A PRESENTATION TO LPESA MAY 27, 2021

Will Smith – Southeast Region Manager – Acrow Bridge

ACROW

OVERVIEW

- About Acrow
- About Acrow Bridges
- Installation
- Acrow 700XS®
- Applications
- Questions

ABOUT ACROW

- Established in 1951
- World leader in design, engineering and manufacture of prefabricated modular steel bridges
- Headquartered in Parsippany, NJ
- Offices across USA, Canada, Italy and UK
- Manufacturing Facilities in Milton, PA, and Lydney, Gloucestershire, UK
- Staging yards in Lafayette, NJ, Eden NC and Centralia, WA
- Proprietary steel technology derived from the Bailey Bridge
- 300+ employees

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ACROW FACILITY

- Milton Steel Co.
- 21 acres
- Milton, PA
- Capacity: 25,000 tons of bridging per year
- 95 team members operating over 3 shifts

EQUIPMENT

- 8 robot cells - 26 robots
- Automated vertical and horizontal drill tables
- CNC Plasma cutting and drilling table
- CNC Drill and robotic plasma beam line

QUALITY ASSURANCE

ISO 9001
CERTIFIED

AISC CERTIFIED FABRICATOR

MADE IN USA

SHORT SPAN STEEL BRIDGE ALLIANCE™

CE

NSBA

ACROW

FEATURES + BENEFITS

- Made in the USA from high-quality, high-strength, 100% American steel
- Easily customizable solutions to desired length, width and strength
- Precision-engineered and full-scale tested for safety and durability
- Hot-dip galvanized to eliminate corrosion and minimize maintenance
- Rapid installation with minimal labor and equipment
- Installed with support from an experienced onsite technician

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BRIDGE SPECIFICATIONS & DESIGN CRITERIA

BRIDGE

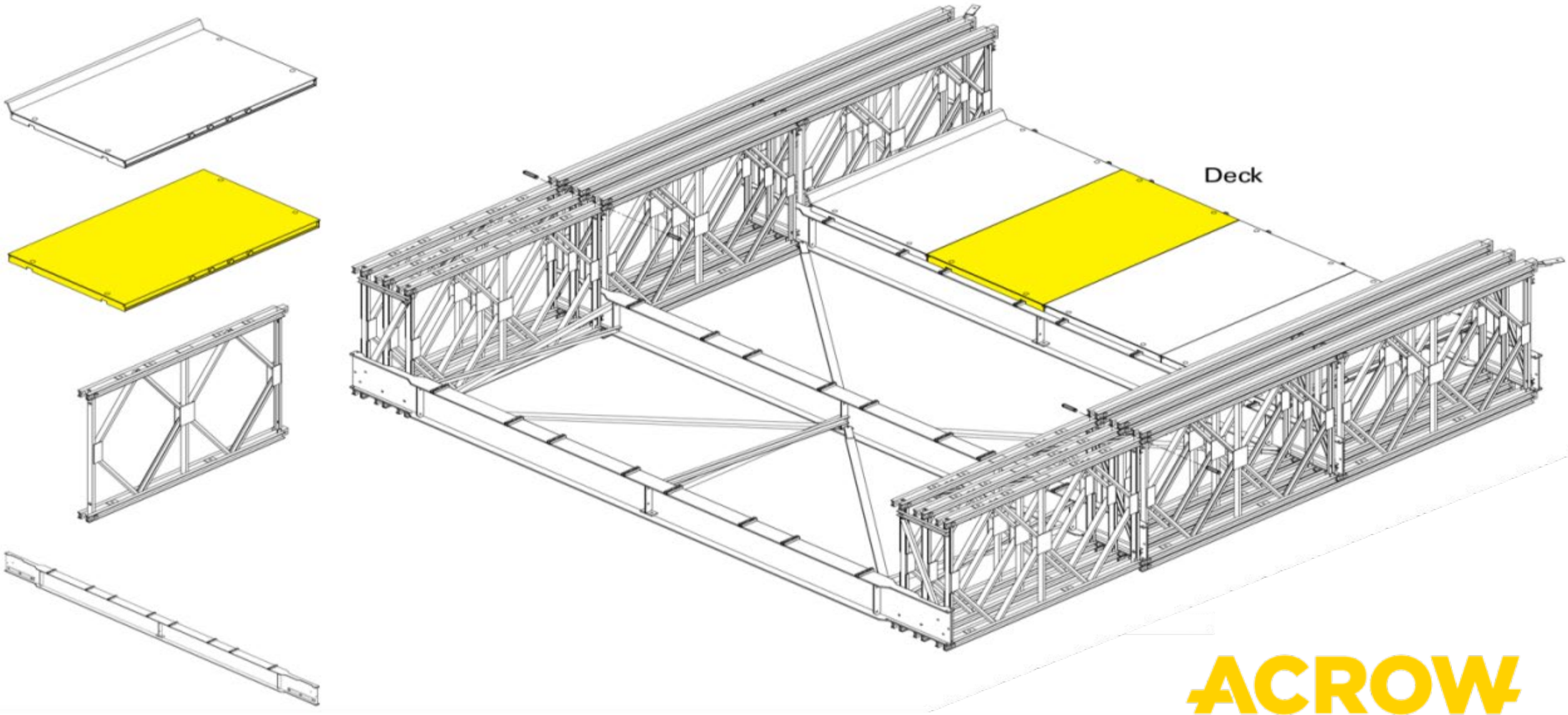
- Designed to meet AASHTO ASD, LRFD, ASD, HS-20, HS-25, HL-93 for temporary bridges or applicable State (including LADV11) and permit loads
- Bridge roadway widths (12’ through 42’)
- Simple span bridges (10’ through 300’)
- Pedestrian bridges (5’, 8’,12’ wide - lengths to 200’)
- Single or multiple span (Length unlimited)

BRIDGE DECK

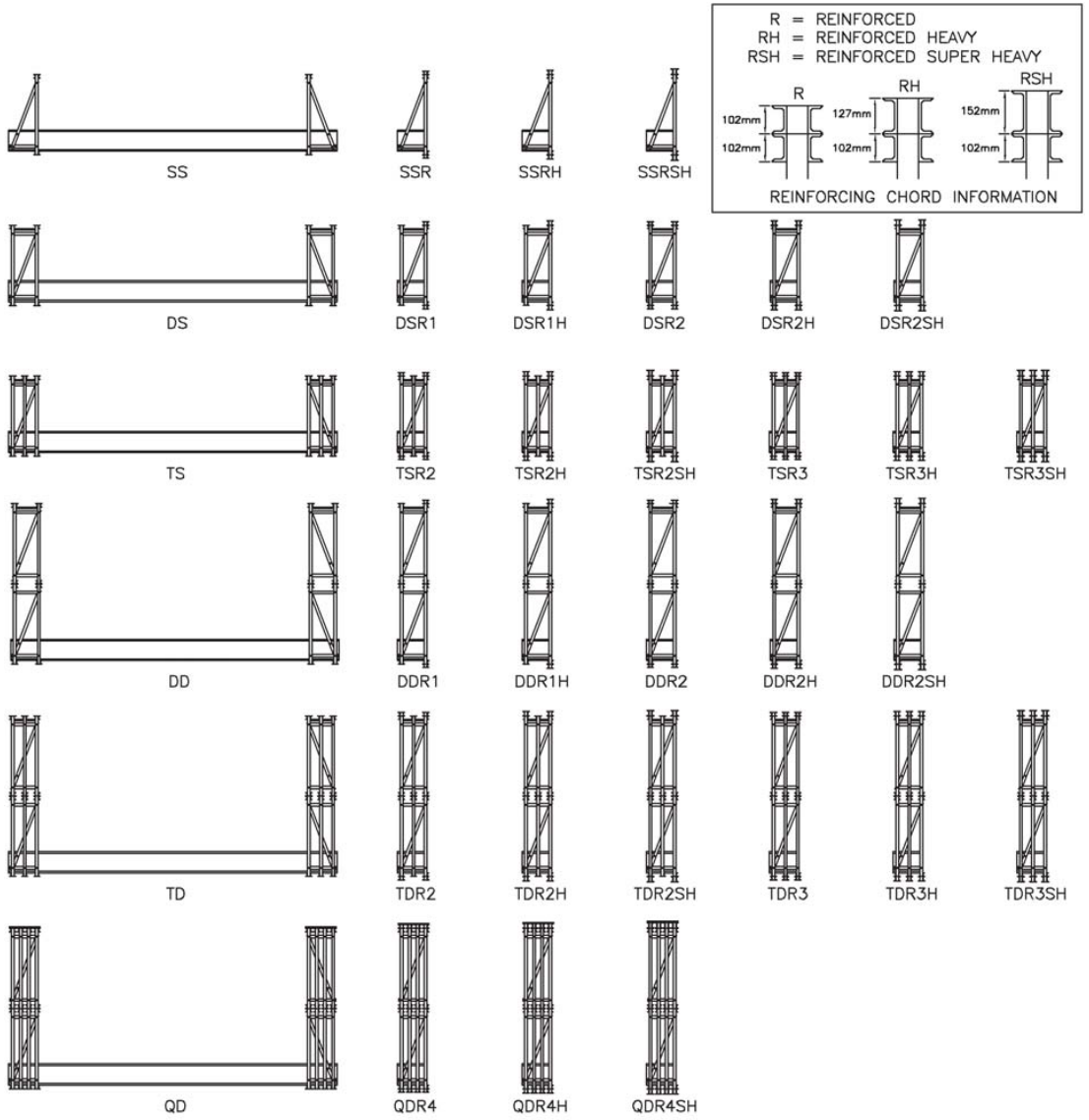
- Steel orthotropic roadway deck units
- Driving surface options (asphalt and epoxy aggregate anti-skid)

ACROW 700XS ®

ACROW 700XS ®



TRUSS CONFIGURATIONS



INSTALLATION

- Cantilevered
- Crane-Assisted Cantilevered
- Crane Lift-in

CANTILEVERED

CRANE-ASSISTED

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CRANE LIFT-IN

VEHICULAR

BEAM

PEDESTRIAN

DETOUR RENTAL

MOVABLE

SHORING

EMERGENCY

OTHER APPLICATIONS

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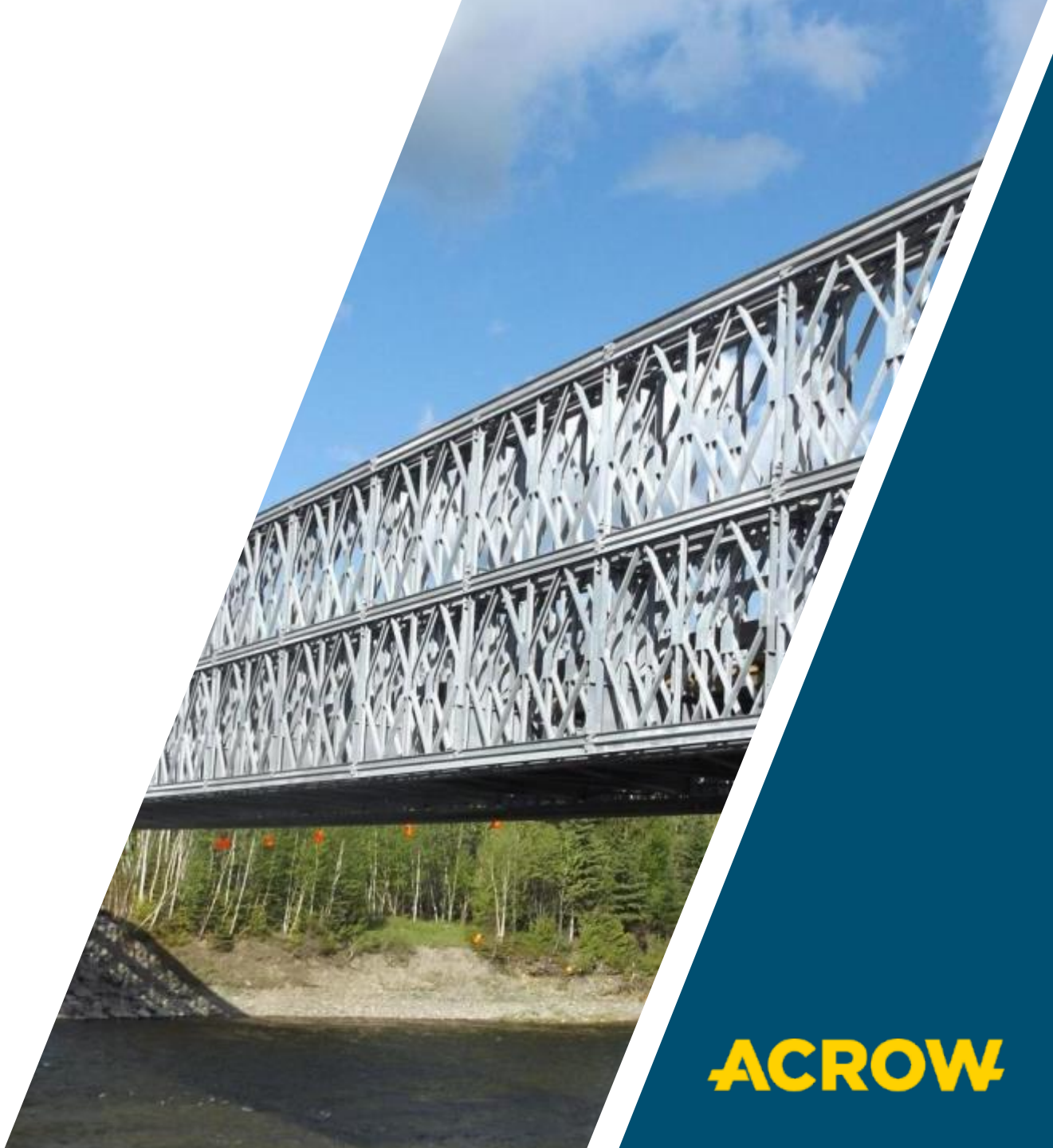
VEHICULAR BRIDGES

- Pre-engineered modular solutions
- Length, width and strength are easily customizable
- Conveniently transported
- Fast assembly and installation
- Safe, reliable, durable



PERMANENT VEHICULAR BRIDGE

Terrebonne Parish LA

Buquet Street, Houma, LA

- Length: 90’
- Width: 24’
- 5’ cantilevered sidewalk
- Design Load: HL-93
- Epoxy aggregate non-skid

PERMANENT VEHICULAR BRIDGE

Terrebonne Parish LA

Bayou Black Drive, Gibson, LA

- Length: 70’
- Width: 24’
- Design Load: HL-93
- Epoxy aggregate non-skid

PERMANENT VEHICULAR BRIDGE

Folsom, NJ

Hospitality Road

- Length: 60’
- Width: 13’ 7”
- Design Load: HL-93

CAMBERED VEHICULAR BRIDGE

Division St., Chicago, IL

Cambered main span required to match original profile and provide clearance for water traffic

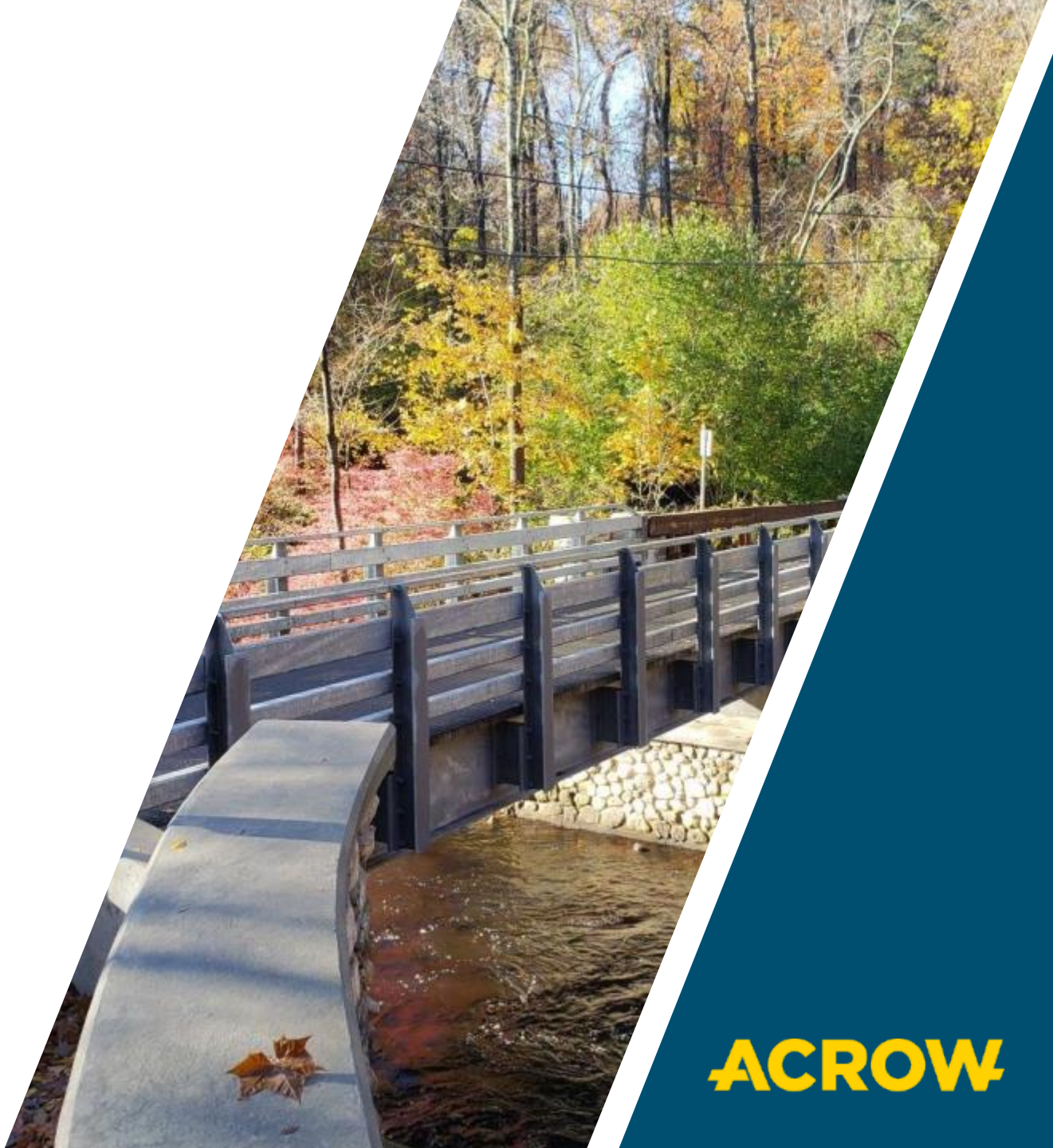
Decorative pedestrian railing

Expected use is 15 + Years

- Length: 3 spans (50’, 140’, 50’)
- Width: 36’
- Design Load: HL-93

BEAM BRIDGES

- Designed for short-span applications
- No field welding, cutting or fabrication
- Spans: 25’, 35’, 45’
- Width: 6’ to unlimited
- Design Loads: HS-20, HS-25, HL-93, Construction Access
- Decks ship with factory-applied non-skid
- Multiple bridge rail options
- Installed within hours using minimal equipment and labor
- Can be delivered complete on site, and lifted directly onto bridge abutments



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BEAM BRIDGE

Hawaii

- Length: 45’
- Width: 36’
- Loading: HL-93

PEDESTRIAN BRIDGES

- Quick and easy installation
- Available in weathering steel for improved aesthetics
- Supplied with a choice of timber, steel or reinforced concrete deck
- Hot-dip galvanized with minimal maintenance requirements

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PEDESTRIAN BRIDGE

Honolulu, HI

Halona Street

- Length: 110’
- Width: 6’ Panel Bridge
- Design Load: 95 PSF

PEDESTRIAN BRIDGE HAMILTON

Ideal application for modular bridges due to limited site access in remote location

1 mile walk into the site

- Length: 260’ single span
- Width: 8’
- Design Load: Pedestrian and pick-up trucks

PERMANENT PEDESTRIAN BRIDGE

West Penn Rail Trail in Blairsville, PA

Ideal application for modular bridges due to limited site access in remote location

- Length: 4 x 150’ continuous spans
- Width: 8’
- Design Load: Pedestrian

DETOUR RENTAL

- LADOTd a big user of Acrow detour bridging
- Accelerated Bridge Construction
- Economical rental solutions
- Safe detours around construction sites
- Supplied direct from inventory strategically staged across North America
- Compliant with AASHTO and state design codes
- Increased safety for motorists & construction crews
- Rapidly installed in days
- Expert site support services as required

DETOUR BRIDGE SARASOTA, FL

I-75 NB/SB

Heavily-travelled interstate traffic

In place for 2 years

2% crown, Asphalt with paving fabric to help asphalt adhere to deck.

- Length: 280’ two-span
- Width: 42’ (widest yet in US)
- Design Load: HL-93

DETOUR BRIDGE

LA-66 West Feliciana Parish. Louisiana

Epoxy aggregate non-skid

- Length: 720’ multi-span bridge
- Width: 24’
- Design Load: HL-93
- Longest launch of an Acrow bridge to date

ARSENAL ROAD
WATERTOWN, NY

Epoxy/aggregate non-skid decks

In place for 2 winters

- Length: Twin 180’ bridges
- Width: 24’ wide each
- Design Load: HL-93

I-10 SOUTH OF TWIN SPANS LOUISIANA

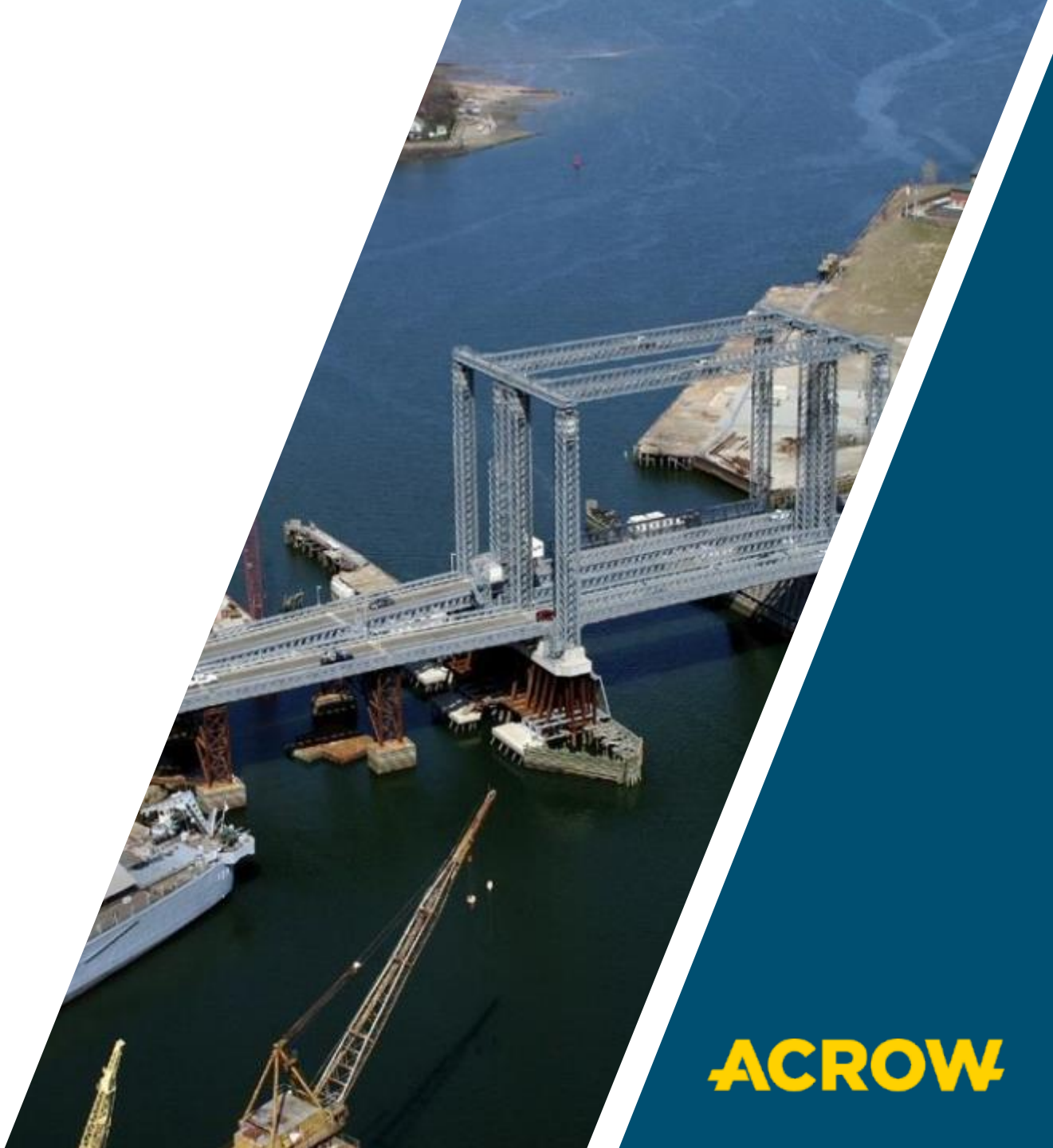
USACE Hurricane/Levee Improvement Project

Epoxy/aggregate non-skid decks

- Length: 4 x 100’ spans
- Width: 36’ (3 x 12’ lanes)
- Design Load: HL-93
- TL-4 Guard Rail

MOVABLE BRIDGES

- Innovative solutions to maintain vehicular and vessel traffic
- Deep expertise in structural, mechanical and electrical engineering
- Expert in complex bascule and vertical lift bridge solutions
- Modular, interchangeable components
- Full highway load-carrying capability to support both standard and heavy-duty applications
- On-site Acrow technicians to support installation, start-up and commissioning



MOVABLE BRIDGE
WEST PALM BEACH, FL

Bridge Opening: Every 30 minutes

Included design and supply of bridge, mechanical, electrical and control systems

- Towers: 75’
- 170’ cambered lift span
- 30’ 2-lane roadway
- 5’ cantilevered sidewalk
- Live Load: AASHTO HL-93

MOVABLE BRIDGE

Martha's Vineyard, MA

"Brute Force" Bascule/draw bridge

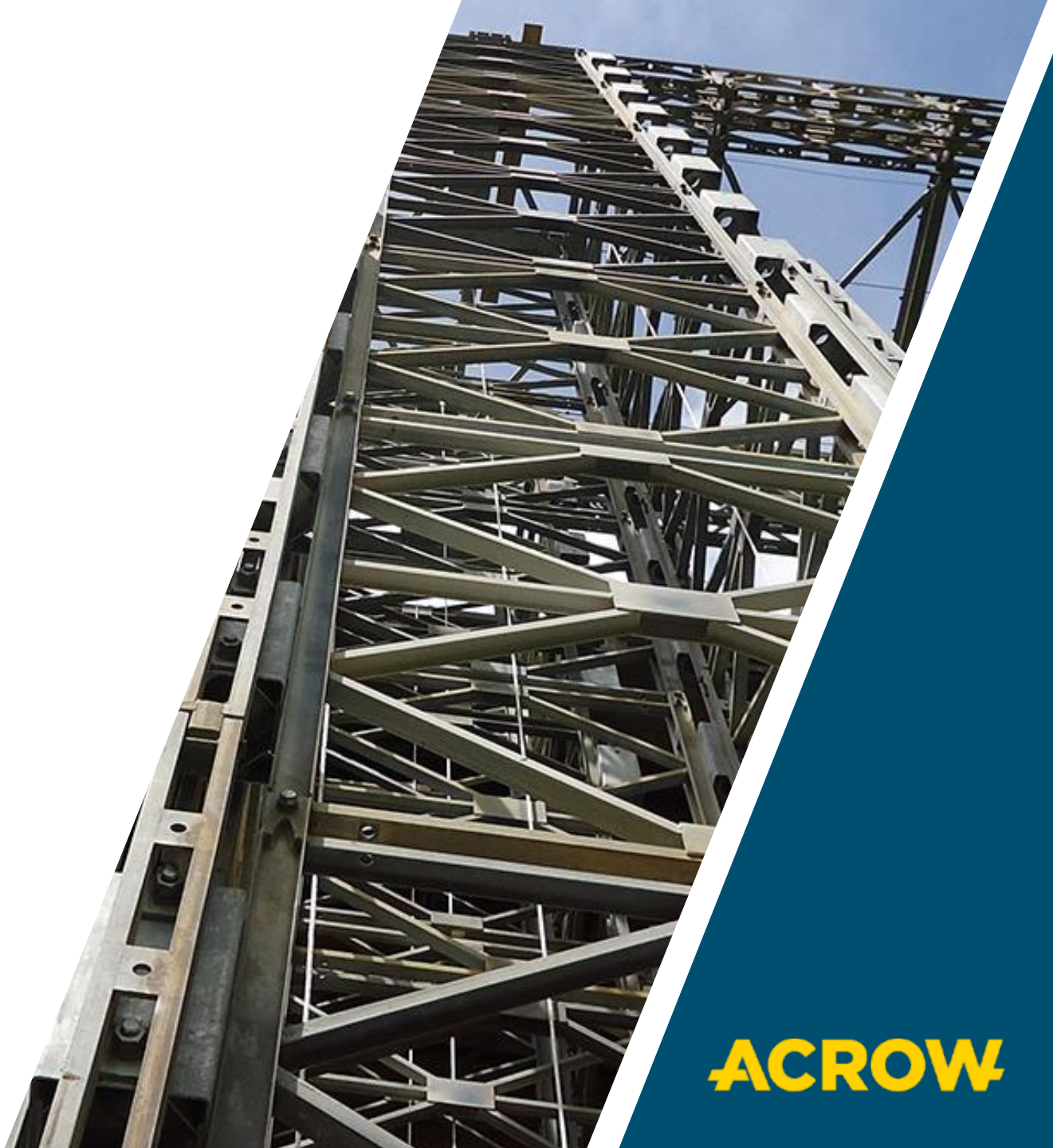
Acrow provided the approaches and the bascule

Full package, including mechanical, electrical and control systems

- Spans: 80' / 60' / 90'
- Width: 2 Lane – 24'
- Design Load: HS-20

SHORING

- Towers and Superprop® shoring systems for a wide range of vertical, horizontal or knee-bracing applications
- Pre-engineered using standard modular components - installed within hours
- Made of high-strength steel, offering versatility and safety
- Expertly designed to suit specific project requirements
- Supplied direct from inventory
- Delivered with expert site support
- Cost-effective rental options available



TOWER SYSTEM

Acrow towers are designed using Acrow Bridge Panels with structural steel crib tops to provide a system of simplistic design.

Can support up to 400+ Kips

SHORING SYSTEMS

A single Superprop® Shore, assembled from Acrow bridge components can support up to 200 tons per prop at a shoring height of 25’

Configured for infinite height options utilizing adjustable screw assemblies

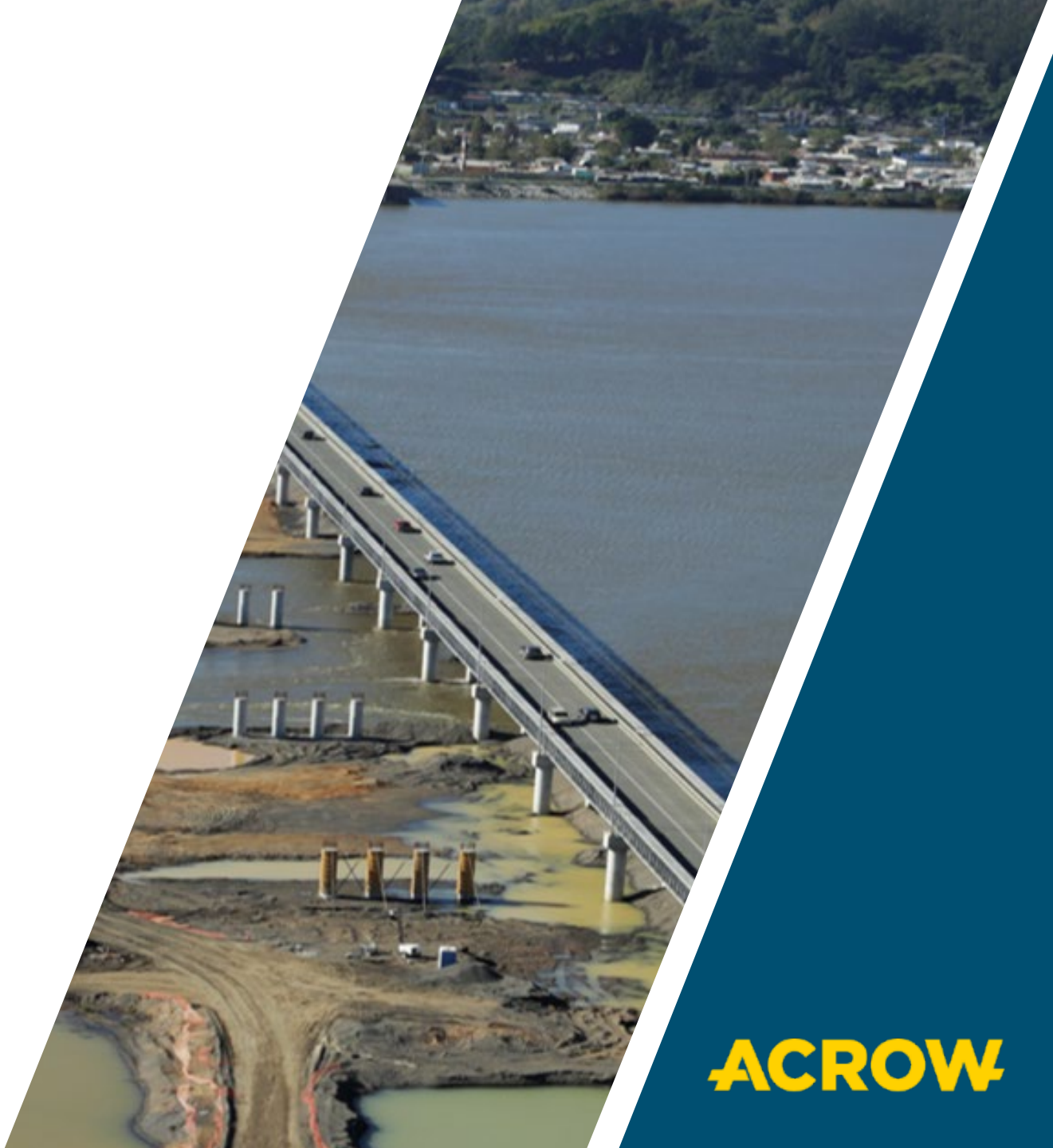
SHORING SYSTEMS

RT 70 Denver, CO

Single Superprop® Shores

EMERGENCY

- Rapid Response Team to deliver restored infrastructure
- Proven in humanitarian aid and disaster-relief applications
- Bridging in-stock, ready to deliver anywhere in the world
- Length, width and load design as required
- Rapidly assembled and installed
- Easily uninstalled to facilitate safe, rapid re-deployment
- Suitable for use in seismic areas



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EMERGENCY

US 85. Lusk, WY

3 weeks before the 75th Anniversary of the Sturgis, SD motorcycle rally this major artery from I-25 and I-80 to Sturgis was shut down

EMERGENCY FIXED IN TIME

US 85. Lusk, WY

Built with WYDOT owned Acrow bridging, WYDOT crews and Contractor + Acrow support

- Length: 200’ clear span
- Width: 2 Lane – 24’
- Design Load: HL-93

EMERGENCY
I-95 BRIDGEPORT, CT

Tanker truck fire shut down I-95

Triple Single Reinforced (TSR3)

- Length: 80’
- Width: 36’

EMERGENCY

Wantagh State Parkway

Long Island, NY

Material is now in NY State DOT inventory for emergencies

- Length: Twin multi-span bridges
- Width: 2 Lane – 24’
- Design Load: HS-25

EMERGENCY
SKAGIT RIVER, WA

I-5 Bridge Collapse

Acrow provided 2x 2-lane bridges within a week

Start to finish and opened in 15 days

- Length: 2 spans, each 160’
- Width: 2 Lane – 24’
- Design Load: HL-93

EMERGENCY HURRICANE IVAN FLORIDA

I-10 bridge over Pensacola Bay (built using FDOT-owned Acrow bridging inventory)

- Almost 1 mile of Acrow 300 series used

EMERGENCY HURRICANE KATRINA

New Orleans, LA

Most aggressive bridge project at the time (2005) – supplied in 3 months!

Existing spans were 65ft.

Water damaged piers and we filled in with Acrow Bridge

- Length: 4,220’
- Width: 2 Lane – 24’
- Design Load: HS-25

EMERGENCY HURRICANE IRENE ROCHESTER, VT

As a result of Hurricane Irene, in addition to VT, Acrow assisted in projects in Eastern NY and New Hampshire

ACROW

BEFORE

AFTER

ACROW

BEFORE

AFTER

ACROW

BEFORE

AFTER

ACROW

BEFORE

AFTER

EMERGENCY WORLD TRADE CENTER 9/11

Worker access sidewalk and five support piers.

Epoxy deck.

Cantilevered walkway.

Was utilized for several years.

- Length: 460’ long
- Width: 30’ wide

Photo shows final 80 ton column transported between honor guard.

OTHER APPLICATIONS

- Gantry & straddle bent systems
- Pile & utility bridges
- Barge bridges
- Bridge rehabilitation
- Jetties
- Ramps

- Also….Super-elevated roadways

OTHER APPLICATIONS

Straddle Bents & gantry

PIPE & UTILITY BRIDGE

Utilized a bridge to carry gas pipes

- Length: 140’
- Width: 8’
- Design Load: Pipe loading

INDUSTRIAL PIPE BRIDGING AND RACKS

Utilized footwalk bearers cantilevered off side of bridge to carry water line.

INDUSTRIAL PIPE RACKING AND BRIDGING

Acrow 700XS specially designed to bridge to carry two levels of pipes for bulk liquids from tankers to storage tank farm.

- Length: 780’ multi-span
- Width: 24’
- Design Load: Special loading
- 6’ wide footwalk included

GEORGE TRYON BRIDGE REHABILITATION

Northern CA, South of Oregon Border (over the South Fork of the Smith River)

Constructed in 1948

2 Lane 206’ Steel Arch Bridge with 140’ mid-span

Eliminated LDs and traffic problems

ROLL-ON/ROLL-OFF RAMPS, LAKE CHAMPLAIN, NY

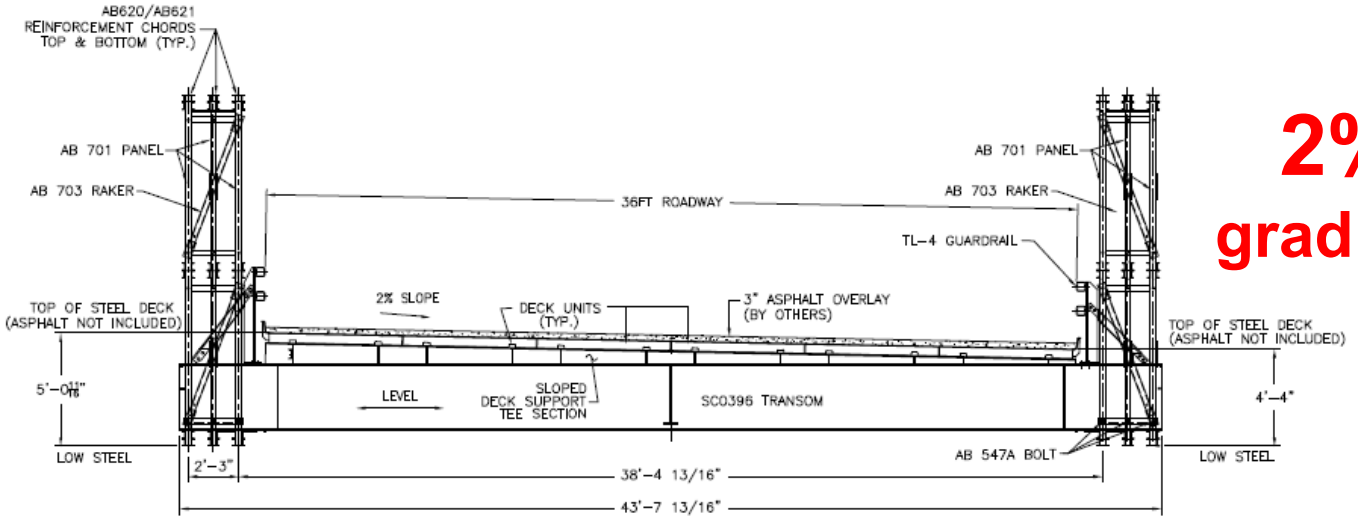
Land bearings - bridge is pinned to the abutment

Ramps for temporary ferry terminal

- Length: 2 x 130’ spans
- Width: 24’ each
- Design Load: HS-25

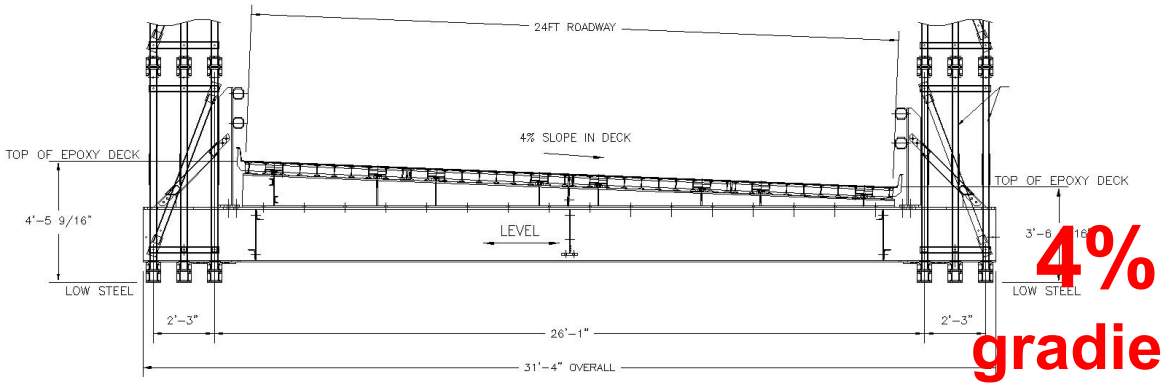
SUPER ELEVATED ROADWAYS

SUPER ELEVATED ROADWAYS

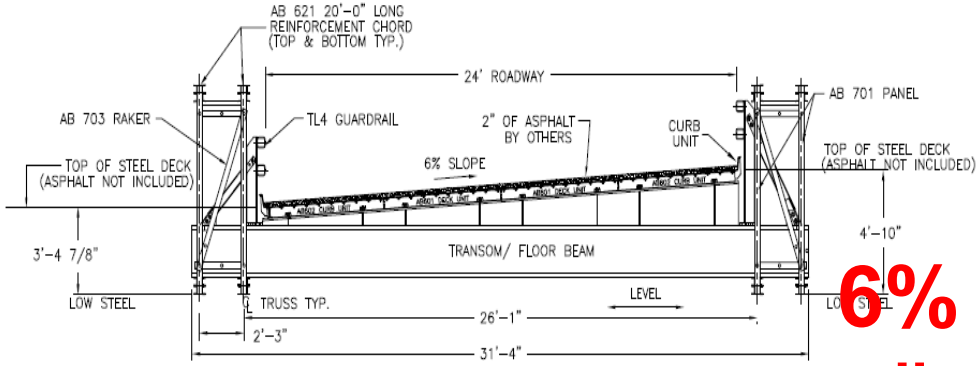


ACROW BRIDGE SECTION
3LANE 36FT AT 2% SLOPE

2% gradient



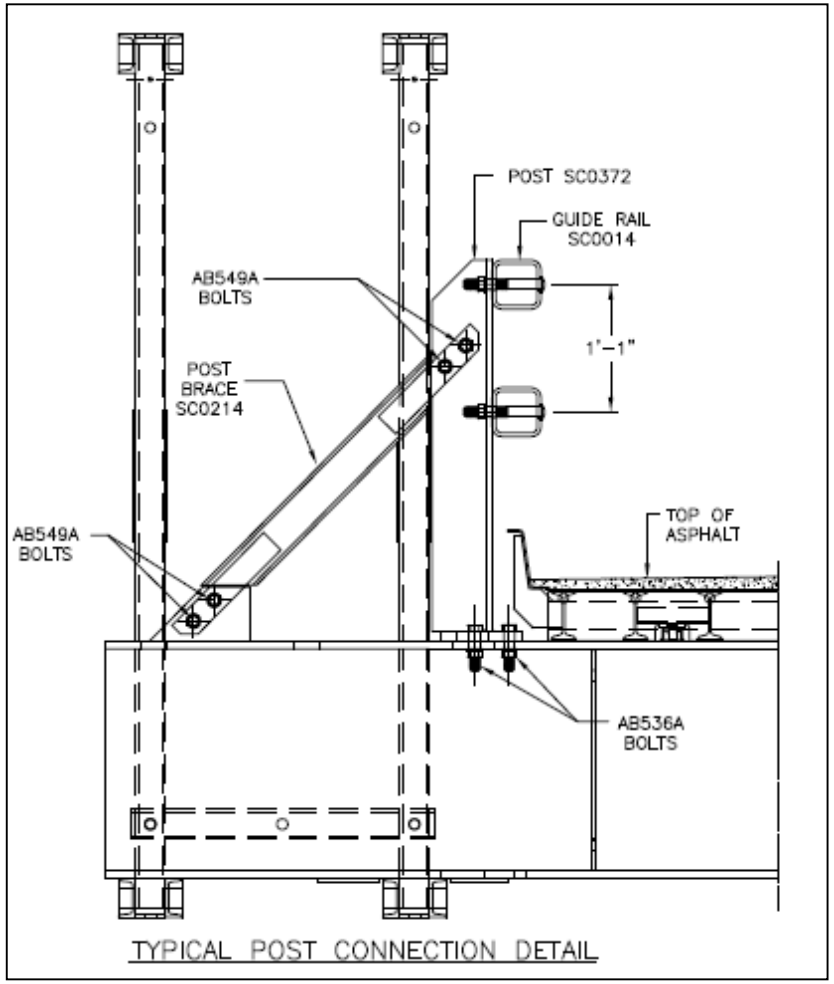
4% gradient



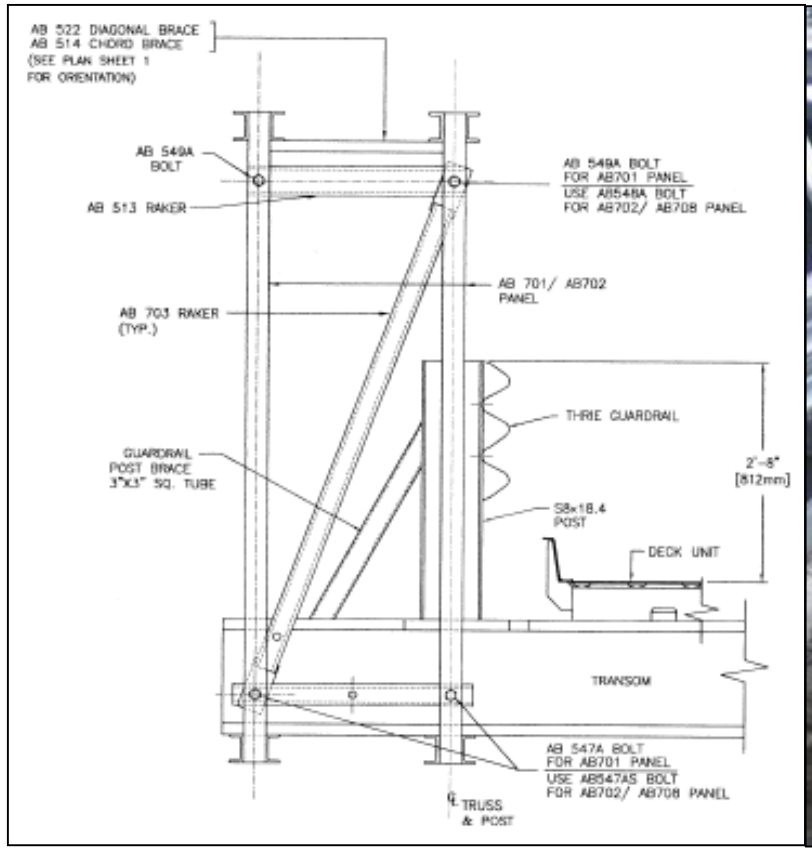
ACROW BRIDGE SECTION
2LANE 24FT AT 6% SLOPE

6% gradient

2 TUBE
BRIDGE RAIL



THRIE-BEAM BRIDGE RAIL



BENEFITS OF STEEL VS. CONCRETE

- Significantly less time on site due to prefabrication
- No forms to build, and strip
- Better quality control
- No negative impact caused by weather, lighting, etc.
- Fabrication in precision jigs and robotic welding
- Lighter in weight, therefore less expensive substructure required
- Steel is almost 100% recyclable
- Easier to modify
- Historically proven that steel bridges outlive concrete bridges
- Easier maintenance and inspection
- Achieve longer spans, so less expensive if you can eliminate piers
- Rehabilitate to extend life span
- Quicker installation times

PHASING VS ACCELERATED BRIDGE CONSTRUCTION

PHASING ADDS 30-40% to PROJECT COSTS

- Phasing costs are dependent on many factors but 30 to 50% is the figure designers use to estimate costs
- Safety is compromised when vehicles are next to workers
- Night-work is less efficient and more dangerous
- Contractors mobilize equipment twice to compensate for road use during construction
- Detour Bridges:
  - ✓ Cost-effective in many applications
  - ✓ Faster project completion
  - ✓ Safer work areas
- Read more: www.shortspansteelbridges.org

ACROW

WHY ACROW?

- Proprietary, proven, advanced modular steel technology
- Expertly manufactured in the USA using high-quality, high-strength steel
- Easily customizable solutions to desired length, width and strength
- Precision-engineered and designed for safety and durability
- Hot-dip galvanized to eliminate corrosion and minimize maintenance
- Rapid installation with minimal labor and equipment
- Engineering support from start to finish
- Delivered in partnership with key stakeholders

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acrow.com

Will Smith – SE Regional Manager
251-408-1340
wsmith@acrow.com

acrow.com

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251-408-1340
wsmith@acrow.com