required by other corrosion protection systems, such as paint. The conveyor also needed a coating that could survive the rough handling conditions of transporting

578,000 tons of limestone annually. Thanks to the dual barrier and cathodic protection of hot-dip galvanized steel, small nicks and abrasions will not compromise the stability of the entire structure.

The owners and community desired an attractive appearance for the structure. As much of the conveyor was built on leased property, the owners wanted a clean, consistent look for the machine, which also crosses public roads. The high quality, consistent finish of hot-dip galvanizing satisfied this need.

Given the high price tag and the public visibility of this project, the progress of this upgrade will be closely watched. Hot-dip galvanized steel will keep the conveyor attractive, durable, maintenance-free, and running efficiently for decades to come.

**Galvanizer**  
Young Galvanizing

**Specifier**  
First Energy

**Engineer**  
Koch GM

**Fabricator**  
Classic Conveyor



original equipment manufacturing



American Galvanizers Association



# Morris Arboretum “Out on a Limb Tree Adventure”

Philadelphia, Pennsylvania

Weaving like a spider web throughout the verdant canopy of the Morris Arboretum, the hot-dip galvanized steel walkways of the “Out on a Limb Tree Adventure” provide a pathway to the treetops for nature enthusiasts. Located just outside of Philadelphia, the exhibit was developed to give visitors a bird’s eye view of the forest.

Consisting of a 450-foot long canopy walk constructed around a 250 year-old chestnut oak tree, the hot-dip galvanized steel structure overlooks the steeply sloped woods of the Wissahickon Valley. In keeping with the bird’s eye theme, visitors can walk into a human-sized birds’ nest constructed of galvanized steel and interwoven with branches hovering at a daring 80 feet above the forest floor.

The specifiers originally considered painting the project for corrosion protection, but after considering the life cycle cost savings of a maintenance-free hot-dip galvanized steel corrosion protection system, the choice was obvious. In the forest environment, galvanized steel has a life expectancy of 75+ years before requiring any type of maintenance, making it ideal for this complicated structure.

The architect, in consideration of the natural environment of the arboretum, wanted to specify a sustainable structure that would add to the greenness of the trees, rather than detract from it. The structure is comprised of lightweight, recyclable galvanized steel and wood, which required less space than concrete foundations, decreasing the risk of damaging the trees and their roots. Utilizing a galvanized steel frame design also allows the owners to easily modify the structure should something happen to one of the surrounding trees.

With an aggressive schedule for completion, time was of the essence. The quick turnaround of the pieces – some taking less than a day – and cooperation of the designers, fabricators, and galvanizer, helped keep the project on schedule. A total of 155 tons of steel was galvanized, including walkways, framing, handrails, canopy, tube steel supports, tower structures, and even the life size “nest” structure.

Upon completion, the specifiers had no doubt the contrast of the glinting galvanized steel amidst the lush, green forest would attract many visitors curious to see the 92-acre view from the expansive canopy platform. Thanks to the durable, sustainable protection of hot-dip galvanized steel, the Tree Adventure will remain an attractive, structurally safe and environmentally friendly web through the canopy.

### Galvanizer

American Galvanizing Co., Inc.

### Fabricator

DDM Steel Company

### Architect, Engineer

Metcalfe Architecture and Design

recreation & entertainment



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American Galvanizers Association



# New York City Bus Shelter

New York City, New York



Visible to the millions of passengers that pass by every day, the galvanized steel of the New York City Bus Shelters stand corrosion-free under the daily hardships of life on the New York streets. With the constant onslaught of sun, rain, snow, road chemicals, and pollutants, painted steel would be “cracking” under the pressure.

Galvanized steel, on the other hand, will provide decades of maintenance-free corrosion protection. The specifier chose to utilize galvanized steel for just that reason, to avoid the costly entanglements of routine repair – the idea was to put the bus shelters up and forget about them. In addition to the maintenance-free nature of galvanized steel, graffiti can also be easily removed from galvanized steel by power washing.

All 500 tons of structural steel members, including tubing and side and roof panels, required a smooth finish, free of zinc build-up and smooth to the touch. With truckloads of steel coming in from multiple

steel suppliers, no other coating could have been applied as quickly. The quick turnaround of the factory-controlled hot-dip galvanizing process allowed the galvanizer to match the different components together and ship them to the different sites complete and fast.

Durable and maintenance-free, these bus shelters are taking advantage of the most superior corrosion protection system available. Located throughout the five boroughs of New York City, these structures will stand strong and corrosion free for generations of New York public transportation advocates.



**Galvanizer**

V&S Amboy Galvanizing LLC

**Specifier**

Metropolitan Transportation Authority of New York City

**Architect, Engineer**

CEM USA Inc.

**Fabricator**

Hi-Tech Metal

transportation



# Dadeland Station Stair Repairs

Miami, Florida

After viewing the shiny, new replacement stairwells at the Dadeland Station, one would never guess the shoddy, unsafe state of the previous structure. Previously painted for corrosion protection, the old stairway system was completely corroded and in need of a total safety and aesthetic makeover after just ten years.

Seeing the successful durability of hot-dip galvanized steel in other Metro Station stairways, the specifiers chose to implement a similar use of the corrosion protection system in the Dadeland Station replacement. After galvanizing 150 tons of structural steel, hand rails, platforms, and stringers, this new and improved stairwell is now standing strong with an attractive zinc finish.

To avoid a failure similar to the previous painted structure, the station now relies on the maintenance-free corrosion protection of hot-dip galvanized steel. Safety is paramount when you have scores of pedestrian traffic ascending and descending the stairs daily, and corrosion can compromise not only

the look of the structure, but, more importantly, the stability.

Galvanized steel will stand up to the daily rigors and abrasions of a busy station while defending against the ravages of corrosion for 75+ years. The timing of the station stairwell replacement was crucial – as the above shopping center remained open to business, the fire marshal ordered only one stairway at a time could be out of commission. The quick turnaround of the galvanizing process, which can be conducted regardless of weather or season, was critical. The stairways were prefabricated, then quickly hot-dip galvanized, reducing turnaround time to a minimum. As a result, the old, deteriorating stairwells were quickly replaced with the sturdy, new galvanized steel structures, which are an important contribution to the attractive, modern façade of the Dadeland station.

## Galvanizer

Industrial Galvanizers America, Inc. – Miami

## Specifier

Piztorino & Alam Structural Engineers

## Architect

Robin Bosco

## Engineer

Walter L. Lista  
Piztorino & Alam Structural Engineers

## Additional

Alro Metals Inc.  
Alsiab Engineering



# transportation



American Galvanizers Association



# Calipso Water Park

Limonges, Ontario

Branching upward like a metallic grove of trees across the grounds of the Calipso Water Park, the hot-dip galvanized support structures and stairwells allow visitors to the park to rest easy in the safety and stability of the parks slides and rides. In an environment constantly assaulted by the corrosive effects of water and chemicals, galvanized steel is the perfect solution to protect structural steel from damaging and unsafe corrosion.

Galvanizing not only protects the steel from the point of view of structural integrity and safety, but also, it provides a long-term appearance free of visible rust spots. These structures can carry hundreds of people above the ground, so safety – both actual and perceived – is critical. No one wants to be dozens of feet in the air with their family on a rusty looking structure, and galvanized steel ensures the structures will remain rust-free for decades to come.

The specifier chose to galvanize all structural steel elements, including anchors, supports, and ornamental components. After seeing the attractive, natural, and modern-looking finish of the zinc coating, the owners chose to allow the galvanized pieces to remain unpainted and exposed. Not only did the galvanized finish achieve the vision of the owners, it will provide 50+ years of maintenance-free corrosion protection – meaning lifelong costs associated with paint repair and touch-ups can be avoided, as well as indirect costs caused by shutting down or delaying rides for continuous maintenance.

The principal challenge of this project was the size and complexity of many of the support columns which totaled more than 350 tons of galvanized steel. These highly complex pieces were designed to guarantee proper ventilation and drainage so the final product was functional, safe and free from any galvanizing blemishes or unwanted deposits – especially important, as many railings and stairs will be touched and moved upon by a multitude of park goers.

The superior barrier and cathodic protection of hot-dip galvanized steel is particularly suited to this highly corrosive environment, standing up to the daily wear and contact of sun, water, and chemicals. As the largest water park in the country, Calipso's sleek, attractive, and safe galvanized structures will keep the park operational and eye-catching for generations to come.

**Galvanizer**  
Corbec Corp.

**Specifier, Architect**  
Village Vacances Valcartier, White Water

**Engineer**  
Genivar/ Stantec/ White Water

**Contractors**  
MIG Structural Steel - Pommerleau

water & marine



American Galvanizers Association



# Valmont Irrigation Machines

Worldwide



The hundreds of thousands of Valmont Irrigation center pivots and linear machines sold over the past 40 years are a testament to the superior, durable corrosion protection offered by utilizing hot-dip galvanized steel. Now considered the industry standard for protecting pivot irrigation equipment against corrosion, galvanized steel protects these vital farming tools from costly and damaging corrosion caused by constant exposure to every climate condition on the planet – beating sun, falling rain, freezing snow – as well as the water moored within.

In generations past, approximately 3,000 Valmont Irrigation machines were painted for corrosion protection. As farmers began to demand a longer lasting corrosion protection solution for their corroding irrigation pipes, Valmont turned to hot-dip galvanized steel in 1968 to protect their pipelines from the damaging effects of rust. The maintenance-free durability of the new piping quickly taught the farmers the value of hot-dip galvanized steel, and they desired more parts to be galvanized to receive the same protection.

The surrounding infrastructure quickly followed. Since 1990, all rims that drive the unit have been galvanized, and, most recently, the final component – the swivel – is being galvanized to bring it to standard with the other galvanized parts. In forty years, over 175,000 dependable, durable, hot-dip galvanized irrigation systems have sold across the globe. Many of these machines, some forty years old, continue to operate corrosion free, untouched as the day they were put afield.

To demonstrate the lifetime achievement of the hot-dip galvanized coating on these structures, a Valley center pivot, sold in April of 1977 was inspected. The table below shows the zinc coating thickness after 33 years. This puts into perspective the even, continued protection provided by hot-dip galvanized steel. The decades-old machine is still operational, and the piping, supporting structure, and unit legs are in excellent condition. No area of galvanized steel has been compromised, and there is no evidence of corrosion. The zinc patina on the piece is mature and

intact, and has taken on the familiar, attractive matte gray appearance. This natural zinc patina blends in with the rural environment and is considered to benefit the landscape by many end customers.

The utilization of the 100% natural zinc coating also reflects the earth-friendly intent of the irrigation machine. What better way to take advantage of zinc's sustainable characteristics than with a product designed to maximize food production while conserving water? The zinc in hot-dip galvanized steel is infinitely recyclable and essential for life, while the unbeatable corrosion protection means no energy or materials will be wasted on routine touch-up and maintenance required by other corrosion protection systems.

Standing up to decades of abuse from constant exposure to nature's fury and the very water coursing throughout the machine, Valley irrigation equipment is built and galvanized to withstand the toughest circumstances. The unparalleled corrosion protection of hot-dip galvanized steel will allow this equipment and its counterparts to keep operating, uninterrupted and corrosion-free for another 30+ years for farmers the world over.

Valmont Irrigation System Produced 1977, Tested 2009:						
Sample Area	Readings (mils)					Average
Pipeline	3.9	4.1	3.9	4.0	3.9	3.9
Angle Supports	3.5	3.3	3.4	3.3	3.2	3.3
Leg Supports	3.5	3.5	3.2	3.9	3.9	3.5

**Galvanizer**  
Valmont Coatings -Valley Galvanizing

**Specifier**  
Valmont Industries, Inc.

**Additional**  
Michelle Stolte  
Keith Knudsen  
Richard Berkland

lifetime achievement



# Deltaport Third Berth Expansion

Delta, British Columbia



With tall rows of gleaming racks spanning far as the eye can see across the Strait of Georgia in Delta, British Columbia, the Deltaport Third Berth Expansion is a response to rapidly increasing industry demand. With projections indicating a doubling container traffic in the next ten years, and a tripling in traffic in the next 25 years, Deltaport is planning for the future by both expanding its container handling capacity and by utilizing durable, maintenance-free hot-dip galvanized steel for corrosion protection.

This outstanding durability will ensure these hot-dip galvanized steel structures will last 50+ years with little or no maintenance, a factor critical to the ongoing operation of the facility. No time or money will be wasted with costly, ineffective touch-ups and repairs. Instead, the galvanized racks will stand strong and corrosion free, enhancing the functionality of the facility.



Sharing a location with the “Westshore Terminal” coal port, the Third Berth Expansion is subjected to some of the harshest environmental factors possible. Perched in the chilly, saltwater environment of the North Pacific shore, the container racks of the port must withstand the highly corrosive effects of rain, snow, and salty sea air. As the metallurgically bonded zinc coating protects edges and flat surfaces alike with no weak spots, seeping water will have nowhere to take hold – stopping rust and corrosion before it starts.

With more than 690 tons of structural steel for container storage, fasteners, and gratings hot-dip galvanized, the owners of Deltaport are planning for a long life of durable, maintenance-free corrosion protection that will support the port’s expanding operations long into the future.



The durable zinc coating is more difficult to penetrate than the substrate steel itself with zinc-iron alloy layers of up to 250 DPN hardness protecting the steel beneath. Such strength is important for container racks that will continually be exposed to rough handling in day-to-day operations. In addition to protection from abrasion, hot-dip galvanizing also provides cathodic protection, which means the zinc will sacrificially corrode to protect the areas around small scratches ionically – preventing rust from spreading like wildfire across a structure.

**Galvanizer**  
Silver City Galvanizing, Inc.

**Specifier**  
Kay-Son Steel

**Engineer**  
Vancouver Port Authority

**Engineer**  
Brymark Installations

most distinguished