PAINTSQUARE.COM

JPCL

AUGUST 2016 BONUS ISSUE

Cover photo: Amanda Went.

Periodical class postage at Pittsburgh, PA and additional mailing offices. Canada Post: Publications Mail Agreement #40612608 • Canada returns are to be sent to: American International Mailing, PO Box 122, Niagara Falls, ON L2E 6S4 Canada The Journal of Protective Coatings & Linings (ISSN 8755-1985) is published monthly by Technology Publishing Company in cooperation with the SSPC (877-281-7772). Editorial offices are at 2100 Wharton Street, Suite 310, Pittsburgh, PA 15203. Telephone 412-431-8300 or 800-837-8303; fax: 412-431-5428 Copies of articles are available from the UMI Article Clearinghouse, University Microfilms International, 300 North Zeeb Road, Box 91, Ann Arbor, MI 48106. Subscription Rates: $90.00 per year North America; $120.00 per year (other countries). Single issue: $10.00. Postmaster: Send address changes to Journal of Protective Coatings & Linings, 2100 Wharton Street, Suite 310, Pittsburgh, PA 15203. Subscription Customer Service: PO Box 17005, North Hollywood, CA 91615 USA, Toll Free: 866 368-5650, Direct: 818-487-2041, Fax: 818-487-4550, Email: paintsquare@espcomp.com

Printed in the USA PAINT SQUARE www.paintsquare.com

Industrial Beauty

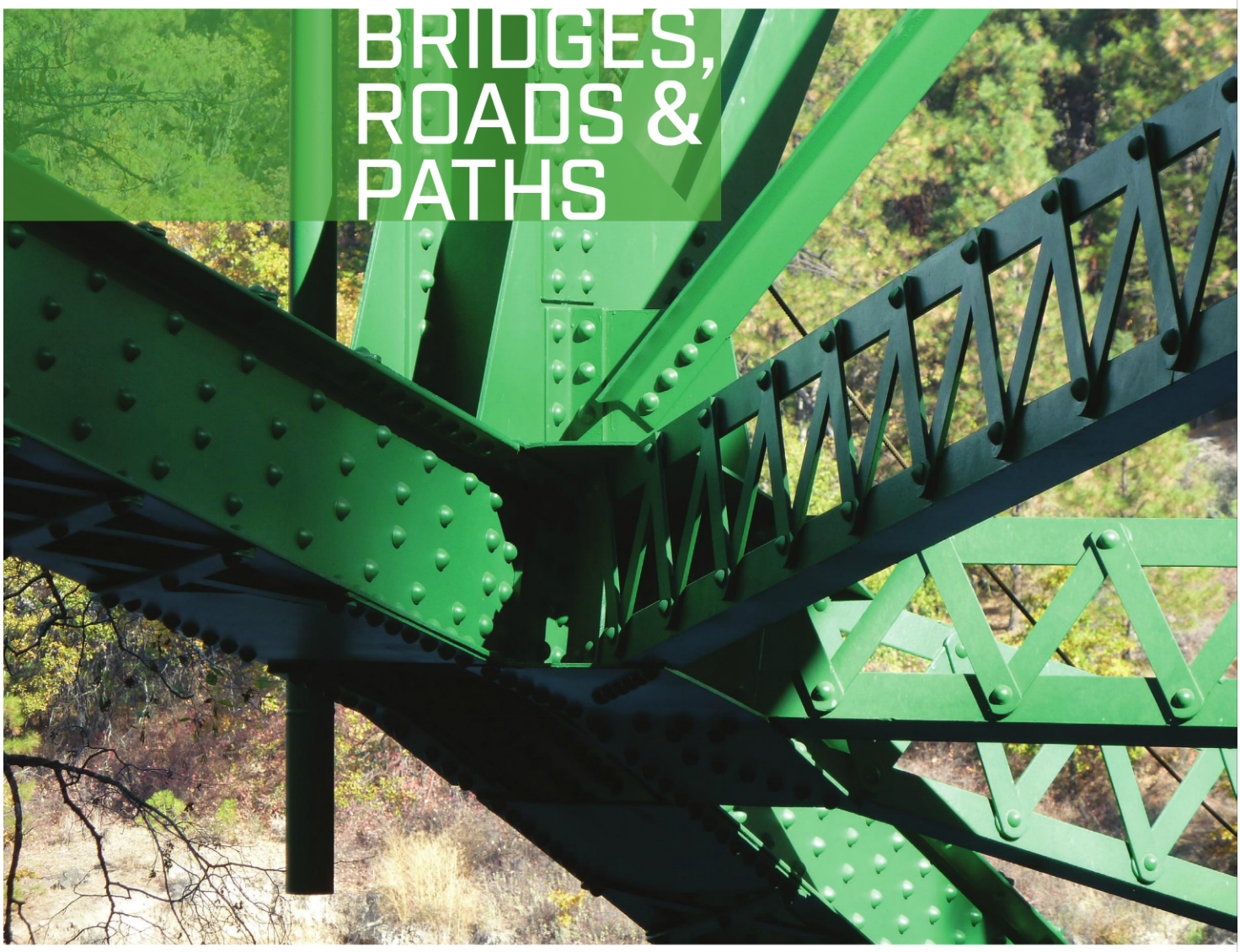
It is said that beauty is in the eye of the beholder. Many of our readers "behold" that beauty in their day-to-day work protecting industrial structures from corrosion, but we rarely, if ever, feature the nuances of what they see.

This issue is intended to be a celebration of the often-overlooked aesthetic side of our work as we pay homage to the grace, scale and artistry of the infrastructure and facilities we protect.

Pamela Simmons
Editor in Chief, *JPCL*

Photo: Pamela Simmons

BRIDGES, ROADS & PATHS



DAVID BROCKMAN, CERTIFIED COATINGS COMPANY
THE LAKE BRITTON BRIDGE, BURNEY, CALIFORNIA

Taken in the early morning light, this 580-foot below-deck truss bridge was built in the 1930s carrying Highway 89 over Lake Britton. My company was contracted to abrasive blast and repaint the structural steel. The existing coatings were the original lead-based coatings. We applied a four-coat Caltrans-formula waterborne (PWB) acrylic system.

DAVID BROCKMAN, CERTIFIED COATINGS COMPANY
SAN FRANCISCO-OAKLAND BAY BRIDGE

This is a portion of the bridge known as the Skyway that carries Interstate 80 from the Oakland toll plaza to the self-anchored suspension (SAS) span and onto Treasure Island en route to San Francisco. My company had a contract to perform the field painting for construction of the SAS portion and during a big push to paint the cable system on the bridge I was frequently on the job site before sunrise. While driving west up the eastbound skyway (obviously not open to traffic yet) I saw the moon in the perfect position with sunrise starting to color the sky.

CHARLES S. BROWN, GREENMAN-PEDERSEN, INC.
BRIDGE SECTION ON U.S. 340 OVER THE POTOMAC RIVER ON THE BORDER BETWEEN MARYLAND AND VIRGINIA

This bridge is located on U.S. 340, a major route from Maryland into Virginia and West Virginia that carries heavy traffic. Construction on the bridge began in the early 1940s but was interrupted at the onset of World War II when steel became scarce. The bridge was not completed until 1947.

I was the design engineer on this painting project in 2010. The original paint system contained lead and was removed by abrasive blasting to an SSPC-SP 10, "Near White" finish with a Class 2A containment. The new paint system was an organic zinc/epoxy/urethane system. I took this photo during a warranty inspection two years after the project was completed.

ERIC BROUWER, CRODA COATINGS & POLYMERS
NEAR VIZCAYA BRIDGE, BILBAO, SPAIN

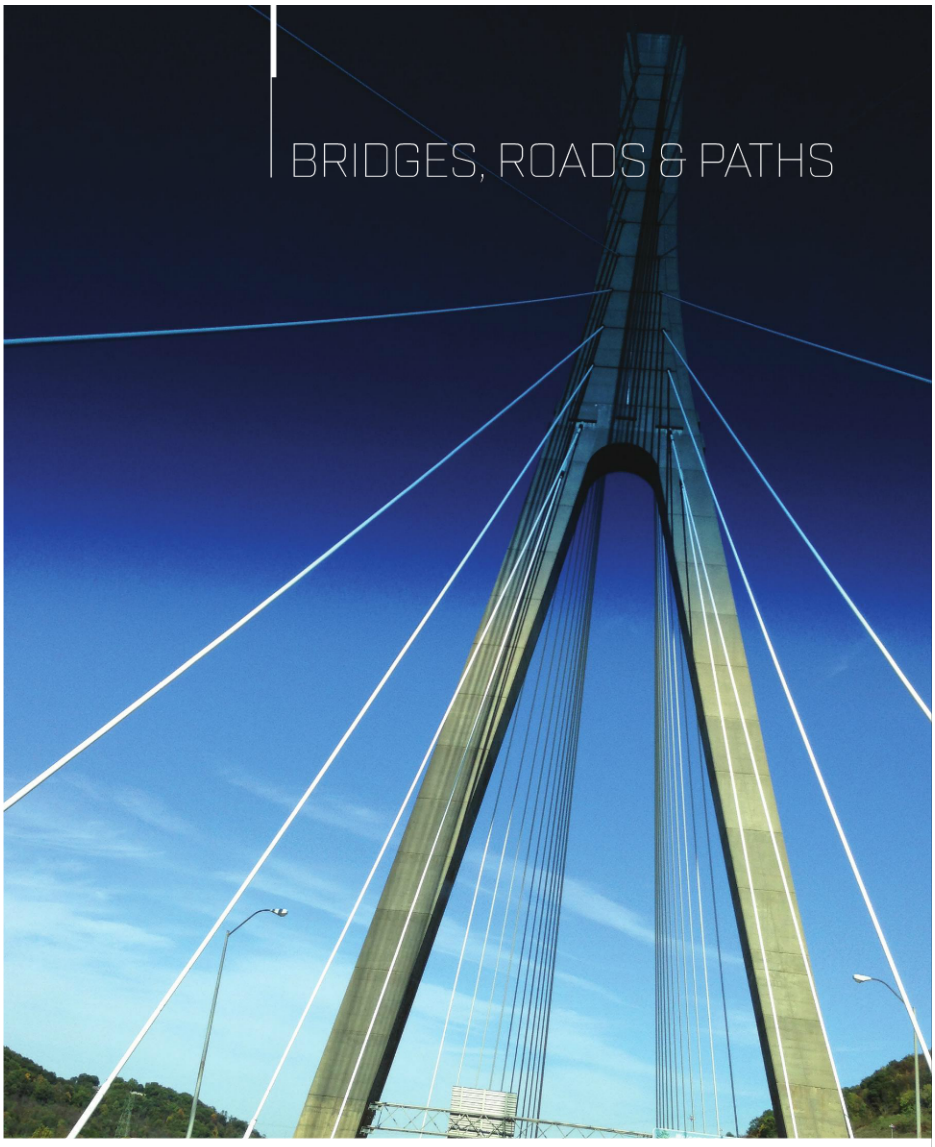
This staircase, located near the Vizcaya Bridge, shows the influence of strong corrosion brought upon by the tide. Corrosion is clearly present on the part of the staircase that is sometimes under the waterline and sometimes above it. With an eye for architecture and the influence of my day job in raw materials and protective coatings, I was involved here simply as a tourist, but I observed that the quality of the painted structure was literally going down (from left to right) and the need for protective coatings against corrosion from water could be seen clearly.

BRIAN GOLDIE, TECHNOLOGY PUBLISHING COMPANY
FORTH RAIL BRIDGE, SCOTLAND

The Forth Bridge has undergone a major refurbishment project that started in 2002 and lasted 10 years. The steelwork was blasted to bare metal and coated with a high-performance system. This was the first time that maintenance painting of this structure involved complete paint renewal. This project was specified with the intent that the bridge will not require a full recoat for at least 20 years, putting an end to the myth that painting the Forth Bridge is a never-ending task. This photo was taken from the top of the central arch just before the project was completed.

PAMELA SIMMONS, TECHNOLOGY PUBLISHING COMPANY
MARGARET HUNT HILL BRIDGE
DALLAS, TEXAS

This unusual bridge was designed by Santiago Calatrava, a well-known architect, structural engineer and sculptor. It spans the Trinity River and was completed in 2012.



PAMELA SIMMONS, TECHNOLOGY PUBLISHING COMPANY
THE VETERANS MEMORIAL BRIDGE
WEIRTON, WEST VIRGINIA

This bridge, also known as the New Steubenville Bridge, spans the Ohio River between Steubenville, Ohio and Weirton, West Virginia. It's a cable-stayed bridge and was completed in 1990, replacing the Fort Steuben Bridge built in 1928.

ERNIE SPADER
SPADER ACCESS
THE NEW TACOMA NARROWS BRIDGE
PIERCE COUNTY, WASHINGTON

We were on-site during the construction and assembly of the new bridge as this photo opportunity presented itself. In the foreground you can see one of the bridge sections being hoisted into position by the gantry crane. In the background, you can see the original Tacoma Narrows Bridge and the new Tacoma Narrows Bridge in progress.

INDUSTRIAL BEAUTY

MARK B. DROMGOOL, KTA-TATOR AUSTRALIA PTY LTD
MELBOURNE, AUSTRALIA

This photo is of the Yellow Beam, one of a series of architectural items at the northern gateway to the Australian city of Melbourne. It's a square steel plate fabrication 70 meters long by 5 meters square that hangs cantilevered across the southbound lanes of the Tullamarine Tollway. The Yellow Beam forms a symbolic "gateway" to the northern portal of the city and is accompanied by 39 inclined "Red Sticks" on the opposite side of the road, resembling an oversized boom gate. I took this photograph early one morning while performing an inspection of the Red Sticks, just because it looked great silhouetted against the stunning eastern sky.

The Yellow Beam is protected by a zinc-rich primer, a high-build epoxy and a polysiloxane topcoat.

THOMAS TAPSCOTT, HCI INDUSTRIAL & MARINE COATINGS

DAVID M. OFSHARICK, ALPINE PAINTING & SANDBLASTING
ELEVATED WATER STORAGE TANK NO. I
VILLAGE OF ROCKVILLE CENTRE, NEW YORK

The tank pictured is a 1.5-million-gallon elevated multi-legged tank that stands approximately 200 feet tall. This photo was taken during the scaffold erection surrounding the center riser of the tank. We chose to scaffold as part of the containment system rather than using a traditional tepee-style system due to the high winds common on the south shore of Long Island. The existing coatings were completely removed from both the interior and exterior of the tank. The winds were especially harsh, requiring that the dust collector run through the night (creating suction, pulling the tarps tight against the scaffold) to guard against losing the containment.

DAN ZIENTY, SHORT ELLIOTT HENDRICKSON, INC.
LITTLE FALLS, MINNESOTA

This is the second of two water towers painted by my company at Camp Ripley. Because Camp Ripley is a state Air Force National Guard facility, aviation orange and white are predominantly featured in the symmetry of the bottom bowl and support columns of this 500,000-gallon tank completed in 2013.

DAN ZIENTY, SHORT ELLIOTT HENDRICKSON, INC.
MINNETONKA, MINNESOTA

When installing telecommunication equipment inside water towers, clean and functional is the goal, but sometimes the result has aesthetic value as illustrated. The attachment of coaxial cables inside the access tube of this water tower made it worth a second look.

MARK LEWIS, EAST BAY MUNICIPAL UTILITY DISTRICT
MOKELUMNE AQUEDUCTS, OAKLAND, CALIFORNIA

The three Mokelumne Aqueducts carry water from the foothills of the Sierra Nevada mountains to the Eastern portion of the San Francisco Bay. They provide high-quality drinking water to 1.4 million residents. The pipes are 90 miles in length, ten of which are above ground where they cross California's Central Valley. The oldest was completed in 1929 and is 65 inches in diameter. The other two are 69 inches in diameter (completed in the 1940s) and 89 inches in diameter (completed in 1963).

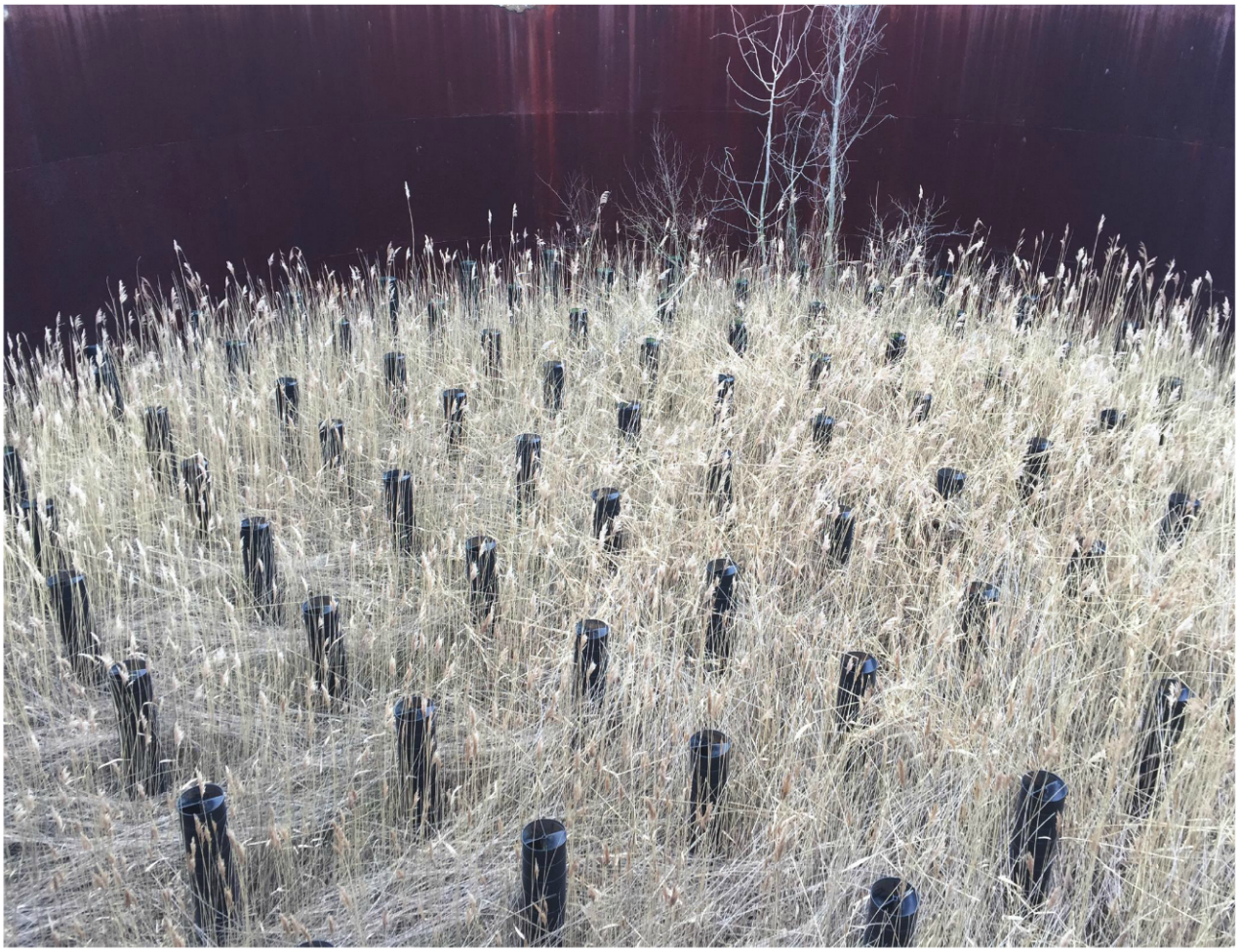
This photo was taken following a flood, which inundated three pipes after a levee failure. It took about five months to pump water from the "island" where they are situated and this photo was shot at the completion of the pumping. The island, known as Upper Jones Tract, sits below sea level. I was the project engineer responsible for recoating these three aqueducts and was conducting a site visit to assess the damage to the coatings, which was extensive.

The pipes are constructed of steel, with the oldest being riveted construction. It was originally coated with a hot-applied, asphalt-based coating of about 85-percent asphalt and 15-percent coal tar. The remaining two pipes were coated with a 3-mil-thick alkyd red lead primer, followed by a 4-mil-thick coat of non-leafing aluminum paint and a finish coat of 5-mil-thick leafing aluminum paint. These coating systems have since been removed by abrasive blasting to SSPC-SP 10/NACE No. 2, "Near White Blast Cleaning" and recoated with an inorganic zinc paint. The zinc is not topcoated but instead acts as a stand-alone coating system. This project was the recipient of the SSPC E. Crone Knoy award in 2015.

INDUSTRIAL BEAUTY

BEN SCATURRO JR.
ALPINE PAINTING & SANDBLASTING
YONKERS, NEW YORK

This is a 72-foot-diameter steel digester cover at a joint wastewater treatment plant. Our company was hired to remove the old, damaged cover and replace it with a new one. This photo was taken during the final touch-up of the interior coating system, composed of an epoxy prime coat and a topcoat of 100-percent-solids high-build epoxy. The project was completed during the winter months, requiring that the structure be heated.



WARREN BRAND, CHICAGO CORROSION GROUP, LLC
WASTEWATER TREATMENT NEUTRALIZATION TANK, CHICAGO, ILLINOIS

This is an open-top wastewater treatment tank that has not been used for roughly 10 years. In the bottom of the tank are nozzles (black stumps in a uniform pattern) formerly used for aeration in the tank. Through simple, natural processes, nature found a way to populate the tank interior with various grass, plants and even a small tree in the background. This photo was taken in January of 2016, which is why all of the foliage is dormant.

VAUGHN O'DEA, TNEMEC COMPANY, INC.
FABRICATED DUCTILE IRON PIPING ADJACENT TO WASTEWATER LIFT STATION
BONNER SPRINGS, KANSAS

I call this photo "Lone Nut." This is fabricated ductile iron piping connected to a recently replaced cast iron (painted) valve in a valve vault adjacent to a wastewater lift station. The enclosed environment is extremely wet and humid and sees some hydrogen sulfide gas from the adjacent lift station wet well. The valve was replaced/connected using stainless steel bolts (except for the one lone carbon steel bolt on the top flange face of the valve). The corrosive nature of this environment and the coupling of dissimilar metals caused accelerated corrosion of the one "lone nut" and accelerated corrosion of the ductile iron piping. I took this picture in April of 2016 as part of a structure repaint recommendation. Many believe that dry wells or valve vaults are not aggressive environments; however, galvanic coupling in corrosive environments can accelerate corrosion.

DAN ZIENTY, SHORT ELLIOTT HENDRICKSON, INC.
SILVER BAY, MINNESOTA

This photo was taken during a 2009 warranty inspection of this ground storage tank in Silver Bay, Minnesota. It's an enhanced photo of the transition platform to the roof handrail system, showing a good deal of symmetry against a colorful fall background. This project was a trial site for the use of an optically activated pigment (OAP) system.

INDUSTRIAL BEAUTY

DAVID BROCKMAN, CERTIFIED COATINGS COMPANY
SHELDON, WASHINGTON

This photo shows a heavily riveted 12-foot-diameter penstock built in the 1920s. It is approximately 1,400 feet in length and was built above ground on concrete foundations, but the lower section has since been buried by a landslide.

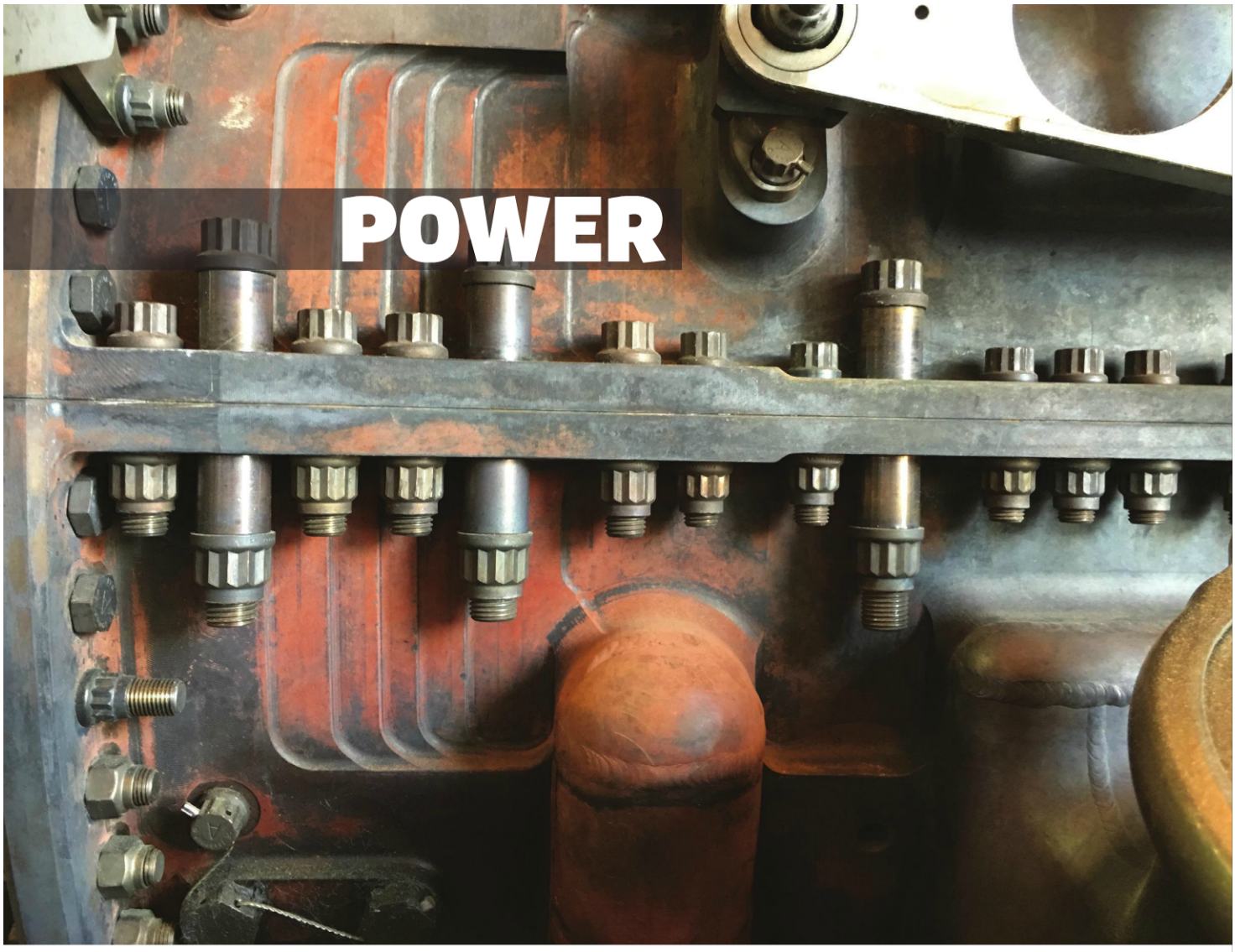
My company was contracted to remove the existing coal tar coating by abrasive blasting and apply a new lining of elastomeric polyurethane. We performed the blasting and lining application with automated equipment. In the center of the photo, two workers are performing maintenance on the radial-arm sprayer as they prepare to apply the second coat of material to a section of the penstock.

I happened to be on-site checking progress, came into a manway well below the work, and the lighting reflecting down the pipe on recently applied coating created this unique photo opportunity.

WARREN BRAND, CHICAGO CORROSION GROUP, LLC
ELEVATOR SHAFT AT A WATER TREATMENT FACILITY
MCCOOK, ILLINOIS

This roughly 500-foot-tall elevator shaft contains ductwork and piping and opens to a huge, underground vault that houses massive pumps, more piping and other equipment as part of the Chicago-area Deep Tunnel Project. This photo is taken looking up into the shaft from the base.

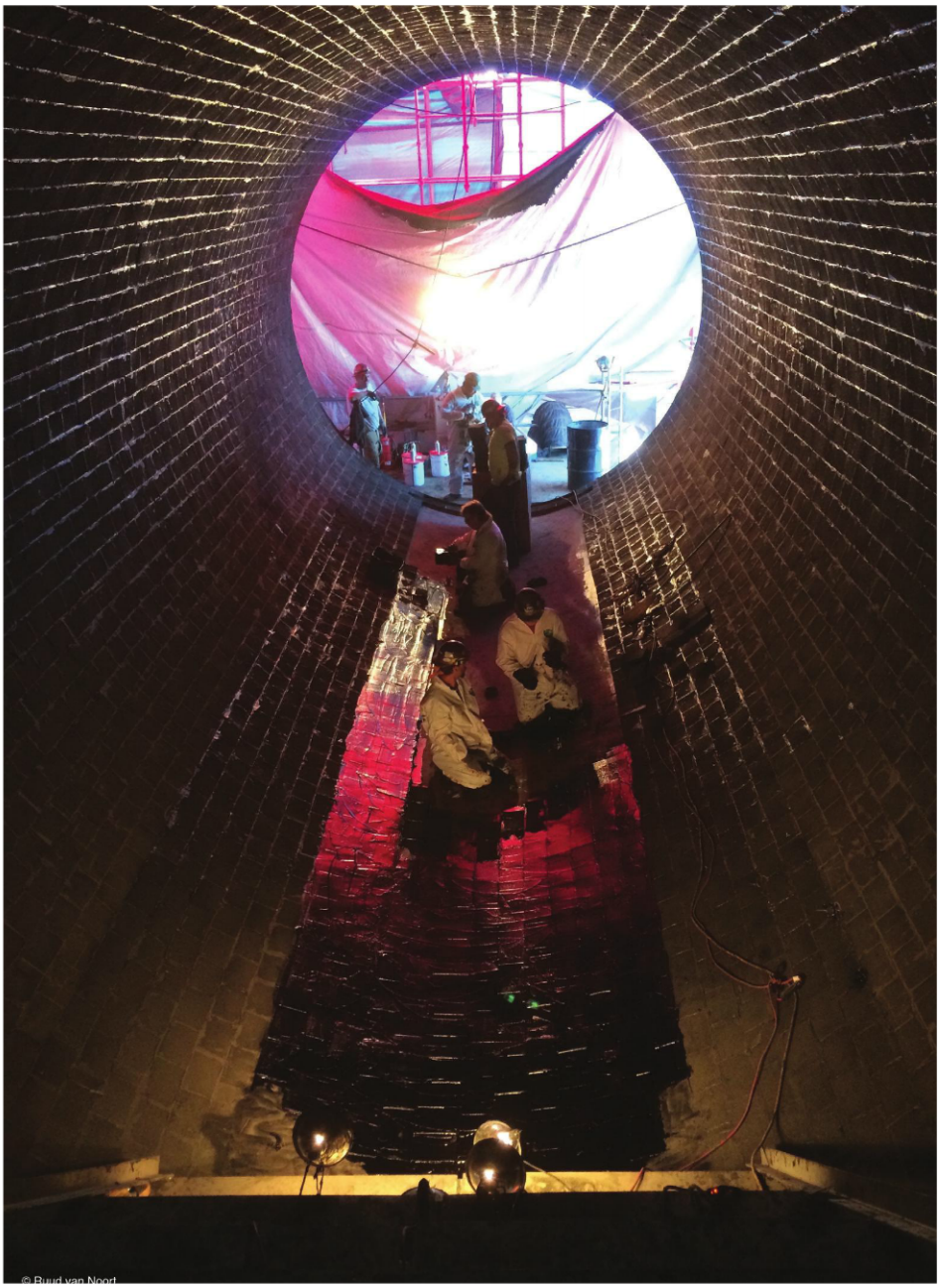
At the bottom of the shaft is an enormous valve chamber that controls billions of gallons of water stored in the nearby McCook reservoir. It is part of a massive multibillion-dollar construction project to reduce flooding in the Chicago area.



JAN PETERSON, PETERSON DESIGN
JM SHAEFFER GENERATION STATION

This photo was taken while I was touring this facility with directors of an electrical distribution co-op that gets some power from this facility. This station is a combined-cycle gas-fired electricity generation plant and this photo shows some of the detail on the surface of a gas turbine.

RUUD VAN NOORT, HADEK PROTECTIVE SYSTEMS, INC.
EAST BEND POWER STATION, RABBIT HASH, KENTUCKY



In the Spring of 2014, the 648-megawatt East Bend Power Plant underwent major maintenance including the replacement of one of the carbon steel ducts. While the old duct was demolished, a new duct was constructed on the ground level and later, with the new lining system installed, hoisted into its final position. The duct is 56 feet long (17 meters) and the internal diameter is 17.5 feet (5.3 meters).

In this photo, workers are installing a bond-breaker, a 1/8-inch-thick (3.2-mm-thick) layer of a two-component asphalt urethane. This prevents a direct bond between the borosilicate lining system and the 2-inch-thick acid-resistant concrete to be installed on top, protecting each from mechanical damage. The carbon steel duct has turning vanes on one end of the duct and was grit-blasted to an SSPC-SP 10/NACE No. 2, "Near White Blast Cleaning" cleanliness level, followed by the application of a two-component wash primer. After curing of the primer, a 2-inch-thick lining system was installed consisting of a foamed borosilicate glass block and an adhesive membrane, a two-component asphalt urethane adhesive to act as the "glue" and sealer between the primed carbon steel substrate and the borosilicate blocks. A total of 3,300 square feet (306 square meters) was lined. I was there on a daily basis to perform QA/QC inspections.

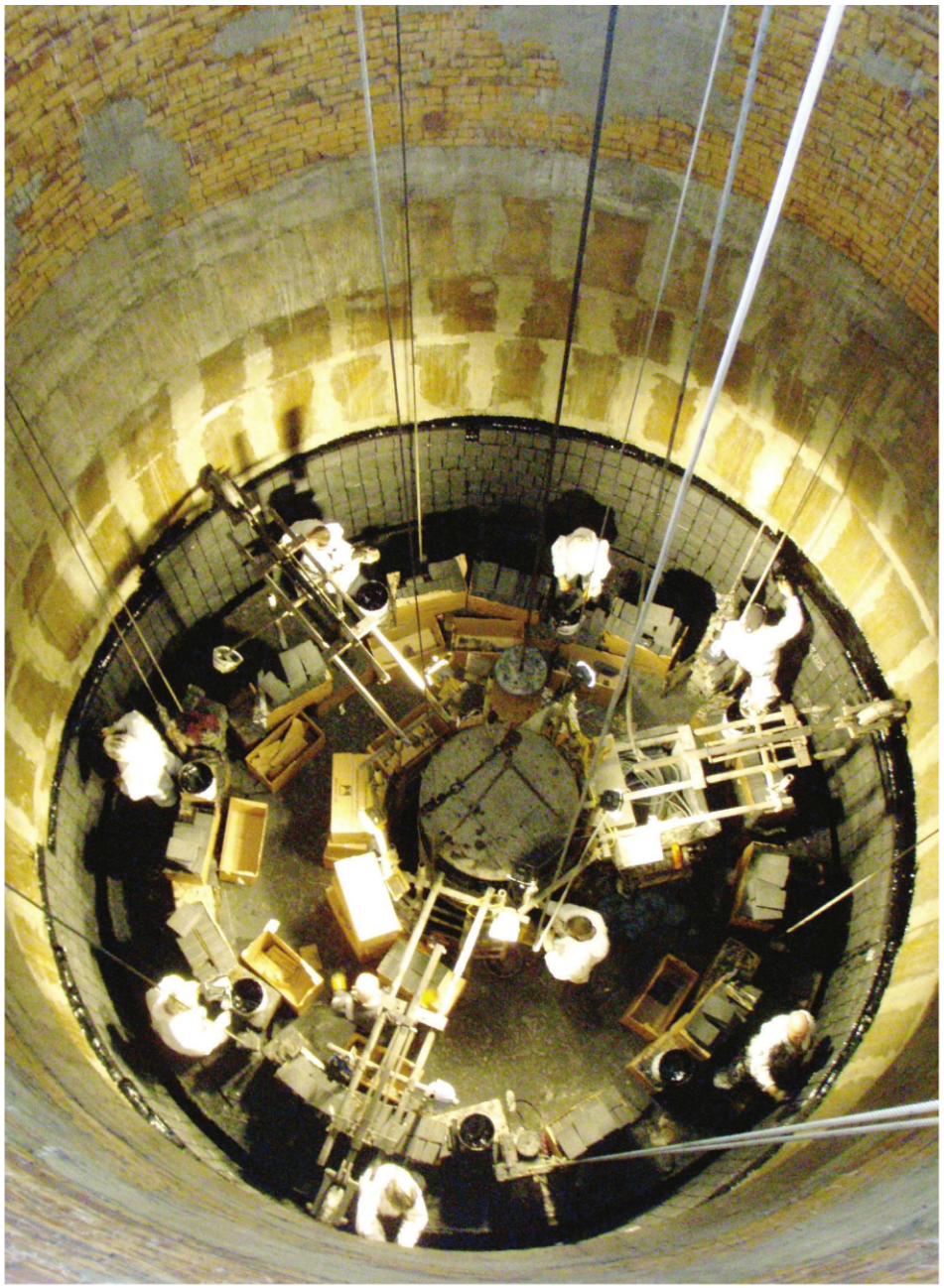
BEN SCATURRO JR., ALPINE PAINTING & SANDBLASTING
NORTHERN NEW JERSEY

These photos (left and right) show a hydroelectric plant that transfers water from one reservoir to another and spins turbines to create electricity. Our company was involved in overcoating the exterior of the penstock. The coating system consisted of a spot prime, a full intermediate and a full finish coat.

Visible in the aerial photo (left), the pipeline terminates at a specific point, a rock cliff, but the pipe does not continue through the cliff. A hole was bored through the rock face that comes up through the bottom of the upper reservoir and therefore, the pipe only transfers water downhill to the generators. Sometimes, as the water is coming through the rock, the rock eventually falls out of the boring and you can hear it bouncing down through the inside of the penstock.

During this project we not only had to fight extreme inclines at the work site, but also bears, raccoons, ticks and snakes.

INDUSTRIAL BEAUTY



RUUD VAN NOORT, HADEK PROTECTIVE SYSTEMS, INC.
COTTAM POWER STATION
COTTAM, UNITED KINGDOM

As part of the addition to a newly built flue gas desulphurization (FGD) plant, the concrete chimney, which had four brick-lined chimney flues inside, had to be refurbished to prepare them for FGD wet-stack operations. In order to reduce the flue gas velocity, the existing internal brick lining was removed, exposing the concrete shell. Each chimney flue was 625 feet (190 meters) high and had an internal diameter of approximately 24 feet (7.3 meters). To accommodate these activities, a suspended platform was installed, capable of going up and down the flue interior with a separate man-cage in the center to transport personnel and material to and from the platform. The entire internal surface was grit-blasted and high-pressure water cleaned before lining system installation. The concrete substrate received a layer of 100-percent solvent-free epoxy primer followed by the installation of a 2-inch-thick borosilicate block lining system. A total of approximately 193,750 square feet (18,000 square meters) was lined.

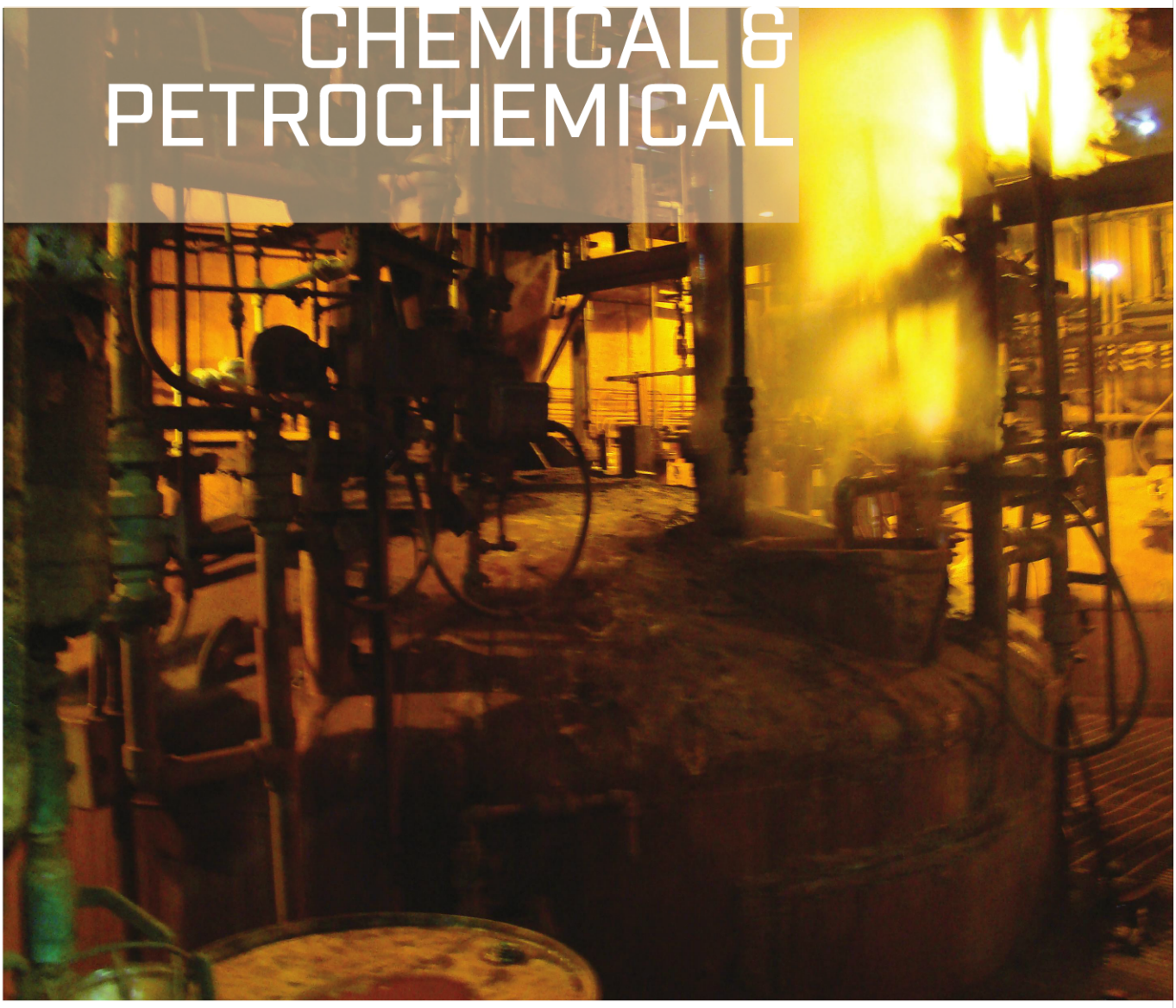
This particular picture was taken on July 7, 2007, when lining operations were almost complete in one flue. The workers were on a suspended platform at a height of approximately 550 feet (168 meters). I was there on a daily basis to perform QA/QC inspections.

ANDY BERNARD, BLOME INTERNATIONAL

The photo above shows a carbon fiber wrap being installed on a chimney to increase the structural integrity. I took the photo as part of my inspection process.

The tile-lined pipe (left) shows ceramic tile installed with an inorganic adhesive to allow for high temperatures and extreme wear. This is a coal pipe in a power plant.

CHEMICAL & PETROCHEMICAL



WARREN BRAND, CHICAGO CORROSION GROUP, LLC
COKE MANUFACTURING FACILITY, ILLINOIS

The facility pictured here manufactures some of the purest iron oxide in the world, used in pharmaceuticals, cosmetics and other areas. After scrap steel is "digested" with hot acid and steam in large, brick-lined tanks, the rusted liquid is piped through a variety of processes and tanks to turn the iron oxide (rust) into a paste that has the consistency of soft butter. This photo is an area near the final processing of the iron-oxide-laden brew and reminds me of the boiling, steaming cauldrons out of Harry Potter.

INDUSTRIAL BEAUTY

CHRIS KUHLMAN,
KURARAY AMERICA INC.
BAYPORT PLANT,
PASADENA, TEXAS

This photo was taken as part of the opening of the Bayport Plant in Pasadena, Texas in April of 2016 and shows an insulated and stainless steel steam line. The steam lines facilitate the movement of steam throughout the plant, either for cooling, disposal or further use in the polymer-making process. This curved structure is an expansion loop; it incorporates more flexibility than expansion joints and it is not as prone to leakage and breaking.

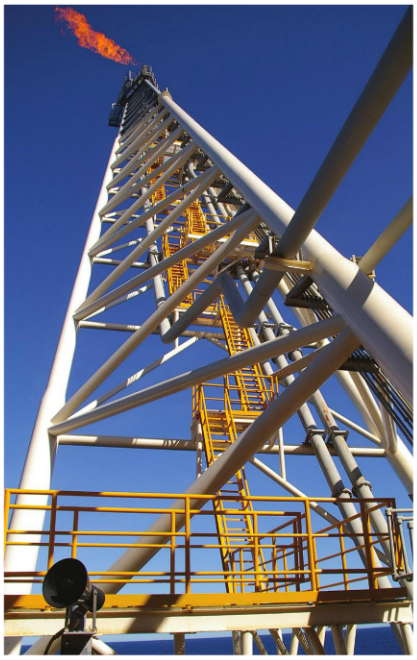
INDUSTRIAL BEAUTY

ANTHONY KRAKE AND ASHLEY SCHOMP, ALPINE PAINTING & SANDBLASTING
UNITED RIVERHEAD TERMINAL, LONG ISLAND, NEW YORK

This photo shows an offshore transfer station for the loading and offloading of fuel oil. The platform is connected to an undersea pipeline that extends from its location in the Long Island Sound to a tank farm onshore. This photo was taken in the early evening, showing the sun beginning to set after a day of mobilization of our equipment onto the platform.

Our project scope consisted of high-pressure waterjetting the existing top deck, piping, underside and pilings. A soluble salt removal solution was used during the process and a glass-flake system installed. Because the scope included the pilings, special precautions were taken to account for changing tides.

MARK B. DROMGOOL, KTA-TATOR AUSTRALIA PTY LTD, AUSTRALIAN COASTLINE



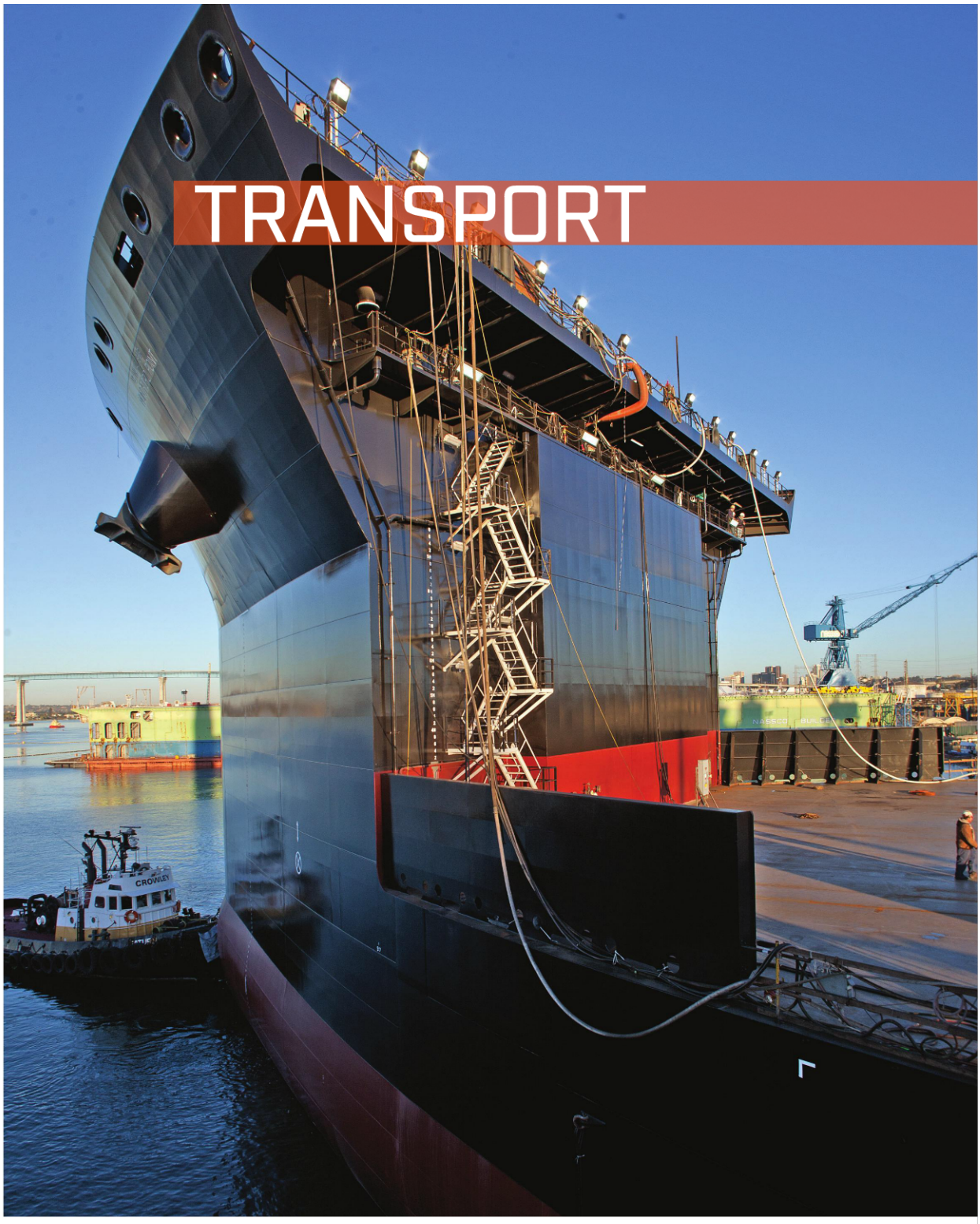
These are photos of the flare boom aboard the starboard forward side of the *Pyrenees Venture,* a floating production storage and offtake (FPSO) vessel in the Indian Ocean off the northwestern Australian coastline, northwest of Exmouth, Western Australia. It operates on a subsea oil/gas permit called The Pyrenees Field and is capable of processing 96,000 barrels of oil per day, has a combined gas lift/re-injection capacity of 60 million cubic feet per day and an oil storage capacity of approximately 850,000 barrels. The FPSO is installed in a water depth of approximately 200 meters.

Flare booms are usually coated with a zinc silicate primer and a number of coats of a high-temperature silicone aluminum heat-resistant coating system. Even though only the top 10 or so meters of the flare boom are close to the flare, and are therefore potentially exposed to high radiant temperatures, usually, the whole boom is coated with the same protective system down to deck level. I took these photos while I was performing a corrosion and coatings survey.

CHRIS KUHLMAN, KURARAY AMERICA INC.
BAYPORT PLANT, PASADENA, TEXAS

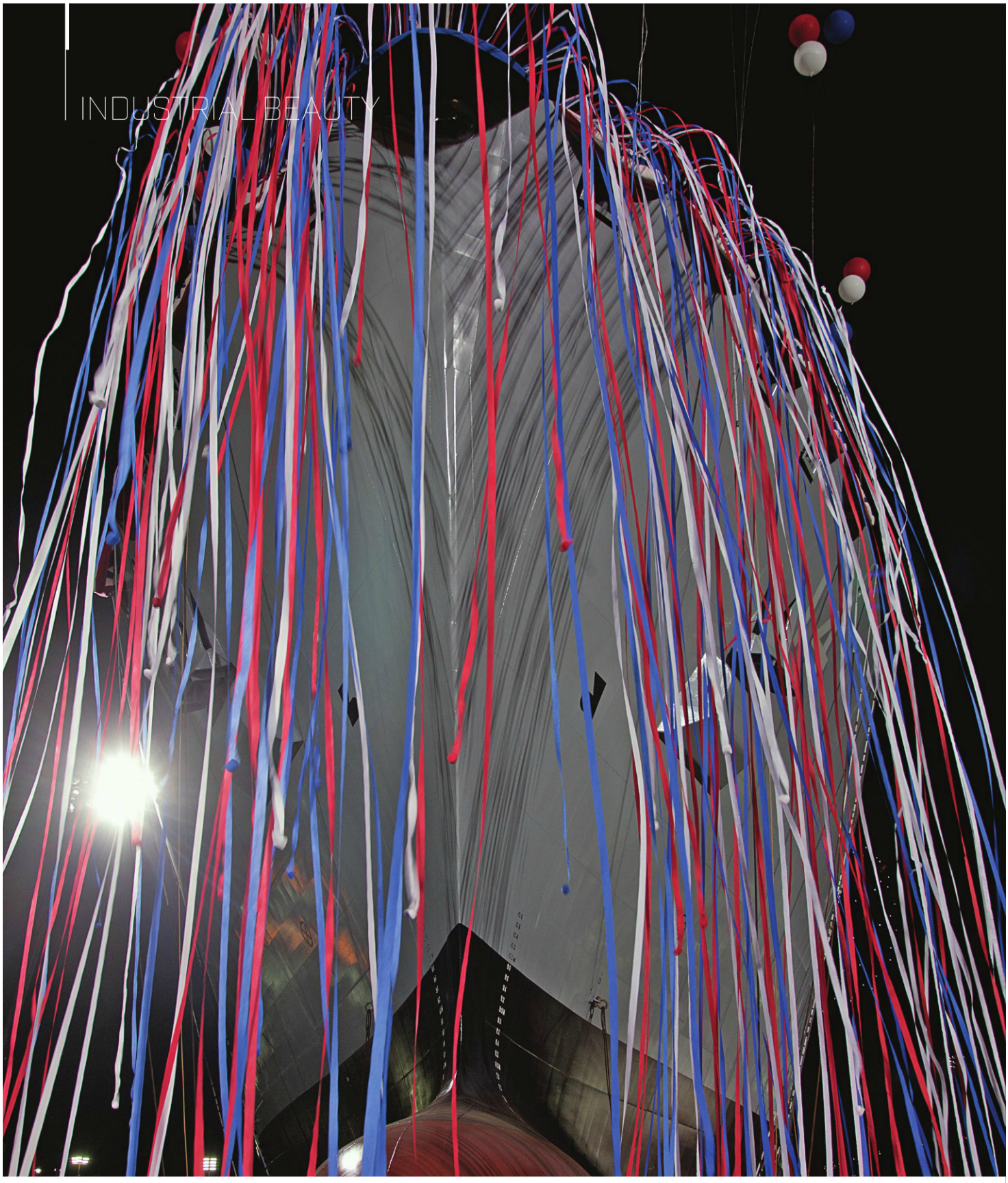
This photo was also taken at the opening of the Bayport Plant. The pipes shown provide chilled water from the cooling tower to and from the plant.

TRANSPORT



GENERAL DYNAMICS NASSCO

Sun reflecting off of the bow of ESD-1 as the ship floats out of NASSCO's building dock.



GENERAL DYNAMICS NASSCO

The *USNS Cesar Chavez*: streamers fly on the evening of May 5, 2012 (above) and ready for launch (opposite).

GENERAL DYNAMICS NASSCO T-AKE 10 *USNS Charles Drew*.

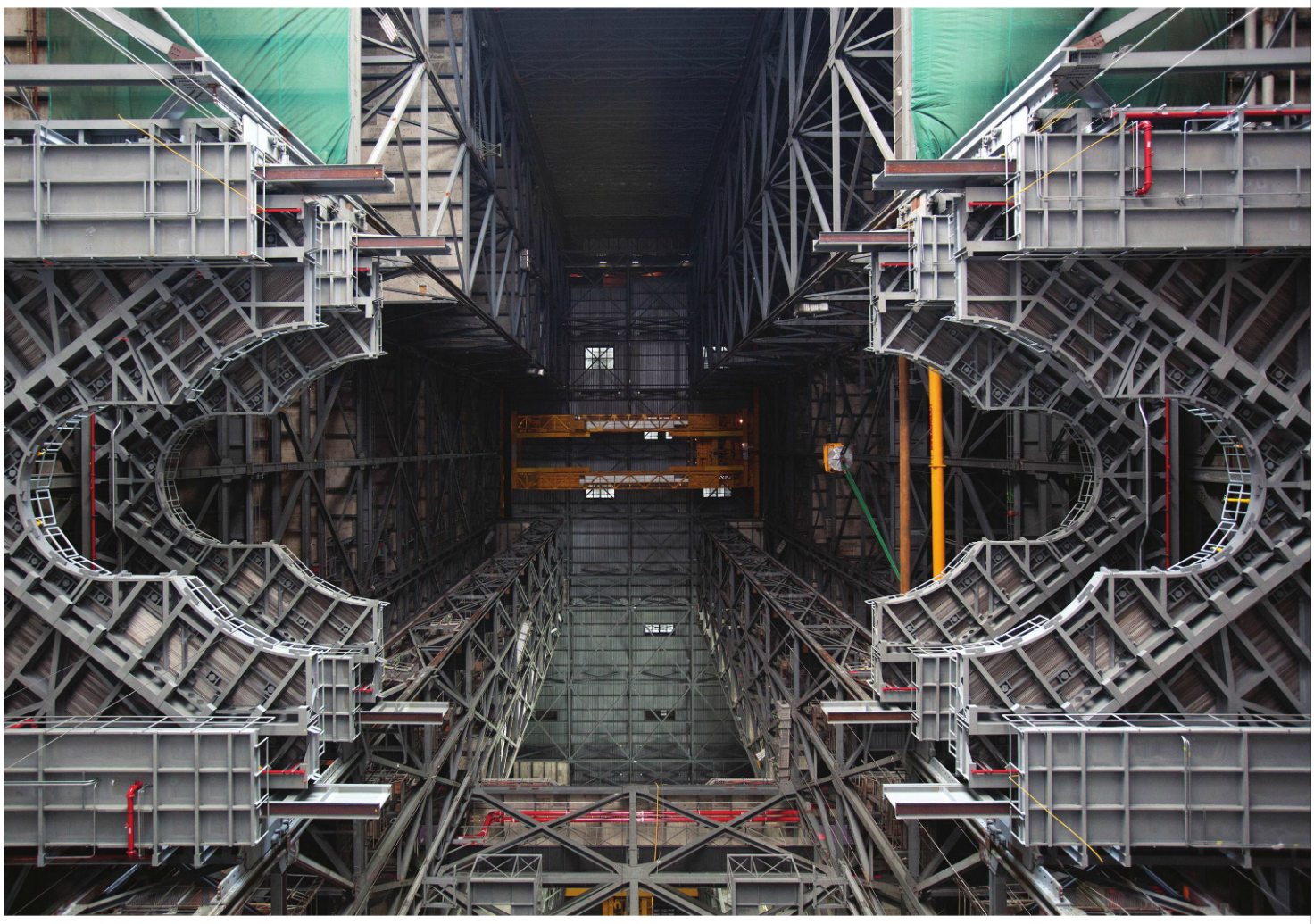
GENERAL DYNAMICS NASSCO

Water rushing into NASSCO's building dock as ESD-1 prepares for float out.

INDUSTRIAL BEAUTY

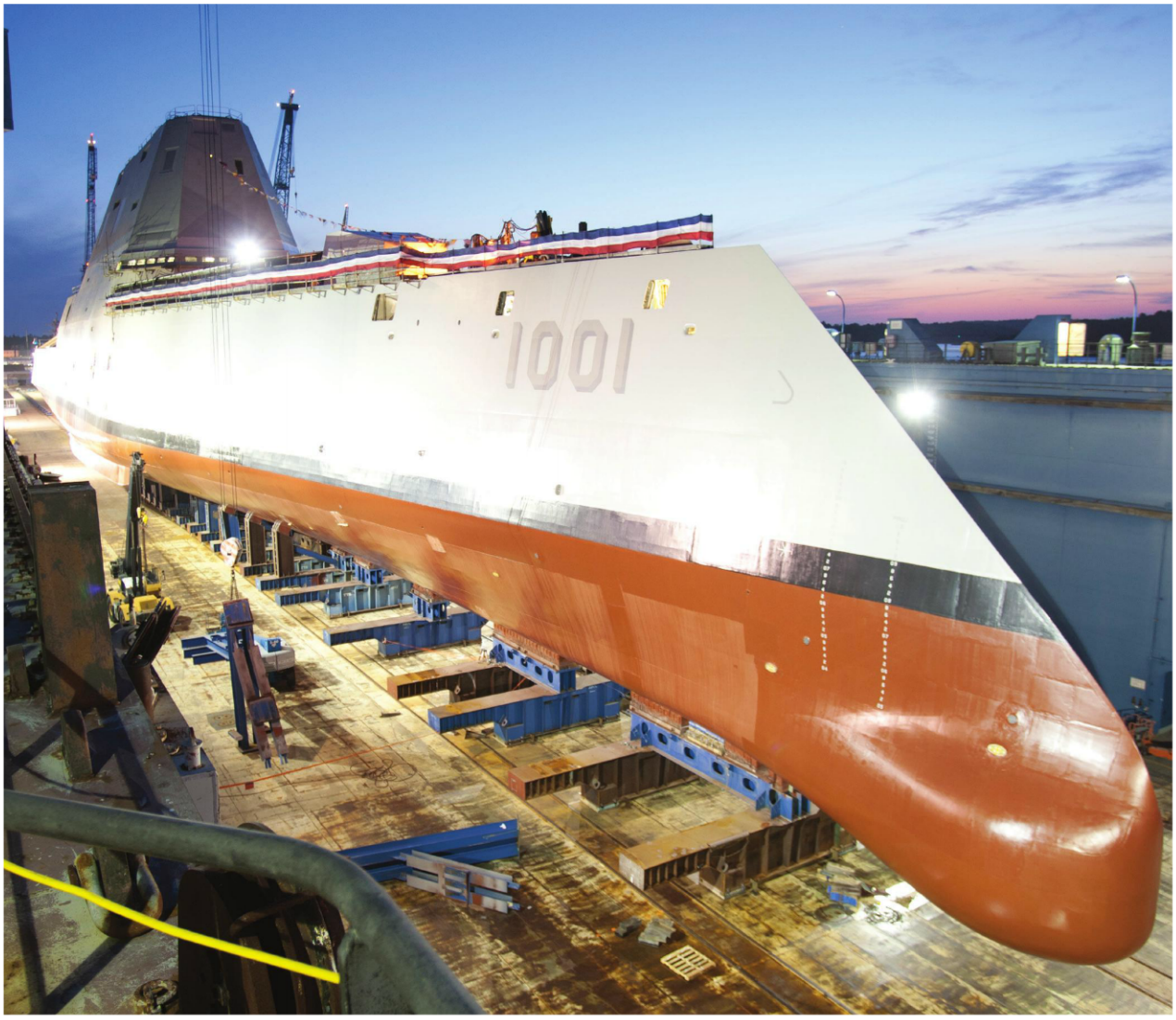
DIMITRI GERONDIDAKIS, NASA KENNEDY SPACE CENTER, FLORIDA

This photo shows the interior of the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida and its three work platforms installed for NASA's Space Launch System (SLS) rocket.



UNION TANK CAR COMPANY/UTLX
ALEXANDRIA, LOUISIANA

Newly built railroad tank cars in queue for interior coating application.



MIKE NUTTER, GENERAL DYNAMICS BATH IRON WORKS
USS MICHAEL MONSOOR
BATH, MAINE

This U.S. Navy Guided Missile Destroyer is named after Petty Officer 2nd Class Michael A. Monsoor. Monsoor died in Iraq in 2006 after throwing his body over a grenade that was thrown at his team, and saving his fellow team members. He received a medal of honor for his actions, and in 2008, it was announced that DDG-1001, the second ship in the *Zumwalt*-class of Guided Missile Destroyers would be named in his honor.

It is a Navy requirement that Bath Iron Works takes a photo of each ship before float-off and launch. This ship was christened the same day that this photo was taken.

MIKE NUTTER, GENERAL DYNAMICS BATH IRON WORKS
***USS RAFAEL PERALTA*, BATH, MAINE**

This U.S. Navy Guided Missile Destroyer is named after Marine Rafael Peralta, 1st Battalion, 3rd Marine Regiment. In 2004, while deployed in Iraq, Peralta led his team through house-clearings when he was hit multiple times with AK-47 fire, leaving him severely wounded. After the fire, a hand grenade was thrown at Peralta and his team. Still conscious on the floor, Peralta pulled the grenade under his body and saved his fellow marines. Peralta received a Navy Cross, and in 2012, it was announced that a new *Arleigh Burke*-class Guided Missile Destroyer would be named *USS Rafael Peralta*.

This is the 37th ship built by Bath Iron Works in the *Arleigh Burke*-class of destroyers. This ship is expected to undertake its first set of trials in August, 2016 and sail away from the shipyard in the spring of 2017.

Pipeline

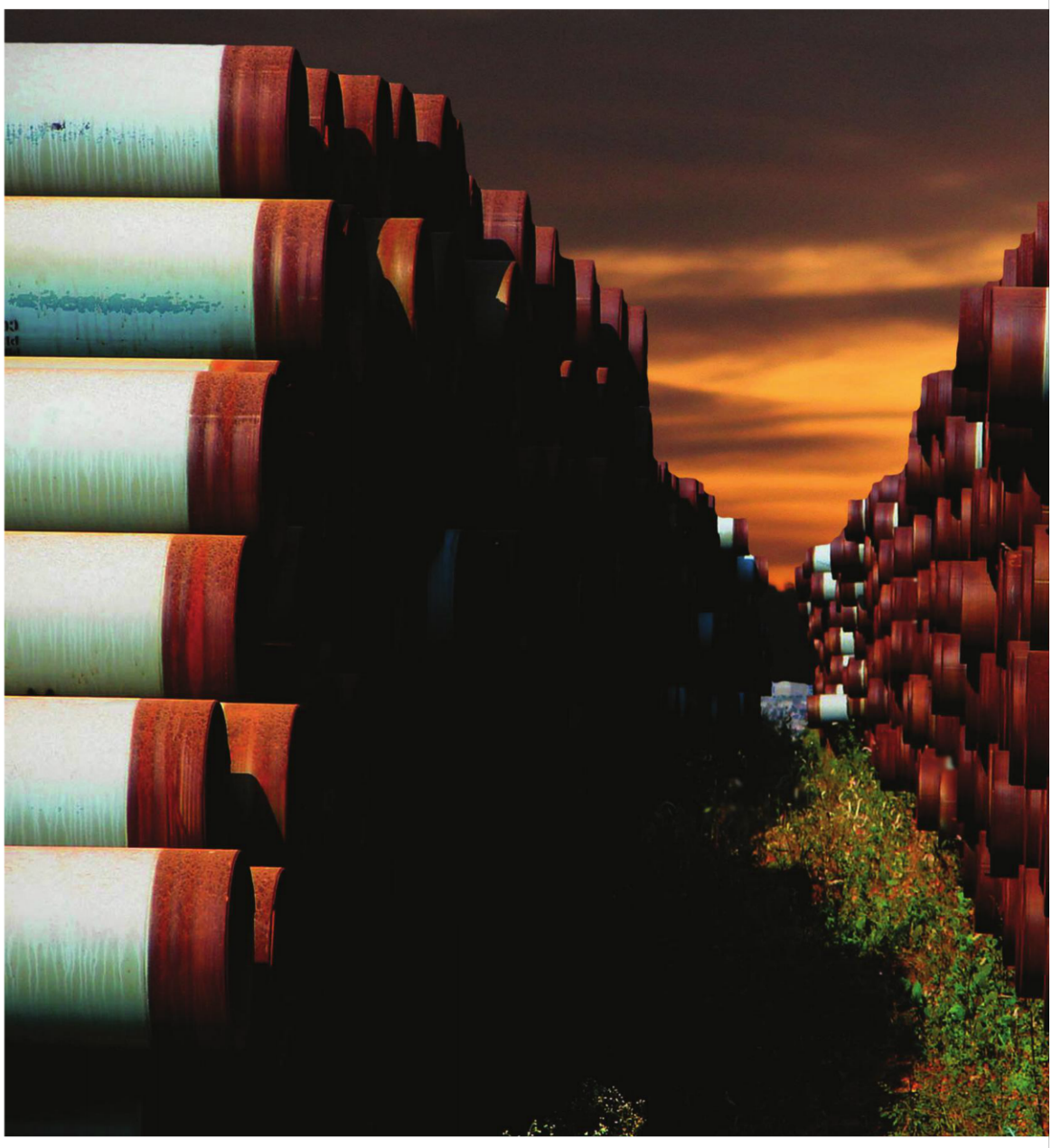
ALAN KEHR, ALAN KEHR ANTI-CORROSION, LLC
A&A COATING, LONESTAR, TEXAS
STOCKPILED PIPE, FBE COATING, 2002

Over my career, I was able to photograph pipes and pipelines on six of the seven continents — so far there has been no significant pipelining in Antarctica. Pipes and stacks of pipe have a natural geometry and beauty. Fusion-bonded epoxy (FBE) coatings for corrosion prevention add a loveliness that may only be in the eye of the beholder — which may be biased since I formulated the colors of some of the early pipe coatings. The color and geometric repetition makes it easy for a photographer.

Unfortunately, the locations are often lacking in beauty and have an abundance of clutter. Therefore, using composites, that is combining images, makes for more interesting pictures. The pipe photographs in this series came from Texas, Florida, Alabama and India. I shot the sunrises and sunsets in various locations around the world and some I shot from planes.

ALAN KEHR, ALAN KEHR ANTI-CORROSION, LLC
E B PIPECOATING, PANAMA CITY, FLORIDA
FBE PIPE COATING, 2002

ALAN KEHR, ALAN KEHR ANTI-CORROSION, LLC
A&A COATING, LONESTAR, TEXAS
STOCKPILED PIPE, FBE COATING, 2002



ALAN KEHR, ALAN KEHR ANTI-CORROSION, LLC
BARODA, INDIA
STOCKPILED PIPE, FBE COATING, 2006

ALAN KEHR, ALAN KEHR ANTI-CORROSION, LLC
BARODA, INDIA
FIRST DUAL-LAYER FBE USED ON MAINLINE PIPE IN INDIA, 2006

LANE SALVATO
TNEMEC COMPANY, INC.
HOBBS, NEW MEXICO

This is an interior view of a 36-inch-diameter by 18-foot-long ductile iron sewer pipe lined with a 100-percent volume solids ceramic epoxy lining at 40-to-50 mils DFT. Taken in 2013, this photo shows a next-generation ceramic epoxy lining selected because of its ability to offer better protection against hydrogen sulfide corrosion and its compatibility with high-velocity jet cleaning operations.

HOLDING PATTERNS

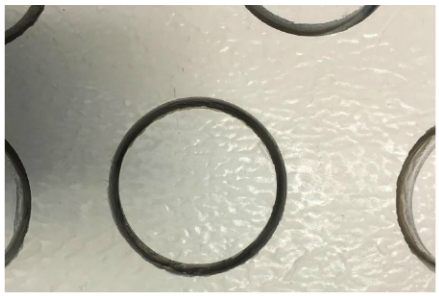
PAMELA SIMMONS, TECHNOLOGY PUBLISHING COMPANY

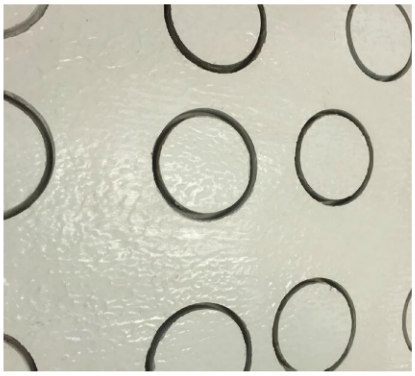
This capture of a bridge section shows five phases of a coating project: untouched "graffitied" steel, blasted steel, zinc primer, epoxy midcoat and green, urethane topcoat.

INDUSTRIAL BEAUTY

ANTHONY DALLEN
TNEMEC COMPANY, INC.

These are photos of 50-mm diamond tipped core cuts per ASTM D7234, "Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers," done to test direct tensile strength of an epoxy lining to concrete with a 50-mm dolly.





PAMELA SIMMONS, TECHNOLOGY PUBLISHING COMPANY

Dust collector pipes on a bridge painting job site.

ANDY BERNARD
BLOME INTERNATIONAL

This is an outlet duct in a power plant that expels gas from the boiler to the stack.

Index to Advertisers