Design. Build. Aluminum.

- **Turnkey aluminum solutions**
- **Eye-catching design**
- **Little to no maintenance**
- **Made with experience**

MAADI™ group

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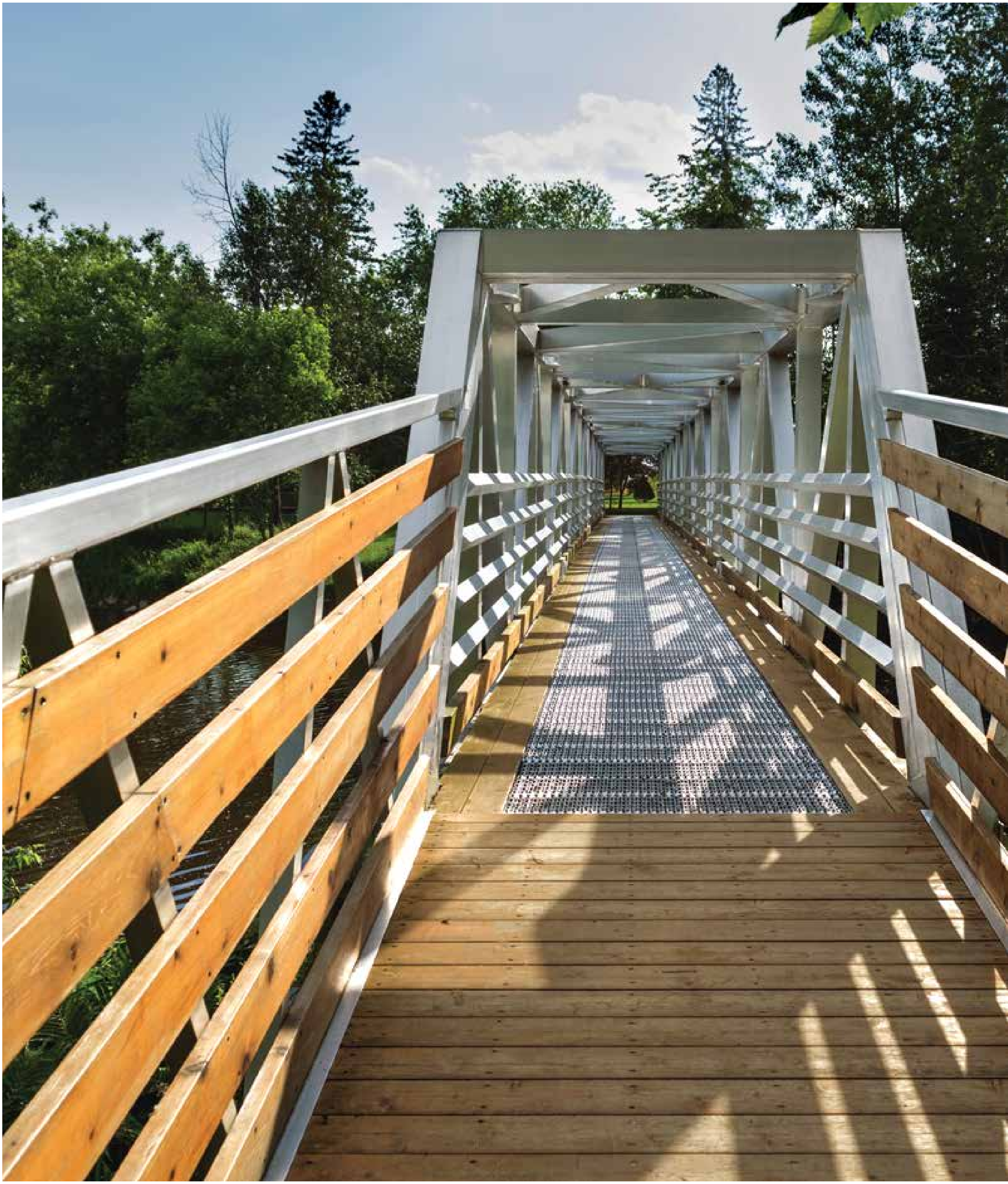


Since 2005, MAADI Group has specialized in structural design and building using hardwearing aluminum that lasts decades. Constantly innovating to maximize efficiency, our structures are maintenance-free and optimize aluminum's sustainable benefits to create products that contribute to a more eco-friendly environment.

← Dame de Cœur Theatre access bridge, Upton, Quebec

Introducing MAADI Group

We provide our clients—municipalities, governments, construction, manufacturing, and more—with the best, most advanced structural designs and building solutions to fit their specific project.

Our first priority is to make sure that your vision and needs are top of mind as we work alongside you and your team throughout the design, planning and implementation phases.

Who we are

MAADI Group is an independent aluminum engineering design and building firm based in Canada. We provide our clients with the most hard-wearing products to meet the needs of the sustainable development, construction and manufacturing industries.

Our team

- Professional engineers
- Technicians
- 3D designers
- Project managers
- Welders
- Daily labourers
- Buyers

What we do

Since 2005, MAADI Group has designed and built hundreds of structural extruded aluminum projects for clients around the world. Our vast technical expertise enables us to design innovative products and infrastructure that reduce weight, simplify transport and lower the total cost of ownership (TCO), while maximizing strength and durability. Using functional and sustainable design principles, we apply the highest engineering and design standards on every project, meeting all local and national building and bridge codes.

MAADI Group aluminum pedestrian bridges, maritime structures and other distinctive engineering products are designed by top-grade engineers experienced in pony truss bridge design and top chord stability criteria, utilizing elastic lateral restraints. We use cutting edge technologies, CAD and 3D modeling to optimize our distinctive structures.

Our services

- Full engineering services
- Technical support and manufacturing services
- Planning
- Installation

Watch our video to learn more

Our mission

To provide planners, architects, builders, and developers with customized aluminum structures that are maintenance-free, durable, attractive, economical, and fully sustainable for generations to come.

Our values

Quality

All our aluminum structures meet the highest quality standards, from design to installation..

Innovation

We use the latest technology to deliver solutions that are both strong and unique.

Integrity

We stay true to who we are and to our commitment to providing exceptional products, tailoring everything we build to our clients' requirements and needs.

Human relationship

We foster strong, lasting relationships with our clients through active listening and dialogue.

Our backstory

MAADI Group was founded in 2005 by Alexandre de la Chevrotière, IWE, P.E. After earning a degree in Mechanical Engineering with emphasis on Naval Architecture, Alexandre acquired over 25 years of experience working extensively with aluminum, including shipbuilding, NATO destroyer retrofits, and designing and manufacturing marinas and bridges.

Over the course of more than 15 years, MAADI Group has developed unparalleled knowledge in mechanical and structural engineering, specializing in designing aluminum bridges and structures for the civil, maritime, and military industries throughout North America and Asia.

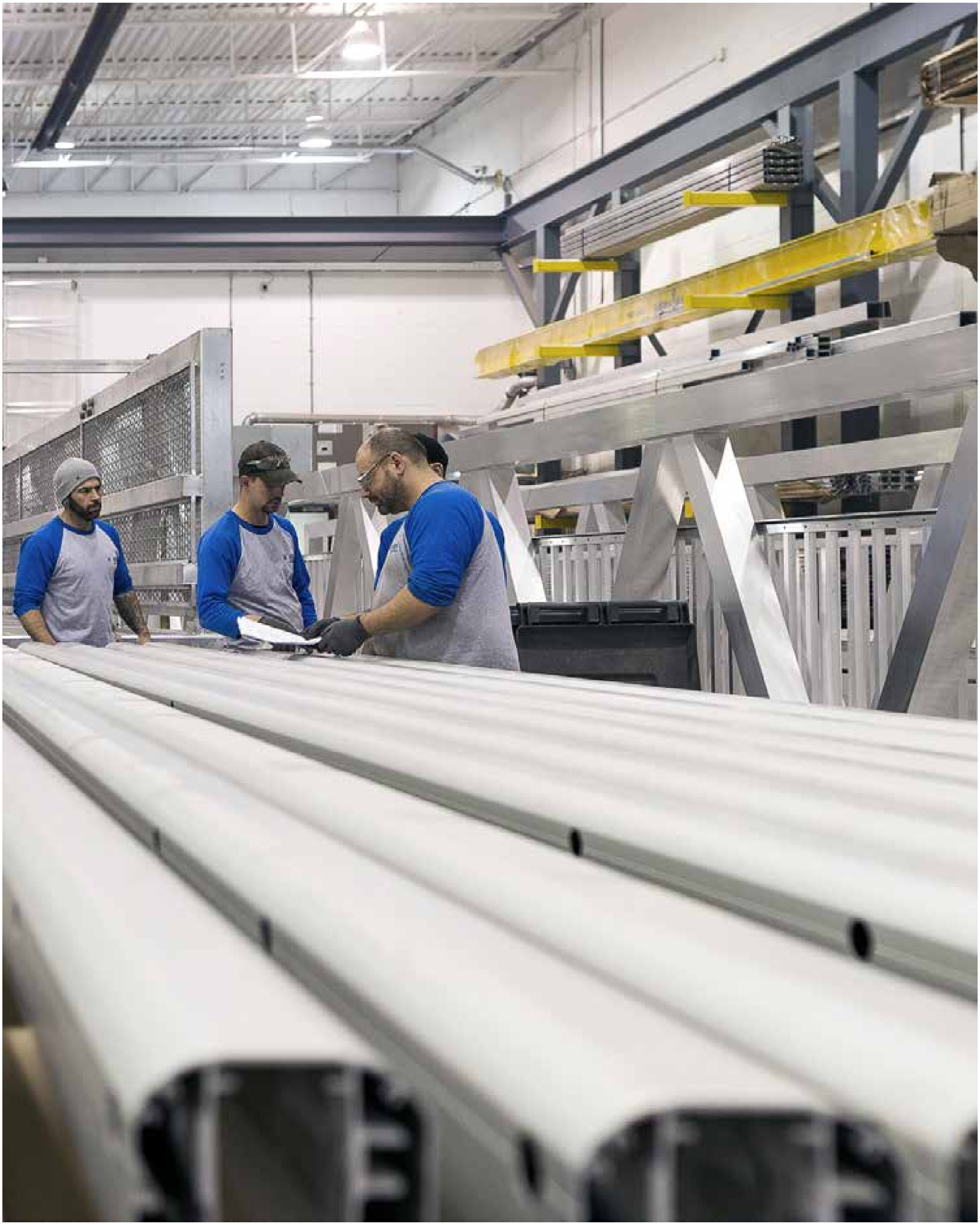
Our clients

MAADI Group's clients are based in the United States, the Caribbean, Canada and Asia.

Shell Exploration
Syncrude
Marinetek
Davie
Canadian Armed Forces
Public Works of Canada
Fluor Daniel
AMEC Americas
ARUP
The Jacques Cartier and Champlain Bridges Incorporated
Technomarine
SNC-Lavalin
Rio Tinto
Parks Canada
Cirque du Soleil
City of Montréal
Turner Construction
Maine Hydro
Rolls-Royce
Bombardier
SÉPAQ

Our production plant

Manufacturing is carried out in our production plant of 21,000 ft^2 (1,951 m^2). Our GMAW welding robot with artificial vision operates in a 110 ft x 13 ft (33.5 m x 4 m) cell to ensure an optimal level of quality. Cutting and machining are done using our 5-axis machining center, which accepts profiles with high linear density and lengths of 42 ft (12.8 m).



Quality Management System

Quality

Excellence

Dependability

For MAADI Group, the notion of quality is both a set of rigorous processes and a sustained policy of reliability that makes us go above and beyond the needs of our customers. Whether it's the quality of our products and services or our competitive costs, our business culture is based on the following principles.

Active listening

MAADI Group remains attentive to its customers in order to offer personalized service and continuously increase its productivity. The company maintains its competitive position in the market while meeting or surpassing its customers' requirements as well as the standards and laws in effect.

Compliance standards

MAADI Group adheres to the international standard ISO 9001:2015. The company's philosophy is based on the adoption of quality objectives, action plans and preventive measures to continuously improve the quality of its products and services as well as its quality management system.

The company is also committed to providing the necessary resources to implement and maintain this system. To this end, all personnel whose duties have an impact on quality benefit from a continuous training program.

Healthy relationships

MAADI Group is committed to its philosophy based on communication, service with integrity and fairness. The company places its employees at the heart of its operations, and respects its responsibilities to the communities where it operates. The company is committed to optimizing its processes in order to reduce non-compliance and meet delivery deadlines.

SYSTEM CERTIFICATION ISO 9001 SGS

Highest Standards

We work closely with our manufacturing partners to ensure that product quality standards are fully and consistently maintained throughout the design, production and installation process.

Codes and standards

At MAADI Group, all of our design specifications meet local, regional and national building codes and professional standards as required. All of our technical designs and calculations for our aluminum structures bear the seal of one of our engineers.

Canada

- CSA-S6-19 Canadian Highway Bridge Design Code
- CSA S157-17 Strength Design in Aluminum
- CSA W59.2-18 Welded Aluminum Construction
- CSA W47.2-11 (R2020) Certification of Companies for Fusion Welding of Aluminum

U.S.

- AASHTO Specifications for Design of Pedestrian Bridges
- AA ADM (2020) Aluminum Design Manual
- AWS D1.2/D1.2M (2014) Structural Welding Code – Aluminum
- Aluminum Standards and Data (AS&D)
- Americans with Disabilities Act (ADA)
- Environmental Engineering for Small Boat Basins, U.S. Army Corps of Engineers
- Planning and Design Guidelines for Small Craft Harbors
- Marinas 2020 of the Coasts, Oceans, Ports, and Rivers Institute (COPRI) of the American Society of Civil Engineers (ASCE)
- Marinas and Small Craft Harbors
- Layout and Design Guidelines for Marina Berthing Facilities of the California Division of Boating and Waterways (DBW)

International

- SAA AS 3962:2020 Standards Australia International – Guidelines for Design of Marinas
- BS 6349-8:2017 British Standards Institution – Maritime Structures
- BS EN 1999-1-1:2007 + A2:2013 Eurocode 9: Design of aluminium structures - General structural rules

Certification

MAADI Group is certified in Division 1 for Fusion Welding of Aluminum per CSA Standard W47.2 of the Canadian Standards Association.

All our welders, welding operators and tack welders are governed by the Canadian Welding Bureau (CWB).

We carry general contractor licences from the Régie du bâtiment du Québec (RBQ).

Patents

MAADI Group owns eight patents, seven of which are for MakeABridge®, our weld-free aluminum pedestrian bridge and maritime gangway system.

Awards

MAADI Group is the proud winner of numerous awards, including the Extrusion Technology Foundation's Design Competition Award in the structural category, which the company won a third time this year.

Partners

MAADI Group partners with Rio Tinto and Centre québécois de recherche et de développement de l'aluminum (CQRDA) to manufacture its award-winning MakeABridge® gangway design and the weld-free bridge decking system GuarDECK™.

At Your Service

We handle the construction of your structure from start to finish. Our qualified team of experts is ready and equipped to provide you with a wide range of services.

Analysis and evaluation

- Site data analysis
- Stress evaluation of aluminum structures
- Evaluation of pedestrian and vehicular loads and wind pressure
- Evaluation of vessel berthing loads and wind loads
- Evaluation of mooring line force
- Evaluation of pile capacity
- Wave load and wave attenuators analysis
- Stability and buoyancy calculations according to industry standards

Design and engineering

- Design and engineering of pedestrian bridges and maritime gangways
- Design, engineering and sizing of floating docks
- Marina layout design and plans
- Design of cleats and mooring bollards
- Welding procedure specifications
- Our team of experienced designers and draftsmen uses 2D and 3D software that can be adapted to the client's needs

Management and manufacturing

- A team dedicated to your project will work with you for your entire project or at specific stages, depending on your needs.
- Manufacturing is carried out in our production plant.

Installation

Installations are performed either by a local contractor supervised by MAADI Group or by one of our certified installers.

Inspection and qualification

Inspections are performed by one of our professional engineers to certify the compliance and safety of structures.

Choose Aluminum

The Better Choice

When strength counts

Corrosion-resistant

Durable

Long lifespan

The genesis of a new material

It was only toward the end of the 19th century that aluminum began to be used in engineering applications. In 1886, Paul Héroult, a French engineer, and Charles Hall, an American student, both independently discovered a cost-effective electrolytic production method. The process showed excellent results but required an enormous amount of electric power. Three years later, Karl Joseph Bayer, an Austrian chemist, invented a cheap and feasible alumina (aluminum oxide) production method. The processes that we use today are based on the Bayer and Hall-Héroult processes.

Three inventions would change the course of history

- Internal combustion engine vehicles.
- Electricity: Lightweight conductive metal was required for carrying electricity across great distances and for building cable towers to deliver electrical energy from power generation sites.
- Airplanes: Partnerships between the aviation and the aluminum industries would flourish for airframes, engines, missile bodies fuel cells and satellite components.

Largely due to its favourable properties, today aluminum is a key material used in many everyday objects and components in virtually all industries, including the food industry.

As automakers move to produce more electric vehicles, car batteries are becoming increasingly powerful—and accordingly, increasingly heavy. Using more aluminum to build vehicle frames helps offset this extra weight and makes it possible to produce the powerful eco-friendly vehicles for which there is growing demand.

Advantages

Aluminum offers excellent atmospheric corrosion resistance, durability, and a high strength-to-weight ratio compared with competing construction materials.

A total cost of ownership study shows that decision makers should no longer assume that steel is the best option economically when investing in civil engineering structures.

Aluminum's cost-saving benefits

- Aluminum is highly resistant to corrosion under the majority of service conditions, and no colored salts are formed to stain or discolor products it comes into contact with.
- Structural stiffness resists permanent deformation caused by live loads, climate or movement
- High strength-to-weight ratio for construction, which means greater strength and easier to handle
- Aluminum retains its strength at low temperatures and is often used for cryogenic applications
- Over its life cycle, aluminum is proven to be almost maintenance-free with no costly galvanizing or painting
- Easy to remove graffiti by simply brushing the bare metal
- Aluminum has an attractive, natural finish, which can be soft or shiny. It can be virtually any color or texture.
- Natural mill finish aluminum forms its own protective coating
- Easy to transport and install due to light weight (60% of equivalent steel structure)
- Easy to fabricate and extrude into infinite shapes

Sustainable

MAADI Group leverages the advantages of sustainable development to enhance the environment in every community where our structures are used. MAADI Group incorporates the sustainable design principles of energy conservation, use of recyclable materials, greater functionality and design flexibility to offer responsible products that last decades.

Environmental advantages

- Natural material requires no maintenance and meets environmental responsibility requirements.
- 100% recyclable, with high scrap value at the end of its useful life.
- Recycling aluminum scrap requires only 5% of the energy used to make new aluminum.
- Fully reusable upon deconstruction without any loss of strength or mechanical properties.
- Reduced energy use and pollution during transport due to light weight (60% of equivalent steel structure).

FAQ

Lightweight, recyclable aluminum is being used more and more often for all sorts of applications. You might be (pleasantly) surprised to learn about them!

Environment and Human Health

Does aluminum contribute to or help mitigate the effects of climate change?

Primary aluminum production is very energy intensive and can have negative impacts on the environment and climate. But, when put to use, aluminum can have very positive impacts on climate change because of its properties:[1]

Lightweight

In the transportation industry, aluminum's light weight increases efficiency and reduces fuel consumption and emissions.[2]

Durable and corrosion-resistant

Aluminum can last much longer than other materials without any protective finishing. In fact, 75% of all aluminum ever produced is still in use, so its true environmental impact can only be calculated at its true end of life (and through a full life cycle analysis).[3]

Easily recyclable with a high scrap value

The aluminum content in certain products (like cars) encourages higher recycling rates.[3] Creating new materials from recycled aluminum only requires 5% of the energy needed to produce primary aluminum. It's relatively easy to recycle and has a very high scrap value.

Infinite possibilities

Aluminum offers designers infinite possibilities for optimizing their products, both in terms of shape and properties (for example, architects can leverage aluminum's high reflectivity to keep a building from heating up in the sunlight).

Is aluminum more damaging to the environment than steel?

The answer depends on the application and what type of aluminum or steel you are comparing. Primary aluminum production is very energy intensive—the carbon footprint worldwide is estimated to be between 8 and 12 tons of CO_2 per ton of aluminum (depending how it is calculated and who you ask). Steel's carbon footprint is only about 2 tons of CO_2 for 1 ton of steel. However, depending on where the aluminum was made and with which energy source, aluminum's carbon footprint can be much lower. For example, in Canada, primary aluminum's carbon footprint is only 2.5 tons of CO_2 per ton of aluminum. Steel is also 3 times heavier than aluminum, which makes comparing "per ton" an unbalanced comparison.

Aluminum is extremely durable and easily recyclable. Recycled aluminum's carbon footprint is only 5% of that of primary aluminum. Aluminum is used because it is lightweight and has a high strength-to-weight ratio. In many products—especially in the transportation industry—it helps save a significant amount of CO_2 emissions during the use phase of the vehicle. So to accurately compare the environmental impact of materials, a full "life-cycle analysis" needs to be done.

[1] International Aluminium Institute - Aluminium Carbon Footprint Technical Support Document

[2] International Aluminium Institute - Carbon Footprint Guidance Document

[3] Carbon Trust - International Carbon Flows / Aluminium

Does aluminum production generate large quantities of greenhouse gas emissions?

Primary aluminum production is very energy intensive and generates large amounts of direct and indirect emissions. Direct greenhouse gas emissions come primarily from the use of fossil fuels in the alumina calcination process, but also from process-related conditions in electrolysis, such as consumption of carbon anodes (CO_2) and PFC emissions (PerFluoroCarbon) from anode effects. The main energy consumption is the electricity used for the electrolysis process in aluminum smelters (causing indirect emissions). But the refining of alumina from bauxite ore also requires a significant amount of energy (to produce the solution of bauxite in caustic soda, for the calcination process and for the recovery of caustic soda after use).

Improving energy efficiency is essential for the aluminum industry, both from an economic and environmental point of view. Reducing greenhouse gas emissions from energy use and from the electrolysis processes is therefore important to reducing the overall carbon footprint of primary aluminum. The aluminum industry has been working on this with significant success over the past century.

Countries like Canada, Iceland and Norway use hydroelectric power, a renewable energy source, to produce aluminum. Recycled aluminum only requires 5% of the energy and generates therefore only a very small fraction of the greenhouse gases that primary aluminum does. Using aluminum made from renewable energy and with the highest possible recycled content guarantees the smallest carbon footprint and lowest greenhouse gases possible.[1]

Is it true that aluminum production has a worse carbon footprint than steel production?

On a global basis, steel is responsible for 7 to 9% of all energy system emissions. The global steel industry therefore contributes 2.8 Gt per annum of CO_2, and each ton of steel produces on average 1.83 tons of CO_2 (according to the World Steel Association). Primary aluminum production is more energy intensive and its carbon footprint is 4 to 6 times higher than that of steel (on a global average) if calculated per ton of metal. Once each metal is recycled, the carbon footprint in both cases is substantially lower, but in theory it is still higher for aluminum than for steel. It is therefore very important to use each material in the right situation for the right product, so that over the full lifespan (from cradle to grave – or even back to cradle) the carbon footprint is minimized.

For this we need what's called a "life-cycle analysis." One example is the transportation industry, which uses a lot of both steel and aluminum and accounts for about 19% of all man-made CO_2 emissions. Eighty percent of all greenhouse gas emissions are produced during the operating life (i.e., not the production of a car/bus/truck/etc.), and a 10% weight reduction (by using the right material) can yield fuel economy improvements of 5-7%. For example, reducing the weight of a city bus by 1 kg can save 40-55 kg of CO_2. This is a perfect example of why just looking at the initial carbon footprint of a material will not give us the full picture of the best usage for a specific product. That's why a full life-cycle analysis is needed.

[1] Carbon Trust - International Carbon Flows / Aluminium

Financial Times - Cleaning up steel is key to tackling climate change

Energy Transitions Commission

European Journal of Sustainable Development

International Aluminium Institute - Aluminium Carbon Footprint Technical Support Document

OECD - Greenhouse Gases Emissions From Aluminium Production

Environment and Human Health

How much carbon emissions are generated by the production of 1 kilogram of aluminum versus steel?

As in many cases, this really depends on where the metal is produced and especially what type of energy was used to produce it. On a global average basis, one kilogram of steel produces 1.83 kg of CO_2, while one kilogram of aluminum produces over 12 kg of CO_2. Unfortunately, most of the recent capacity expansions have taken place in China, where coal is the dominant energy source used. In the past decades, aluminum production capacity has also increased in the Middle East, where the use of primarily natural gas generates fewer carbon emissions.

Outside of those two regions, aluminum production had been shifting to renewable energy sources (predominantly hydroelectric power, used in 100% of all Canadian aluminum production), until the U.S. began reviving old and obsolete coal-powered smelters. However, both the steel and aluminum industries worldwide are working hard to reduce their carbon footprint, and with the Rio Tinto – Alcoa Joint Venture (Elysis) we seem to be relatively close to making this a reality in the not-too-distant future.

Carbon Trust - International Carbon Flows / Aluminium

Carbon Trust - International Carbon Flows / Steel

Are exorbitant amounts of electrical energy used to produce aluminum?

On a global average, about 14 MWh (Megawatt hours) are required to produce one ton of aluminum. This seems very high, but the number has been coming down with advancing technologies. In the 1980s this number was over 17 MWh, and in 1990 it dropped to around 16MWh.

The new smelters in China are already quite a bit below this number. China on average is at only 13 MWh per ton of aluminum. The most important factor for the reduction came from replacing Söderberg smelting technology with the “prebake” process to bring the number down to 12-16 MWh/ton of aluminum. Most new smelter technologies around the world are now at about 12 MWh/t of aluminum. Rio Tinto and Alcoa are working on “carbon free” aluminum with their new joint venture (Elysis).

Carbon Trust - International Carbon Flows / Aluminium

Carbon Trust - International Carbon Flows / Steel

Is aluminum recyclable (compared to steel)?

Yes, aluminum is just as recyclable as steel. And due to its much lower melting point, it is also much easier to recycle. In the industry we distinguish between industrial (or pre-consumer) recycling and post-consumer recycling. Industrial recycling is often done in so-called "closed loop systems." For example, an automotive stamping factory will return all scrap directly back to its sheet metal supplier that will then re-melt the scrap, and, with very little loss, put it back into new sheet for that same plant.

Post-consumer scrap is either also directly recycled back into the same or similar products. The best example is a pop can, or vehicle wheels. When these items come back as a scrap mix, they are separated and then recycled using special processes. An extreme example is the non-ferrous remains of a scrapped car that was shredded. It goes through different separation processes that allow materials such as plastics and rubber to be separated from the non-ferrous scrap pieces. Those scrap pieces are then re-melted into a die-casting alloy called A380 that is typically used to cast a wide variety of products, from engine blocks to furniture brackets. Aluminum is endlessly recyclable and does not lose much of its value. It is important to recycle it as much as possible back into the same alloy (or alloy family) in order to conserve the maximum value.

The Aluminium Story: Explore the production, use and recycling of this versatile metal

ALU - Aluminium for futur generations

The Aluminum Association - Recycling

How do companies recycle aluminum?

Aluminum is generally combined with other metals to improve its properties. These aluminum alloys are divided into families according to the filler metals. The compositions must comply with recognized standards in order to guarantee the specific properties of each alloy.

Manufacturing companies (e.g., aircraft, automotive and appliance makers) use a number of alloys in their products and recycle scrap, machining chips and defective components. Re-melting together scrap of different compositions would produce an alloy that doesn't meet any standard. This is why it becomes necessary to sort them properly so as not to mix them. Normally these companies will sort the scrap metal at the production plant so that it's not devalued by the recycler. Otherwise, the recycler will have to carry out this sorting on their own. The sorted waste is then crushed and decontaminated to remove any pollutants (e.g., varnish, paint, oil).

The final step is the fusion of this sorted and packaged waste to produce ingots corresponding to the original composition, known as "second fusion" ingots. When the composition of these ingots corresponds to that of a foundry alloy, they are then sold to foundries to make new parts. They can also be re-melted like the alloys produced in the casting centers of aluminum smelters to produce rolling ingots or extrusion billets.

CQRDA - Les alliages à durcissement par écrouissage

CQRDA - Les alliages de fonderie

FEDEREC - Évaluation environnementale du recyclage en France selon la méthodologie de l'analyse de cycle de vie

RECYC-QUÉBEC - Programme de consigne

Structural Integrity

Where does aluminum come from?

Aluminum is obtained through the electrolysis of alumina. But where does alumina come from, and how does the liquid aluminum produced in this way become the lightweight parts used by MAADI Group to build such strong structures?

This website gives an overview of the stages leading from bauxite—the main ore used in aluminum production—to finished products. Other diagrams illustrate these different steps:

- Alumina (Al_2O_3) is chemically extracted from bauxite, which generally contains 40 to 60% of the compound.
- Alumina is then melted at around 960°C and then, through electrolysis, the alumina splits into oxygen and aluminum (Al).

Various avenues allow manufacturers of finished products to take advantage of the extraordinary potential of aluminum, such as:

- Development and casting of specific alloys into ingots, billets, etc.
- Moldings that meet the specific needs of transformers, such as the different nodes designed and used by MAADI Group to manufacture MakeABridge® bridges.
- Ingot rolling and billet extrusion, like the extrusions designed and used by MAADI Group to build its structures.

Quebec producers ensure that each of these steps is carried out with respect for the environment and human health. These producers ensure that the aluminum produced in Quebec is one of the cleanest—if not the cleanest—in the world. For this reason MAADI Group is proud to use Quebec-made aluminum in all of its products, including gangways, pedestrian bridges, marina decks and more.

What are the major differences between steel and aluminum?

The density of aluminum is three times lower than that of steel, which gives aluminum a definite advantage for transportation.

Electrical and thermal conductivity depends on the purity of the metal, but generally speaking it is three times higher for aluminum. Combined lightness and conductivity make aluminum indispensable for power transmission lines. The melting temperature of aluminum alloys is about two times lower than that of steel, which means aluminum can be cast in steel molds, a method that considerably reduces manufacturing costs.

Aluminum is also very malleable at a temperature near its melting point, making it very easy to extrude. This “extrudability” makes it possible to create highly complex aluminum profiles that would be impossible to produce using steel.[1] Aluminum offers enormous potential for designers and product design engineers alike.

[1] CQRDA - L’extrusion de l’aluminium

Wikipedia - Mass concentration (original source)

Alu Québec - Transport terrestre

Wikipedia - List of thermal conductivities (original source)

Hydro-Québec - Power transmission cables

Wikipedia - Casting (original source)

What happens if aluminum comes into contact with steel?

It all depends on the contact conditions. To be sure, contact between steel and aluminum can accelerate the corrosion of aluminum, so this issue should be considered. Without the presence of water to act as a conductive liquid, galvanic corrosion cannot occur.[1, 2] Metal contact between aluminum and steel is also required to form a short-circuit and create a corrosion current, as in the case of a battery.

In the case of rain that can dry, when the wetting time remains short overall, galvanic corrosion may not be a concern. But in any environment exposed to water, short-circuiting is prevented for bolted connections by placing insulation (preferably waterproof) between metal surfaces (steel-bolt-aluminum) or by using a coating on the surfaces to isolate them from each other or from water. In some environments, stainless steel bolts can be used to assemble aluminum. A phenomenon called passivation considerably slows down galvanic corrosion of aluminum, but the time it takes for this type of assembly will need to be taken into account.

Aluminum is more “noble” than zinc, so it’s protected by the zinc coating on galvanized steel. But since zinc is similar to aluminum, it will corrode slowly, making it important to plan ahead for when this protective zinc coating disappears.

[1] CNRC / NRC - Guide de solutions pratiques permettant de contrer la corrosion galvanique entre l’aluminium et l’acier dans le domaine du transport terrestre

[2] Euro Inox - Stainless Steel in Contact with Other Metallic Materials

What is the lifetime of an aluminum structure vs. a steel structure?

A structure is the framework that supports all loads such as traction, compression and torsion. If the loads are static and the strength limit of the material is respected by the design, in principle the service life is infinite if corrosion is ignored. However, when the mechanical stresses appear as cyclic loads, metals will suffer damage such as material fatigue (i.e., appearance of micro-cracks), leading to failure after a number of cycles depending on the weight of the load.[1, 2]

When it’s possible to see this type of stress, it’s possible to predict the service life before failure occurs. This is thanks to the large number of mechanical tests performed on each metal. Since the loads on structural elements depend on the design, engineers design the structures and dimensions of the structural elements and their connections (i.e., welded, glued, bolted) to ensure a sufficient and safe service life for the selected metal alloy. Steel has the uniqueness of having a stress threshold that gives an infinite service life. A design based on this threshold is not optimal or required for all types of structures.

The level of safety is partly based on a lack of knowledge of in-service stresses, so designers who want to lighten the components of their structure (e.g., frame members and vehicle chassis) compile data to measure these in-service stresses. For optimal product use, it’s often necessary to decide on the service life requirements during the design phase.

[1] Wikipedia - Fatigue (original source)

[2] Centre Traitement de la Peur en Avion - Quelle est la durée de vie d’un avion ?

Structural Integrity

Is aluminum weldable?

When we talk about aluminum, we are referring to aluminum alloys. There are many welding techniques, and some of them are well suited for welding aluminum.[1,2] The choice of welding techniques will depend on the shape of the part, the quantity and the alloys to be welded.

Fusion welding of metal at a joint, with or without the addition of metal, does not give satisfactory results with some alloys. The existing knowledge base includes all the practices and advice for welding an alloy or alloys together, as well as the ideal alloy for the filler metal (generally required) using a particular welding technique (e.g., TIG, MIG, etc.). The aluminum alloys used for manufacturing are delivered with enhanced mechanical properties through heat treatment and/or mechanical treatment, which hardens them. The temperature reached in the joint largely eliminates this hardening. It's the role of engineers to take this into account in the design of a part, which often leads to a more or less oversized part.[2]

Friction stir welding, a fusion-free welding technique almost exclusively used for aluminum, makes it possible to weld all alloys without almost any loss of mechanical properties, including for problematic foundry alloys.[3] When geometry and quantities are adapted to the process, this technology can become an essential asset for aluminum and product quality.

Is there any training to learn how to calculate aluminum?

Civil engineering courses teach future engineers to calculate the forces to which the elements of a loaded structure are subjected. The materials used in structures such as steel, concrete, wood and aluminum each have their own mechanical characteristics that must be taken into account in the detailed calculations.[1] Since they've been used for so long, the characteristics of old traditional materials such as steel, concrete and wood are integrated into structural design software, but not aluminum. For reasons related to manufacturing difficulty, traditional materials are made available in standard profiles, which make it easier for engineers to learn how to use them, ensure compliance with standards and ultimately choose those materials. But aluminum's extrudability allows for complex shapes and contours, providing a clear advantage for structural design.

Additional training is offered to engineers working in the aluminum industry to address the lack of training with aluminum alloys. Some are ad hoc,[2] while others are offered as part of specialized training.[3,4] Since these short programs are offered on a one-off basis, it's best to check the schedule directly with the institutions offering the training.

[1] Wikipedia - Welding (original source)

[2] CQRDA / Le Feuillard Technique - Soudage

[3] Alu Québec - Soudage de l'aluminium par friction malaxage (FSW)

[1] CQRDA - Calcul des charpentes d'aluminium

[2] Genium360 - Construction structurale en aluminium incluant l'application de la norme CSA S157 (en collaboration avec AluQuébec)

[3] Chaire de leadership en enseignement sur les charpentes métalliques

[4] SAFI Online Training & Webinar

Why aren't all engineers familiar with calculations for aluminum structures?

Reference books on the subject for aluminum are relatively recent. The first one[1] that was published in Canada was released back in 2003, while the revision of the CAN/CSA S157-05 standard is more recent. The training of engineers in universities cannot be done without these tools. These resources are, however, critical to engineers' training. That's why the aluminum industry has to proactively approach institutions to educate them about the importance of including the sustainable metal in their curriculum. Initiatives to encourage on-the-job training, like scholarships and recycling courses, are relatively recent.

For a long time, universities have offered undergraduate programs that essentially focus on traditional materials like steel, concrete and wood. The tide is slowly starting to turn, but aluminum does not yet enjoy its rightful place in university programs. That said, the rising cost of steel means that more and more engineers and architects are turning to aluminum. And that's great news, because as demand increases, so will the need for training.

[1] CQRDA - Calcul des charpentes d'aluminium

Cost

How much does aluminum cost, and how does it compare to steel?

Both aluminum and steel are commodities. Their prices are determined by many factors, but mainly by supply and demand. Although there are some similarities, their markets are very different, which has a big impact on their prices. As a rule of thumb, aluminum costs about three times more than steel. So if a pound of steel is around 0.30 USD/lb, aluminum will be around 0.90 USD/lb. At the same time, aluminum represents only one third of the weight of steel.

There are also big differences in pricing depending on the specific type and alloy. Generally, the price differences between different steel types are much greater than those of different aluminum alloys. This is due to the alloy ingredients—for aluminum, lower priced metals like silicon and magnesium are used, but for steel, more expensive elements with volatile prices are used, like nickel and cobalt.

Why is aluminum more expensive than steel?

Primary aluminum production is extremely energy intensive, which is the main factor responsible for the high cost. Between one third and one half of the cost of making aluminum is the direct and indirect energy needed to produce it.

After that, most of the cost is attributable to the alloy ingredients, which are usually cheaper for most aluminum alloys than for many types of steel. The main ingredients of aluminum alloys are silicon (Si) and magnesium (Mg), while main alloy ingredients for steels are often very highly priced elements like nickel (Ni) and cobalt (Co). For this reason we need to clearly distinguish which type of steel we're comparing with aluminum. The most common mild steels and carbon steels are usually less expensive than aluminum (on a per kg or per ton basis). It's very important to take all factors into account, including the transformation process, tooling and assembly costs, as well as lifetime costs (e.g., maintenance). For example, if we compare stainless steel and aluminum and consider aluminum's corrosion resistance, then steel tends to be more expensive.

Visit our website for an even more extensive FAQ section.

Eagle Mouldings - The Difference Between Steel vs Aluminum

What determines the price of aluminum?

The global price of primary aluminum is determined at the London Metal Exchange (LME). Many factors influence the price, like:

- Global supply and demand for the metal
- Economics of aluminum production, especially the price of energy
- Inventories: The higher the inventories, the greater the downward pressure on the price, and vice versa
- Regulatory changes: An embargo, like the U.S. placed on Russian metal, changes the market dynamics and impacts the price
- Exchange rates: Aluminum is traded even at the LME in U.S. dollars, but most of the production and demand are outside of the U.S.
- Investors buying metal when the current price is low, expecting the price to go up in the future

There is also a regional market premium on the LME price. In North America it is called the “Midwest U.S. Transaction Premium” (MWP). It depends on basically the same factors, but on a regional level. Regional deficits like we have in North America require a high premium to attract offshore metal. A duty in one country or region is a regulatory change that directly impacts this regional premium, as is the case for the MWP. Together the global LME price and the regional premium form the “all in” price of primary aluminum.

LME Aluminium Trading Summary

S&P Global Platts - US Aluminum Transaction

Is primary aluminum cheaper in Quebec because there is so much produced in the province?

Primary aluminum has one global base price, which is determined at the London Metal Exchange (LME). No primary aluminum producer would sell below this price, as they could simply sell their metal at that price directly on the exchange. The metal bought at the LME can be at any producer’s location (in other words, the location is at the seller’s discretion). This means that a consumer would need to bring it to wherever it is needed.

To avoid this, however, there is a second factor concerning the primary aluminum price, which is a regional market premium that exists in every major consumer region. In Japan it is called “CIF Japan,” whereas in Europe it is “GW premium paid in-warehouse Rotterdam.” In North America it is the “Midwest U.S. Transaction Premium” (MWP). This LME price plus the MWP together form the “Midwest U.S. Transaction Price,” which is the price for primary aluminum delivered and duty paid in the Midwest region. Consumers outside the Midwest can get a small discount or premium if they’re close to a producer, but the discount is usually very small. All Quebec-based aluminum producers can sell in the U.S. basically duty free and will not sell their metal much cheaper in Quebec.

LME Aluminium Trading Summary

S&P Global Platts - US Aluminum Transaction

Pedestrian Bridges

Custom Bridges

- **Enriches the landscape**
- **Durable investment**
- **Cost effective**

MAADI Group aluminum pedestrian bridges are designed by top-grade professional engineers specialized in pony truss bridge design and top chord stability criteria, utilizing elastic lateral restraints.

← Rideau river bridges, Smiths Falls, Ontario

Specifications

Design and materials

- 100% recyclable aluminum structural components and energy-efficient recycling, resulting in a low carbon footprint.
- Resistant to corrosion from salt water, chemicals and pollution. A permanent film of natural oxide makes the metal less impacted or corroded by the environment.
- Suited to extreme cold, aluminum does not crack at low temperatures.
- Integrates well with new construction and retrofits of existing structures.
- Includes complete engineering services, eliminating all of the costly phases of design, customized production and approval generally required by a third party.

Maintenance

Virtually maintenance-free and highly cost-effective, compared with steel when total cost of ownership (TCO) is considered.

Vandalism

Very easy to remove graffiti by brushing or sanding bare aluminum, compared to steel that has protective coating.

Warranty

15-year limited warranty on aluminum against material failure, defects and corrosion.

Pedestrian Bridge Styles

MAADI Group natural finish aluminum bridges include various styles and bridge spans for different needs and purposes.

St. Lawrence

Type
Arched pony truss bridge

Spans
Up to 150' (45.7 m)

Widths
From 3' to 12' (1 m to 3.7 m)

Banff

Type
Bowstring truss bridge

Spans
Up to 100' (30.5 m)

Widths
From 6' to 12' (1.8 m to 3.7 m)

Yukon

Type
Bow truss bridge

Spans
Up to 160' (48.8 m)

Widths
From 6' to 10' (1.8 m to 3 m)

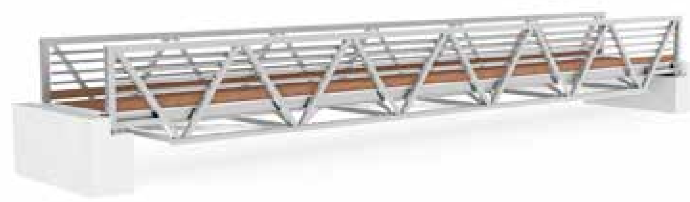
Glacier

Type
Pony truss bridge

Spans
Up to 150' (45.7 m)

Widths
From 3' to 10' (1 m to 3 m)

Tremblant



Type
H-section truss bridge

Spans
Up to 160' (48.8 m)

Widths
From 4' to 12' (1.2 m to 3.7 m)

Mackenzie

Type
Box truss bridge

Spans
Up to 160' (48.8 m)

Widths
From 6' to 10' (1.8 m to 3 m)

Jasper

Type
Cantilever walkway for bridge widening

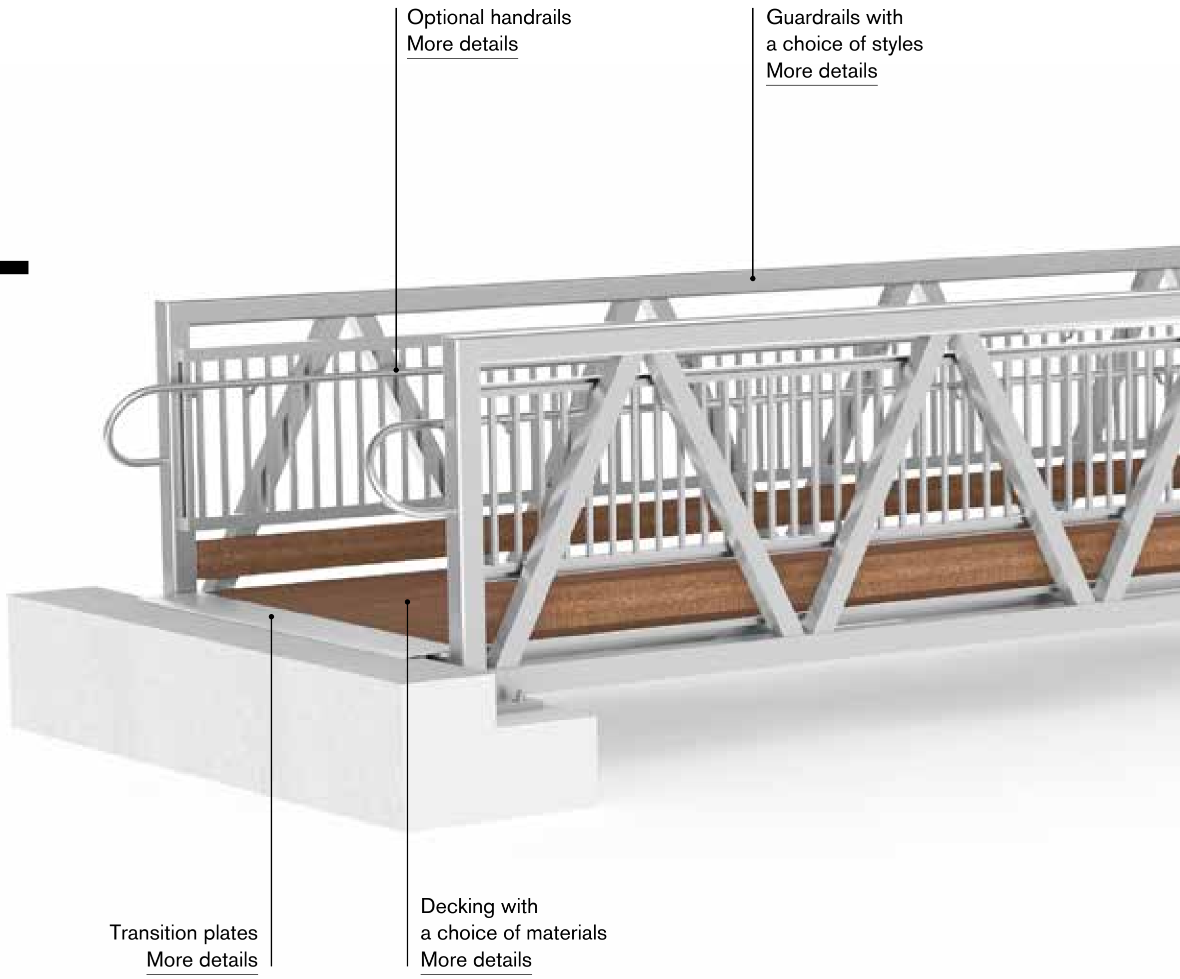
Spans
Up to 100' (30.5 m)

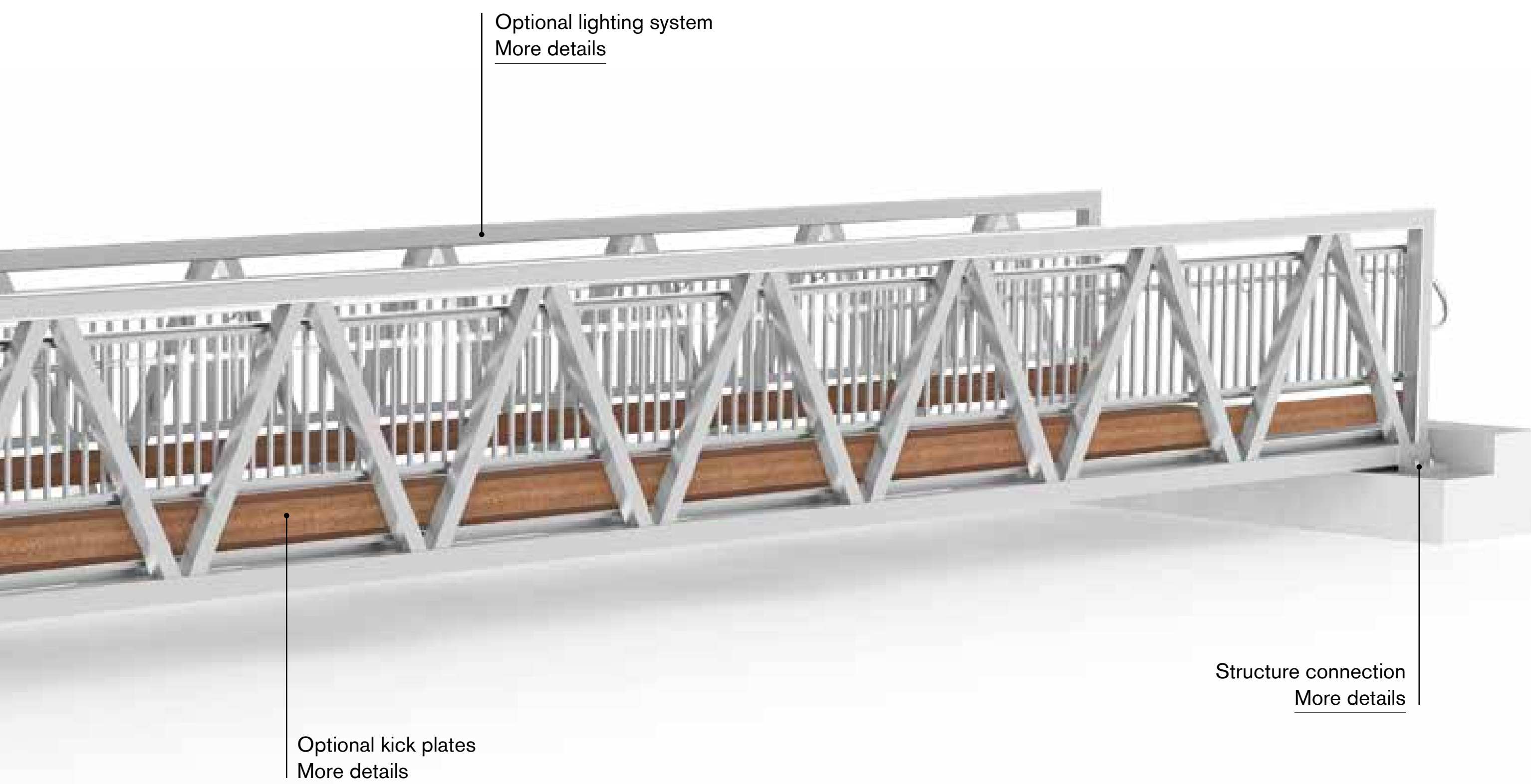
Widths
From 5' to 10' (1.5 m to 3 m)

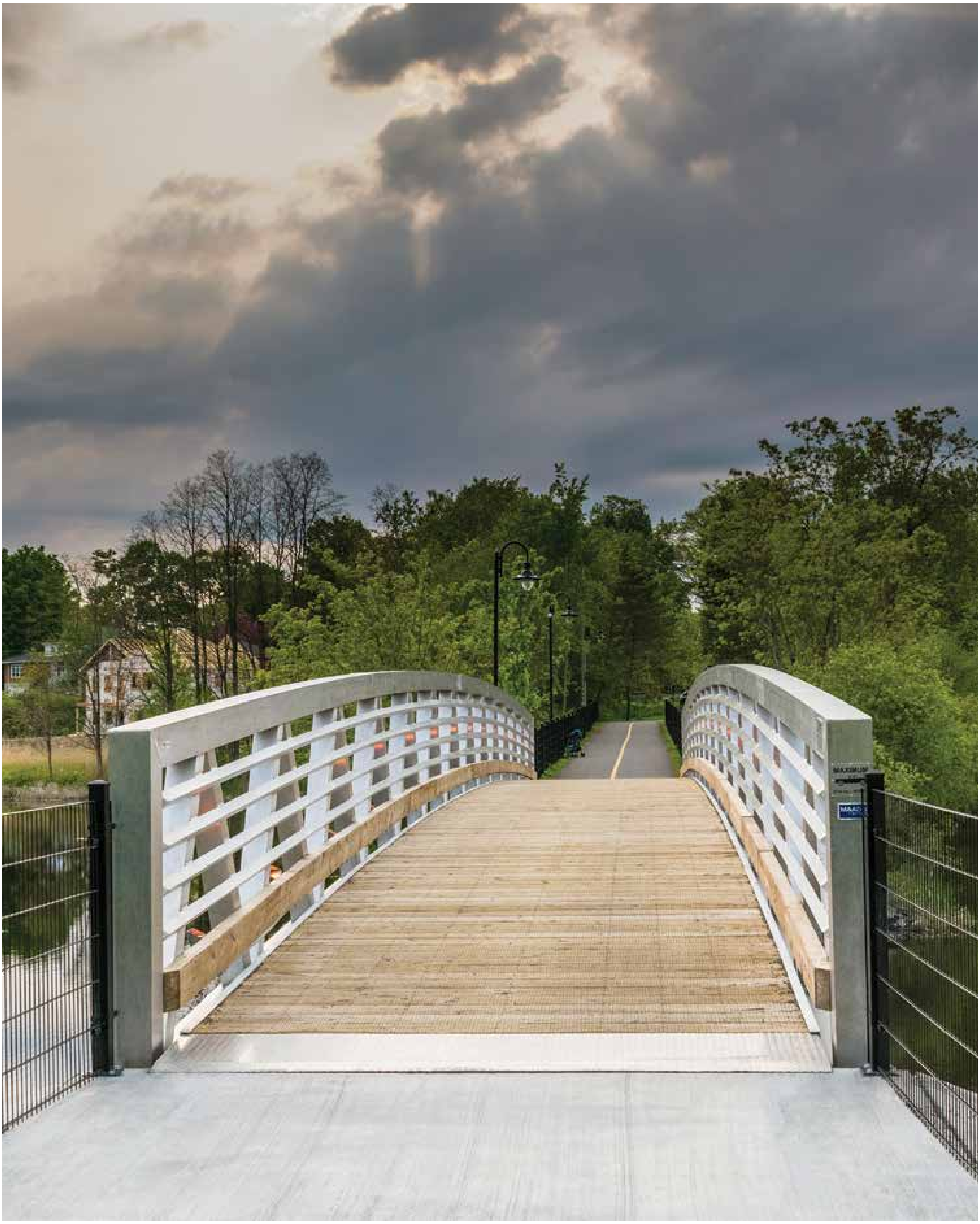
Tailored Designs

A design that can be adapted to your needs.

Our bridge design offers fully customized options to create a distinctive structure that is best suited for its purpose and integrates with its surroundings.




Optional lighting system
More details
Structure connection
More details
Optional kick plates
More details



Structure Connection

The structure connection system allows expansion and contraction of the bridge.

Anchor and bearing plates

Specifications
- Allow thermal expansion on one end of the bridge
- Stainless steel anchors kit with adhesive cement included
- Isolators included

Transition plate

With non-slip finishing, transition plates facilitate access to the gangway from adjacent surfaces.

Specifications
- Aluminum plate with anti-slip diamond treads
- Comes with frictionless edge to protect decking surface

Options
- Aluminum plate with anti-slip extruded strips is available upon request

Customization

Guardrails

MAADI Group guardrail systems offer safe and practical solutions that are also attractive.

Our guardrails comply with Canadian and American bridge codes and standards.

Vertical pickets

Material and finish

- Extruded aluminum with natural finish

Specifications

- Less than 4" (102 mm) between pickets – National Building Code of Canada
- Less than 6" (152 mm) between pickets – CSA S6-19 Canadian Highway Bridge Design Code)

Heights

- Pedestrians: 42" (1,067 mm)
- Cyclists: 54" (1,372 mm)

Horizontal railings

Material and finish

- Extruded aluminum with natural finish

Specifications

- Less than 6" (152 mm) between railing – CSA S6-19 Canadian Highway Bridge Design Code)

Heights

- Pedestrians: 42" (1,067 mm)
- Cyclists: 54" (1,372 mm)

Option

- Midrails also available

Custom design

Option

- Personalize your guardrails with your own design

Decking Materials

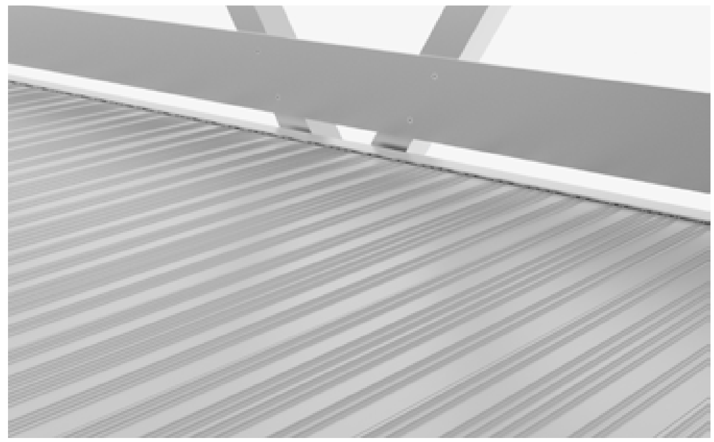
Choose bridge decking material based on how your structure will be used. MAADI Group engineers can recommend the best decking for your needs in terms of application, safety, and maintenance. Here are our most popular and durable options.

Ipe hardwood

Specifications
- Naturally very resistant to decay, rot and insect attack
- Minimum 40-year lifespan depending on use
- Low maintenance, no treating or sealing required for durability (treating may be required to keep rich, red color)
- Straight grain with fine to medium texture
- Economical over life of the structure
- Average density of 69 lb/ft^3 (1,100 kg/m^3)

Dimensions
- S4S outside corner
- Width varies between 5" and 7 3/8" (127 mm and 188 mm)
- Thickness varies between 1" and 1 1/2" (25 mm et 40 mm) depending on loads and applications

Options
- Available in pressure-treated pine wood planks, in incised hemlock wood planks and in composite planks
- Other wood decking options are available upon request



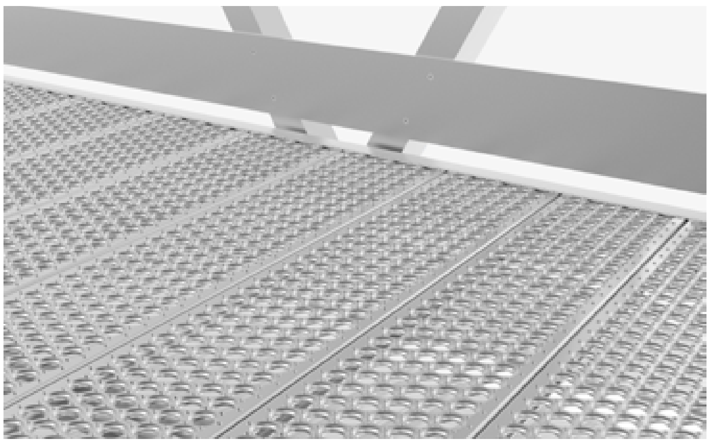
Ribbed aluminum

Specifications
- Unlimited lifespan with regular cleaning
- High grip ribbed tongue and groove planks
- Maintenance-free and corrosion-resistant – no treatments or sealers required
- 100% recyclable and reusable
- Economical over life of the structure

Material
- Extruded aluminum alloy with natural finish – no paint or treatment required

Options
- Durable polyester powder coating for extra adherence also available upon request
- Compliant to AAMA 2604-10 & ASTM D3359
- Available in two colors: beige and gray (other RAL colors are available upon request)

Heavy load option
- Maintenance-free GuarDECK™ tongue and groove anti-slip panels.



Shur grip

Specifications
- Unlimited lifespan with regular cleaning
- High grip surface
- Maintenance-free and corrosion-resistant – no treatments or sealers required
- Transversal planks have integral side channels
- Safety grating planks have debossed holes, each surrounded by 6 perforated buttons
- 100% recyclable and reusable
- Economical over life of the structure

Material
- Extruded aluminum alloy with natural finish – no paint or treatment required

Options
- Grip span planks are also available
- Other decking options are available upon request

Anti-skid surface coating

Specifications
- Minimum 20-year lifespan depending on use
- Maintenance-free and impervious – no treatments or sealers required

Materials
- Polyurethane based system combined with an aggregate dressing provides an extremely durable slip and skid resistant surface

Option
- Available in two aggregate dressing finishes: for pedestrians and cyclists or for lightweight vehicles

Decking Materials

Consider maintenance, durability, adherence, and sustainability when choosing the most suitable decking material for your project.

	– 0	1	2	3	4	+ 5
Maintenance						
Ipe hardwood planks			■			
Pressure-treated pine wood planks					■	
Composite wood planks			■			
Ribbed aluminum planks	■					
Ribbed aluminum planks with durable coating finish	■					
Grip span planks		■				
Shur grip planks		■				
Anti-skid surface coating			■			
Durability						
Ipe hardwood planks					■	
Pressure-treated pine wood planks		■				
Composite wood planks				■		
Ribbed aluminum planks						■
Ribbed aluminum planks with durable coating finish						■
Grip span planks						■
Shur grip planks						■
Anti-skid surface coating				■		

	– 0	1	2	3	4	+ 5
Adherence						
Ipe hardwood planks			■			
Pressure-treated pine wood planks			■			
Composite wood planks				■		
Ribbed aluminum planks					■	
Ribbed aluminum planks with durable coating finish						■
Grip span planks						■
Shur grip planks					■	
Anti-skid surface coating						■

	– 0	1	2	3	4	+ 5
Sustainability						
Ipe hardwood planks				■		
Pressure-treated pine wood planks		■				
Composite wood planks			■			
Ribbed aluminum planks						■
Ribbed aluminum planks with durable coating finish						■
Grip span planks						■
Shur grip planks						■
High grip surface coating		■				

Options

Kick plates, handrails and LED lighting system are offered to further customize your bridge to best suit the application and the surrounding environment.

Handrails

Material
- Extruded aluminum alloy with natural finish

Dimensions
- Diameter: from 1 1/4" to 2" (from 32 mm to 50 mm)
- 2" (50 mm) hand clearance

Height
- Standard: 36" (915 mm)
- ADA[1]: 24" (610 mm)

Option
- Double handrails (ADA) are available upon request

[1] Americans with Disabilities Act

Integrated kick plates

Specifications

- Helps prevent objects from falling and provide a higher level of security

Material

- Extruded aluminum alloy with natural finish

Dimensions

- Height: 4" (102 mm)

Raised kick plates

Specifications

- Helps prevent objects from falling and provide a higher level of security
- Compliant with the Americans with Disabilities Act

Materials

- Ipe hardwood, wood composite or extruded aluminum alloy
- Other type of woods are availbale upon request

Dimensions

- **Wood or wood composite**
  Heights: 3 1/2" (89 mm), 5 1/2" (140 mm) or 7 1/4" (184 mm)
- **Aluminum**
  Heights: 4" (102 mm), 6" (152 mm) or 8" (203 mm)

Options

LED lighting system

Specifications
- White LED

LED light projector system

Options
- Programmable RGB LED
- White LED

Integrated lighting system

Specifications
- Integrated into the handrails

Options
- Programmable RGB LED
- White LED

Projects

Visit our website to
see our latest projects

Parks and Recreation

Designs that Enrich the Landscape

MAADI Group pedestrian walkways, bicycle paths and bridges provide access to remote or otherwise inaccessible places. Requiring very little maintenance and resistant to the most extreme weather conditions, our structures provide a safe access to parks and other natural settings, in addition to respecting the environment in which they are installed.

Rideau River Bridges

Smiths Falls, Ontario

Location

Overall spans
68' 6" and 84' 11"
(20.9 m and 25.9 m)

Clear width
5' 6" (1.7 m)

Pedestrian load
84 psf (4 kPa)

Vehicular load
N/A

Bridge self-weights
7,700 lb and 9,240 lb
(3,500 kg and 4,200 kg)

Wind pressure
8.6 psf (410 Pa)

Bridge style
St. Lawrence

Options
Ipe hardwood decking, aluminum guardrails with vertical pickets railings

Quinchien Bridge

Vaudreuil-Dorion, Quebec

Location

Overall span
98' 6" (30 m)

Clear width
10' (3 m)

Pedestrian load
84 psf (4 kPa)

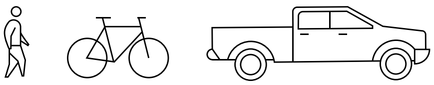
Vehicular load
18,000 lb (8,150 kg)

Bridge self-weight
30,360 lb (13,800 kg)

Wind pressure
37 psf (1,750 Pa)

Bridge style
St. Lawrence

Options
Ipe hardwood decking and kick plates, aluminum guardrails with vertical pickets railings, LED lighting



→ LED lighting

White Street Bridge

Vaudreuil-Dorion, Quebec

Location

Longueur totale de la portée
46,3 m (152')

Largeur libre
1,83 m (6' 1")

Charge piétonnière
3,47 kPa (72 lb/pi^2)

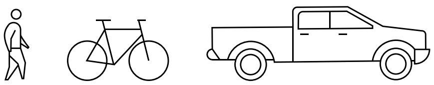
Charge des véhicules
1 134 kg (2 500 lb)

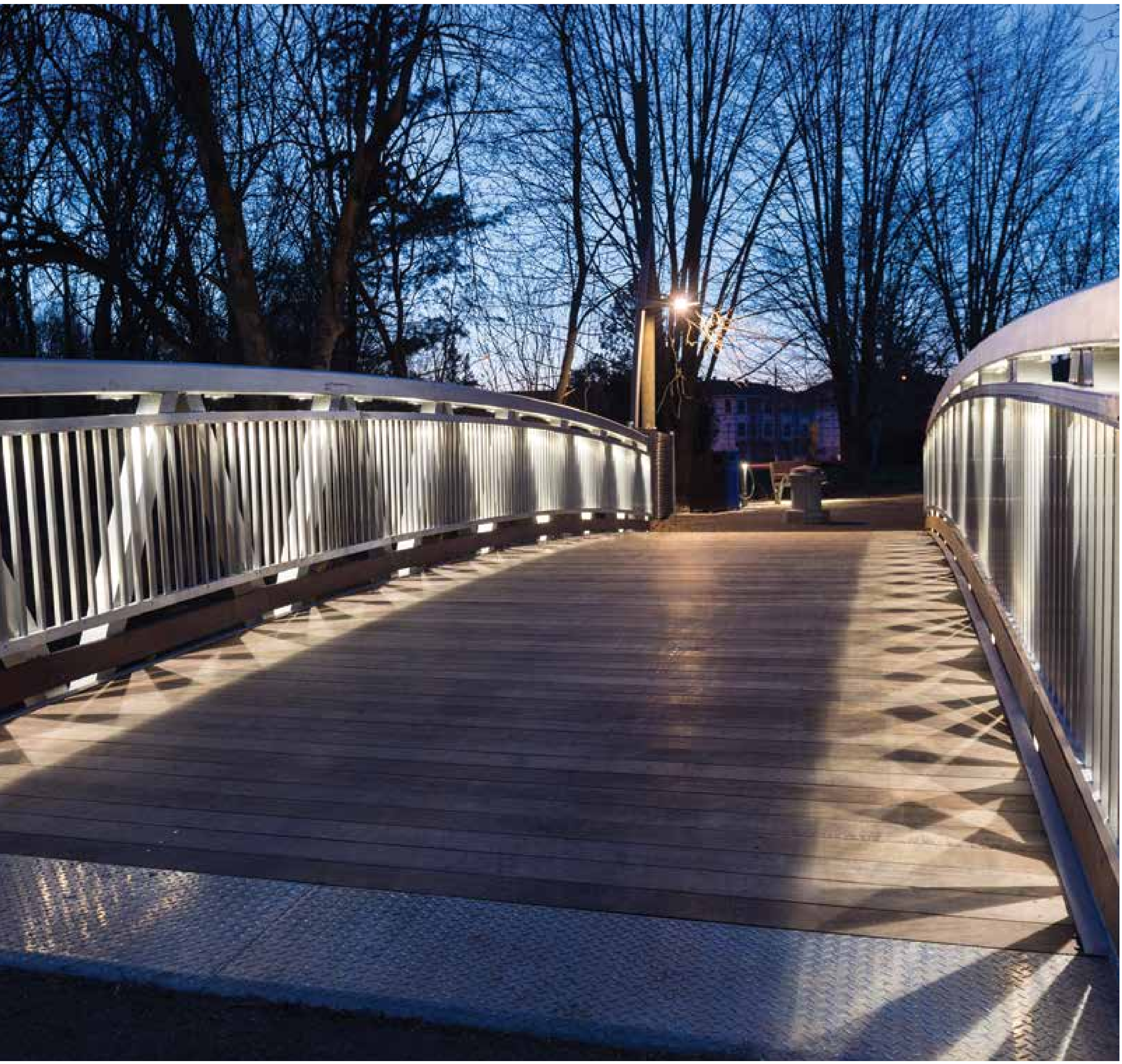
Poids propre du pont
15 800 kg (34 760 lb)

Pression du vent
345 Pa (7,2 lb/pi^2)

Style de pont
Mackenzie

Options
Platelage *grip span*, garde-corps avec lattes horizontales en aluminium, coups-de-pied cèdre rouge de l'Ouest, système de projecteurs à DEL





Dame de Cœur Theatre Retrofit Bridge

Upton, Quebec

Location

Overall span
152' (46.3 m)

Clear width
6' 1" (1.83 m)

Pedestrian load
72 psf (3.47 kPa)

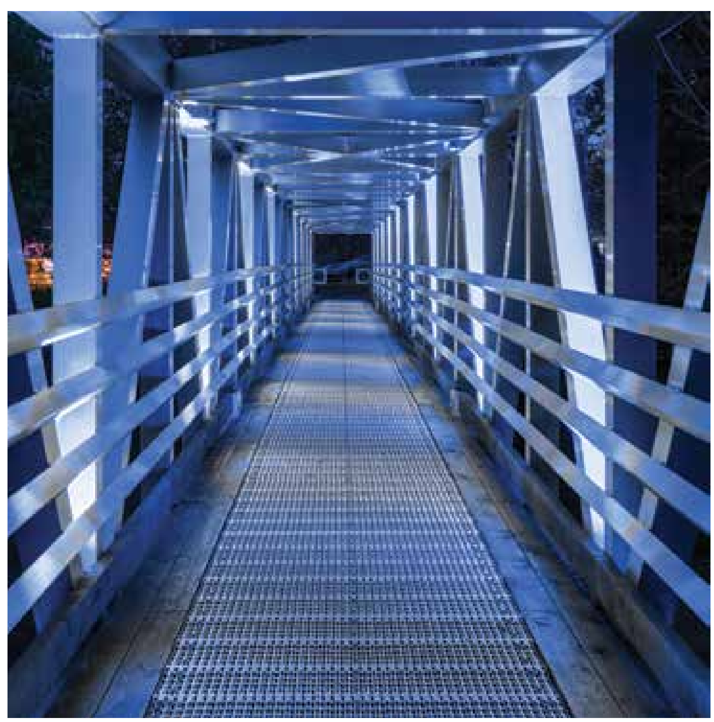
Vehicular load
2,500 lb (1,134 kg)

Bridge self-weight
34,760 lb (15,800 kg)

Wind pressure
7.2 psf (345 Pa)

Bridge style
Mackenzie

Options
Grip span decking, aluminum guardrails with horizontal railings, western red cedar kick plates, LED light projector system



Stevens Bridge

Waterloo, Quebec

Location

Overall span
98' 6" (30 m)

Clear width
9' 10" (3 m)

Pedestrian load
84 psf (4 kPa)

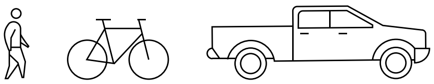
Vehicular load
17,950 lb (8,150 kg)

Bridge self-weight
36,300 lb (16,500 kg)

Wind pressure
7.3 psf (350 Pa)

Bridge style
St. Lawrence

Options
Eastern hemlock wood decking and kick plates, aluminum guardrails with horizontal railings, LED light projector system



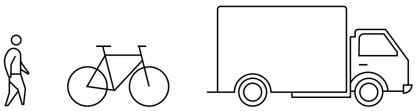
Lac-Jérôme Dam

Saint-Jérôme, Quebec

Location

Overall span
18' 10" (5.7 m)

Clear width
13' 5" (4.1 m)



Pedestrian load
84 psf (4 kPa)

Vehicular load
18,700 lb (8,500 kg)

Bridge self-weight
7,722 lb (3,510 kg)

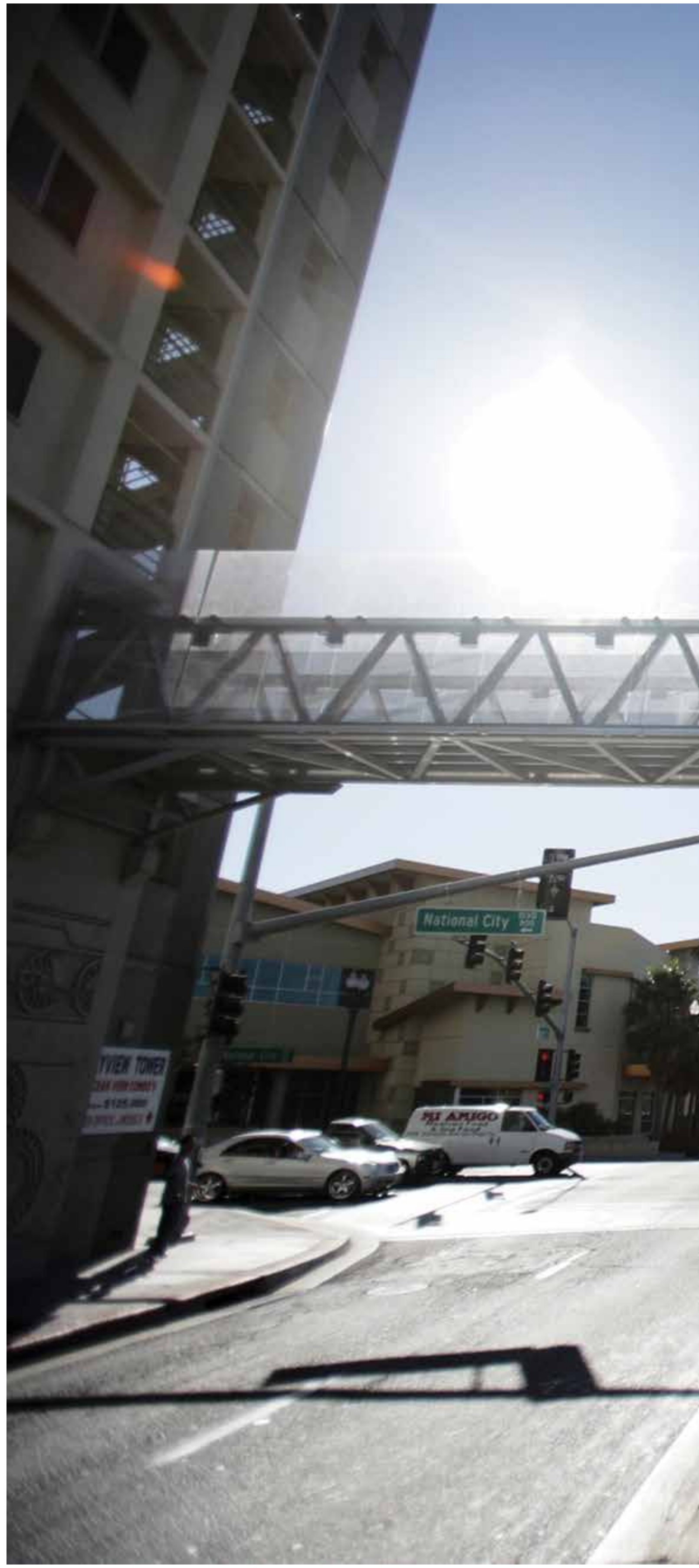
Wind pressure
8.4 psf (400 Pa)

Bridge style
Glacier

Options
Fire retardant treated Douglas fir decking and kick plates, aluminum guardrails, horizontal railings and handrails

Architecture

Bridges with Beauty

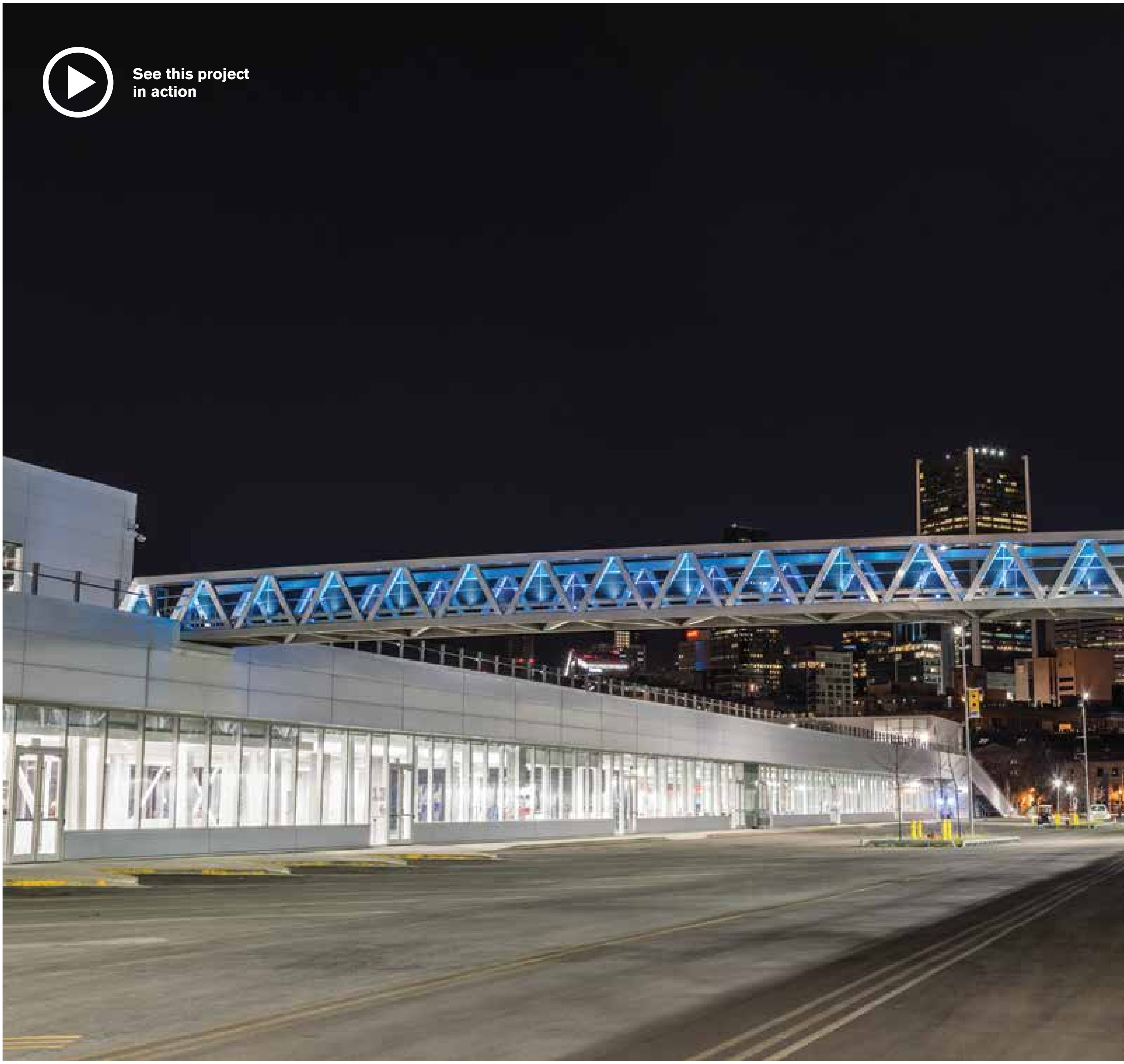


Our eye-catching welded pedestrian bridges with natural finish are built and customized to your specifications. With a choice of 7 pedestrian bridge styles and a wide variety of options, you can create a distinctive structure that enriches the landscape and last decades, with no maintenance required.

Alexandra Pier

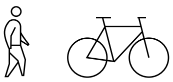
Montreal, Quebec

Location



Overall span
106' 11" (32.6 m)

Clear width
6' 7" (2 m)



Pedestrian load
100 psf (4.8 kPa)

Vehicular load
2,200 lb (1,000 kg)

Bridge self-weight
19,800 lb (9,000 kg)

Wind pressure
8.4 psf (400 Pa)

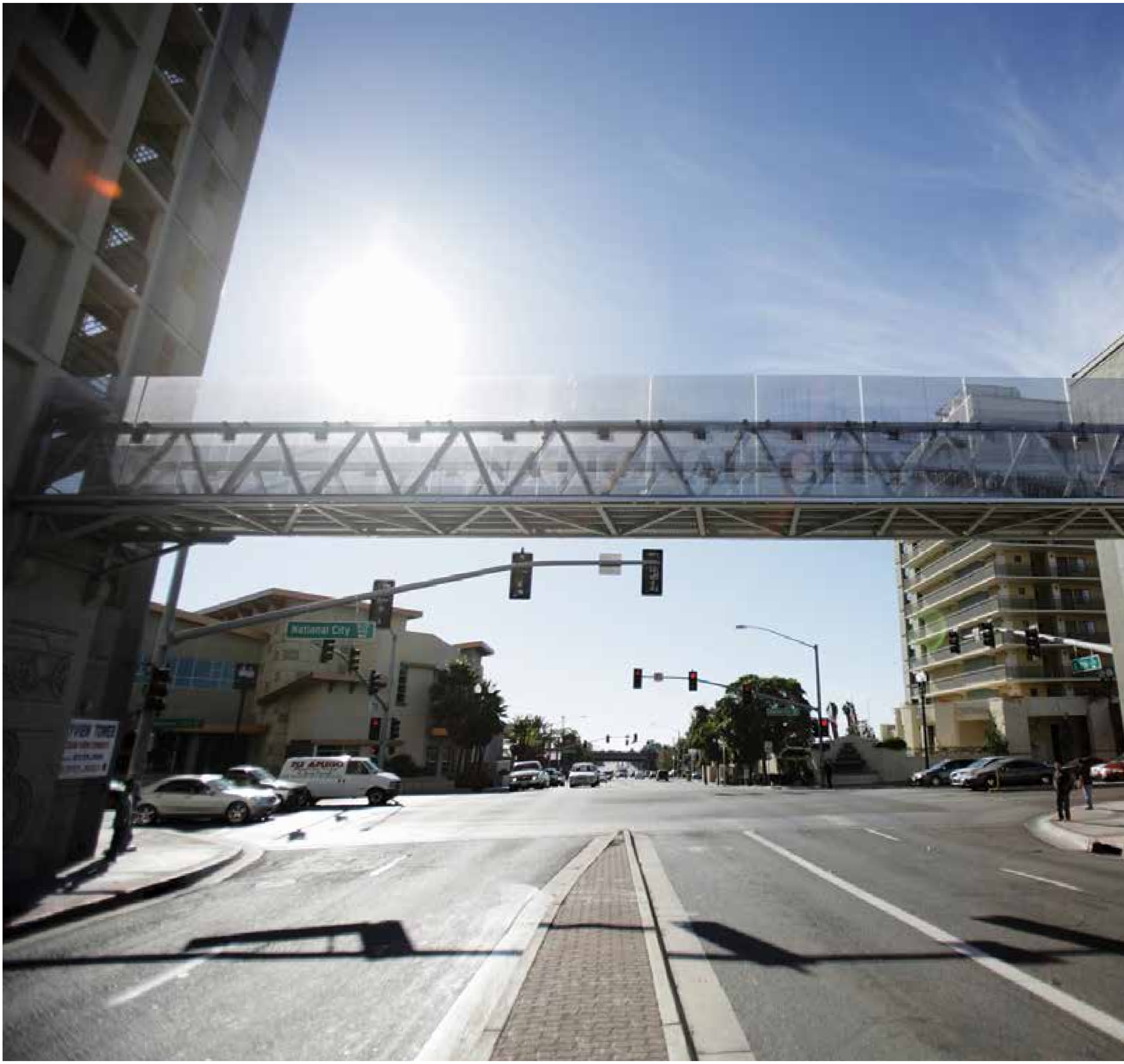
Bridge style
St. Lawrence

Options
Western red cedar decking, aluminum guardrails with stainless steel "Lock-Tuck" mesh, aluminum handrails, LED light projector system

Bayview Skywalk Bridge

San Diego, California

Location



Overall span
83' 4" (25.4 m)

Clear width
6' (1.8 m)

Pedestrian load
93 psf (4.5 kPa)

Vehicular load
N/A

Bridge self-weight
8,910 lb (4,050 kg)

Wind pressure
35 psf (1.7 kPa)

Bridge style
Glacier

Options
Aluminum decking and glass panel guardrails

St-Martin School

Laval, Quebec

Location

Overall span
30' 10" (9.4 m)

Clear width
8' 10" (2.7 m)

Pedestrian load
100 psf (4.8 kPa)

Vehicular load
N/A

Bridge self-weight
8,580 lb (3,900 kg)

Wind pressure
12.5 psf (600 Pa)

Bridge style
Banff

Options
Polymer decking, aluminum guardrails with vertical pickets railings

TD Place Stadium

Ottawa, Ontario

Location

Overall span
98' 5" (30 m)

Clear width
6' (1.8 m)

Pedestrian load
100 psf (4.8 kPa)

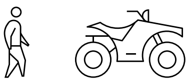
Vehicular load
2,000 lb (910 kg)

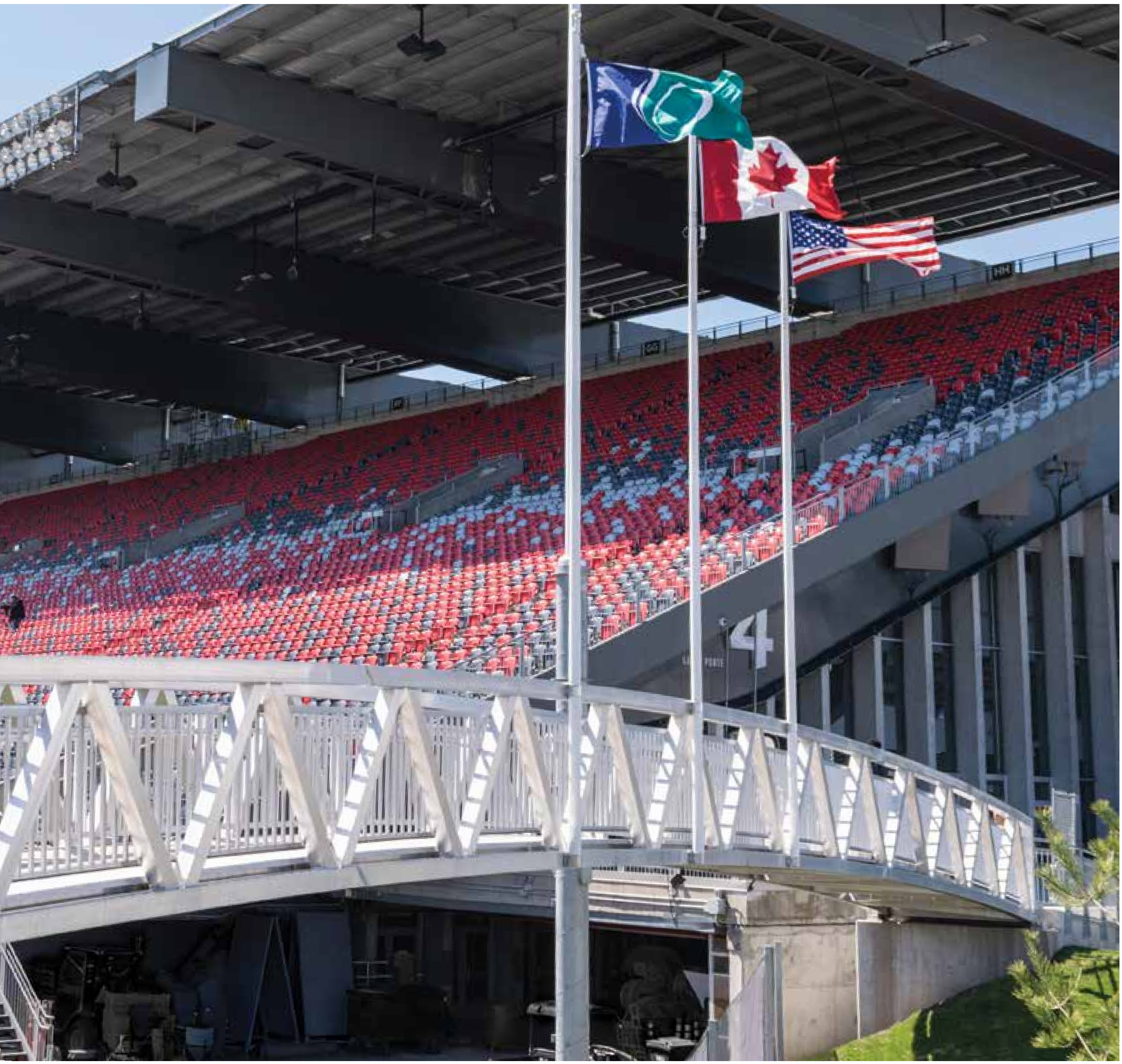
Bridge self-weight
17,435 lb (7,925 kg)

Wind pressure
8.6 psf (410 Pa)

Bridge style
St. Lawrence

Options
Ipe hardwood decking, aluminum guardrails, vertical pickets railings and handrails





Industries

Masters of efficiency

We design and build high-strength aluminum gangways, bridges, offshore platforms and more for temporary or permanent projects.

Our lightweight, corrosion-free structures are made to endure extreme weather conditions and heavy, repeated use. Bracing components and anti-skid decking units add to structural strength and safety.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Offshore Platform Bridge

Deep ocean

Overall span
152' (46.3 m)

Clear width
4' (1.2 m)

Pedestrian load
31 psf (1.5 kPa)

Vehicular load
N/A

Bridge self-weight
30,140 lb (13,700 kg)

Wind pressure
7.8 psf (375 Pa)

Bridge style
Mackenzie

Options
Aluminum grip span decking, aluminum guardrails and kick plates

Medical Center

New York, New York

Overall span
36' 8" (11.2 m)

Clear width
8' 2" (2.5 m)

Pedestrian load
100 psf (4.8 kPa)

Vehicular load
N/A

Bridge self-weight
6,000 lb (2,730 kg)

Wind pressure
N/A

Bridge style
Glacier

Options
Ribbed aluminum decking, guardrails, square mesh and handrails in aluminum

Rio Tinto Alcan

Saguenay, Quebec

Location

Overall span
65' 7" (20 m)

Clear width
3' 7" (1.1 m)

Pedestrian load
100 psf (4.8 kPa)

Vehicular load
N/A

Bridge self-weight
3,835 lb (1,720 kg)

Wind pressure
N/A

Bridge style
Glacier

Options
Ribbed aluminum decking, guardrails with removable midrails and kick plates in alumimum

Bridge widening

Enhance safety

Our Jasper lightweight aluminum pedestrian bridge lane solution enhances bridge functionality and promotes improved safety and traffic flow. A bridge widening using our retrofit solution also offers a cost-saving alternative to total bridge redevelopment.

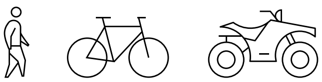
The cantilevered system is ideal for existing bridges as part of roadway bridge renovation projects or to provide safe, efficient access for pedestrian and bicycle traffic.

Tar River

Rocky Mount, North Carolina

Overall span
620' (189 m)

Clear width
8'-6" (2.9 m)



Pedestrian loading
90 psf (4.3 kPa)

Vehicular load
5,000 lb (2,275 kg)

Bridge self-weight
73,780 lb (33,535 kg)

Wind pressure
35 psf (1.7 kPa)

Bridge style
Jasper

Options
Ribbed aluminum decking, aluminum guardrails with horizontal rails and kick plates

Bridge Kits

Visual appeal

Cost-effective investment

Award-winning innovation


MAADI
group

MakeABridge®

In addition to being aesthetically pleasing, our unique patented weld-free system uses off-the-shelf components, allowing for fast shipping and easy installation.

We offer a wide choice of finishes and options to create a durable, economical and distinctive structure customized to your specifications and needs.

← Centennial park pedestrian bridge with faux-wood finish, Dollard-des-Ormeaux, Quebec

Specifications

The MakeABridge® pedestrian bridges are ideal for new constructions or for retrofits of existing bridges, and may be used in temporary or permanent applications.

Our weld-free system is engineered to be ultra-light, yet strong and durable and is impervious to corrosion from salt water, chemicals or pollution.

Design and materials

- 100% recyclable aluminum structural components and energy-efficient recycling.
- Easy to add durable architectural finishes.
- Integrates well with new constructions and retrofits of existing structures.
- No welding – aluminum maintains its full structural integrity.
- Resistant to corrosion from salt water, chemicals and pollution. A permanent film of natural oxide makes the metal less impacted by the environment.
- Suited to extreme cold, aluminum does not crack at low temperatures.
- High-strength alloy construction using 6005A, 6061, 6082, AA356, AA357.
- Fasteners in stainless steel 300 series.
- Destructive testing conducted at ETS (École de technologie supérieure) in Montreal (Quebec) and at the University of Waterloo (Ontario) to verify the structure's ductility.
- Includes complete engineering services, eliminating all of the costly phases of design, customized production and approval generally required by a third party.

Patents

- Canada 2,607,711; Canada 2,869,050
- US 8,667,633; US 8,590,084; US 7,882,586; US 7,568,253
- Patents pending WO 2010/040205 A1 – 12/495,084

Maintenance

Virtually maintenance-free and highly cost-effective compared with steel when total cost of ownership (TCO) is considered.

Vandalism

Optional anti-theft/anti-vandalism fasteners.

Warranty

15-year limited warranty on aluminum against material failure, defects and corrosion.

Awards

The MakeABridge® system has received many design and innovation awards since 2006.

2013

Winner
Product innovation award: Architectural Products magazine

2010

Finalist
Génie Innovation awards for engineering innovation

2009

New technology prize
Quebec Region, Canadian Manufacturers & Exporters and National Research Council of Canada (NRC IRAP)

Honorable mention
Contech innovation trophies

Finalist
Among 487 firms participating in the VoirGRAND.tv competition

2008

First Place
Category structure, International Aluminum Extrusion Design Competition of ET Foundation.

2006

Finalist
Les Anges financiers™ competition of the Jeune Chambre de commerce de Montréal (JCCM) and Anges Québec

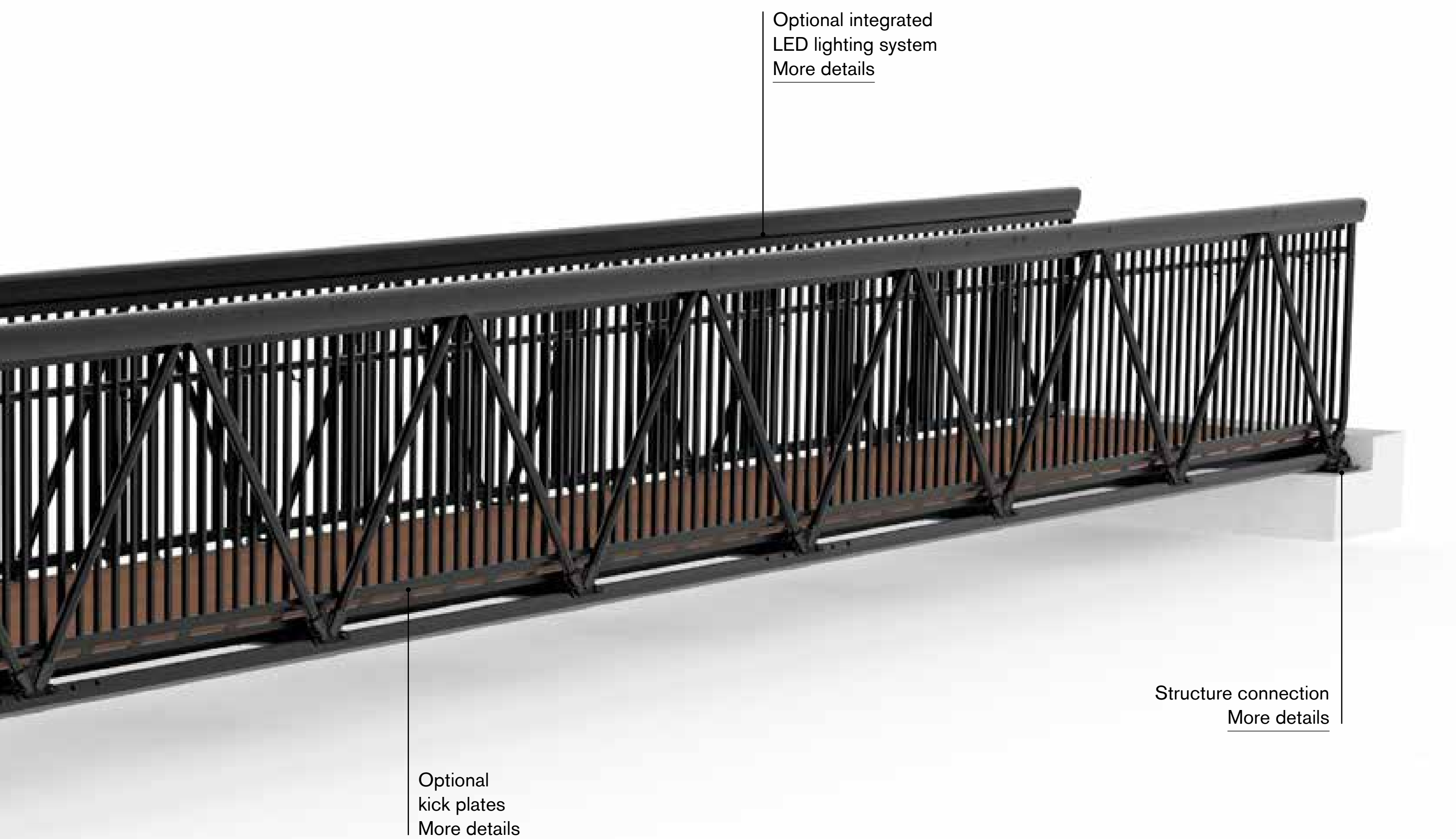
Custom design

Design options offer versatility in a cost-effective and durable structure.

Specifications

Overall span
From 20' to 60'
(6.1 m to 18.3 m)

Clear width
From 3' to 6'
(0.9 m to 1.8 m)


Optional integrated
LED lighting system
More details
Structure connection
More details
Optional
kick plates
More details

Structure Connection

The structure connection system allows expansion and contraction of the bridge. Each system is adapted to a particular application and is specified by MAADI Group engineers.

Anchor and bearing plates

Specifications
- Allow thermal expansion on one end of the bridge
- Stainless steel anchors kit with adhesive cement included
- Isolators included

Adaptable bearing plates

Specifications
- Designed to adjust on rough terrain, for either temporary or permanent use
- Optional stainless steel anchors kit with adhesive cement (for permanent use)
- Isolators included

Transition plate

With non-slip finishing, transition plates facilitate access to the gangway from adjacent surfaces.

Specifications
- Aluminum plate with anti-slip diamond treads
- Comes with frictionless edge to protect decking surface

Options
- Aluminum plate with anti-slip extruded strips is available upon request

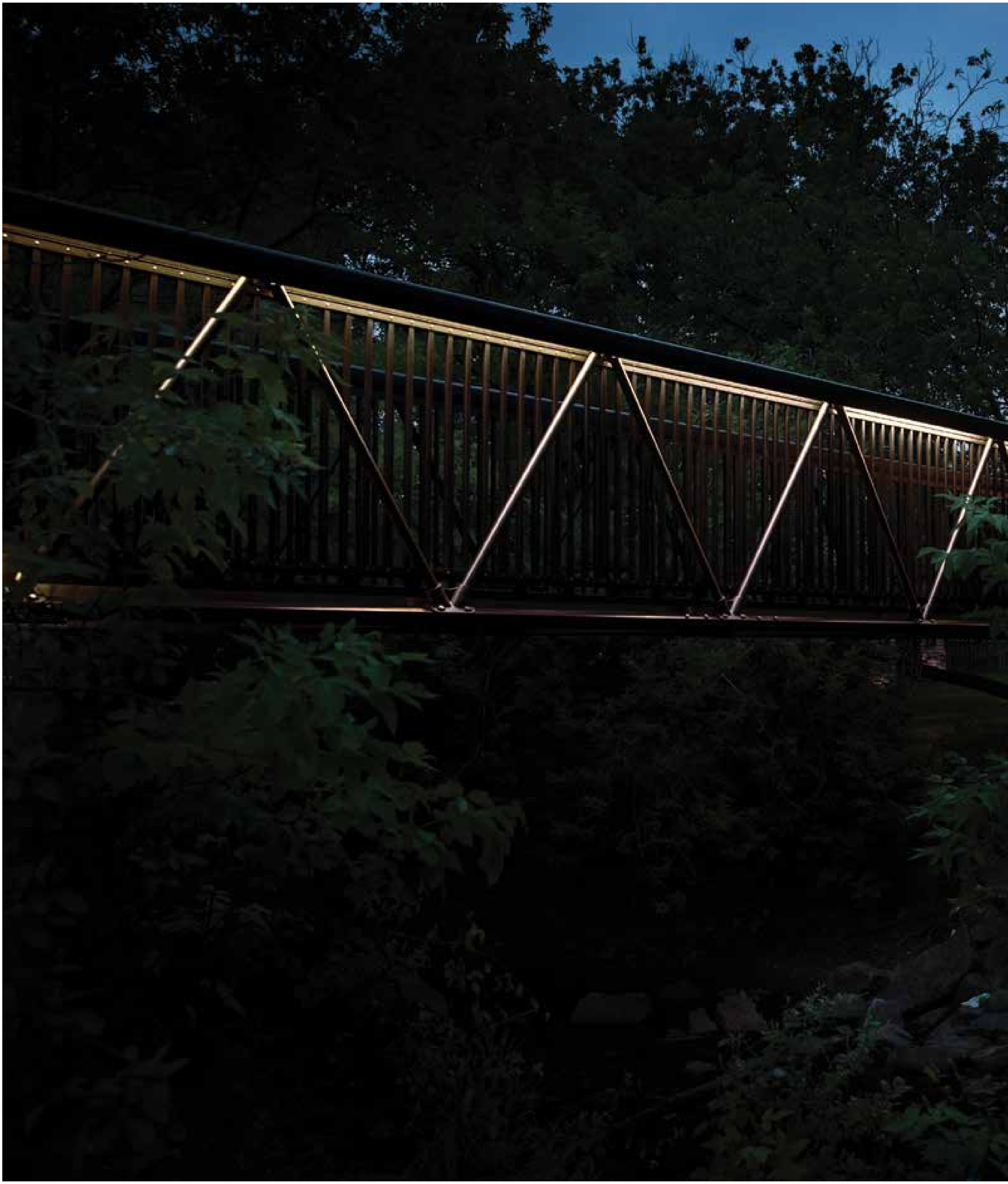
Fast assembly and installation

Lighter and easier to install than competitive steel, wood or concrete products

On-site assembly requiring only three people with standard tools and equipment

Typical footbridge 30 ft (9 m) assembles in about 5 hours

See how it works



Easy shipping

Off-the-shelf components ready to be shipped on standard-size trailers

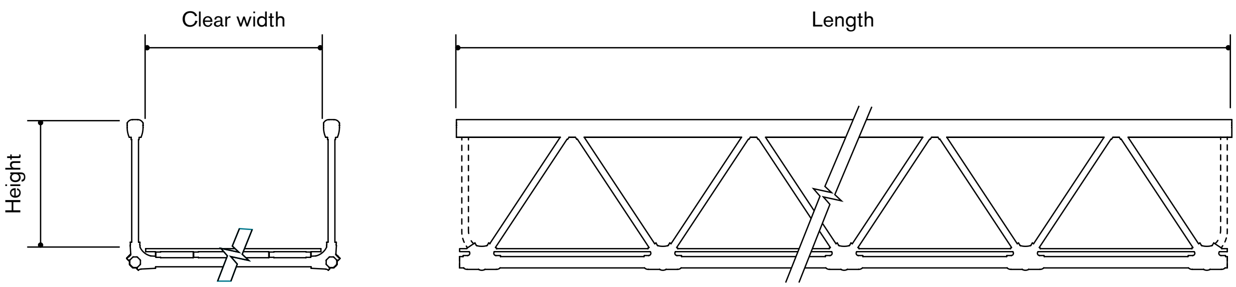
Delivery is four to eight times faster than for conventional welded bridges.

Much lower shipping costs than conventional structures

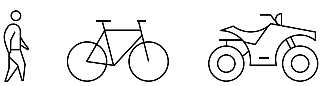
Delivered in bundles measuring 20 ft x 4 ft x 2 ft (6.1 m x 1.2 m x 0.6 m) or pre-assembled

Maximum weight of each component is 110 lb (50 kg)

Live Load Capacity

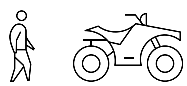


Minimum height 54" (1,372 mm)



Length ↓ / Width →	3' (0.9 m)	4' (1.2 m)	5' (1.5 m)	6' (1.8 m)
- 35' (- 10.7 m)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)
40' (12.2 m)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)
45' (13.7 m)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)
50' (15.2 m)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	50 psf (2.4 kPa)
55' (16.8 m)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	50 psf (2.4 kPa)	50 psf (2.4 kPa)
60' (18.3 m)	100 psf (4.8 kPa)	50 psf (2.4 kPa)	50 psf (2.4 kPa)	50 psf (2.4 kPa)

Minimum height 42" (1,067 mm)



Length ↓ / Width →	3' (0.9 m)	4' (1.2 m)	5' (1.5 m)	6' (1.8 m)
- 35' (- 10.7 m)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)
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45' (13.7 m)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	100 psf (4.8 kPa)
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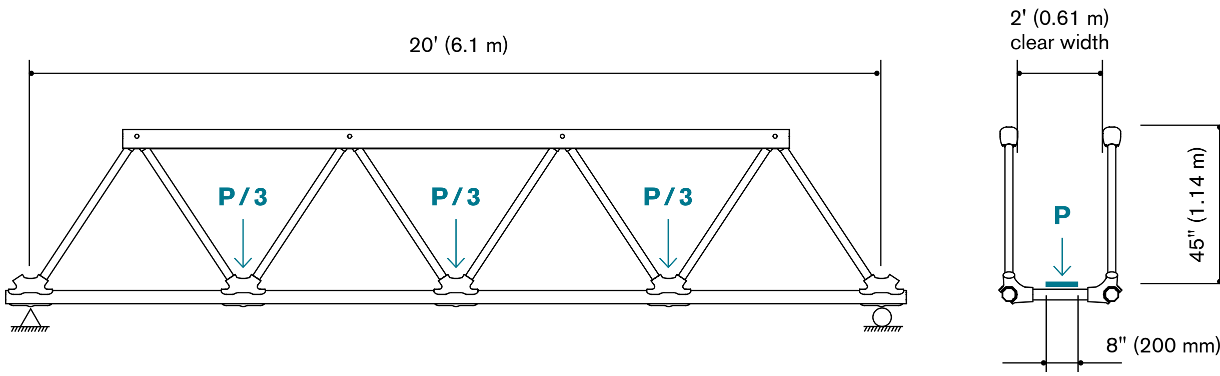
60' (18.3 m)	100 psf (4.8 kPa)	100 psf (4.8 kPa)	50 psf (2.4 kPa)	50 psf (2.4 kPa)

100 psf (4.8 kPa)

50 psf (2.4 kPa)

Destructive Structural Testing



A destructive structural test was conducted at the University of Waterloo, Waterloo, Ontario, Canada in the Department of Civil and Environmental Engineering Structures Laboratory to determine the maximum load capacity of a MakeABridge® bridge system.

The specimen consisted of a 20 ft (6,1 m) long by 2 ft (0,61 m) wide aluminum pony-truss structure, fabricated using aluminum extruded sections and cast joints developed by MAADI Group. The size was reduced to fit the specimen in the U of W test frame.

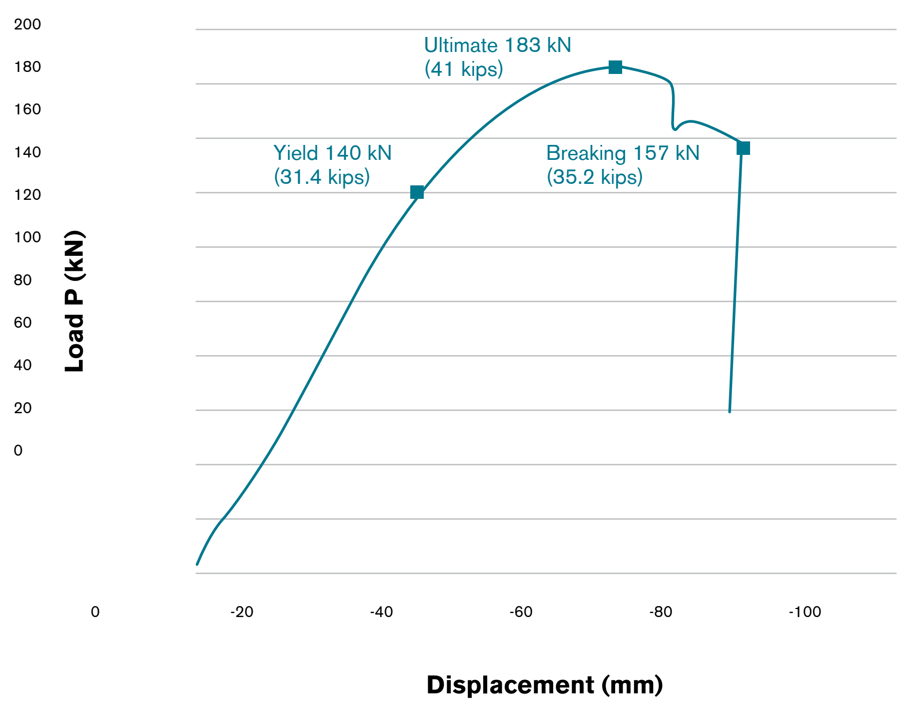
The load was introduced via a “load tree” which consisted of two simply supported steel I-beams loaded to facilitate the splitting of the jack load (i.e., the total load) into three equal point loads, to be introduced at each of the three interior panel points of the truss. The three point loads were introduced via machined aluminum bearing pads. The specimen sat on two end supports, one pin and one roller.

See it in action

Test data

This curve shows the initial linear behavior. Softening of the specimen occurs very gradually, making it difficult to identify a load coinciding with the onset of non-linear behavior. The peak total load obtained was 41 kips (183 kN). At this load, vertical deflection at the mid-span was approximately 2.4" (61 mm). The specimen exhibited some ductility beyond this peak load; final failure occurred at a total load of 35.2 kips (157 kN) and a mid-span deflection of approximately 3.15" (80 mm).

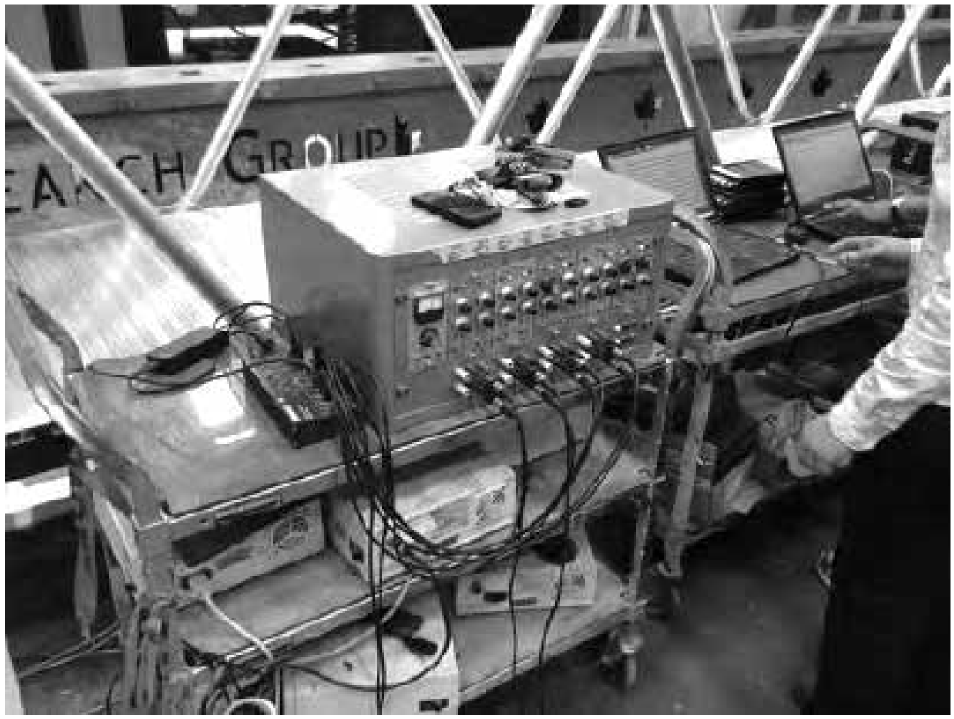
Total load (kN) vs. Displacement (mm)



Developments and Studies

Vibration was undertaken in 2014 and is ongoing at the University of Waterloo in Waterloo, Ontario, Canada, at the Department of Civil and Environmental Engineering Structures Laboratory.

Around 30 repetitions were recorded for each test type



Research on vibration behavior

In order to better understand the behavior of aluminum pedestrian bridges subjected to crowd-induced vibrations, a research project was undertaken at the University of Waterloo, with financial support provided by the Aluminum Association of Canada (AAC) and the Natural Sciences and Engineering Research Council of Canada (NSERC). The industry partner for this project, MAADI Group, supplied a 75 ft-long (22.86 m) aluminum pedestrian bridge specimen, which could be installed in the Structural Testing Laboratory at any desired span between 10 ft and 75 ft (3.05 m to 22.86 m).

The experimental setup offered a number of important benefits, which can be summarized as follows:

- In contrast to vibration studies performed on pedestrian bridges in the field, with the laboratory testing approach it was possible to install load cells under each of the four support points to capture the dynamic reaction loads in the vertical, lateral, and longitudinal directions, as pedestrians walked across the bridge, individually or in groups.
- With the employed bridge system, it was easy to investigate otherwise identical bridges, with a wide range of spans and stiffness.
- With the employed bridge system, it was possible to add/remove elements (e.g., lateral cross-bracing) to alter the dynamic bridge response.

Load cell data

One of the main goals of this research has been to collect data for the purpose of assessing the suitability of the various available international pedestrian bridge design standards for application to aluminum structures.

For each test type, acceleration and load cell data was collected. If possible, around 30 repetitions were recorded for each test type (specimen configuration, pedestrian volume, walking speed) to ensure statistical significance. Acceleration data was transformed into the frequency domain, so that critical frequencies could be identified.

Future research directions

Work in this area is ongoing, thanks to a new collaborative project between the University of Waterloo and MAADI Group. Among other things, this work is taking a critical look at the design provisions for pedestrian bridges using a probability framework, similar to the one structural engineers are more familiar with for the calibration of strength provisions in design codes.

While it must be recognized that there are many sources of uncertainty that come into play in predicting the vibration behaviour of a pedestrian bridge, this approach makes it possible to apply some degree of rigor to the process, and may provide a rationale for future design code modifications to ensure more consistent levels of safety against serviceability failures due to poor vibration performance under crowd loads.

Conclusions

In conclusion, aluminum, with its light weight and good durability characteristics is finding its place in pedestrian bridge applications. The confidence that can be placed in its use is growing at an accelerated pace, thanks to research projects such as the one highlighted in this article.

For further details on the full test program and data post-processing methods employed in this study, click here.

Customization

Guardrails

MAADI Group guardrail systems offer safe and practical solutions that are also attractive. Our guardrails comply with Canadian and American bridge codes and standards.

Vertical pickets

Material and finish

- Extruded aluminum with clear anodized finish

Specifications

- Less than 4" (102 mm) between pickets – National Building Code of Canada
- Less than 6" (152 mm) between pickets – CSA S6-19 Canadian Highway Bridge Design Code)

Heights

- Pedestrians: 42" (1,067 mm)
- Cyclists: 54" (1,372 mm)

Options

- Other colors and finishes are available upon request

More details

Horizontal railings

Material and finish

- Extruded aluminum with clear anodized finish

Specifications

- Less than 6" (152 mm) between railing – CSA S6-19 Canadian Highway Bridge Design Code)

Heights

- Pedestrians: 42" (1,067 mm)
- Cyclists: 54" (1,372 mm)

Options

- Midrails also available
- Other colors and finishes are available upon request

More details

Custom design

Options

- Personalize the guardrails with your own design

Decking Materials

Our engineers will guide you in choosing the most suitable decking for the use of the structure, taking into account safety and maintenance.

Compare the different choices using our table.

Ipe hardwood

Specifications
- Naturally very resistant to decay, rot and insect attack
- Minimum 40-year lifespan depending on use
- Low maintenance, no treating or sealing required for durability (treating may be required to keep the original color)
- Straight grain with fine to medium texture
- Economical over life of the structure
- Average density of 69 lb/ft³ (1,100 kg/m³)

Dimensions
- Outside corner S4S
- Width varies between 5" and 7 3/8" (127 mm and 188 mm)
- Thickness varies according to the loads and applications between 1" and 1 1/2" (25 mm et 40 mm)

Options
- Available in pressure-treated pine wood planks and in incised hemlock wood planks
- Other wood decking options are available upon request

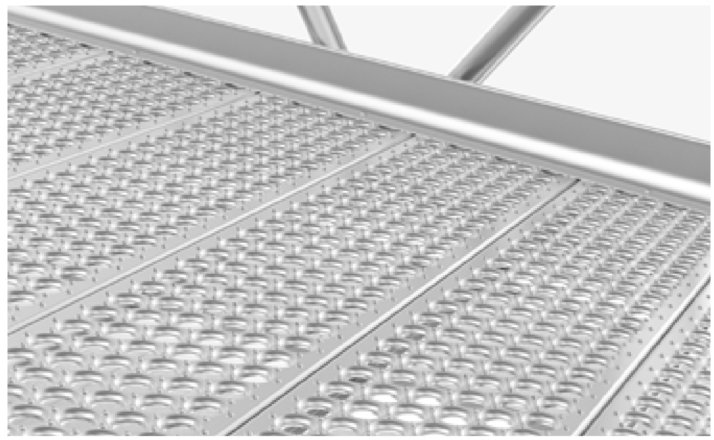
Composite

Specifications
- Designed to resist rot, warping and fading
- Minimum 25-year lifespan depending on use
- Anti-slip ribbed surface
- Low maintenance – no treatments or sealers required
- Economical over life of the structure
- Density of 75 lb/ft³ (1,195 kg/m³)
- Fastened with stainless steel screws

Materials
- A blend of wood flour and high-density polyethylene

Dimensions
- S4S outside corner
- 7/8" x 5 1/2" (22 mm x 140 mm)

Color
- Sand (other colors are available upon request)



Ribbed aluminum

Specifications
- Unlimited lifespan with regular cleaning
- High grip ribbed tongue and groove planks
- Maintenance-free and corrosion-resistant – no treatments or sealers required
- 100% recyclable and reusable
- Economical over life of the structure
- Fastened with stainless steel screws

Material and finish
- Extruded aluminum alloy with natural finish – no paint or treatment required

Option
- Durable polyester powder coating for extra adherence also available upon request
- Compliant to AAMA 2604-10 & ASTM D3359
- Available in two colors: beige and gray (other RAL colors are available upon request)

Shur grip

Specifications
- Unlimited lifespan with regular cleaning
- High grip surface
- Maintenance-free and corrosion-resistant – no treatments or sealers required
- Transversal planks have integral side channels
- Safety grating planks have debossed holes, each surrounded by 6 perforated buttons
- 100% recyclable and reusable
- Economical over life of the structure

Material and finish
- Extruded aluminum alloy with natural finish – no paint or treatment required

Option
- Grip span planks are also available
- Other decking options are available upon request

Options

Various options are offered to further customize your structure to best suit the application and the surrounding environment.

Integrated kick plates

Specifications

- Help prevent objects from falling and provide a higher level of security

Material and finish

- Extruded aluminum alloy with clear anodized finish

Dimensions

- Height: 4" (102 mm)

Handrails

Material and finish
- Extruded aluminum alloy with clear anodized finish

Dimensions
- Diameter: from 1 1/4" to 2" (from 32 mm to 50 mm)
- 2" (50 mm) hand clearance

Height
- Standard: 36" (915 mm)
- ADA[1]: 24" (610 mm)

Option
- Double handrails (ADA[1]) are available upon request

Integrated LED lighting system

Specifications
- Integrated into the guardrails

Options
- Programmable RGB LED
- White LED

[1] Americans with Disabilities Act

Finishes

Powder coating

Specifications
- Available in two colors: beige and gray
- Made of powdered polyester resin
- Baked as per specifications
- Meets AAMA[1] standards
- Not recommended for use on aluminum decking

Options
- Other RAL colors are available upon request

Anodization

Specifications
- Available in five colors: clear, champagne, light bronze, architectural bronze and black
- Meets all requirements of the Aluminum Association (AA) for the anodized architectural aluminum
- Meets AAMA 611[1] standards
- Meets AA-M10C21A41[2] for clear finish and AA-M10C21A44[2] for Champagne, Light bronze, Architectural bronze and black finishes
- Only extruded parts can be anodized

Options
- Other RAL colors are available upon request

Faux-wood

Specifications
- Made of polyurethane based thermosetting powder paint
- Baked as per specifications
- Meets American Architectural Manufacturers Association (AAMA) standards
- Compatible with natural surroundings
- Recommended for use with Ipe hardwood horizontal railing and decking

[1] American Architectural Manufacturers Association
[2] Aluminum Association Designation system

← Black anodized finish

Projects

Visit our website to see more projets

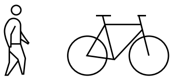
Boulé Street

Saint-Constant, Quebec

Location

Overall span
55' 4" (16.9 m)

Clear width
5' 11" (1.8 m)



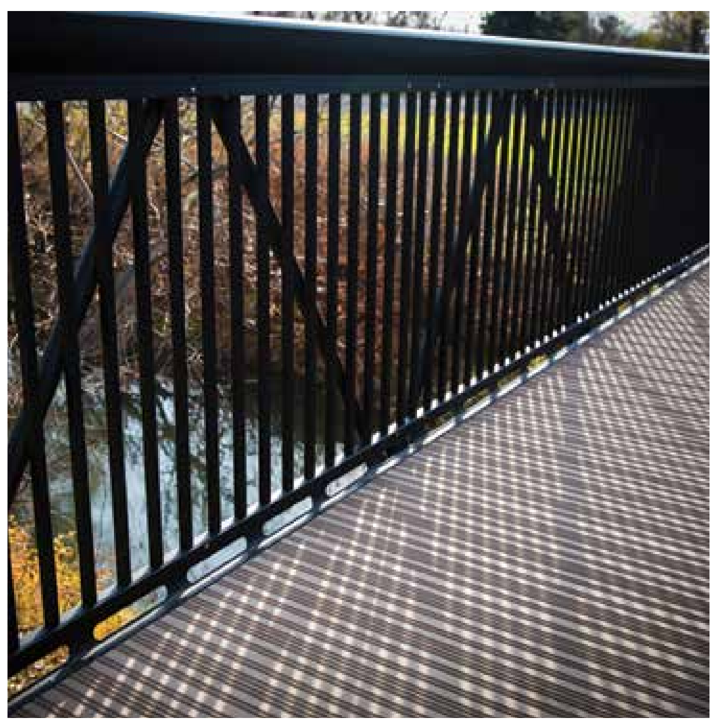
Pedestrian load
84 psf (4 kPa)

Vehicular load
2,200 lb (1,000 kg)

Bridge self-weight
4,620 lb (2,100 kg)

Wind pressure
8.4 psf (400 Pa)

Options
Ribbed aluminum decking with beige coating finish, black anodized aluminum truss structure with integrated LED lighting system, black anodized aluminum guardrails with vertical pickets railings



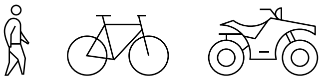
Argyll Linear Path

Brome Lake, Quebec

Location

Overall spans
35', 48' 9" & 55' 7"
(10.7 m, 14.9 m & 16.9 m)

Clear width
5' 11" (1.8 m)



Pedestrian load
84 psf (4 kPa)

Vehicular load
ATV: 2,510 lb (1,140 kg)
Trailer: 1,500 lb (680 kg)

Bridge self-weight
4,290 lb, 3,850 lb & 2,750 lb
(1,950 kg, 1,750 kg & 1,250 kg)

Wind pressure
7.7 psf (370 Pa)

Options
Ribbed aluminum decking with beige coating finish, truss structure, guardrails with horizontal railings and kick plates in clear anodized aluminum

Centennial Park

Dollard-des-Ormeaux, Quebec

Location

Overall span
23' 4" (7.1 m)

Clear width
5' 11" (1.8 m)

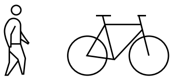
Pedestrian load
84 psf (4 kPa)

Vehicular load
N/A

Bridge self-weight
2,420 lb (1,200 kg)

Wind pressure
8.4 psf (400 Pa)

Options
Decking and horizontal railings in ipe hardwood, truss structure, guardrails and kick plates in aluminum faux-wood finish



Ruisseau Clair Stream

Mont-Tremblant, Quebec

Location

Overall span
32' 10" (10 m)

Clear width
5' 11" (1.8 m)

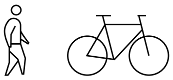
Pedestrian load
84 psf (4.0 kPa)

Vehicular load
1,100 lb (500 kg)

Bridge self-weight
3,300 lb (1,500 kg)

Wind pressure
18.8 psf (900 Pa)

Options
Ipe hardwood decking, truss structure, guardrails with vertical pickets and kick plates in clear anodized aluminum



Hermel Home Port

Sept-Îles, Quebec

Location

Overall span
20' & 26'
(6.1 m & 7.9 m)

Clear width
3' (0.9 m)

Pedestrian load
100 psf (4.8 kPa)

Vehicular load
N/A

Bridge self-weight
1,500 lb & 1,150 lb
(680 kg & 520 kg)

Wind pressure
11.3 psf (540 Pa)

Options
Ribbed aluminum decking, aluminum kick plates, guardrails with midrails and double handrails

Skelton Hydroelectric Dam

Dayton, Maine

Location

Overall span
22' 5" (6.8 m)

Clear width
4' (1.2 m)

Pedestrian load
100 psf (4.8 kPa)

Vehicular load
N/A

Bridge self-weight
1,285 lb (583 kg)

Wind pressure
8.3 psf (400 Pa)

Options
Ribbed aluminum decking, aluminum guardrails with midrails and kick plates

Aluminum Bridge Decking

Durable and tough

Fast installation

Cost effective

GuarDECK™

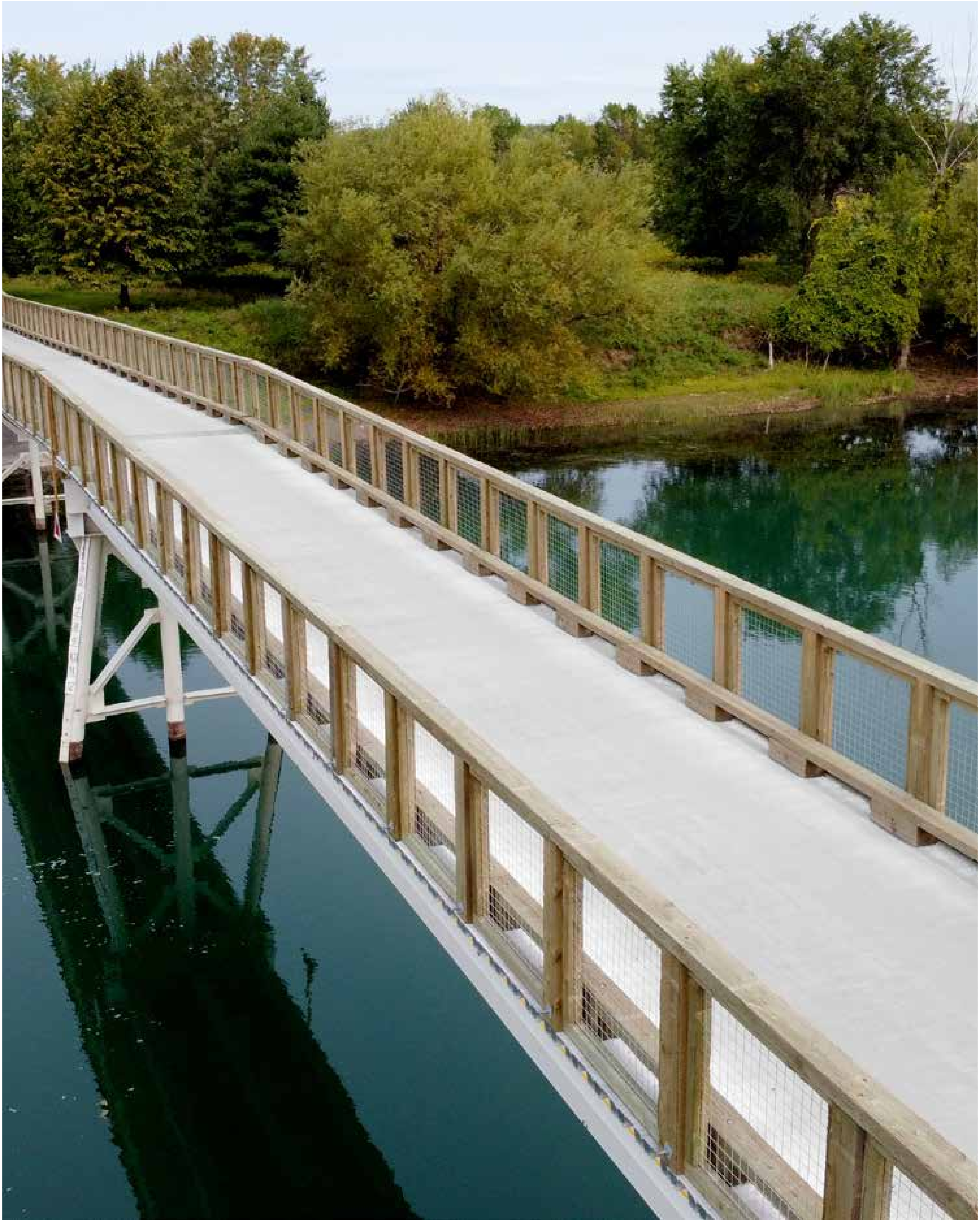
MAADI Group specializes in aluminum bridge decking that is unmatched for durability and lasts several decades. This engineer-designed product is ideal for new or existing bridge retrofit with quick installation and minimal disruption to people and traffic.

MAADI Group works with municipalities, developers, architects, construction companies, governments and other parties to offer innovative Accelerated Bridge Construction (ABC) that cuts down on traffic interruptions and costly traffic control.

← Îles-de-Boucherville National Park, Boucherville, Quebec

Whether replacing existing decking on an older bridge or building a new one, GuarDECK™ saves time as the mechanical connections are fast and easy to install.

The lightweight system is specially tailored for pedestrians, 15-ton vehicles or less, movable bridges, civil security, temporary bridges, military bridges, maritime structures, and construction platforms.



Specifications

Design and materials

- 100% recyclable aluminum structural components and energy-efficient recycling.
- Integrates well with new construction and retrofits of existing structures.
- Resistant to salt water, chemicals, and pollution due to its permanent, natural oxide film that prevents corrosion of the aluminum by the environment.
- No welding – the aluminum maintains its full structural integrity.
- Custom T-bolts fasteners in stainless steel 316 series.
- Built-in ribs provide an anti-slip surface.
- Includes dielectric and anti-slip coating between steel and aluminum components.
- No on-site drilling.

Patents

Patent pending

Customization

- Aluminum guardrails with a choice of styles and durable anodized and baked paint finishes.
- Optional aluminum curbs
- Optional integrated LED lighting system also available

For more details, click here.

Award Received

In 2020, GuarDECK™ won 1st place in the Architectural/ Structural category at the 2020 Aluminum Extrusion Design Competition, organized by the ET Foundation.

Easy shipping

- Standard off-the-shelf components available in four weeks, ready to be shipped flat on standard-size trailers anywhere in North America, and in eight weeks anywhere worldwide.

Fast assembly and installation

- Lighter and easier to install than competitive steel, wood or concrete products.
- A team can install a weld-free aluminum deck and open the bridge to traffic later that same day.

Maintenance

Virtually maintenance-free and highly cost-effective, compared with steel when total cost of ownership (TCO) is considered.

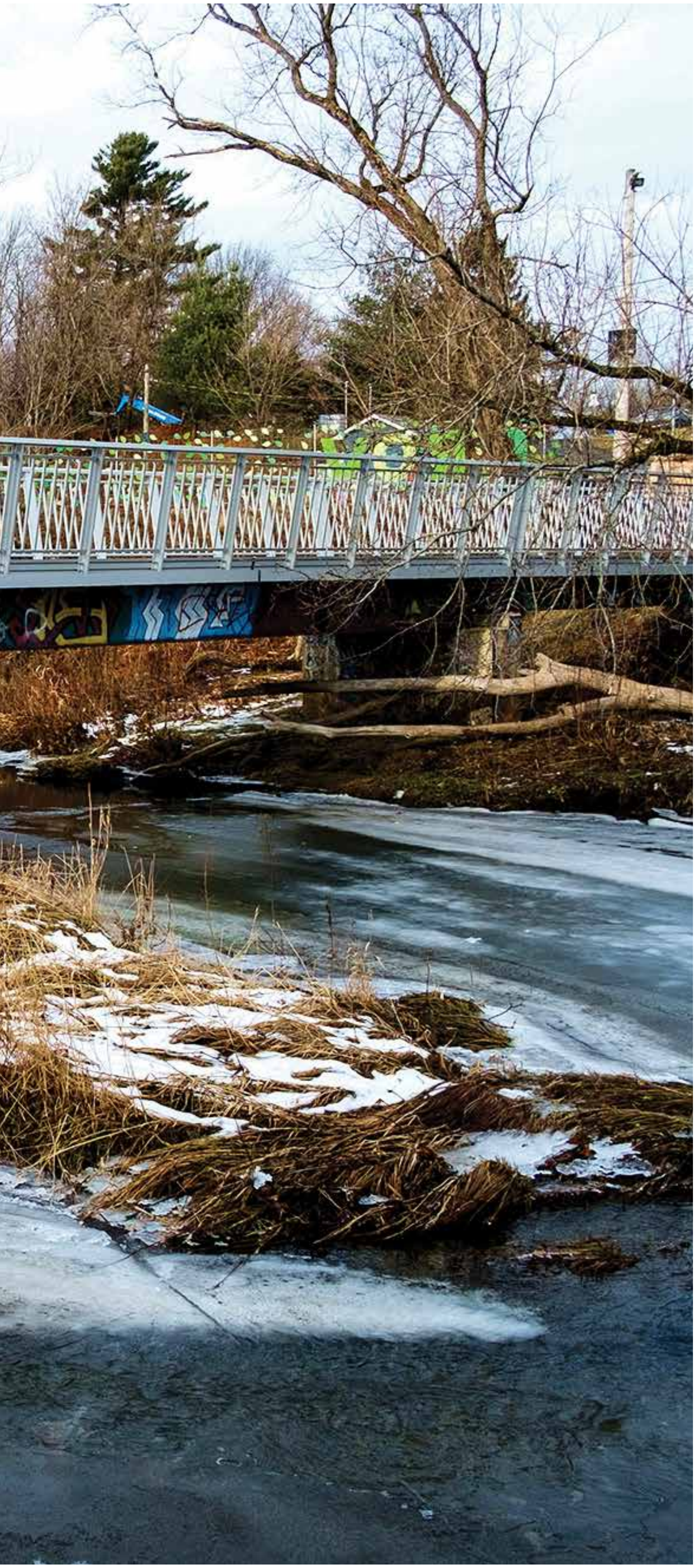
Vandalism

Optional anti-theft/anti-vandalism fasteners.

Warranty

We offer a One-Year Limited Warranty on aluminum against material failure, defects and corrosion.

This game-changing aluminum bridge decking offers incredible advantages over traditional concrete and steel construction, such as a lighter weight, resistance to corrosion, and less maintenance.



Applications

- Pedestrian and up to 15-ton vehicle bridges
- Maritime Structures
- Civil Security Bridges
- Temporary Bridges
- Military Bridges
- Industrial Bridges
- Extend roadway bridge for cantilevered bike path

A Cut Above

Durability

Ease

Versatility

Longer bridge life

GuarDECK™ represents a cut above in factory aluminum bridge decking. Consistent manufacturing and quality control mean that MAADI Group can deliver faster installation that's also better quality than field-built decks.

This engineer-designed product is ideal for new or existing bridge retrofit with quick installation and minimal disruption to people and traffic. Whether permanent or temporary, this product fits well into most environments and situations where durability and rapid installation are top priority.

Facts on aluminum decking

A North American study shows that older projects using aluminum decking instead of concrete, steel and wood have stood the test of time. Between 1946 and 1963, nine bridges were built with aluminum beams and girders and six still exist. Gradually more countries, such as Japan, Norway and Sweden are recognizing the benefits of aluminum versus steel construction, and are using aluminum extrusions in the repair and construction of bridge decks.

A foundation for good roads

GuarDECK™ facilitates seamless connections between secondary roads, bike paths, trails, pathways and other structures. It solves complex issues of deficient, narrow or outdated bridges, providing ready made solutions that endure.

Lighter than steel

Aluminum bridge decks are 70 to 80 percent lighter than concrete and most metal, (about 10 psf – 0.5 kPa), which makes it easier to handle and install. This lightweight, versatile material reduces dead load and offers increased bridge width and capacity without the need to strengthen supporting bridge elements. This is especially important for load-restricted bridges, historic bridges, movable bridges and bridges with narrow roadways requiring expansions for bicycle paths or walkways.

Hardwearing and resilient

Using marine grade aluminum, our bridge decks are virtually maintenance-free and require no chemical treatments that are harmful to human health and the environment, such as those used to protect steel and wood. Lasting up to 100 years, and naturally resistant to corrosion, this bridge deck type is better suited—than steel or concrete—to de-icing during colder months.

Accelerated Bridge Construction (ABC)

This unique type of construction allows for a quick-turnaround installation when compared to concrete which typically requires extensive formwork and curing time.

Reducing costs matters

Using GuarDECK™ could mean decreasing costs for movable bridges and bridges with long spans where dead weight is considerable.

In-factory for faster turnaround

GuarDECK™ is prefabricated in our factory and shipped ready to install with standard manual tools. This system uses custom aluminum hollow extrusions that attach easily to the main steel I-beams with special stainless steel fasteners and clamps. Prefabricated aluminum deck extrusions can be installed faster than other systems and require no on-site drilling or welding.

Stands up to cold

This product is ideal for bridges and other highway structures in colder climates. It eliminates concerns about brittle fracture, even in the most severe Arctic weather. The strength of aluminum increases with extremely low temperatures.

Aluminum: The eco-conscious metal

MAADI Group is sensitive to climate change. To that end we have designed GuarDECK™ to reduce your project's carbon footprint by using 20 percent recycled aluminum and renewable energy. And we use the most innovative, energy efficient technology to produce the remaining 80 percent of your bridge deck.

Aluminum bridge decks last generations and the components are 100 percent recyclable, and potentially reusable. About 75 percent of all aluminum ever produced is still in use today thanks to recycling programs.

Versatile designs

Due to its lightweight and versatile nature aluminum can be shaped into a myriad of designs. Attractive and heavy-duty at the same time, this material creates bridge decking that integrates well into all built and natural environments. Our deck surface also has built-in ribs to prevent slipping.

Increased use

A wide variety of cross-sectional shapes of aluminum extrusion has led to the increased use of aluminum for bridge decks. This has signaled the potential in North America and worldwide for its use in other applications.

Aluminum's time has come

Over the past decades, aluminum has seen improved properties and advances in knowledge concerning aluminum's mechanical behavior, along with much improved alloys and tempers. The structural engineering community is already using this knowledge, which is gradually translating into more governments and municipalities recognizing the advantages of aluminum.

Tailored Designs

GuarDECK™ is a versatile and maintenance-free product that you and your team can easily adapt to your particular project.

Specifications

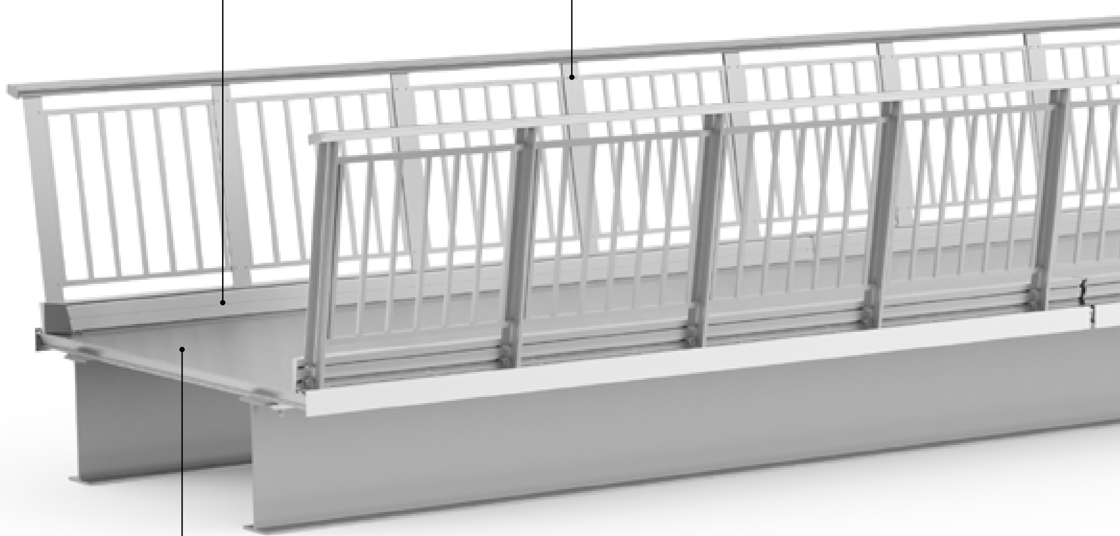
Overall bridge span
Unlimited

Clear width
Varies with I-beam spacing

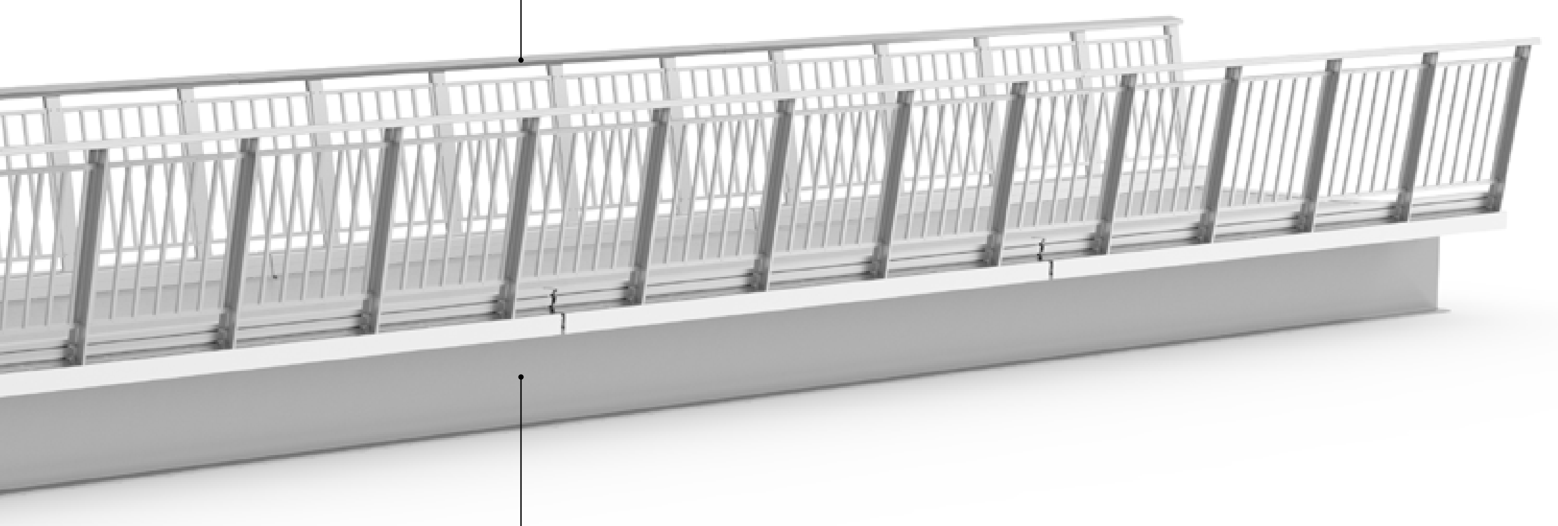
Pedestrian load
Up to 90 psf (4.3 kPa)

Vehicular load
Up to 33,000 lb (15,000 kg)

Decking self-weight
10 psf (0.5 kPa)

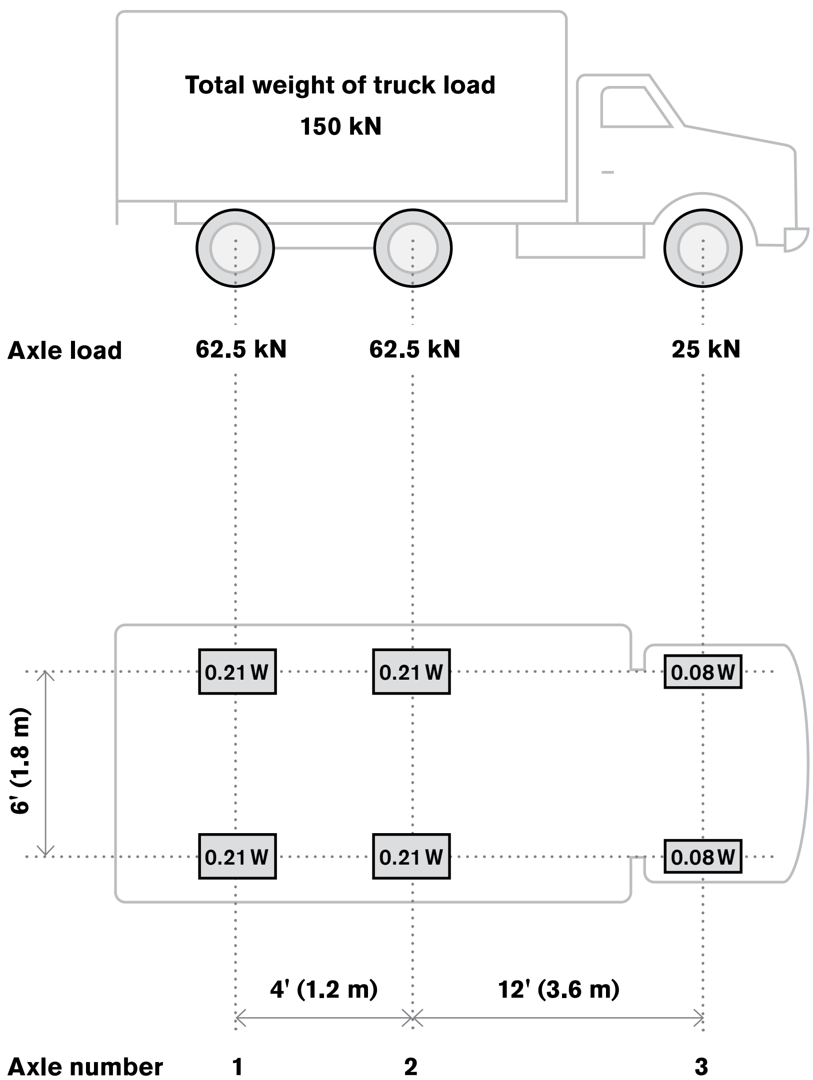


Optional integrated
LED lighting system
More details



New construction or retrofits
of existing structures. Steel I-beams
supplied by your local distributor.

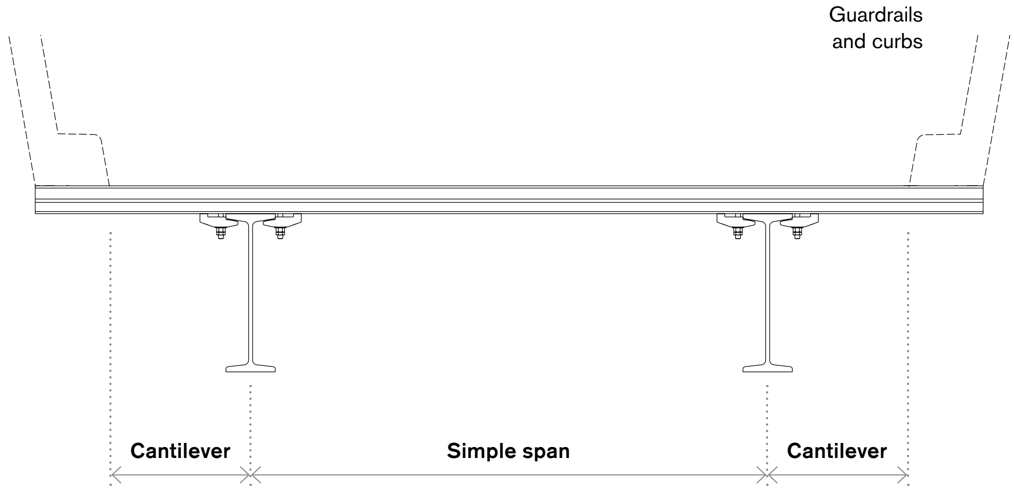
Vehicular load



The vehicular load shall not be combined with pedestrian load.

W = Total weight of truck load

Load Chart



Standard	Load	Maximum simple span (ft)	Maximum simple span (m)	Maximum cantilever (ft)	Maximum cantilever (m)
AASHTO LRFD Bridge Specification (7th Edition) & Guide for Pedestrian Bridges (2009)	Pedestrian 90 psf (4.3 kPa)	13.00*	3.96*	7.21*	2.20*
	H5 Truck 10,000 lb (44.5 kN)	9.52	2.90	2.40	0.73
	H10 Truck 20,000 lb (89 kN)	4.79	1.46	1.20	0.37
International Building Code (2018) & Aluminum Design Manual (2015)	Walkways & platforms 60 psf (2.87 kPa)	14.88*	4.53*	8.82*	2.69*
	Yards & pesdestrians 100 psf (4.8 kPa)	12.55*	3.82*	7.44*	2.27*
	Areas accessible by vehicles 250 psf or 8,000 lb (12 kPa or 35.6 kN)	5.24	1.60	1.31	0.40
CSA S6-19	Pedestrian 83.5 psf (4 kPa)	13.35*	4.07*	7.91*	2.41*
	Maintenance vehicle 18,000 lb (80 kN)	6.22	1.89	1.56	0.47
NBCC 2015 & CSA S157-17	Footbridges 100 psf (4.8 kPa)	12.56*	3.83*	7.45*	2.27*

For preliminary design purposes only. Cantilever span exclude guardrails and railings.
* Span values are controlled by deflection criterias:
- L/360 for simple spans
- L/180 for cantilever spans (L/220 for AASHTO)

Easy Installation and Handling

Our premium bridge decking product is designed for easy installation. Versatile and sturdy, GuarDECK™ is also built to fit a range of different environments and applications.

Installation

Specifications
- No on-site drilling or welding
- Easy to install clamping system that bolts directly into the planks

Fasteners
- Custom T-bolt fasteners in stainless steel 316 series
- Extruded aluminum heavy-duty clamps

Option
- Optional anti-theft/anti-vandalism fasteners

Anti-skid aluminum decking

Specifications
- Unlimited lifespan with regular cleaning
- High grip surface
- Maintenance-free and corrosion-resistant – no treatments or sealers required
- 100% recyclable and reusable
- Economical over life of the bridge/structure

Material
- Natural finish extruded aluminum alloy tongue and groove planks – no paints or coatings required

Option
- Polyurethane based coating combined with an aggregate dressing provides an extremely durable slip and skid resistant surface

More details

Existing Bridge Retrofit

Before

This off-the-shelf product is ideal for existing bridge retrofit with fast installation and little disturbance to pedestrians and vehicles.

After

← Retrofit of existing bridge, Brome Lake, Quebec

Customization

Options

Various options are offered to further customize your project to best suit the application and the surrounding environment.

Guardrails with vertical pickets

Material and finish

- Extruded aluminum alloy with clear anodized finish

Specifications

- Less than 4" (102 mm) between pickets – National Building Code of Canada
- Less than 6" (152 mm) between pickets – CSA S6-19 Canadian Highway Bridge Design Code)

Heights

- Pedestrians: 42" (1,067 mm)
- Cyclists: 54" (1,372 mm)

Options

Styles

- Horizontal railings and custom design or available upon request

Architectural finishes

- Other anodization colors and powder coat finish are available upon request

More details

Options

Handrails

Material and finish
- Extruded aluminum alloy with clear anodized finish

Dimensions
- Diameter: from 1 1/4" to 2" (from 32 mm to 50 mm)
- 2" (50 mm) hand clearance

Height
- Standard: 36" (915 mm)
- ADA[1]: 24" (610 mm)

Option
- Double handrails (ADA[1]) are available upon request

Curbs

Specifications
- Help prevent objects from falling and adds a higher level of security.

Material and finish
- Extruded aluminum alloy with clear anodized finish

[1] Americans with Disabilities Act

Integrated LED lighting system

Specifications

- Integrated into the guardrails

Options

- Programmable RGB LED
- White LED

Anti-skid surface coating

Specifications

- Minimum 20-year lifespan depending on use
- Maintenance-free and impervious – no treatments or sealers required

Materials

- Polyurethane based system combined with an aggregate dressing provides an extremely durable slip and skid resistant surface

Option

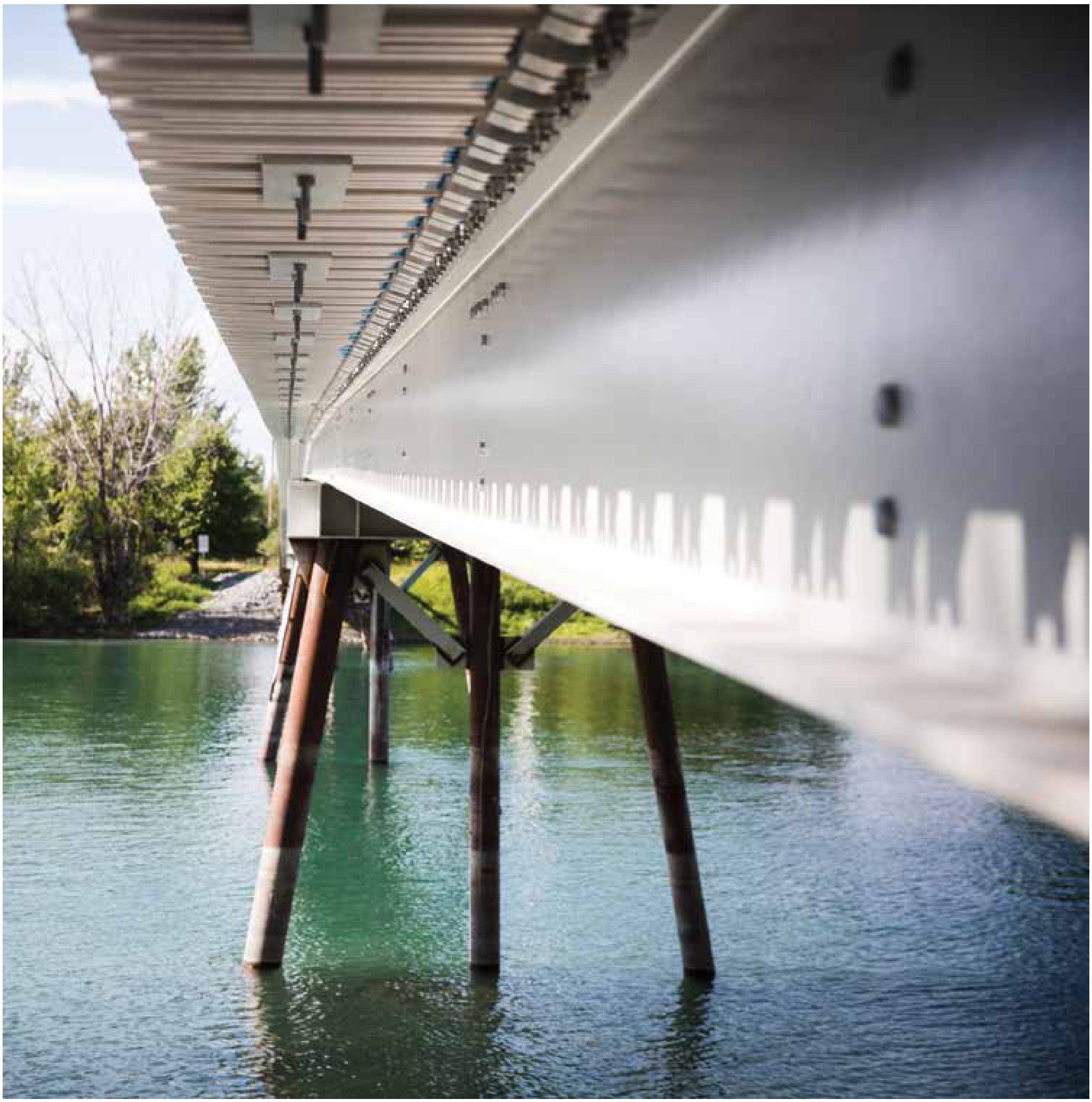
- Available in two aggregate dressing finishes: for pedestrians and cyclists or for lightweight vehicles

Projects

Îles-de-Boucherville National Park

Boucherville, Quebec

Location



Overall spans
143' 2", 214' 3" & 420' 9" (43.6 m, 65.3 m et 128.3 m)

Clear width
11' 6" (3.5 m)

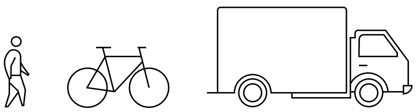
Pedestrian load
84 psf (4 kPa)

Vehicular load
33,000 lb (15,000 kg)

Decking self-weight
10 psf (0.5 kPa)

Wind pressure
52 psf (2.48 kPa)

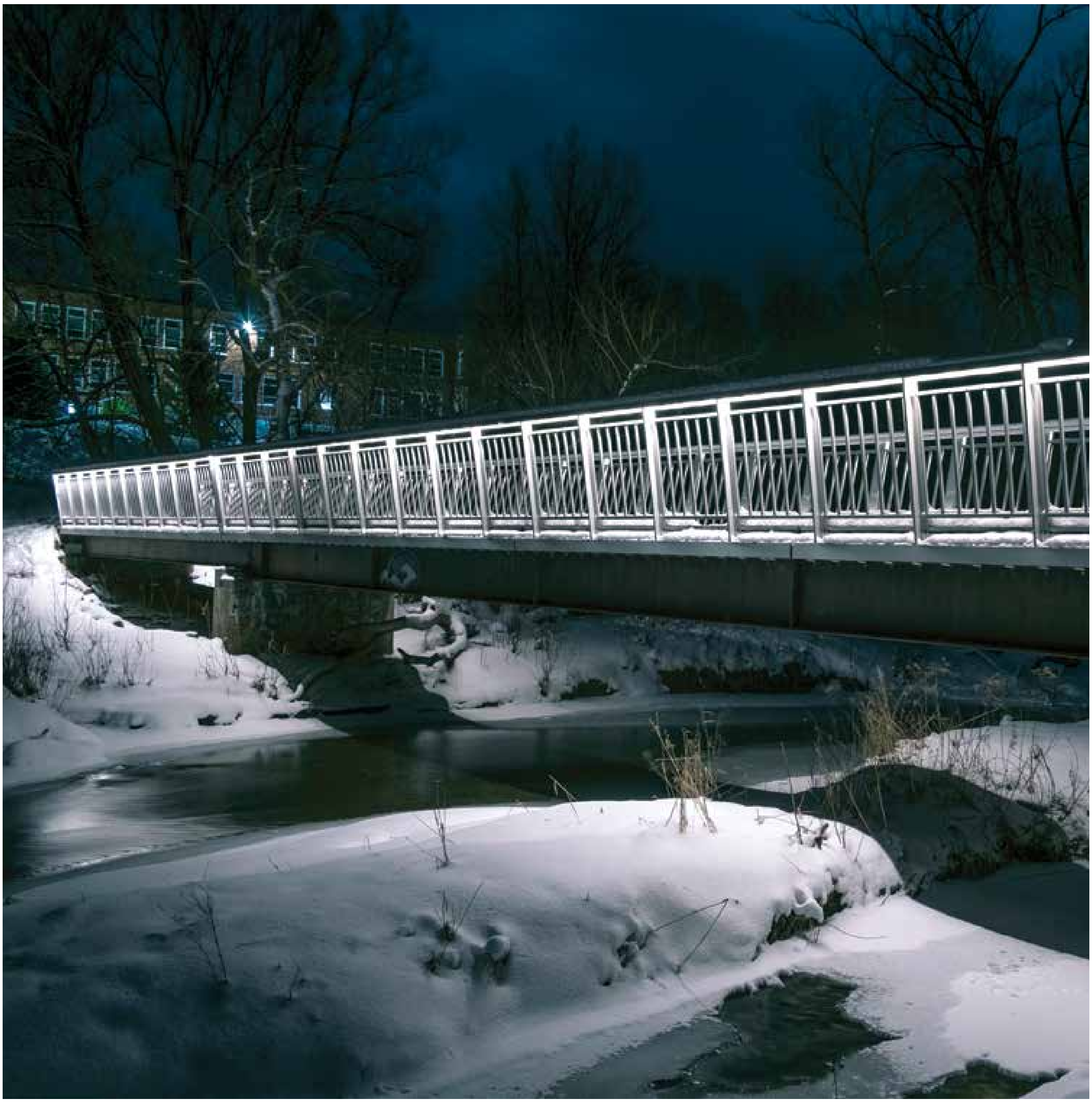
Options
N/A



Design/build of aluminum decking over a series of pedestrian & 15-ton vehicle bridges

Retrofit of Existing Bridge

Brome Lake, Quebec



Overall span
106' 3" (32.4 m)

Clear width
8' 3" (2.5 m)

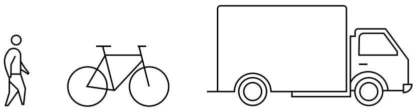
Pedestrian load
84 psf (4 kPa)

Vehicular load
33,000 lb (15,000 kg)

Decking self-weight
10 psf (0.5 kPa)

Wind pressure
52 psf (2.48 kPa)

Options
Clear anodized aluminum guardrails with vertical pickets, integrated LED lighting



Design/build of aluminum decking and guardrails over an existing structure

Marinas

Custom turnkey marinas

Eye-catching sophistication

Optimized layout

Photo: Royal Caribbean

For over 15 years, MAADI Group has designed and manufactured marinas throughout North America.

MAADI Group's unparalleled team of engineers designs custom marinas that deliver high performance with little to no maintenance required. Each marina is built to last using sustainable design principles, even for the most complex project requirements.

← Briland Club Marina, Harbour Island, Bahamas

Briland Club Marina

Harbour Island, Bahamas

Location

Dock system
Tri Ocean

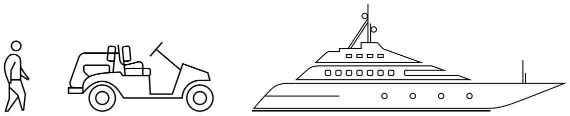
Fingers
Rectangular

Boat sizes
75' to 250' (22 m to 76 m)

Capacity
41 slips

Anchoring system
Steel piles and H-Beams

Weather conditions
Designed for Category 2 hurricane winds of 110 mph (175 km/h), waves up to 3' (1 m)



Customization

Aluminum gangways
More details

Ipe hardwood decking and utility trough covers

Powder-coated steel piles with stainless steel caps

LED lighting system

Old Port Cove Marina

North basin, North Palm Beach, Florida, USA

Location

Dock system
245 Series

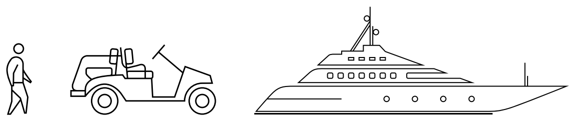
Fingers
Rectangular

Boat sizes
30' to 180' (9 m to 55 m)

Capacity
60 slips

Anchoring system
Steel piles

Weather conditions
Designed for Category 2 hurricane winds of 110 mph (175 km/h), waves up to 3' (1 m)



Customization

- Aluminum gangways
- Ipe hardwood decking with aluminum utility trough covers
- Powder-coated steel piles with stainless steel caps
- Aluminum floating wave attenuators. More details

Floating Docks

Durable

Custom design

Versatile

Photo: Royal Caribbean

With their ultra-lightweight design, our custom-made aluminum floating docks are a durable, high-performance and environmentally friendly solution for marinas, ferry landings and floating bridges.

Virtually maintenance-free, our marine grade extruded aluminum alloy floating docks are robust and can easily withstand harsh weather and the constant flow of pedestrians and golf carts.

The modular design of the dock systems offers flexibility to accommodate all types of boats, from small pleasure boats to mega yachts.

Aesthetically pleasing and customizable thanks to a variety of options, our designs blend in perfectly with their surroundings and beautify the environment while serving their function.

← Old Port Cove Marina, North basin, North Palm Beach, Florida

Photo: Tom Hurst

← City Commons Waterfront Docks, West Palm Beach, Florida, USA

Design and materials

- 100% recyclable aluminum structural components and energy-efficient recycling, resulting in a low carbon footprint.
- Resistant to corrosion from salt water, chemicals and pollution. A permanent film of natural oxide makes the metal less impacted or corroded by the environment.
- Suited to extreme cold, aluminum does not crack at low temperatures.
- Marine grade extruded aluminum alloy construction using 6061-T6, 6005A-T6 and 5083-H321

Maintenance

Virtually maintenance-free and highly cost-effective, compared with steel when total cost of ownership (TCO) is considered.

Vandalism

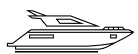
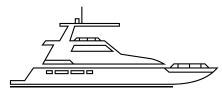
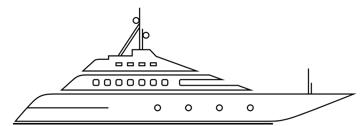
Very easy to remove graffiti by brushing or sanding bare aluminum, compared to steel that has protective coating.

Warranty

12-year limited warranty on aluminum against material failure, defects and corrosion.

Our Systems

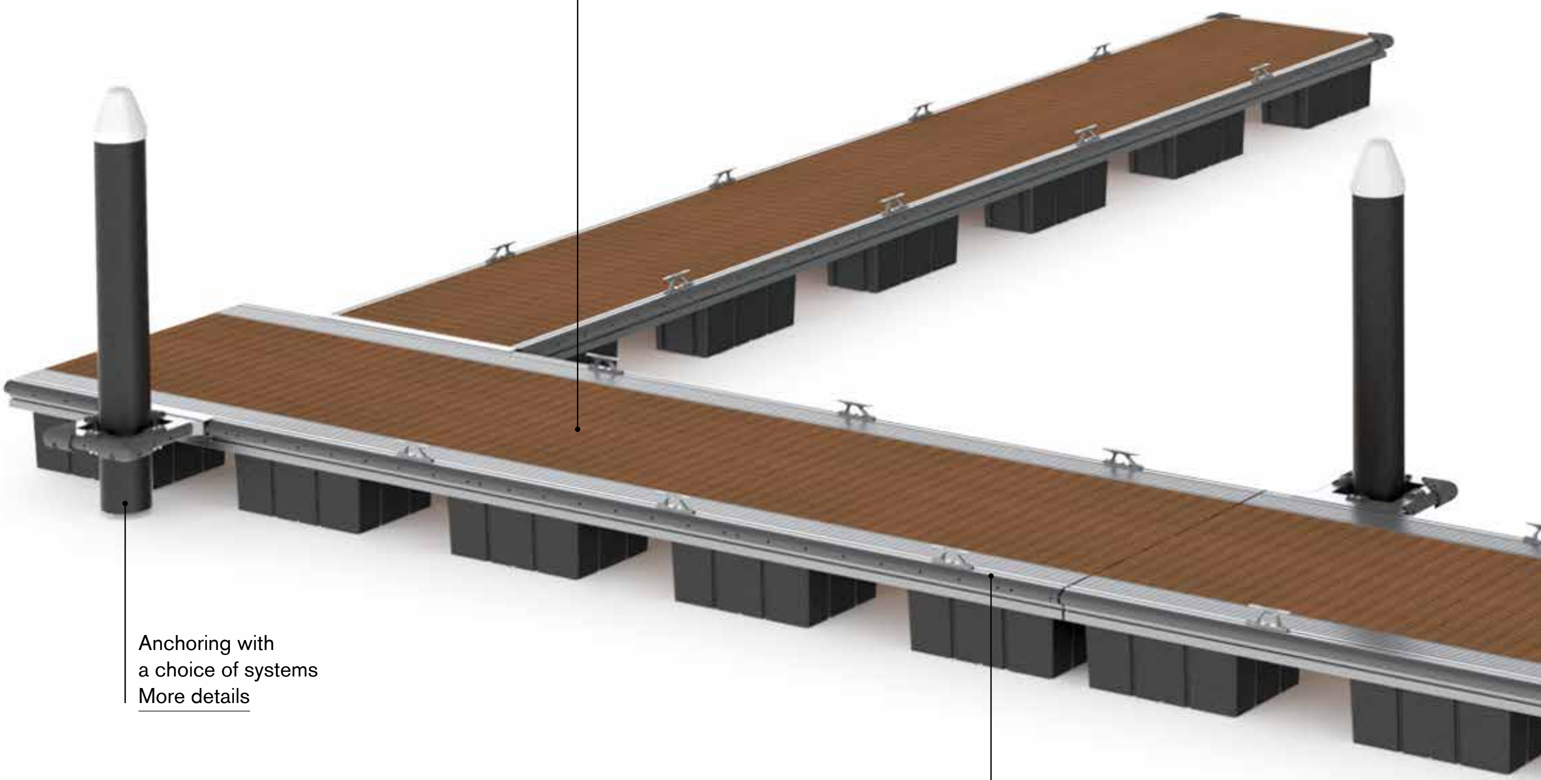
Our modular floating dock systems are easily adaptable and configurable to recreational marinas and watercraft.

System characteristics	Lakeshore	Great Lakes	Tri Ocean
	 **Small pleasure craft and recreational boats**	 **Medium-sized pleasure yachts**	 **Large vessels and mega yachts**
Boat dimensions	From 20' to 40' (From 6.1 to 12.2 m)	From 20' to 80' (From 6.1 to 24.4 m)	From 60' to 200' (From 18.3 to 61 m)
Dock width	From 4' to 8' (From 1.2 m to 2.4 m)	From 4' to 11' (From 1.2 m to 3.4 m)	From 4' to 16' (From 1.2 m to 4.9 m)
Dock length	Up to 42' (12.8 m)	Up to 42' (12.8 m)	Up to 42' (12.8 m)
Standard freeboard	From 10" to 20" (From 254 to 508 mm)	From 14" to 24" (From 356 to 610 mm)	From 16" to 36" (From 406 to 914 mm)
Reserve buoyancy	From 20 to 30 psf (From 0.96 to 1.44 kPa)	From 30 to 50 psf (From 1.44 to 2.39 kPa)	From 35 to 80 psf (From 1.68 to 3.83 kPa)
Vertical load-bearing capacity	Up to 100 psf (4.8 kPa)	Up to 150 psf (7.2 kPa)	Up to 200 psf (9.6 kPa)
Horizontal load-bearing capacity	246 psf – 150 lb/ft (12 kN/m^2 – 223 kg/m)	246 psf – 150 lb/ft (12 kN/m^2 – 223 kg/m)	1,337 psf – 1,250 lb/ft (64 kN/m^2 – 1,860 kg/m)
Impact resistance	22-ton boat, 1.6 fps (0.5 m/s) at 10° angle absorbed over 3' (900 mm) of dock length	60-ton boat, 1.6 fps (0.5 m/s) at 10° angle absorbed over 3' (900 mm) of dock length	240-ton boat, 1.6 fps (0.5 m/s) at 10° angle absorbed over 3' (900 mm) of dock length
Stability	Maximum tilt angle: 10° with live load on one side of dock		
Weather conditions	Severe storms Winds of 74 mph (120 km/h)	Category 2 hurricane with winds of 110 mph (175 km/h)	
Cleats	12" – up to 3,200 lb (305 mm – up to 14 kN)		12" – up to 3,200 lb (305 mm – up to 14 kN) 20" – up to 11,400 lb (508 mm – up to 51 kN)
Bollards	Single bitt: 15" – up to 4,250 lb (381 mm – up to 19 kN)		Double bitt: 15"– up to 14,400 lb (381 mm – up to 64 kN)
Optional utility trough covers	9" (229 mm)	Lateral: 9" (229 mm) Central: 16" (406 mm)	Lateral: 12" (305 mm) Central: 16" (406 mm)
Multifunction track system	Single rail	Single rail	Double rail

Main Docks

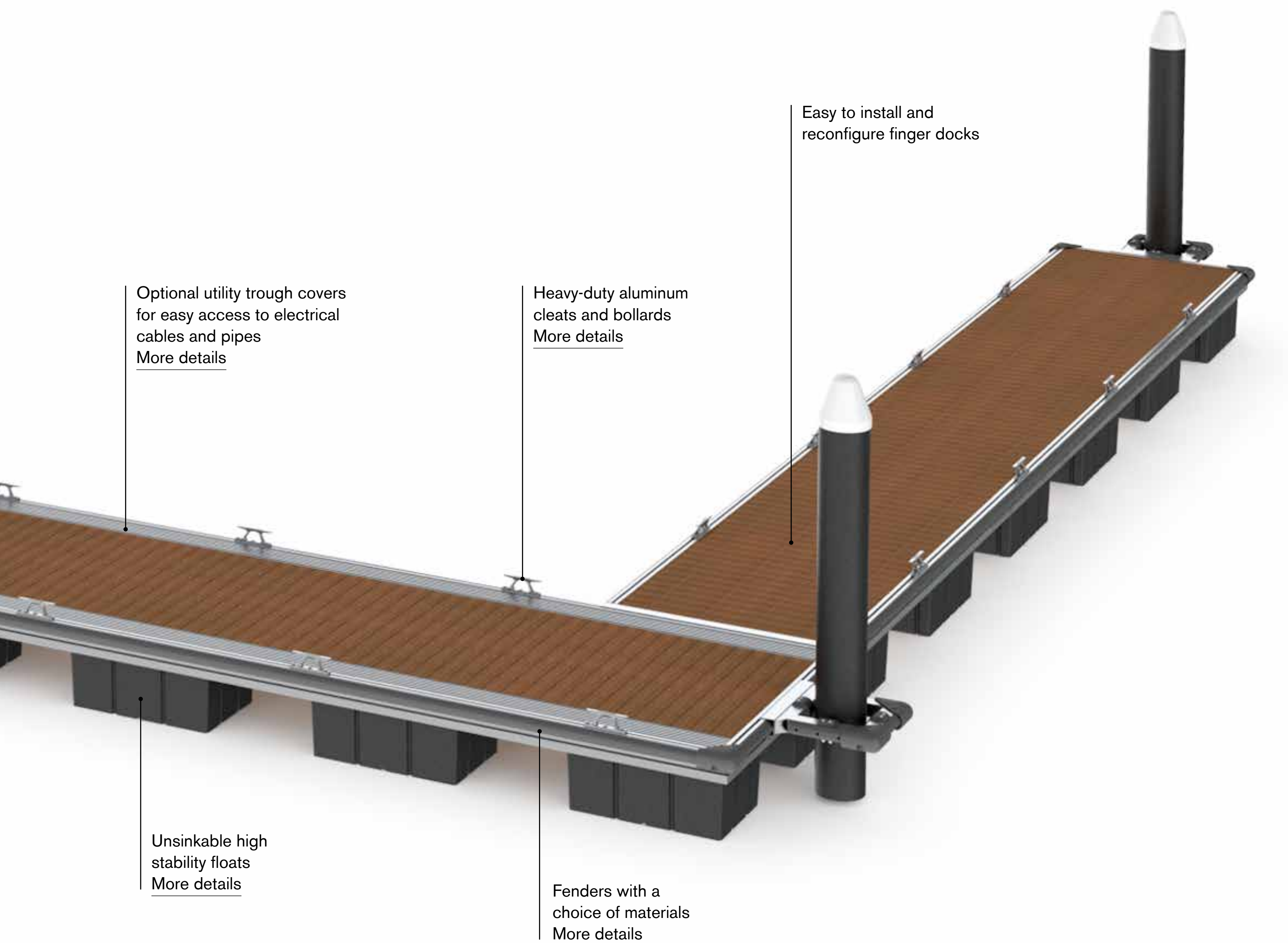
Custom lengths and widths available

Easy to maintain and
replace deck planks,
with a choice of materials
More details



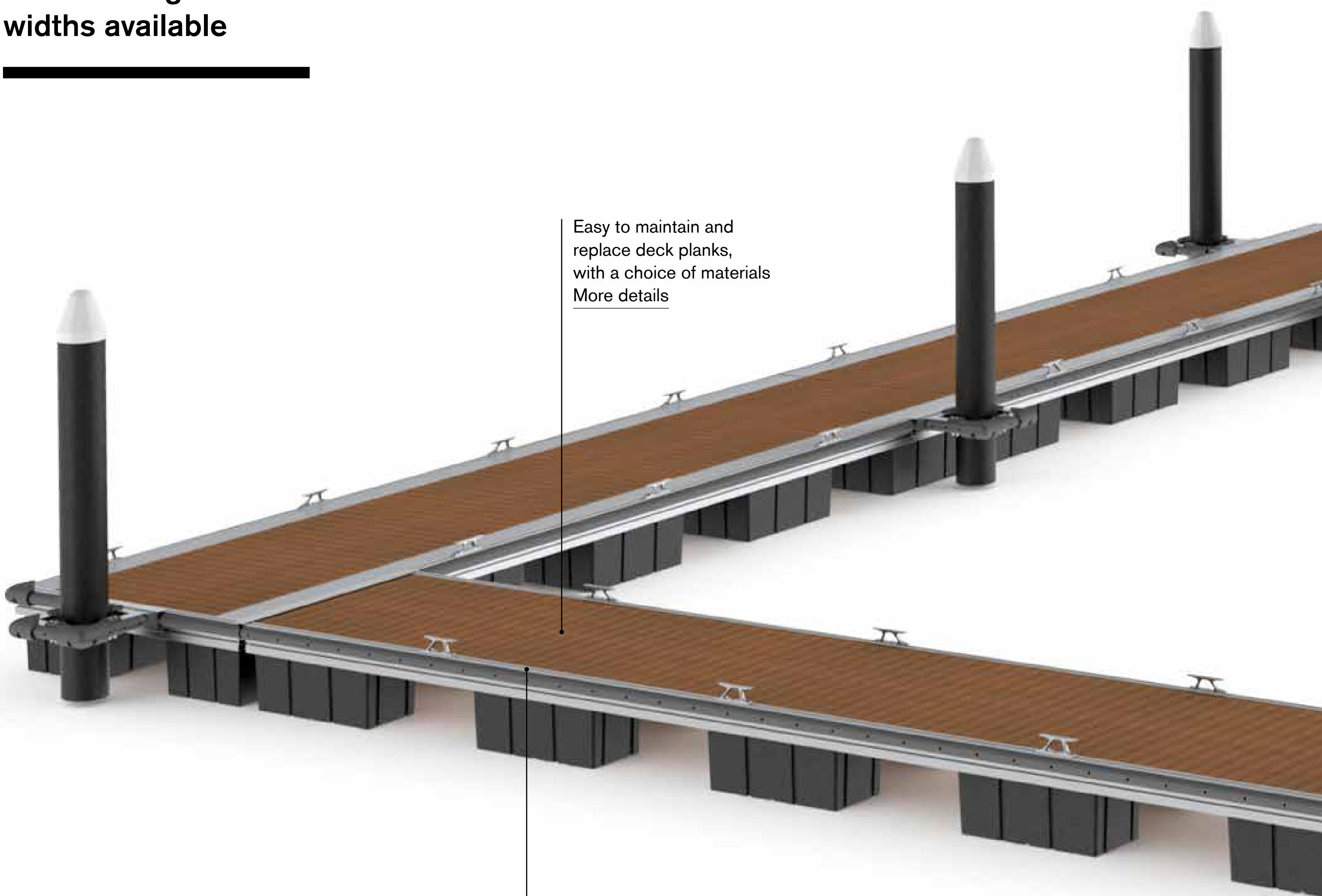
Anchoring with
a choice of systems
More details

Multifunction track system
for easy installation and
reconfiguration of cleats, bollards,
accessories and finger docks
More details


Easy to install and reconfigure finger docks
Optional utility trough covers for easy access to electrical cables and pipes
More details
Heavy-duty aluminum cleats and bollards
More details
Unsinkable high stability floats
More details
Fenders with a choice of materials
More details

Finger Docks

Custom lengths and widths available



Fenders and corner fenders with a choice of materials
More details

Anchoring with a choice of systems
More details

Multifunction Track System

Specifications

Design

- Heavy-duty built-in single or double rails
- Enables fast and easy attachment of dockside accessories such as cleats, bollards and safety ladders, as well as finger docks and pile guides
- Permits continuous reconfiguration depending on needs

Material

- Marine grade 6061-T6, 6005A-T6, 5083-H321 aluminum alloy extrusions

Lakeshore and Great Lakes systems

Single rail

Tri Ocean system

Double rail

Universal Connectors

Specifications

Design

- Quickly connect the main dock modules as well as the finger docks
- Noise-free, strong and flexible
- Wave movements absorbed through connectors, delivering stable dock performance in rough water conditions

Material

- Elastomer or UV-stabilized ethylene propylene diene monomer (EPDM) reinforced with high resistance aluminum rings

Tensile strength

- 19.4 kips (86.48 kN)
- Distortion: 1.1" (27.8 mm)

Compressive strength

- 19.7 kips (87.55 kN)
- Distortion: 0.75" (19 mm)

Shear strength

- 19.8 kips (87.95 kN)
- Distortion: 3.1" (79.8 mm)

Unsinkable Floats

We offer unsinkable rotomolded polyethylene floats with great stability, withstanding shocks and harsh conditions.

Specifications

Design

- Resistant to salt water, hydrocarbons, chemicals and pollution
- Resistant to carbon black cracking, low temperature impacts and punctures
- Pressure-release valve to maintain float integrity when temperature varies
- Spin weld plug available for completely submerged floats
- Fastened to the side extrusion with stainless steel hardware
- Complies with all U.S. Army Corps of Engineers and EPA requirements

Materials

- Seamless UV-stabilized polyethylene shell – nominal thickness of 0.15" (3.81 mm)
- Filled with EPS foam – minimum density of 1 lb/ft^3 (16 kg/m^3) and meets requirements of the Hunt absorption test

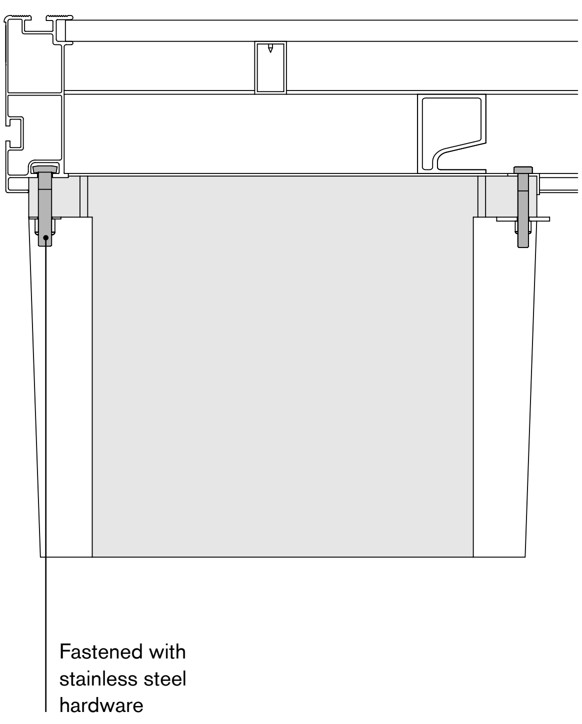
Warranty

- 10-year limited warranty

Float with or without flange

Lakeshore system

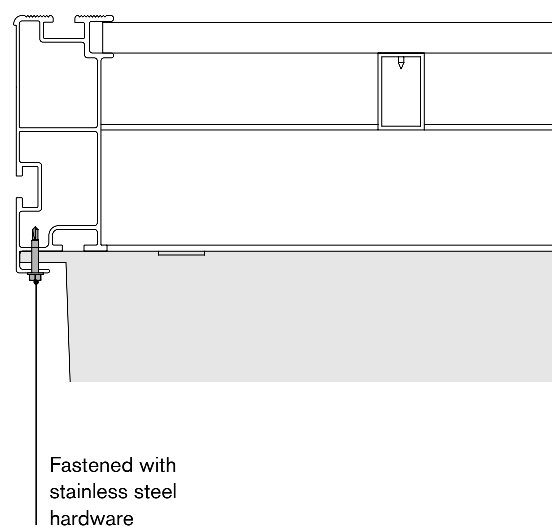
Float without flange



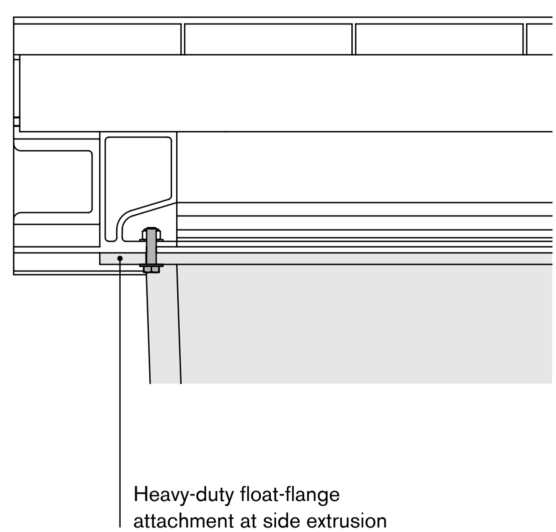
Great Lakes and Tri Ocean systems

Float with flange

External assembly



Mid assembly



Customization


Photo: Tom Hurst

Decking Materials

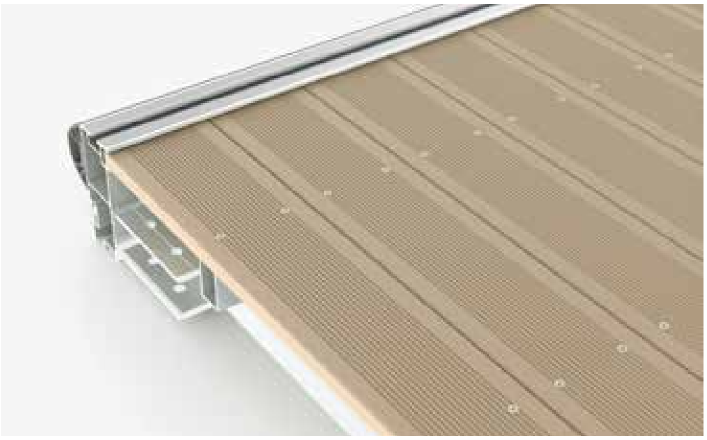
Choose decking material based on how your dock will be used. MAADI Group engineers can recommend the best decking for your needs in terms of application, safety, and maintenance. Here are our most popular and durable options.

Ipe hardwood

Specifications
- Naturally very resistant to decay, rot and insect attack
- Minimum 40-year lifespan depending on use
- Low maintenance, no treating or sealing required for durability (treating may be required to keep the original color)
- Straight grain with fine to medium texture
- Economical over life of the structure
- Average density of 69 lb/ft^3 (1,100 kg/m^3)
- Fastened with stainless steel screws

Dimensions
- S4S outside corner
- Width varies between 5" and 7 3/8" (127 mm and 188 mm)
- Thickness varies between 1" and 1 1/2" (25 mm et 40 mm) depending on loads and applications

Option
- Other hardwood options such as ribbed cumaru are available upon request



Composite

Specifications
- Designed to resist rot, warping and fading
- Minimum 25-year lifespan depending on use
- Anti-slip ribbed surface
- Low maintenance, no treating or sealing required for durability
- Economical over life of the structure
- Density of 75 lb/ft^3 (1,195 kg/m^3)
- Fastened with stainless steel screws

Materials
- A blend of wood flour and high-density polyethylene

Dimensions
- S4S outside corner
- 7/8" x 5 1/2" (22 mm x 140 mm)

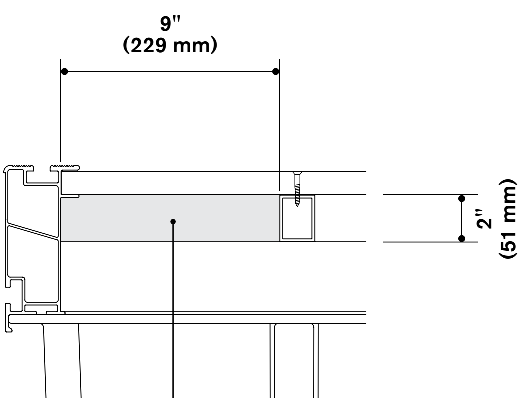
Color
- Sand

Utility Troughs

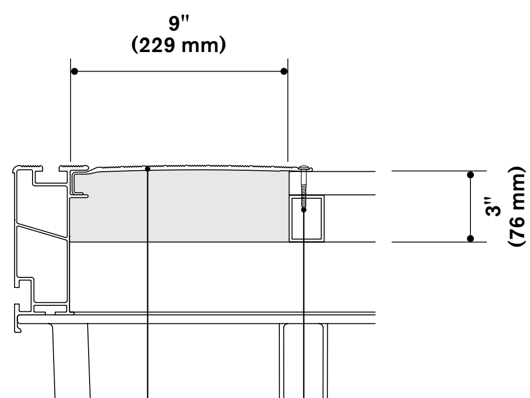
With its flush design, the trough covers conceal and protect electrical cables, plumbing and fire extinguishing pipes, offering easy access for maintenance and reconfiguration.

Lakeshore system

Without cover



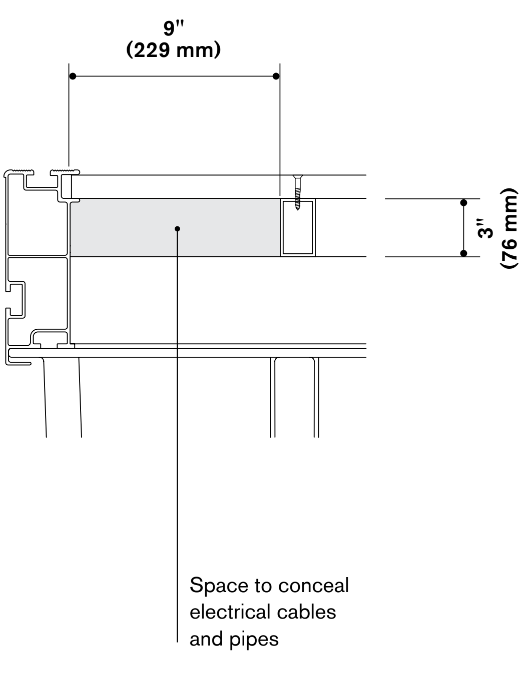
With lateral cover – 9" (229 mm)



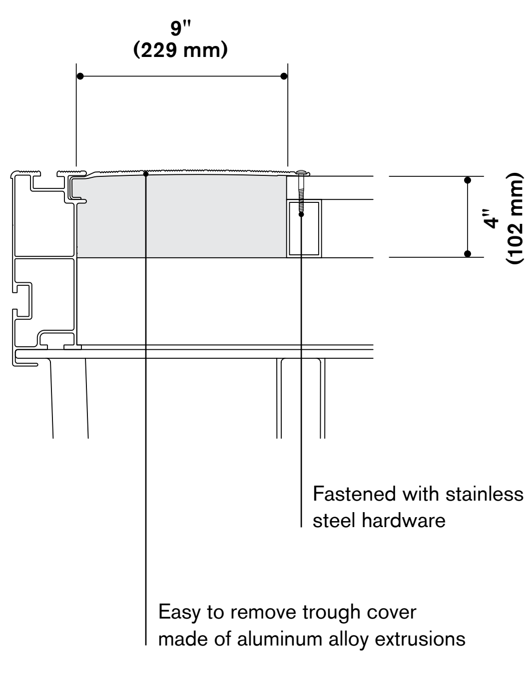
Utility Troughs

Great Lakes system

Without cover

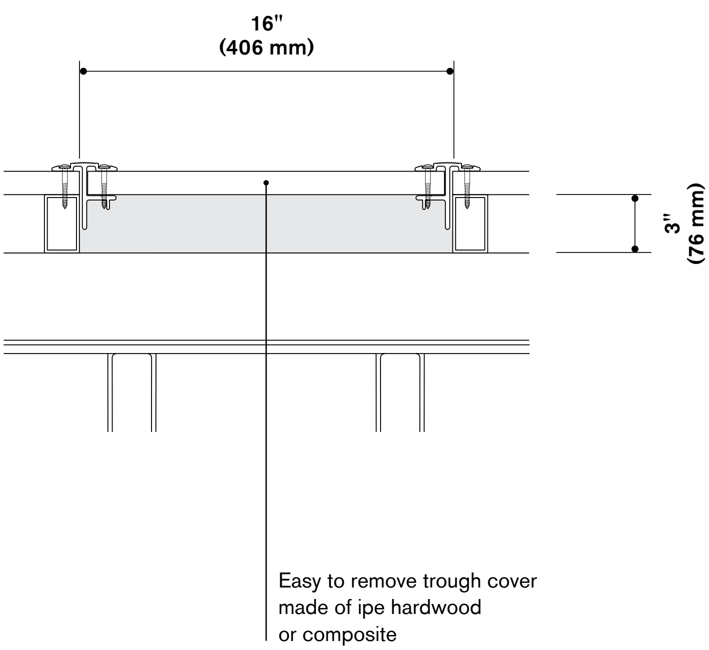


With lateral cover – 9" (229 mm)



Great Lakes system

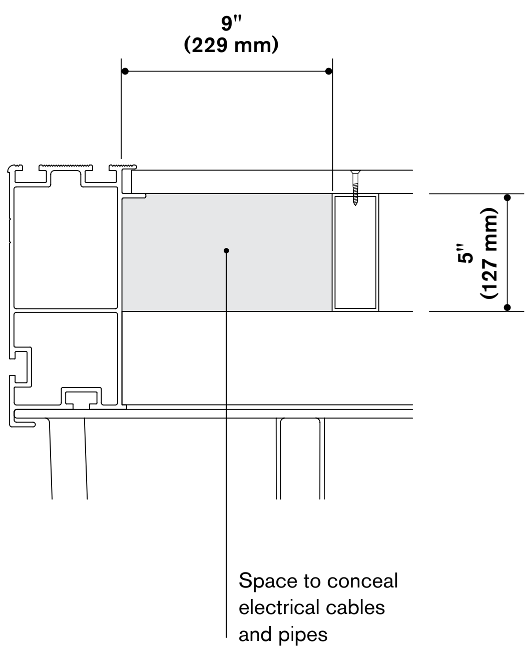
With central cover – 16" (406 mm)



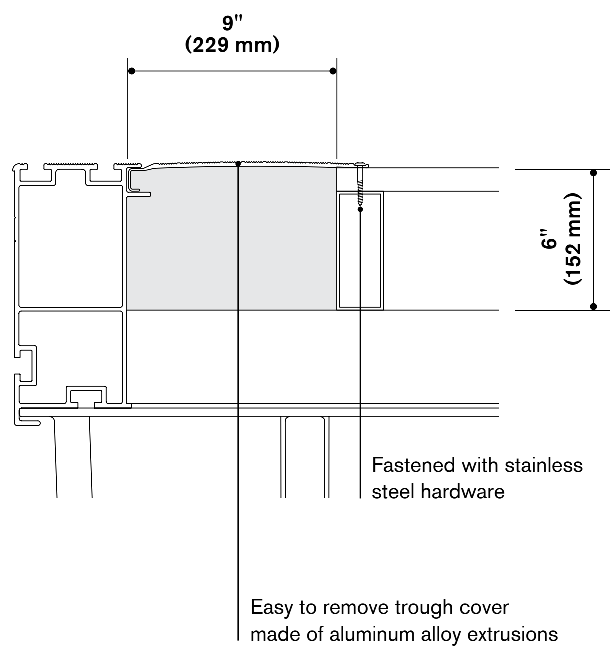
Utility Troughs

Tri Ocean system

Without cover

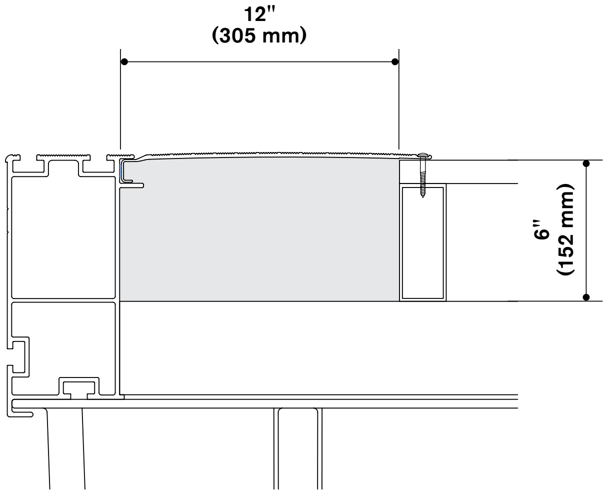


With lateral cover – 9" (229 mm)

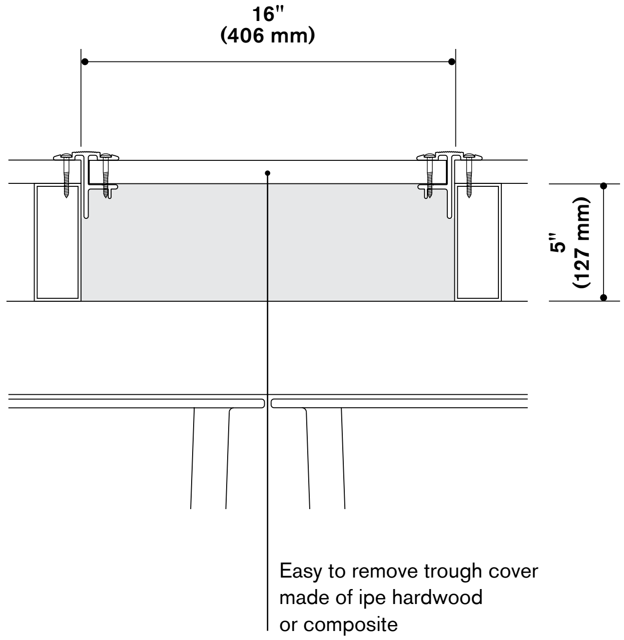


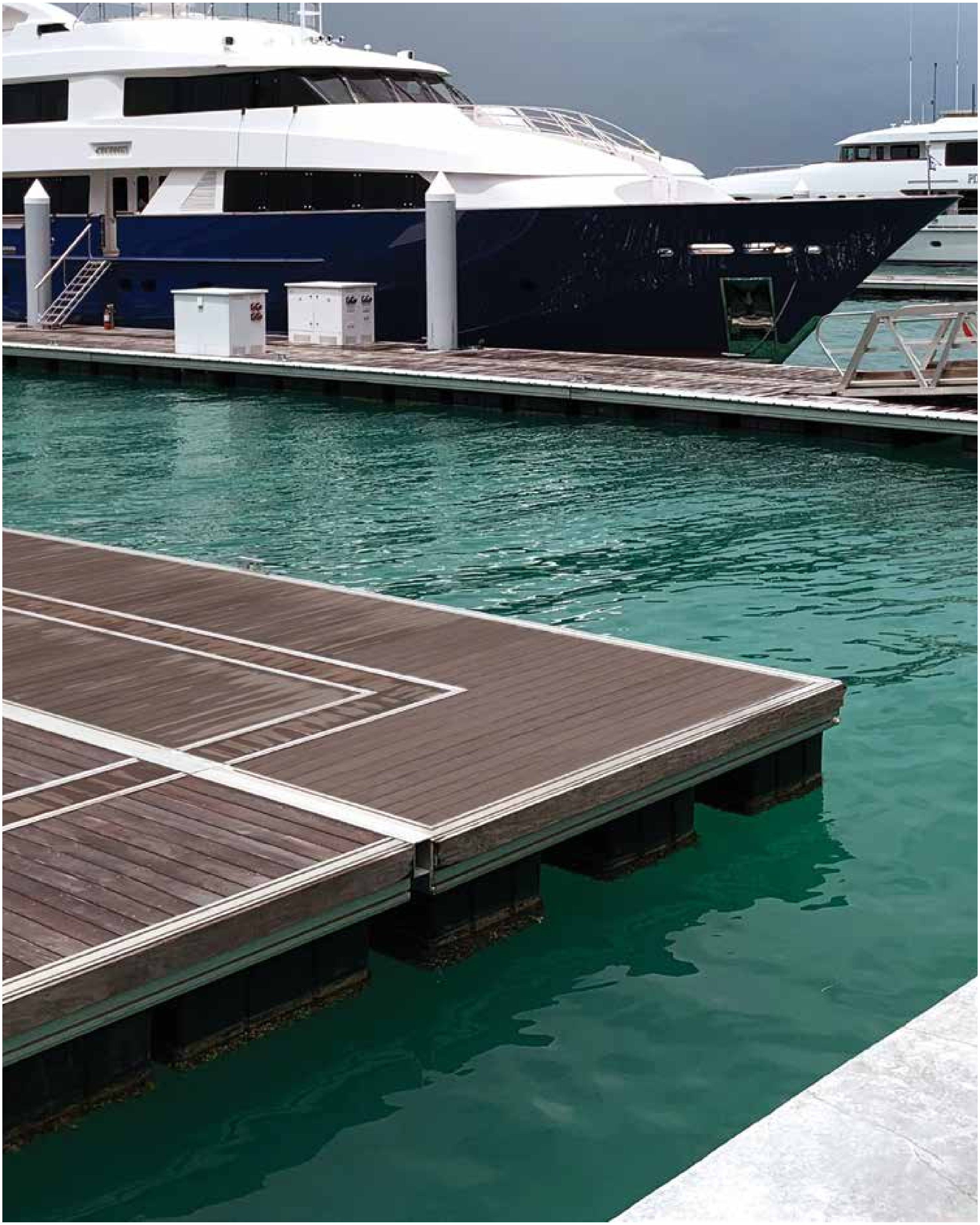
Tri Ocean system

With lateral cover – 12" (305 mm)



With central cover – 16" (406 mm)





Fenders

Our all-purpose non-marking fenders offer maximum boat hull protection. All fenders are attached to the dock with stainless steel hardware.

Ipe hardwood

Specifications

- Naturally very resistant to decay, rot and insect attack
- Minimum 40-year lifespan depending on use
- Low maintenance, no treating or sealing required for durability (treating may be required to keep the original color)
- Economical over life of the structure
- Average density of 69 lb/ft³ (1,100 kg/m³)
- Can be combined with corner fenders for optimal protection

Dock systems

- Half-size: Lakeshore and Great Lakes
- Full-size: Tri Ocean

Material

- Ipe

Dimensions

Available in two sizes:

- Half-size: 2 1/2" x 1" (65 mm x 25 mm)
- Full-size: 5" x 1" (135 mm x 25 mm)

Options

- Other hardwood options such as cumaru are available upon request
- Composite fenders are also available upon request

Lakeshore and Great Lakes systems

Half-size

Tri Ocean system

Full-size

Fenders

EPDM rubber

Specifications
- Usually used for larger vessels

Dock systems
- DD4: for all systems
- DD6: Tri Ocean

Material
- UV-stabilized ethylene-propylene-diene-monomer (EPDM)

Color
- Grey

Dimensions

Available in two sizes:
- DD4: 4" x 4" (102 mm x 102 mm)
- DD6: 6" x 6" (152 mm x 152 mm)

All systems

DD4

Tri Ocean system

DD6

PVC

Specifications
- Can be combined with corner fenders for optimal protection

Dock systems
- For all systems

Material
- UV-stabilized polyvinyl chloride (PVC)

Color
- Grey

Dimensions
- 4" x 2" (102 mm x 55 mm)

HDPE corners

Specifications
- Added corner dock protection

Dock systems
- For all systems
- Can be used with half-size ipe hardwood and composite, and PVC fenders

Material
- UV-stabilized high density polyethylene (HDPE)

Color
- Grey

Dimensions
- 10 1/2" x 10 1/2" x 5 5/8" (269 mm x 269 mm x 144 mm)

Moorings

MAADI Group's aluminum cleats and bollards combine form, function and strength. Resistant to corrosion from salt water, our moorings are easy to reconfigure on a multifunction track system.

Cleats – 12" (305 mm)

Lakeshore and Great Lakes systems

Tri Ocean system

Dock systems
- For all systems

Capacity
- Up to 3,200 lb (14 kN)

Material
- Aluminum alloy A356

Fastener
- Three stainless steel T-bolts

Dimensions
- Length: 12" (305 mm)
- Width: 2 1/2" (64 mm)
- Height: 4 1/2" (114 mm)

Cleats – 20" (508 mm)

Dock system
- Tri Ocean

Capacity
- Up to 11,400 lb (51 kN)

Material
- Aluminum alloy A356

Fastener
- Four stainless steel T-bolts

Dimensions
- Length: 20" (508 mm)
- Width: 5 3/4" (146 mm)
- Height: 6" (152 mm)

Single bitt bollards – 15" (381 mm)

Dock systems
- Lakeshore and Great Lakes

Capacity
- Up to 4,250 lb (19 kN)

Material
- Aluminum alloy A356

Fastener
- Four stainless steel T-bolts

Dimensions
- Length: 15" (381 mm)
- Width: 5 1/2" (140 mm)
- Height: 5 3/8" (137 mm)

Double bitt bollards – 15" (381 mm)

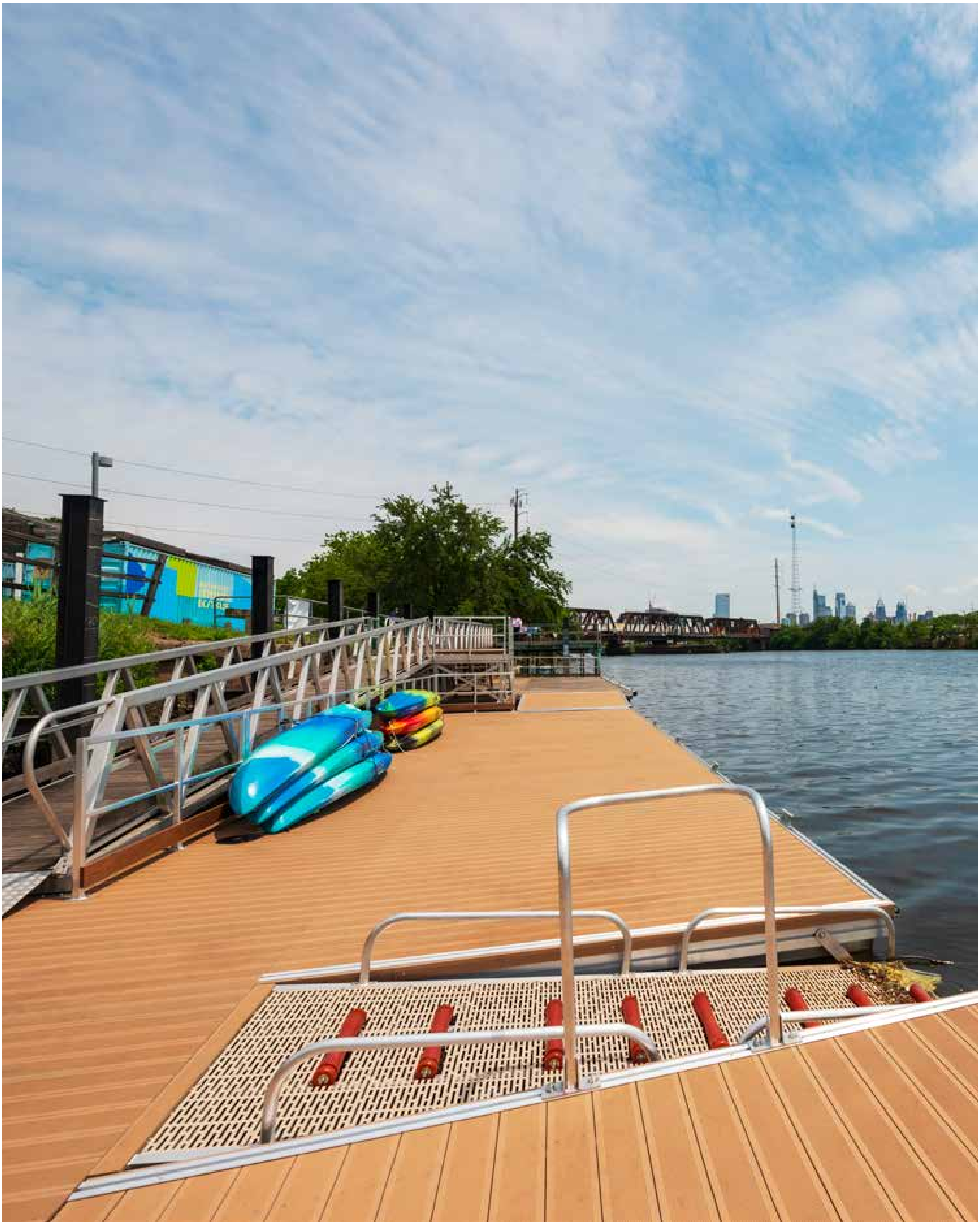
Dock system
- Tri Ocean

Capacity
- Up to 14,400 lb (64 kN)

Material
- Aluminum alloy A356

Fastener
- Six stainless steel T-bolts

Dimensions
- Length: 15" (381 mm)
- Width: 6" (152 mm)
- Height: 6" (152 mm)



Accessories

MAADI Group pays particular attention to the aesthetics and safety aspect of its structures. All our accessories comply with the strictest American and Canadian standards and codes.

Comfort and aesthetics

Guardrails with a choice of styles

- Midrails
- Personalize your guardrails with your own design

Other options

- Custom benches
- Parasols, canopies and awnings
- LED lighting system

Safety and services

Options

We offer a full range of high-quality accessories for all your needs:

- Ladders
- Fire hydrants
- Security accessories
- Power pedestals
- Wastewater pump-out system
- Fuel pumps

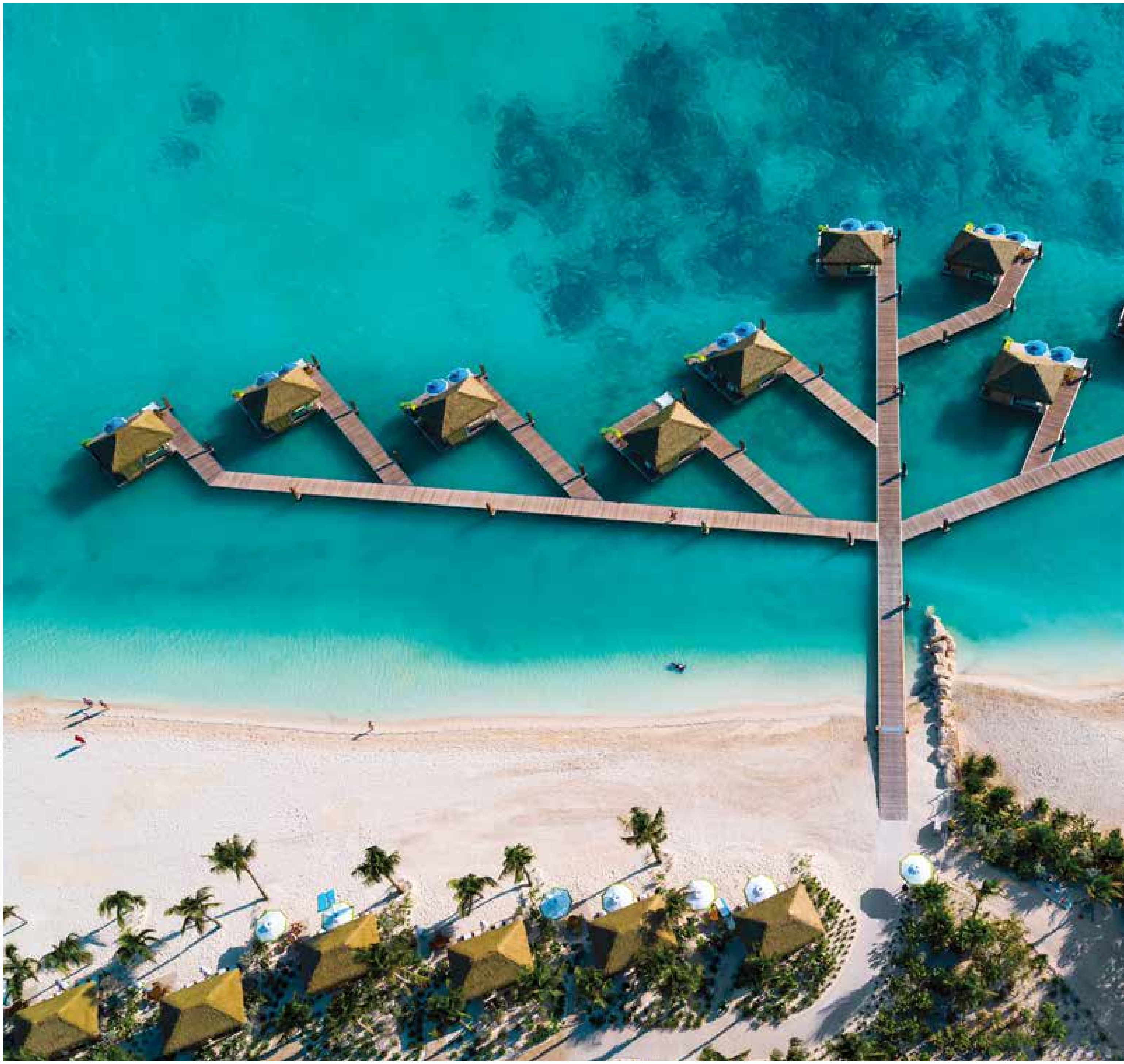
Projects

Photo: Royal Caribbean

CocoCay Floating Docks

Berry Islands, Bahamas

Location



Dock system
214 Series

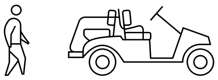
Fingers
N/A

Boat sizes
N/A

Capacity
20 floating cabanas

Anchoring system
Steel piles

Weather conditions
Designed for Category 2 hurricane winds of 110 mph (175 km/h), waves up to 3' (1 m)



Customization

Side extrusions covered with ipe hardwood

Ipe hardwood decking

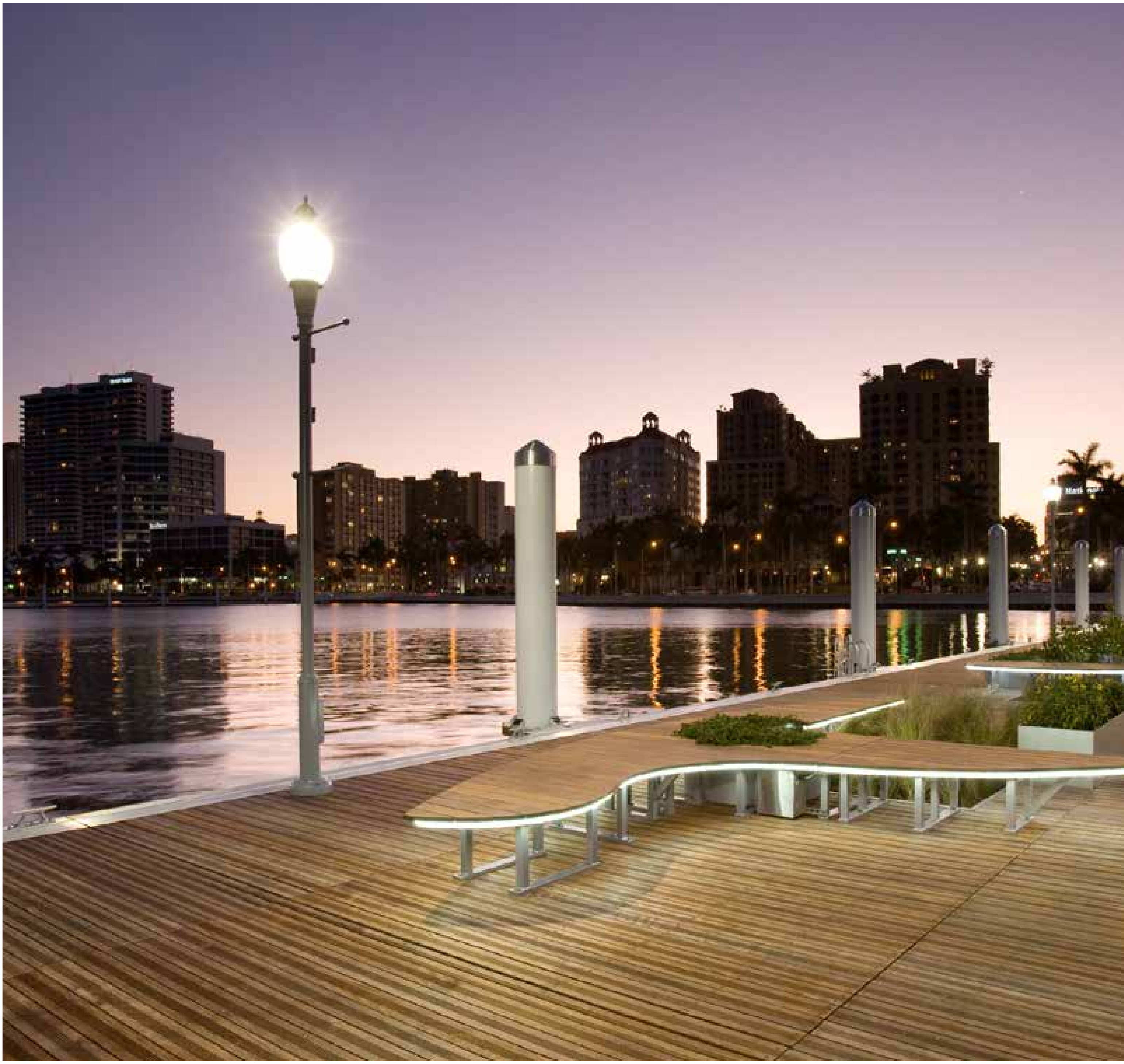
Steel piles covered with ipe hardwood

Photos: Royal Caribbean

City Commons Waterfront Docks

West Palm Beach, Florida, USA

Location



Dock type
245 Series

Fingers
N/A

Boat sizes
Up to 35' (11 m)

Capacity
50 slips

Anchoring system
Steel piles

Weather conditions
Designed for Category 2 hurricane winds of 110 mph (175 km/h), waves up to 3' (1 m)

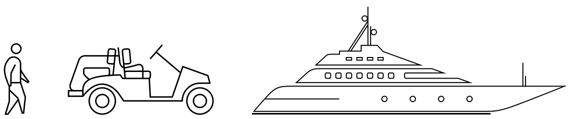


Photo: Tom Hurst

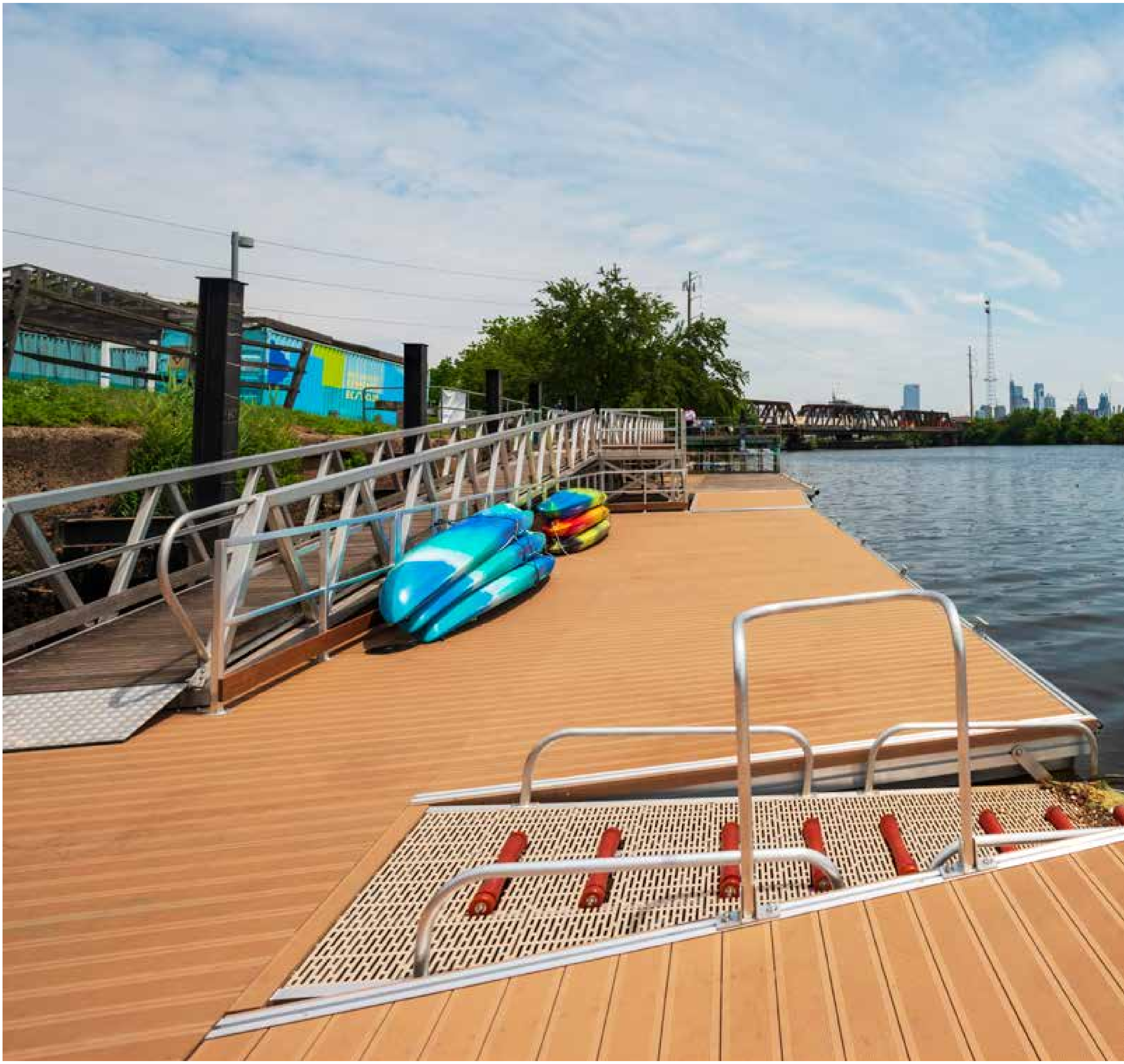
Customization

- Fixed access platforms and gangways. More details
- Ribbed cumaru wood decking
- Steel piles with powder-coated finish and stainless steel caps
- Custom benches and removable parasols
- LED lighting system
- Oyster beds
- Submerged planters for mangroves
- Automatic watering system

Bartram’s Garden Dock

Philadelphia, Pennsylvania, United States

Location



Dock system
Lakeshore

Fingers
N/A

Boat type
Kayaks

Slips
N/A

Anchoring system
H-beam, H-beam guide anchored on concrete wall

Weather conditions
Designed for winds up to 115 mph (185 km/h), current up to 6.7 ppm

Customization

Glacier style gangway, ipe hardwood decking and kick plates, aluminum guardrails with midrails

Composite decking

Kayak launching ramp with polypropylene decking and roller system

Floating Bridges

Customized for every environment

Countries such as the U.S., Guyana and Norway are constructing floating bridges because they're often better suited to local climates and land features. Pontoons allow the structure to move with the water rather than stay in one place and risk damage. Bracing components and anti-skid decking units add structural strength and increase safety.

Engineered using heavy-duty aluminum, the pontoons that we custom design and manufacture bend, shift and heave, preventing damage such as cracks to form and cause water leakage. Floating bridges take up less space than traditional bridges so visitors and residents can still take in a location's natural features while maintaining a high level of safety and security. They are very well suited to extreme cold, and our pontoons contain watertight compartments to prevent water coming in.

MAADI Group offers a variety of custom design options, such as anti-skid decking, aluminum guardrails with a choice of styles and finishes, handrails, kick plates, LED lighting system and wave attenuators.

MAADI Group floating bridges meet the highest quality standards for stability and corrosion resistance.

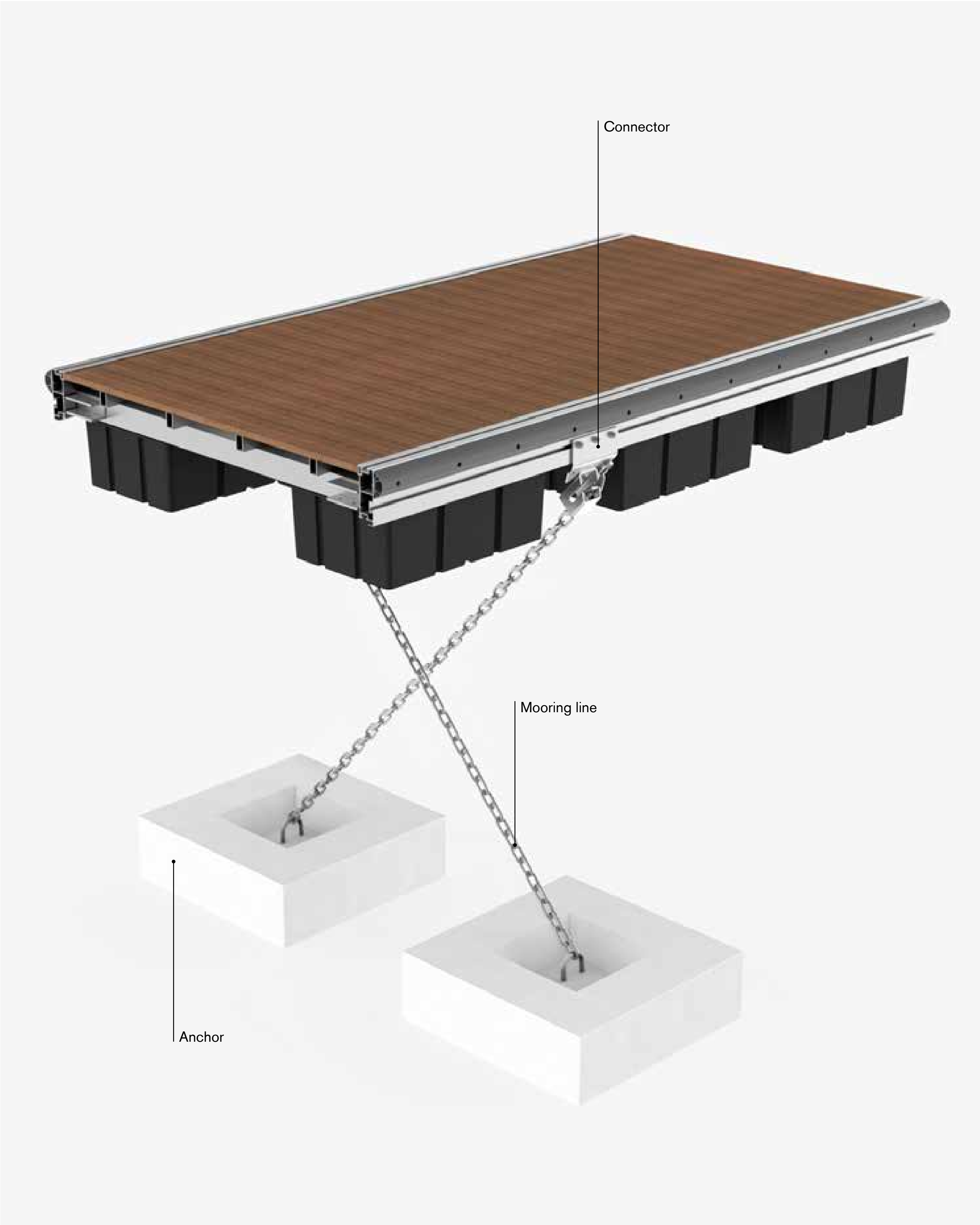
Anchoring Systems

Anchoring Systems

Our engineers have earned international recognition for their one-of-a-kind expertise in planning full anchoring system layouts. Through an in-depth analysis of all the project parameters, they're able to offer you the perfect solution for your needs.

MAADI Group engineers can recommend the best anchoring system for you in terms of application, safety, and maintenance. All components and hardware are resistant to salt-water corrosion.

	Deadman More details			Piles More details	H-beam More details	Push-arm More details
	Concrete block	Helical anchor	Earth anchor			
Tides						
Small	■	■	■	■	■	■
Large	■	■	■	■	■	
Water depth						
Shallow Up to 20' (6.1 m)	■	■	■	■	■	■
Deep Up to 60' (18 m)	■	■	■		■	■
Bottom conditions						
Soft	■		■	■	■	■
Hard	■	■		■	■	■
Setting						
Bulkhead/Seawall					■	■
Shoreline						■


Connector
Mooring line
Anchor

Deadman

This method of anchoring is the most common and generally used in deep waters.

Specifications

System

- Floating docks are moored to the sea bed with anchors and to the shore with mooring lines
- No adjustment required after installation

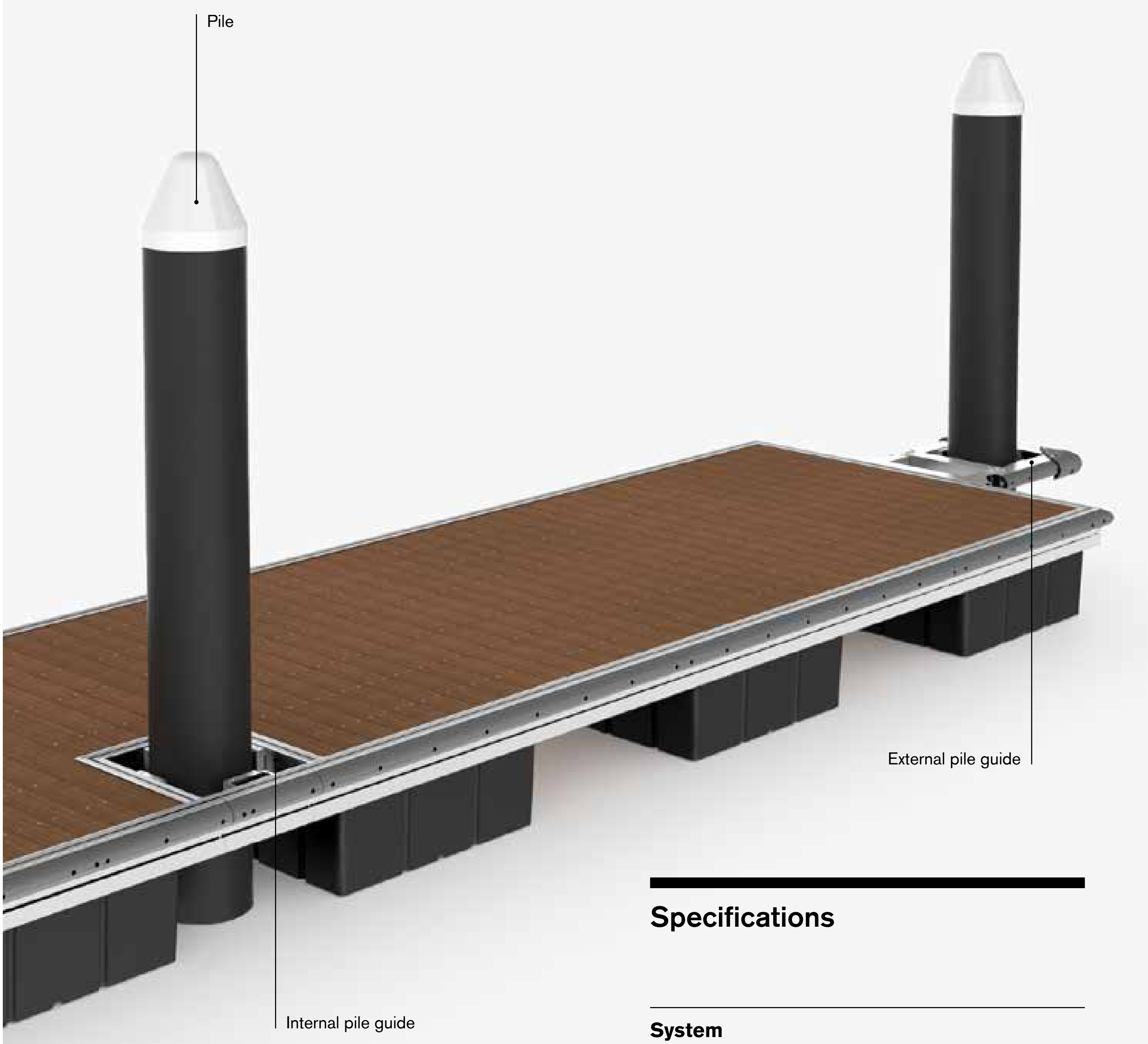
Anchor options

- Concrete block
- Helical anchor
- Plow anchor

Mooring options

- Hot-dip galvanised chain and shackle
- Cable with rubber hawser

Connector



Specifications

System

- Floating docks are anchored to the piles with external or internal aluminum guide piles
- Not suitable for sites subject to thick ice
- No adjustment required after installation
- Low maintenance

Options

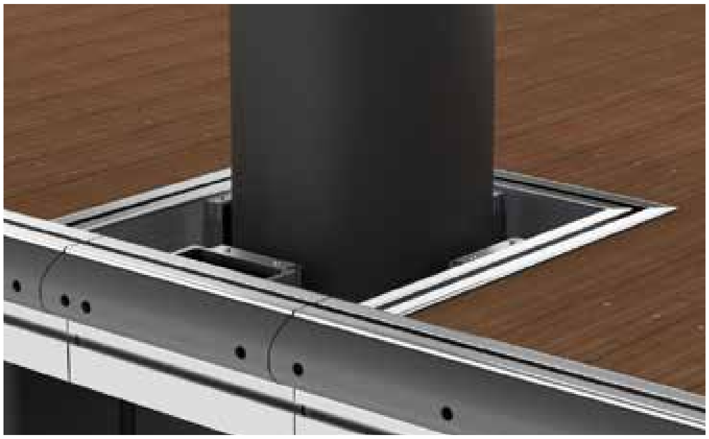
- Various types of piles are available: steel, concrete or wood

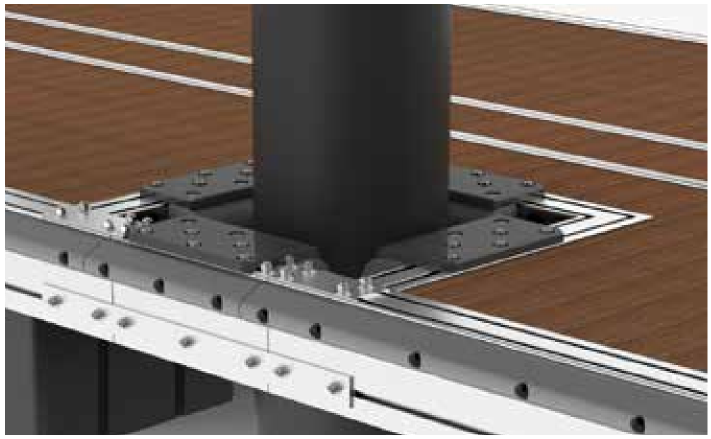
Piles

Pile anchoring is a long-lasting mooring method and is usually used in shallow waters.

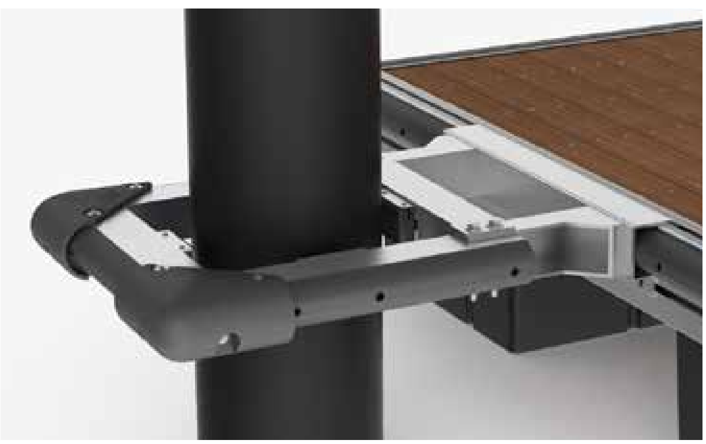
Great Lakes system

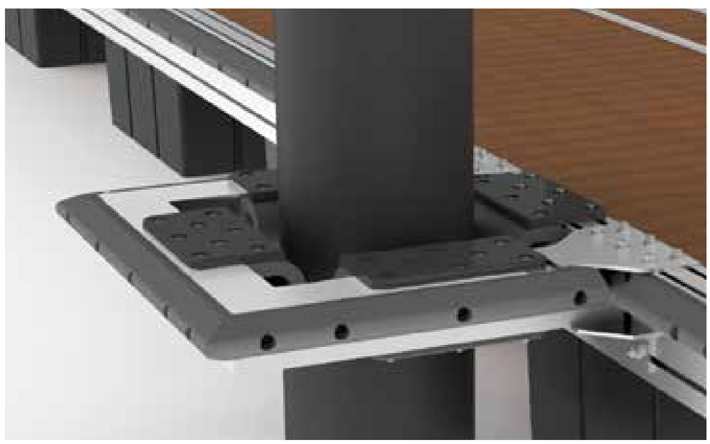
Tri Ocean system



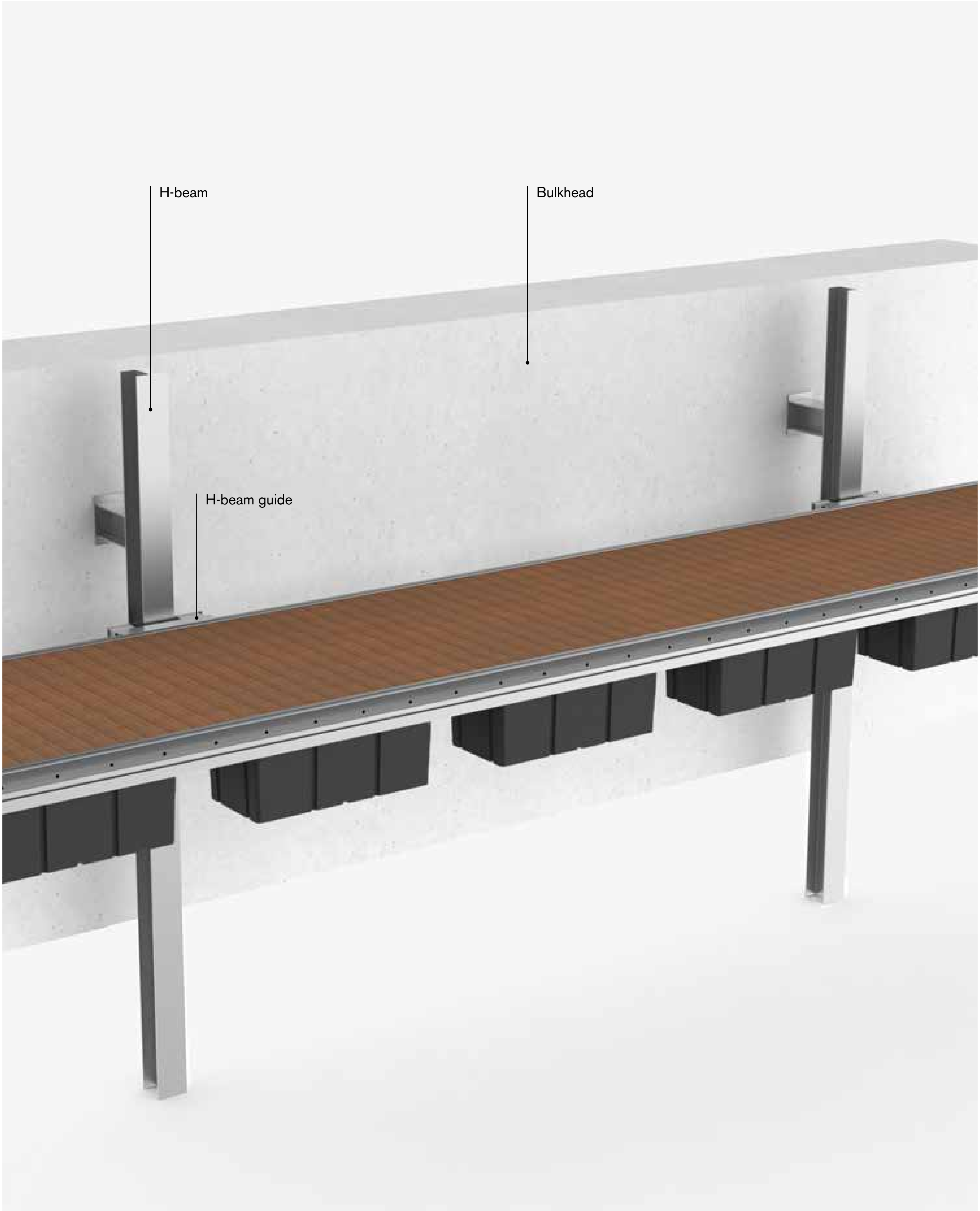


Internal





External


H-beam
Bulkhead
H-beam guide

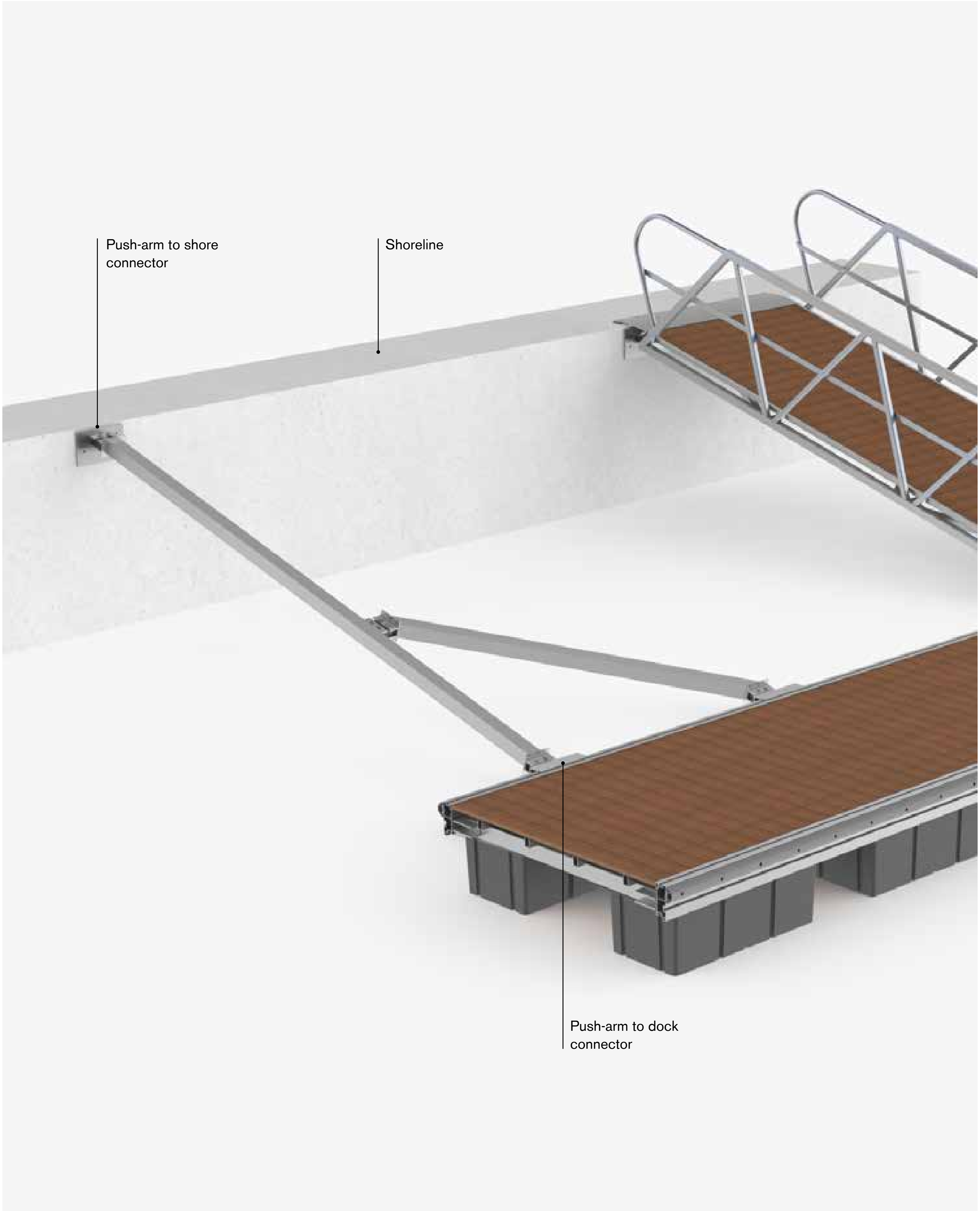
H-Beam

Can be used for floating docks anchored along a seawall or bulkhead.

Specifications

System
- Economical mooring solution compared to piles
- Ideal when water level variations are large
- Easy to install
- No adjustment required after installation
- Low maintenance

H-beam guide


Push-arm to shore
connector
Shoreline
Push-arm to dock
connector

Push-Arm

Used for floating docks along the shoreline, particularly when the shoreline is uneven.

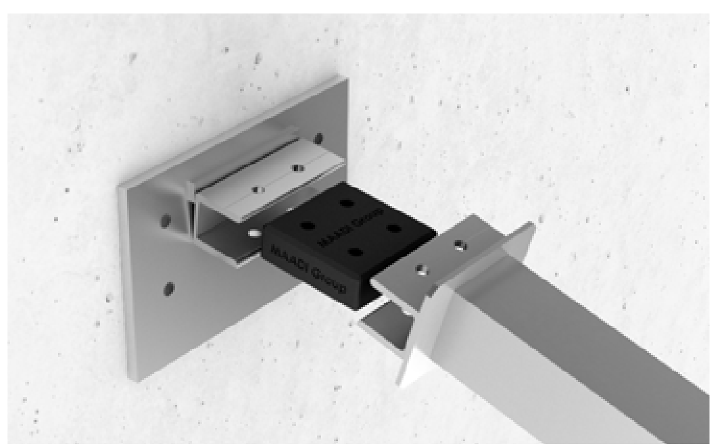
Specifications

System

- Push-arm mooring method is used where water level variations are small
- All components and hardware are resistant to corrosion from salt water
- No adjustment required after installation
- Low maintenance

Connectors

Dock



Shore

Ferry Landings

- **Turnkey ferry landings**
- **Strong and durable**
- **Cost-effective**
- **Tailored design**

Whether they're built for mooring shuttles, ferries or water taxis, our aluminum landings are designed to ensure passenger safety with minimal maintenance.

MAADI Group engineers optimize design and manufacturing to achieve superior quality structures that withstand corrosion, pollution, harsh climates and high daily use.

Our structures are tailored to your specific needs and are fully customizable with a variety of options.

← International Cruise Ship Ferry Landing La Baie, Quebec

Location

Location

← Ferry landing at Mingan Archipelago National Park Reserve, Havre-Saint-Pierre, Quebec, Canada

Floating Wave Attenuators

- **Innovative**
- **Tough**
- **Better for the environment**

Wave attenuators designed for climate change

Hurricanes, typhoons and storms have all generally become more severe and unpredictable in recent years. With the impacts of climate change already being felt around the world, it's more important than ever to develop robust solutions that respect the environment and withstand the forces of nature and accelerated erosion.

Faced with the challenge of protecting shorelines from damaging wind- and ship-generated waves, MAADI Group engineers have created an innovative design that uses sustainable materials: the aluminum floating wave attenuator.

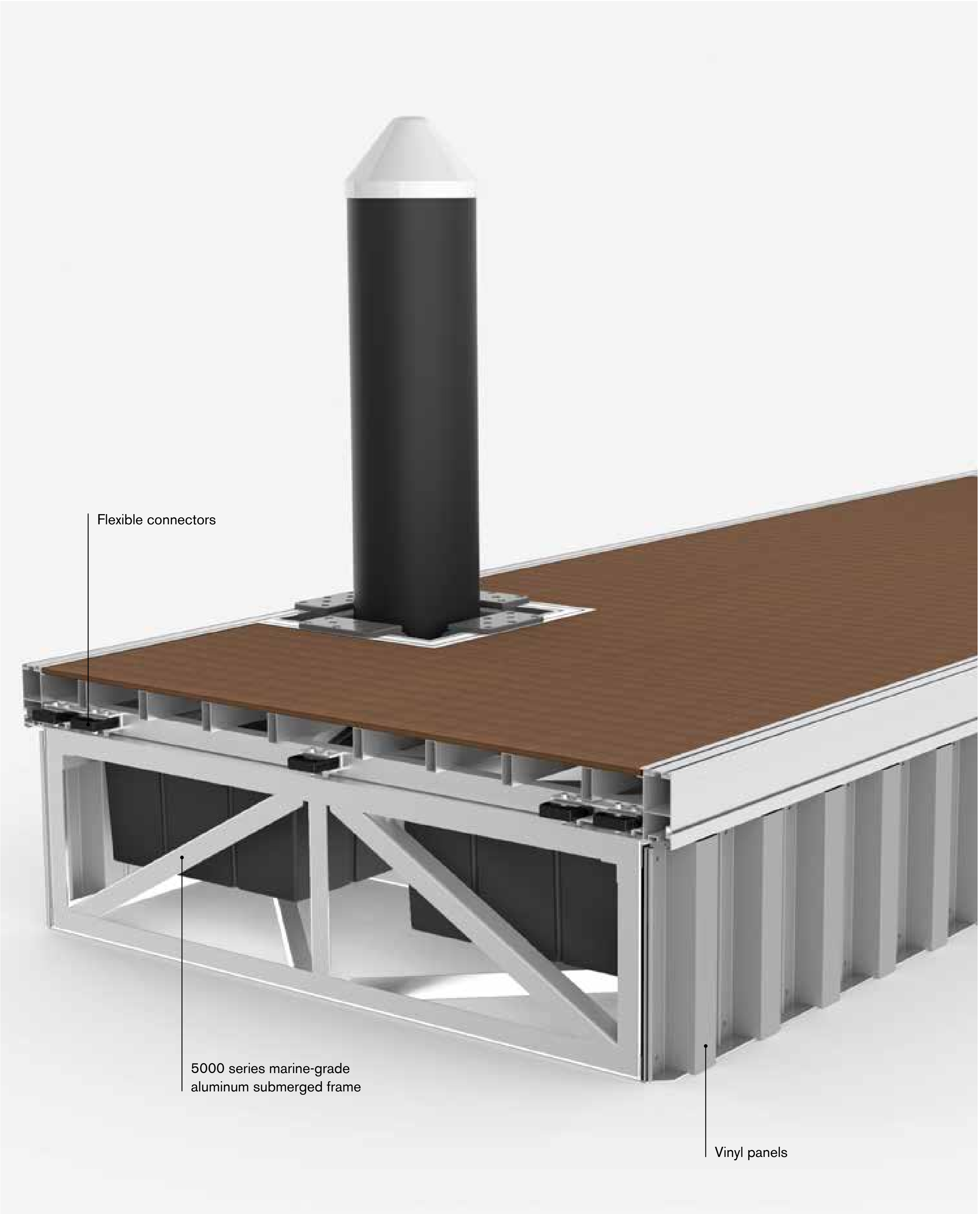
Design innovation

Whether for a new construction or a renovation project, aluminum floating wave attenuators are an attractive solution that provides the ultimate in durability and corrosion resistance.

We design and produce high-performance floating wave attenuators. By using piles instead of chains, we're able to increase the efficiency of wave attenuators and create additional boat slips and dockage areas.

Our specialized maritime structures integrate the strength of aluminum alloys 6061-T6, 6005A-T6 and 5083-H321 modules with a submerged steel or marine-grade aluminum frame and vinyl panels. Aluminum's low modulus of elasticity, critical energy absorption properties, resilience, and corrosion resistance protect valuable coastline and vessels without compromising the environment and beauty of the waterfront.

← Old Port Cove Marina (North basin), North Palm Beach, Florida


Flexible connectors
5000 series marine-grade
aluminum submerged frame
Vinyl panels

Specifications

Tough and efficient

MAADI Group's superior design and quality fabrication improves the performance and reliability of floating wave attenuators by using custom aluminum extrusion that combines internal links with increased torsional rigidity and high section modulus.

MAADI Group floating wave attenuators are efficient for up to 74 mile-per-hour winds that may generate three-foot wave heights. Flexible connectors between the sections of our floating wave attenuators allow for hogging and sagging movement, releasing tension.

In shallow waters, floating wave attenuators use pilings to prevent swaying and pitching.

Conditions	**Wave**		**Reduction**
	Period (T)*	**Maximum length (L)***	
Normal	1 to 2 sec.	20' (6 m)	90 to 75%
Maximum	2 to 2.8 sec.	40' (12 m)	75 to 50%
Storm	2.8 to 3.3 sec.	50' (15 m)	50 to 32%
Survival	> 3.3 sec.	> 50' (15 m)	

*** Relation between the period (T) and the wavelength (L):**

L (ft) = 5.12 T^2
L (m) = 1.56 T^2

Better, greener applications

Unlike traditional wave attenuators that use rocks or rubble, MAADI Group's floating wave attenuators respect the natural environment. Instead of destroying marine life, our systems allow for better water circulation and fish migration. This non-invasive method is the result of a floating system anchored by pilings. Our made-to-measure extruded aluminum modules also allow for better buoyancy, eliminating anchoring problems, and do not trap debris like rubber tire systems do.

Throughout North America and the Caribbean, our breakthrough design works with nature to dissipate waves and provide superior protection.

Warranty

We offer a 2-year limited warranty on aluminum against material failure, defects and corrosion.

Gangways

Designs that enrich your waterfront

Aluminum experts

Long-term savings

Custom Gangways

Durable investment

Eye appeal

Cost effective

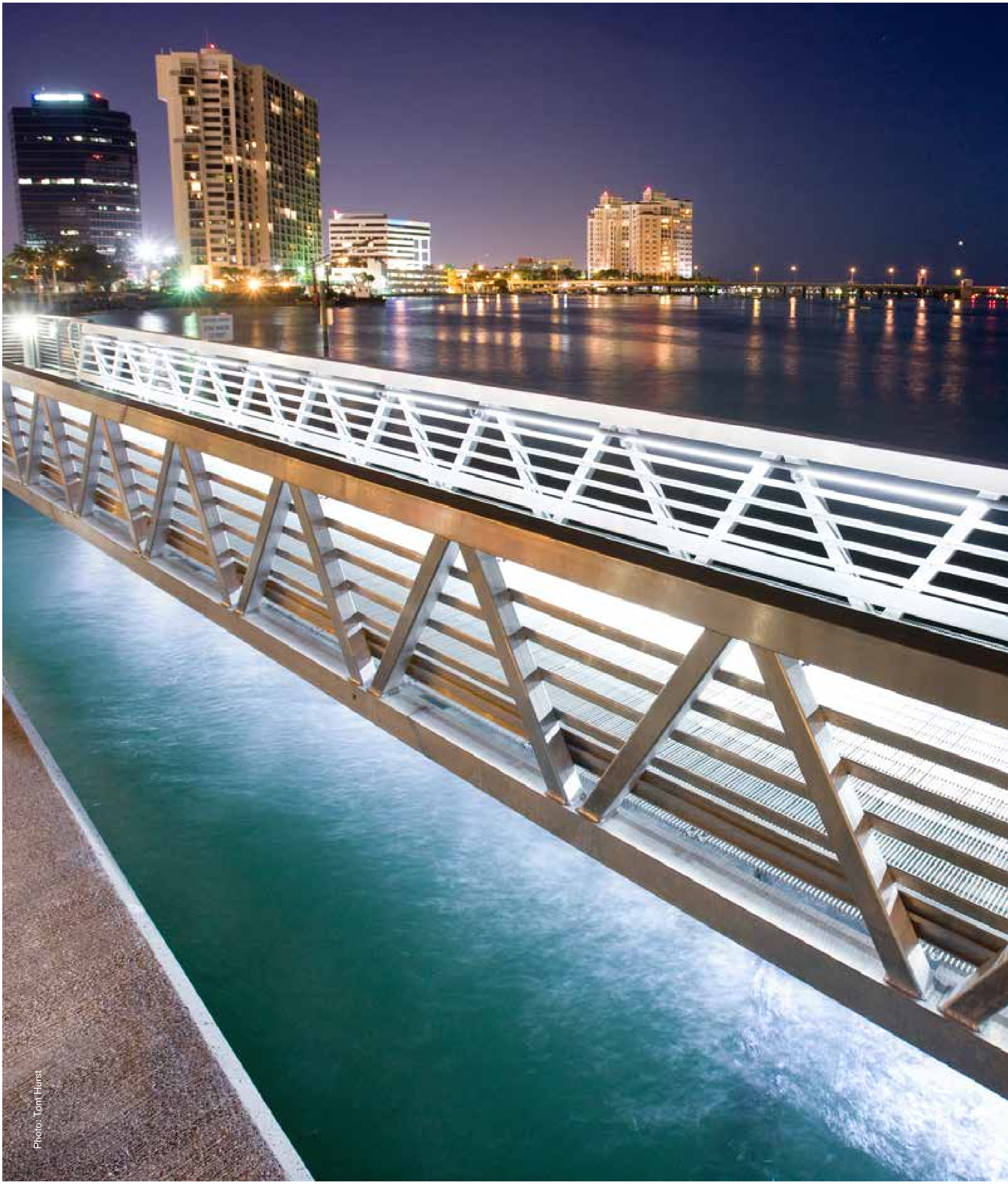


Photo: Tom Hurst

Design and materials

- 100% recyclable aluminum structural components and energy-efficient recycling.
- Resistant to corrosion from salt water, chemicals and pollution. A permanent film of natural oxide makes the metal less impacted by the environment.
- Suited to extreme cold, aluminum does not crack at low temperatures.
- Marine grade extruded aluminum alloy construction using 6061-T6, 6005A-T6 and 5083-H321.
- Integrates well with new constructions and retrofits of existing structures.

Maintenance

Virtually maintenance-free and highly cost-effective, compared with steel when total cost of ownership (TCO) is considered.

Vandalism

Very easy to remove graffiti by brushing or sanding bare aluminum, compared to steel that has protective coating.

Warranty

15-year limited warranty on aluminum against material failure, defects and corrosion.

MAADI GROUP
15-YEAR LIMITED WARRANTY

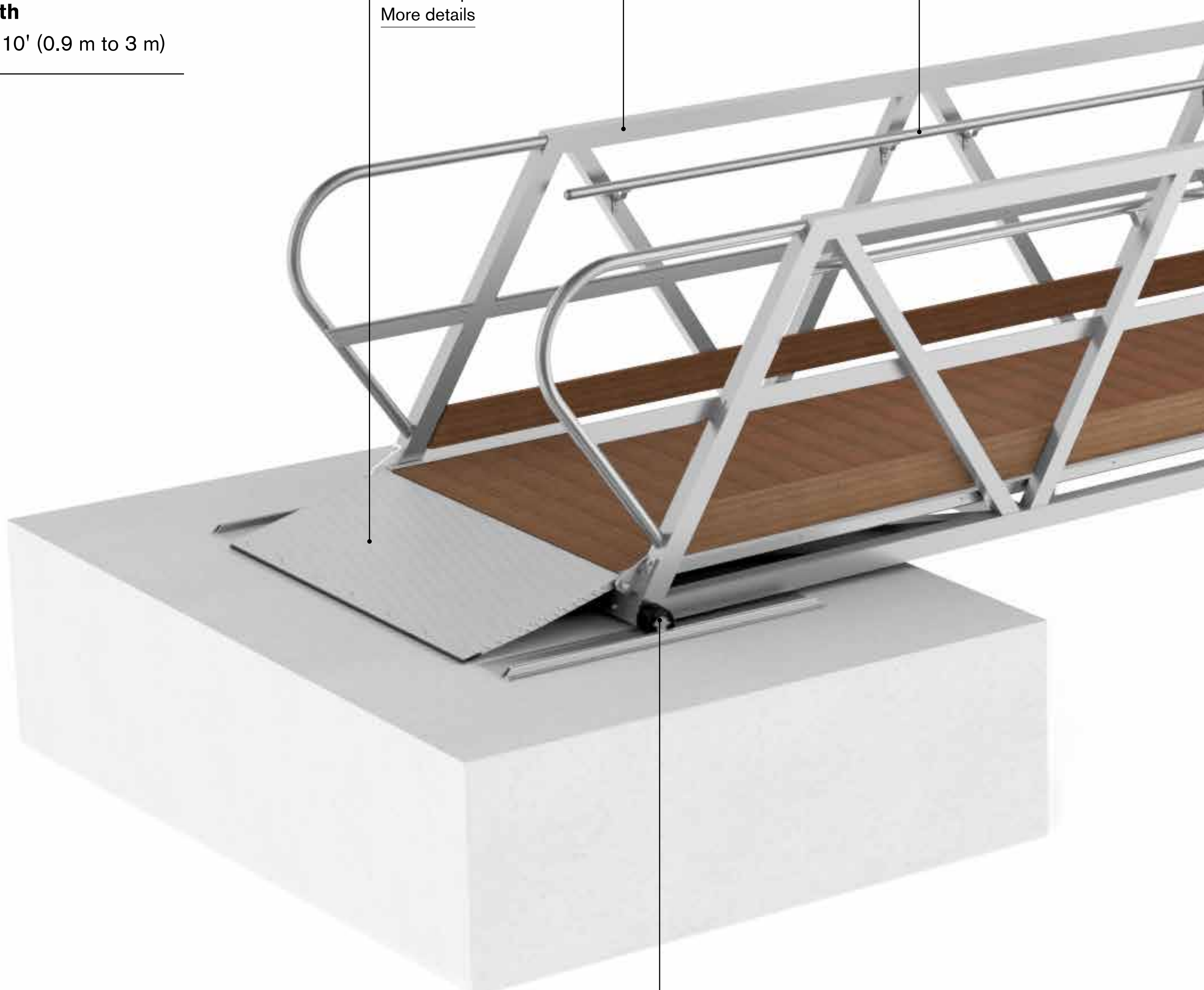
Tailored Designs

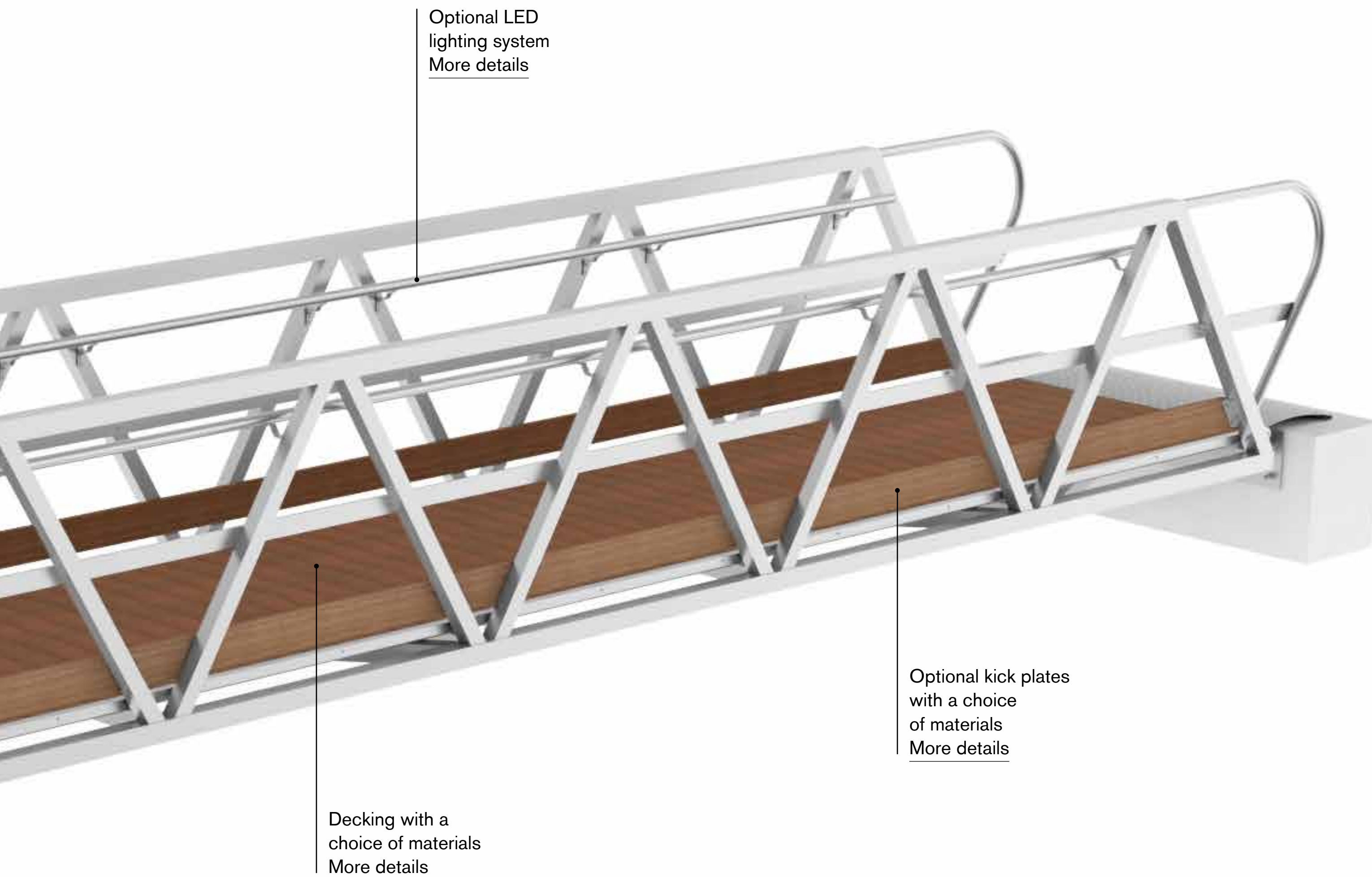
Customized to your specifications and needs.

Specifications

Overall span
Up to 150' (45.7 m)

Clear width
From 3' to 10' (0.9 m to 3 m)




Optional LED
lighting system
More details
Optional kick plates
with a choice
of materials
More details
Decking with a
choice of materials
More details

Guardrails

MAADI Group guardrail systems offer safe and practical solutions that are also attractive. Our guardrails comply with Canadian and American bridge codes and standards.

Specifications

Material
- Extruded aluminum alloy with natural finish

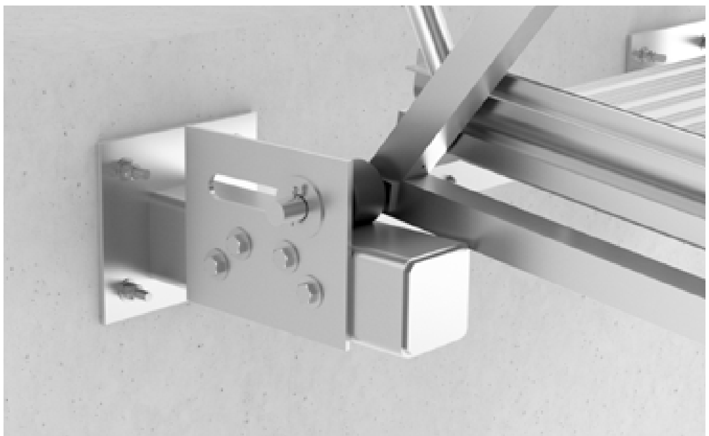
Dimensions
- Height: 42" (1,070 mm)
- 2" (50 mm) midrails installed at mid-height

Custom design

Option
- Personalize your guardrails with your own design

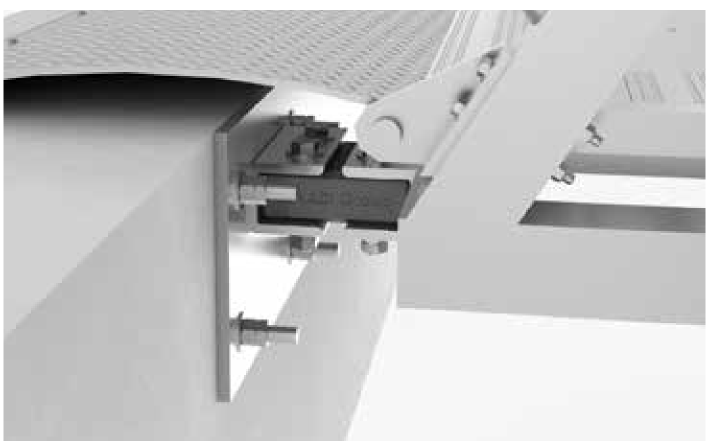
Structure Connections

Each connection system is adapted to a particular application and is specified by MAADI Group engineers.



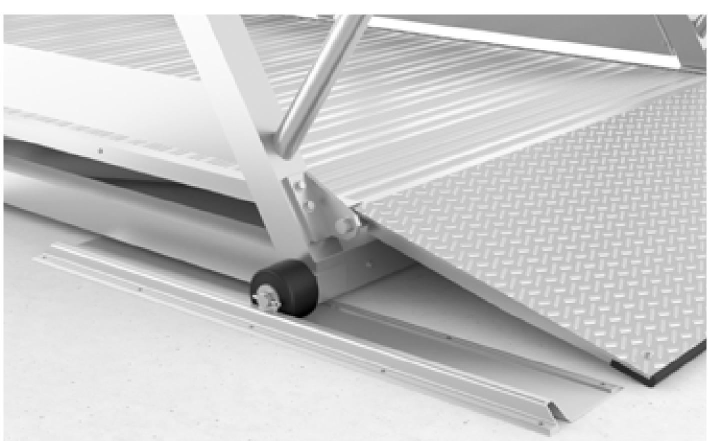
Roller and plate system

Specifications
- System allows lateral and vertical movement
- Usually required to link a chain-anchored floating dock to land



Flexible connector

Specifications
- Connector allows small vertical movement
- Usually required to link a pile-anchored floating dock to the land



Roller and rail system

Specifications
- Usually used in conjunction with roller and plate system or flexible connector on the land side
- Rails are made of aluminum
- Wheels are made of UHMW
- Easy to install

Transition Plates

With non-slip finishing, transition plates facilitate access to the gangway from adjacent surfaces.

Flat transition plate

Specifications

- Used with the roller and rail system.
- Aluminum plate with anti-slip diamond treads.
- Comes with frictionless edge to protect decking surface.

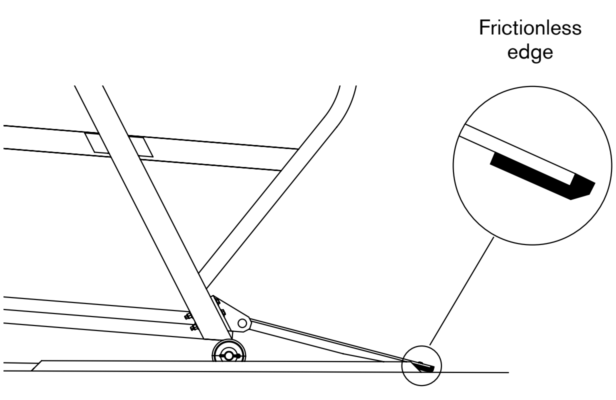
Options

Anti-slip strips

- Aluminum plate with anti-slip extruded strips is available upon request.

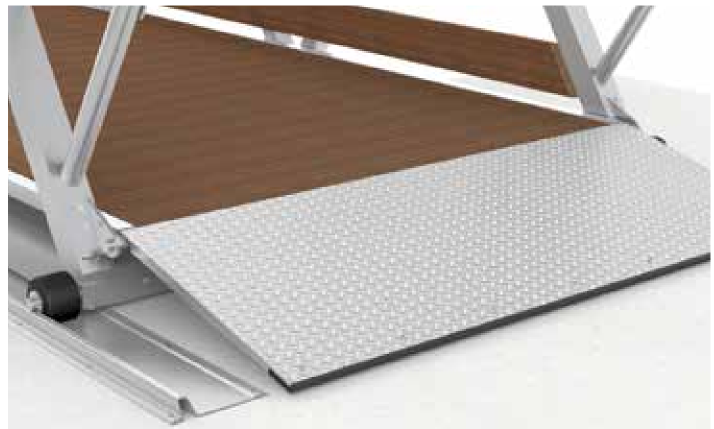
Anti-slip coating

- Aluminum plate with anti-slip durable polyester powder coating is available upon request.
- Compliant with AAMA 2604-10 & ASTM D3359.

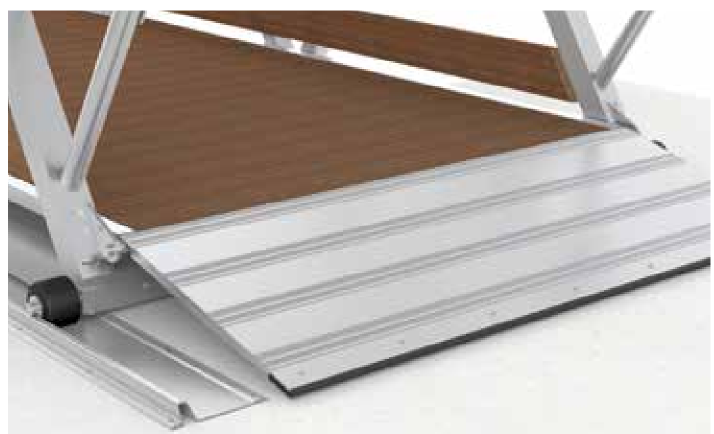


Roller and rail system

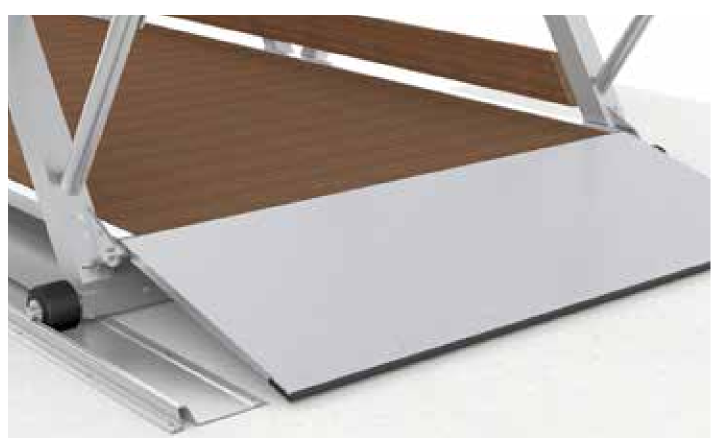
Diamond treads



Anti-slip strips



Anti-slip coating



Curved transition plate

Specifications

- Used with the roller and plate system.
- Aluminum plate with anti-slip diamond treads.
- Comes with frictionless edge to protect decking surface.

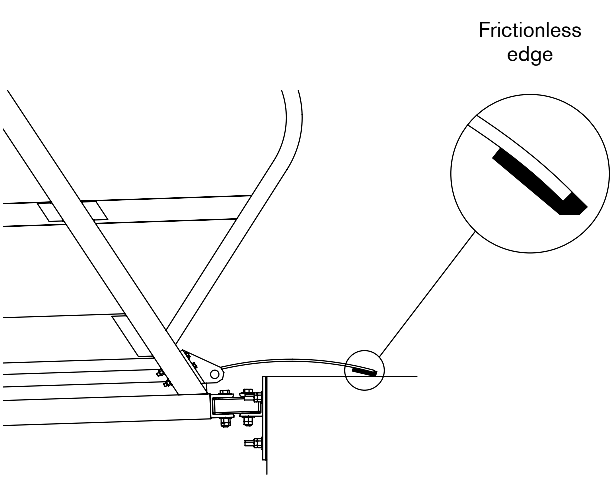
Options

Anti-slip strips

- Aluminum plate with anti-slip extruded strips is available upon request.

Anti-slip coating

- Aluminum plate with anti-slip durable powder coating is available upon request.
- Compliant with AAMA 2604-10 & ASTM D3359.



Roller and plate system

Diamond treads

Anti-slip strips

Anti-slip coating

Customization


SAMARA

Decking Materials

Choose the material best suited to the function of the structure. Let our engineers advise you on the best decking for your needs.

Ipe hardwood

Specifications

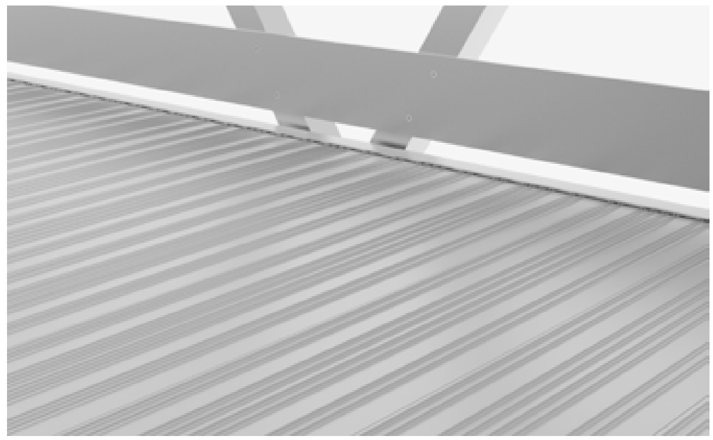
- Naturally very resistant to decay, rot and insect attack
- Minimum 40-year lifespan depending on use
- Low maintenance, no treating or sealing required for durability (treating may be required to keep the original color)
- Straight grain with fine to medium texture
- Economical over life of the structure
- Average density of 69 lb/ft^3 (1,100 kg/m^3)
- Fastened with stainless steel screws

Dimensions

- S4S outside corner
- Width varies between 5" and 7 3/8" (127 mm and 188 mm)
- Thickness varies between 1" and 1 1/2" (25 mm et 40 mm) depending on loads and applications

Option

- Other hardwood options such as ribbed cumaru are available upon request



Composite

Specifications
- Designed to resist rot, warping and fading
- Minimum 25-year lifespan depending on use
- Anti-slip ribbed surface
- Low maintenance – no treatments or sealers required
- Economical over life of the structure
- Density of 75 lb/ft^3 (1,195 kg/m^3)
- Fastened with stainless steel screws

Materials
- A blend of wood flour and high-density polyethylene

Dimensions
- S4S outside corner
- 7/8" x 5 1/2" (22 mm x 140 mm)

Color
- Sand

Ribbed aluminum

Specifications
- Unlimited lifespan with regular cleaning
- High grip ribbed tongue and groove planks
- Maintenance-free and corrosion-resistant – no treatments or sealers required
- 100% recyclable and reusable
- Economical over life of the structure
- Fastened with stainless steel screws

Materials
- Extruded aluminum alloy with natural finish – no paint or treatment required

Dimensions
- 7 3/8" x 1 1/4" (188 mm x 31 mm)
- Anti-slip ribs height: 1/16" (2.3 mm)

Options

Kick plates, handrails and LED lighting system are offered to further customize your gangway to best suit the application and the surrounding environment.

Integrated kick plates

Design
- Helps prevent objects from falling and provide a higher level of security

Material
- Extruded aluminum alloy with natural finish

Dimensions
- Height: 4" (102 mm)

Raised kick plates

Specifications
- Helps prevent objects from falling and provide a higher level of security
- Compliant with the Americans with Disabilities Act

Materials
- Ipe hardwood, wood composite or extruded aluminum alloy
- Other type of woods are availbale upon request

Dimensions
- **Wood or wood composite**
  Heights: 3 1/2" (89 mm), 5 1/2" (140 mm) or 7 1/4" (184 mm)
- **Aluminum**
  Heights: 4" (102 mm), 6" (152 mm) or 8" (203 mm)

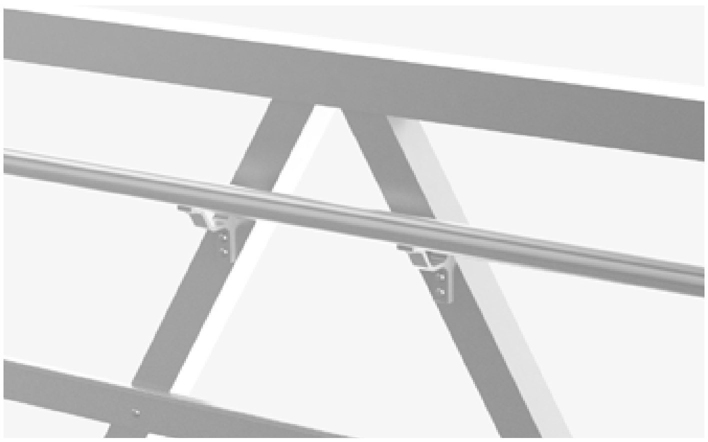


Photo: Tom Hurst

Handrails

Material
- Extruded aluminum alloy with natural finish

Dimensions
- Diameter: from 1 1/4" to 2" (from 32 mm to 50 mm)
- 2" (50 mm) hand clearance

Height
- Standard: 36" (915 mm)
- ADA[1]: 24" (610 mm)

Option
- Double handrails (ADA) are available upon request

LED lighting system

Options
- White LED lighting system
- White or RGB programmable LED light projector system
- Handrail-integrated lighting system

[1] Americans with Disabilities Act

Projects

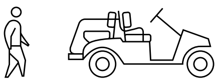
Briland Club Marina

Harbour Island, Bahamas

Location

Overall spans
40' (12.2 m)

Clear width
7' 10" (2.4 m)



Pedestrian load
100 psf (4.8 kPa)

Vehicular load
924 lb (420 kg)

Bridge self-weight
4,800 lb (2,177 kg)

Wind pressure
41.8 psf (2 kPa)

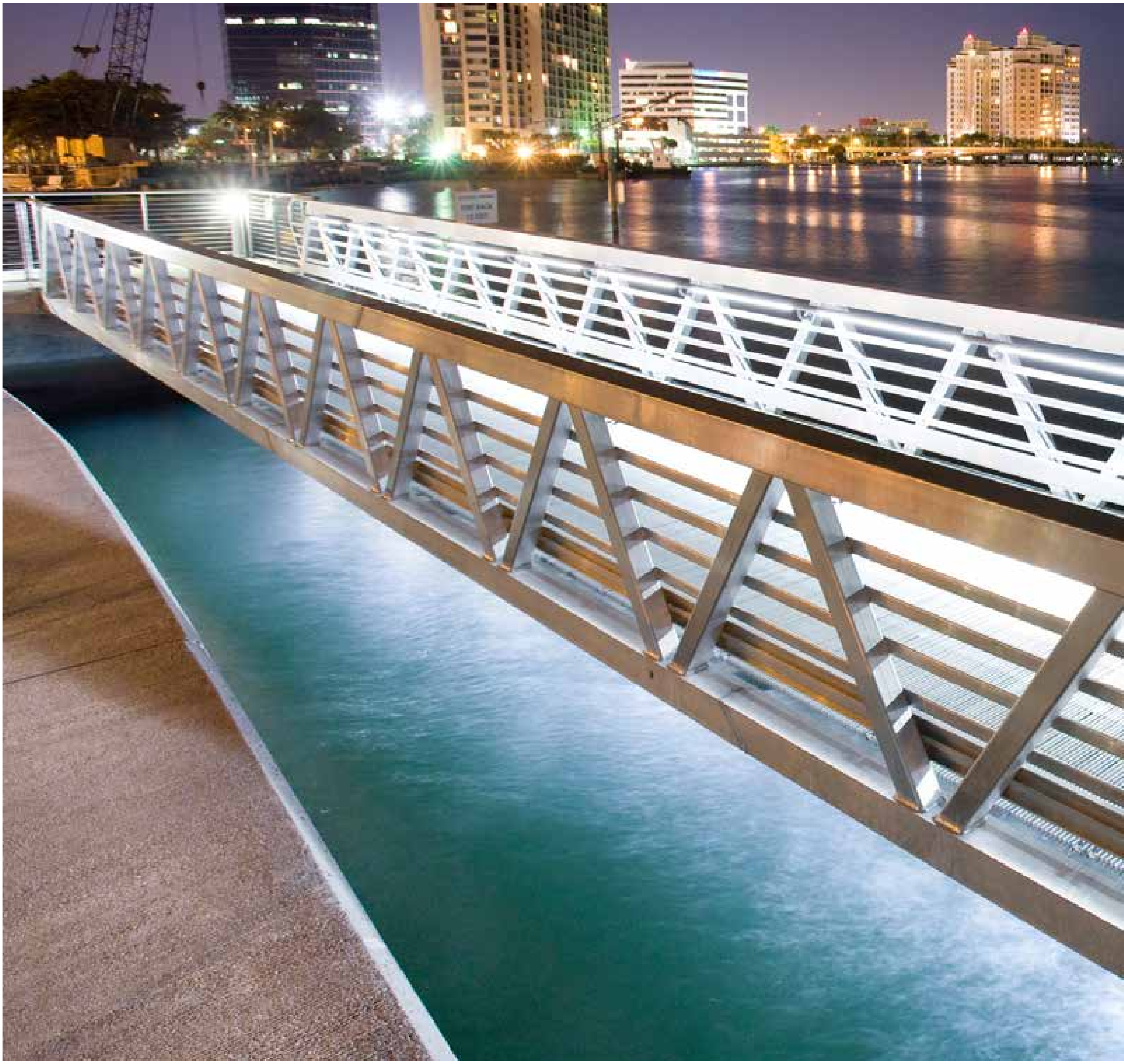
Gangway style
Glacier

Options
Ipe hardwood decking and kick plates, aluminum guardrails with midrails and handrails

City Commons Waterfront Docks

West Palm Beach, USA

Location



Overall spans
80' (24 m)

Clear width
7' 10" (2.4 m)

Pedestrian load
100 psf (4.8 kPa)

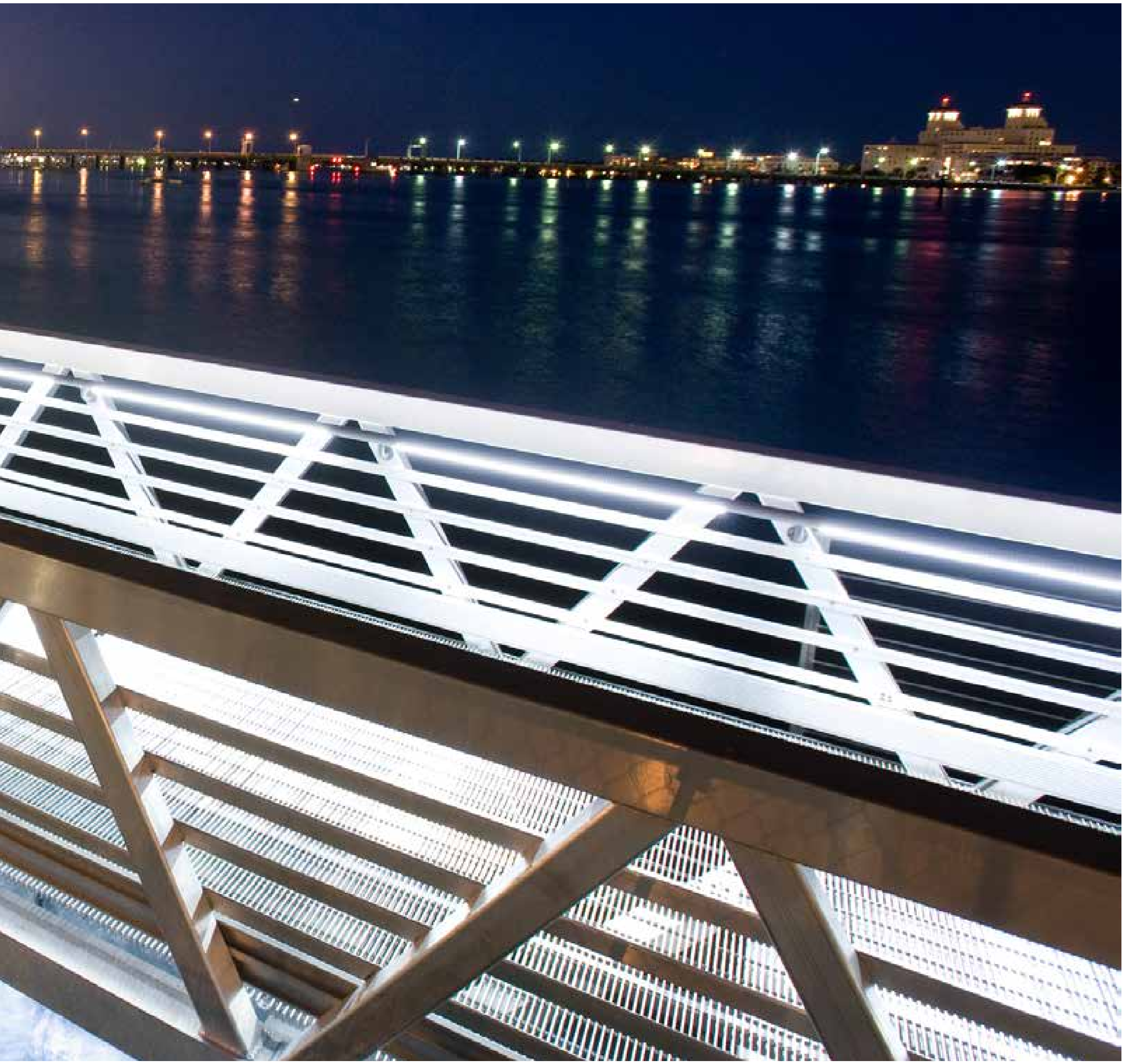
Vehicular load
N/A

Bridge self-weight
9,600 lb (4,354 kg)

Wind pressure
11.5 psf (550 Pa)

Gangway style
Glacier

Options
Aluminum bar grating decking, aluminum kick plates and guardrails with horizontal railings, aluminum handrails with integrated LED lighting



International Cruise Ship Ferry Landing

La Baie, Quebec

Location

Overall spans
118' 1" (36 m)

Clear width
4' (1.2 m)

Pedestrian load
50 psf (2.4 kPa)

Vehicular load
N/A

Bridge self-weight
7,680 lb (3,484 kg)

Wind pressure
8.6 psf (410 Pa)

Gangway style
Tremblant

Options
Shur Grip aluminum decking, aluminum guardrails with horizontal railings

Port of Quebec

Quebec City, Quebec

Location

Overall span
72' 2" (22 m)

Clear width
5' 7" (1.7 m)

Pedestrian load
100 psf (4.8 kPa)

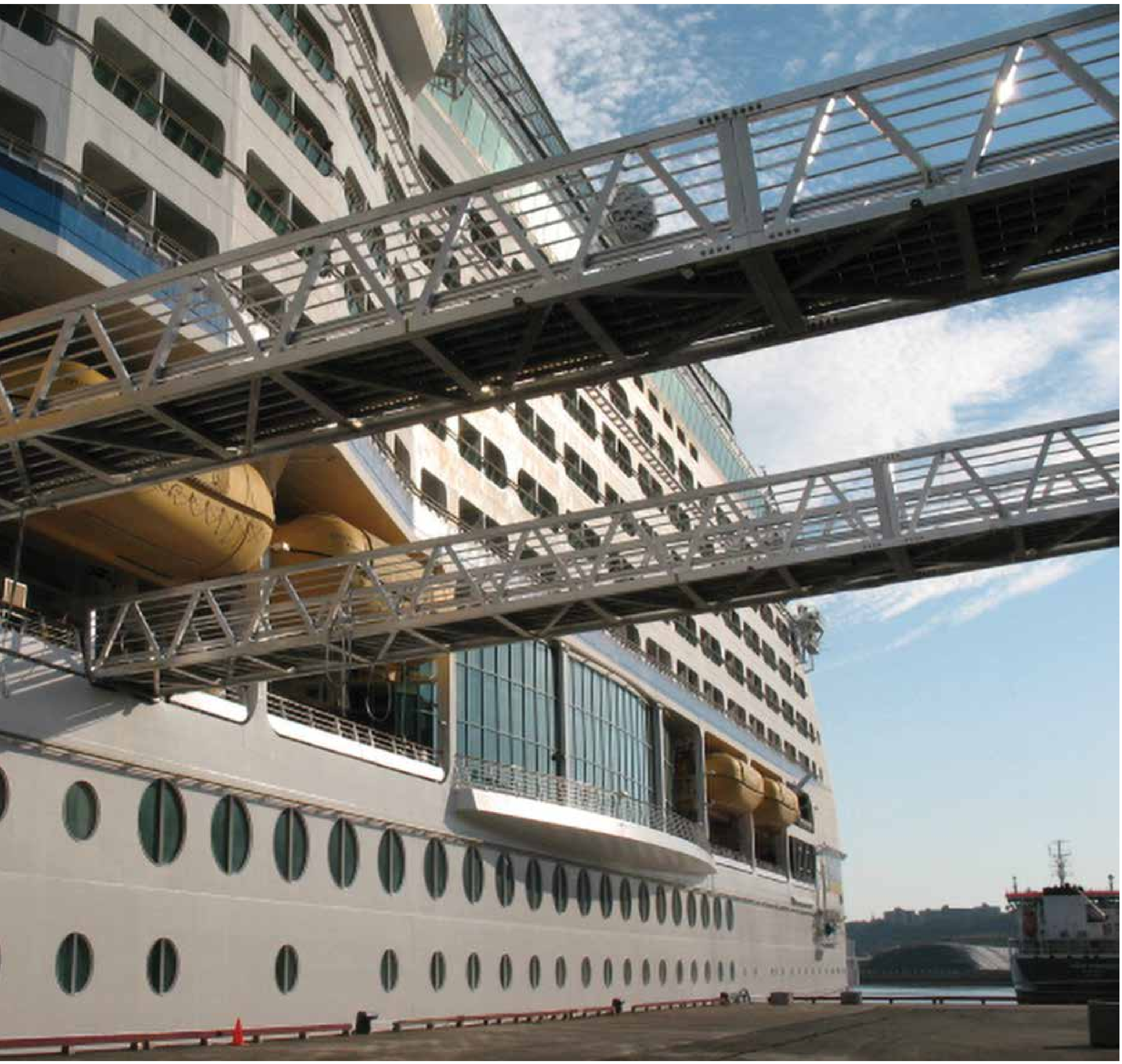
Vehicular load
N/A

Bridge self-weight
6,600 lb (3,000 kg)

Wind pressure
12.6 psf (604 Pa)

Gangway style
Glacier

Options
Ribbed aluminum decking, guardrails with horizontal railings and handrails in aluminum



Mingan Archipelago National Park Reserve

Havre-Saint-Pierre, Quebec

Location

Overall span
48' 5¼" (14.8 m)

Clear width
4' (1.2 m)

Pedestrian load
52 psf (2.5 kPa)

Vehicular load
N/A

Bridge self-weight
2,270 lb (1,030 kg)

Wind pressure
16.4 psf (785 Pa)

Gangway style
Glacier

Options
Treated wood decking, aluminum guardrails with horizontal railings

Davie Shipyard

Lévis, Quebec

Location

Overall span
60' & 50'
(18.3 m & 15.2 m)

Clear width
4' (1.2 m)

Pedestrian load
100 psf (4.8 kPa)

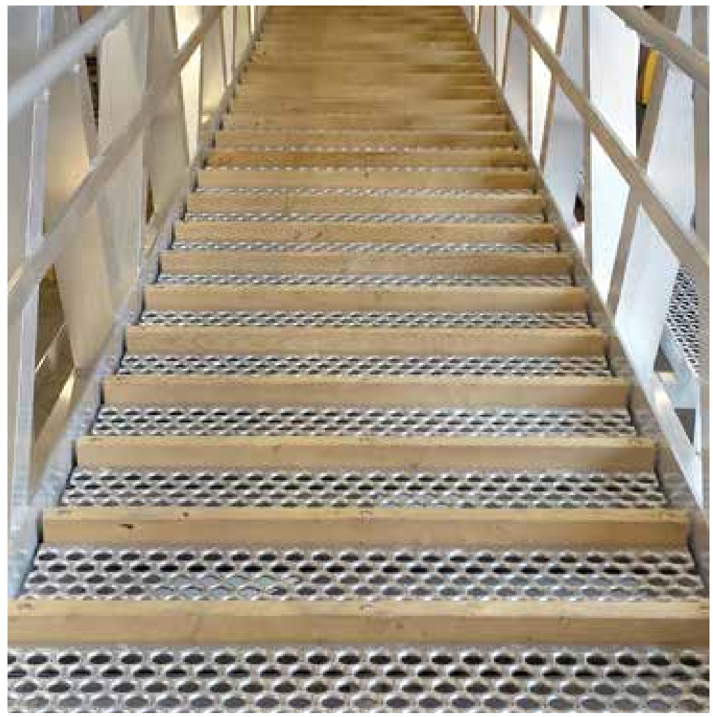
Vehicular load
N/A

Bridge self-weight
6,160 lb & 5,280 lb
(2,800 kg & 2,400 kg)

Wind pressure
8.4 psf (410 Pa)

Gangway style
Glacier

Options
Aluminum shur grip decking with wooden treads, aluminum guardrails, midrails and canopy structures



Laurentian Pilotage Authority

Les Escoumins, Quebec

Location

Overall span
35' 9" (10.9 m)

Clear width
2' (0.6 m)

Pedestrian load
50 psf (2.4 kPa)

Vehicular load
N/A

Bridge self-weight
1,520 lb (690 kg)

Wind pressure
11.5 psf (550 Pa)

Gangway style
Stair

Options
Aluminum grip span adjustable steps, guardrails with horizontal railings

Gangway Kits

Visual appeal

Ready now

Cost-effective investment

Award-winning innovation

MakeABridge®

MakeABridge® gangways are engineered to be ultra-light, yet strong and durable to provide safe and reliable access to marinas. Our weld-free system is impervious to corrosion from salt water, chemicals or pollution.

In addition to being aesthetically pleasing, our unique patented system uses off-the-shelf components, allowing for fast shipping and easy installation.

We offer a wide choice of finishes and options to create a durable, economical and distinctive structure customized to your specifications and needs.

← Bota Bota Spa-sur-l'eau, Montreal, Quebec

Specifications

Design and materials

- 100% recyclable aluminum structural components and energy-efficient recycling.
- No welding – aluminum maintains its full structural integrity.
- Resistant to corrosion from salt water, chemicals and pollution. A permanent film of natural oxide makes the metal less impacted by the environment.
- Suited to extreme cold, aluminum does not crack at low temperatures.
- Marine grade extruded aluminum alloy construction using 6061-T6, 6005A-T6 and 5083-H321.
- Fasteners in stainless steel 300 series.
- Destructive testing conducted at ETS (École de technologie supérieure) in Montreal (Quebec) and at the University of Waterloo (Ontario) to verify the structure's ductility.
- Integrates well with new constructions and retrofits of existing structures.

Patents

- Canada 2,607,711; Canada 2,869,050
- US 8,667,633; US 8,590,084; US 7,882,586; US 7,568,253
- Patents pending WO 2010/040205 A1 – 12/495,084

Easy shipping

- Off-the-shelf components are ready to be shipped on standard-size trailers in three to four weeks anywhere in North America, or four to six weeks anywhere worldwide.
- Delivery is four to eight times faster than for conventional welded bridges.
- Much lower shipping costs than steel structures.
- Delivered in bundles measuring 20 ft x 4 ft x 2 ft (6.1 m x 1.2 m x 0.6 m).
- Maximum weight of each component is 110 lb (50 kg).

Fast assembly and installation

- Lighter and easier to install than steel, wood or concrete products.
- On-site assembly requiring only three people with standard tools and equipment.
- Typical 30 ft (9 m) footbridge assembles in about 5 hours.

See how it works

Maintenance

Virtually maintenance-free and highly cost-effective compared with steel when total cost of ownership (TCO) is considered.

Vandalism

Optional anti-theft/anti-vandalism fasteners.

Warranty

15-year limited warranty on aluminum against material failure, defects and corrosion.

Awards

The MakeABridge® system has received many design and innovation awards since 2006.

2013

Winner
Product innovation award: Architectural Products magazine

2010

Finalist
Génie Innovation awards for engineering innovation

2009

New technology prize
Quebec Region, Canadian Manufacturers & Exporters and National Research Council of Canada (NRC IRAP)

Honorable mention
Contech innovation trophies

Finalist
Among 487 firms participating in the VoirGRAND.tv competition

2008

First Place
Category structure, International Aluminum Extrusion Design Competition of ET Foundation.

2006

Finalist
Les Anges financiers™ competition of the Jeune Chambre de commerce de Montréal (JCCM) and Anges Québec

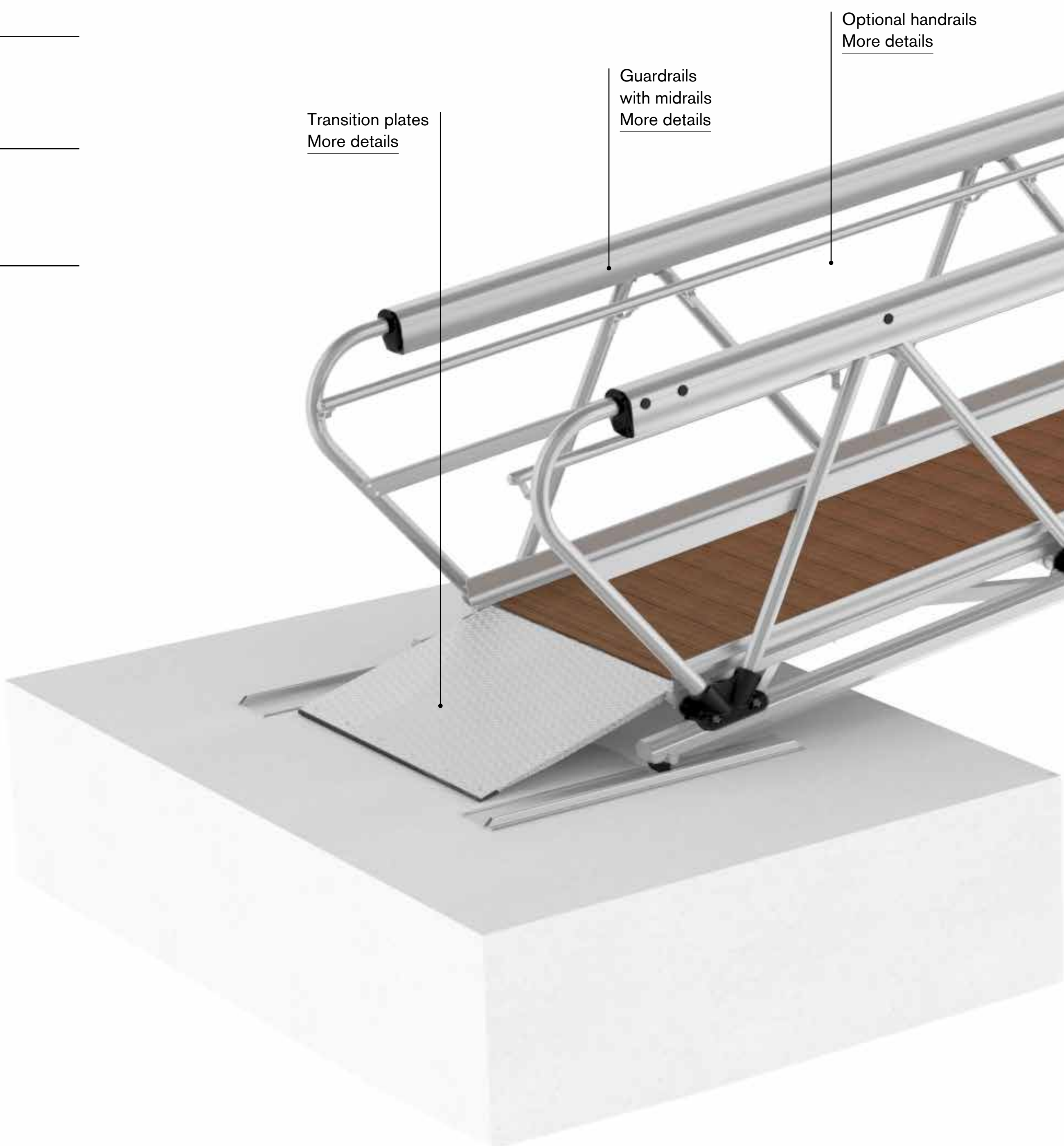
Tailored Designs

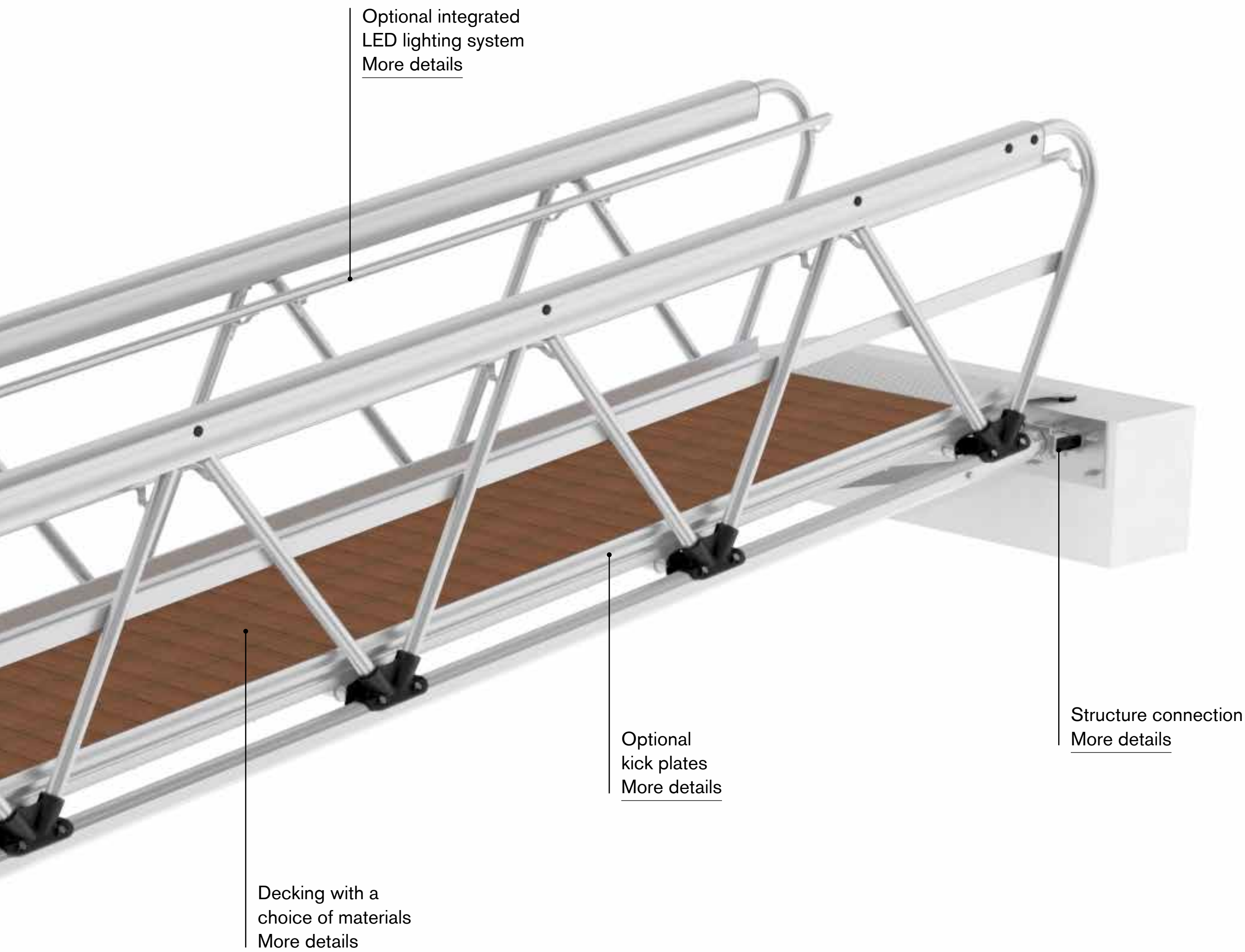
Customized to your specifications and needs.

Specifications

Overall span
From 20' to 60'
(6.1 m to 18.3 m)

Clear width
From 3' to 6'
(0.9 m to 1.8 m)




Optional integrated
LED lighting system
More details
Structure connection
More details
Optional
kick plates
More details
Decking with a
choice of materials
More details

Guardrails

MAADI Group guardrail systems offer safe and practical solutions that are also attractive. Our guardrails comply with Canadian and American bridge codes and standards.

Specifications

Material and finish
- Extruded aluminum alloy with clear anodized finish
- Only extruded parts can be anodized

Dimensions
- Height: 42" (1,070 mm)
- 2" (50 mm) mid-rails installed at mid-height

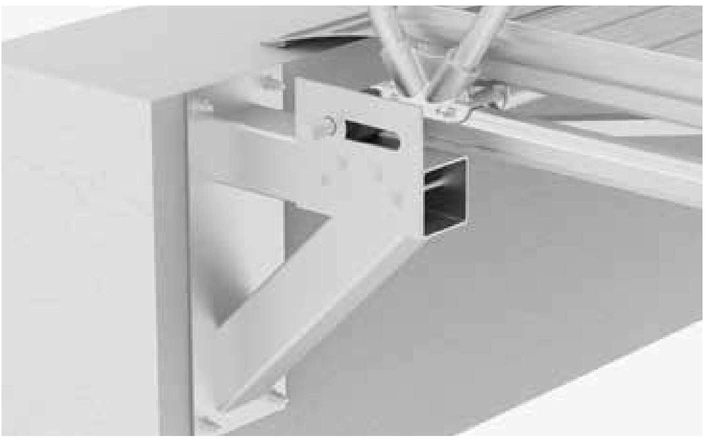
Option
- Powder coat finish available upon request

Custom design

Option
- Personalize your guardrails with your own design

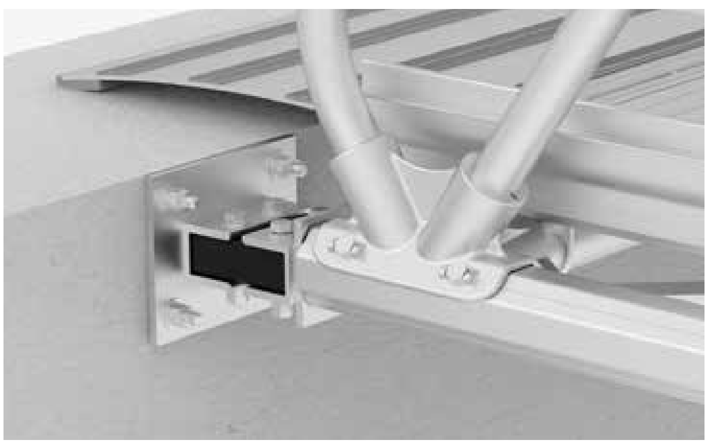
Structure Connection

Each connection system is adapted to a particular application and is specified by MAADI Group engineers.



Roller and plate system

Specifications
- System allows lateral and vertical movement
- Usually required to link a chain-anchored floating dock to land



Flexible connector

Specifications
- Connector allows small vertical movement
- Usually required to link a pile-anchored floating dock to land

Roller and rail system

Specifications
- Usually used in conjunction with roller and plate system or flexible connector on land
- Rails are made of aluminum
- Wheels are made of UHMW
- Easy to install

Transition Plates

With non-slip finishing, transition plates facilitate access to the gangway from adjacent surfaces.

Flat transition plate

Specifications

- Used with the roller and rail system.
- Aluminum plate with anti-slip diamond treads.
- Comes with frictionless edge to protect decking surface.

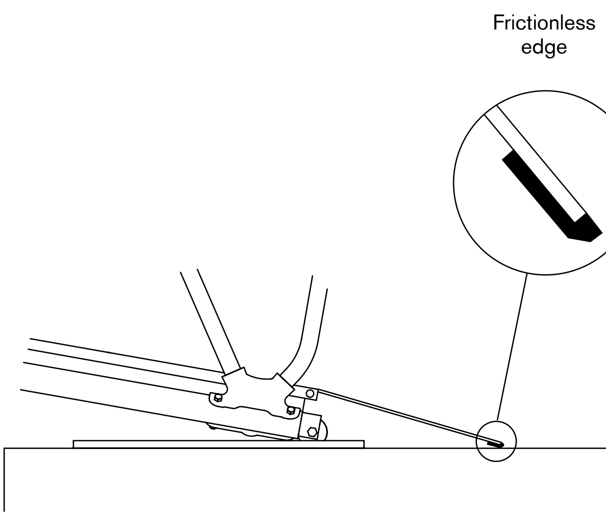
Options

Anti-slip strips

- Aluminum plate with anti-slip extruded strips is available upon request.

Anti-slip coating

- Aluminum plate with anti-slip durable polyester powder coating.
- Compliant with AAMA 2604-10 & ASTM D3359.



Roller and rail system

Diamond treads

Anti-slip strips

Anti-slip coating

Curved transition plate

Specifications

- Used with the roller and plate system.
- Aluminum plate with anti-slip diamond treads.
- Comes with frictionless edge to protect decking surface.

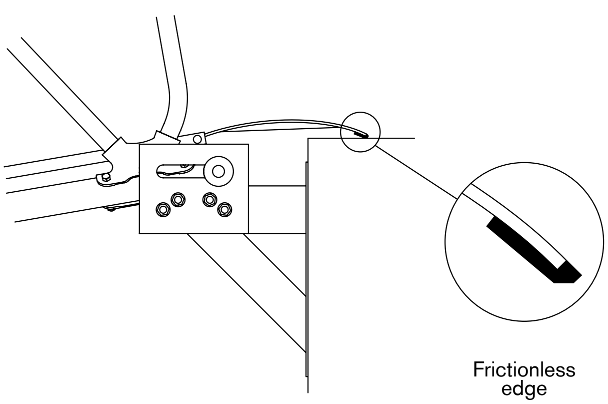
Options

Anti-slip strips

- Aluminum plate with anti-slip extruded strips is available upon request.

Anti-slip coating

- Aluminum plate with anti-slip durable polyester powder coating.
- Compliant with AAMA 2604-10 & ASTM D3359.



Roller and plate system

Diamond treads

Anti-slip strips

Anti-slip coating

Customization

Decking Materials

Our engineers will guide you in choosing the most suitable decking for the use of the structure, taking into account safety and maintenance.

Ipe hardwood

Specifications

- Naturally very resistant to decay, rot and insect attack
- Minimum 40-year lifespan depending on use
- Low maintenance, no treating or sealing required for durability (treating may be required to keep the original color)
- Straight grain with fine to medium texture
- Economical over life of the structure
- Average density of 69 lb/ft³ (1,100 kg/m³)
- Fastened with stainless steel screws

Dimensions

- S4S outside corner
- Width varies between 5" and 7 3/8" (127 mm and 188 mm)
- Thickness varies between 1" and 1 1/2" (25 mm et 40 mm) depending on loads and applications

Option

- Other hardwood options such as ribbed cumaru are available upon request

Composite

Specifications
- Designed to resist rot, warping and fading
- Minimum 25-year lifespan depending on use
- Anti-slip ribbed surface
- Low maintenance – no treatments or sealers required
- Economical over life of the structure
- Density of 75 lb/ft^3 (1,195 kg/m^3)
- Fastened with stainless steel screws

Materials
- A blend of wood flour and high-density polyethylene

Dimensions
- S4S outside corner
- 7/8" x 5 1/2" (22 mm x 140 mm)

Color
- Sand

Ribbed aluminum

Specifications
- Unlimited lifespan with regular cleaning
- High grip ribbed tongue and groove planks
- Maintenance-free and corrosion-resistant – no treatments or sealers required
- 100% recyclable and reusable
- Economical over life of the structure
- Fastened with stainless steel screws

Materials
- Extruded aluminum alloy with natural finish – no paint or treatment required

Dimensions
- 7 3/8" x 1 1/4" (188 mm x 31 mm)
- Anti-slip ribs height: 1/16" (2.3 mm)

Options

Various options are offered to further customize your structure to best suit the application and the surrounding environment.

Integrated kick plates

Specifications

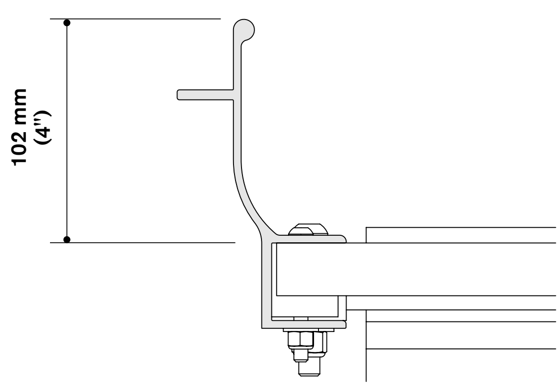
- Helps prevent objects from falling and provide a higher level of security

Material

- Extruded aluminum alloy with clear anodized finish

Dimensions

- Height: 4" (102 mm)



Handrails

Material
- Extruded aluminum alloy with clear anodized finish

Dimensions
- Diameter: 1 1/4" to 2" (32 mm to 50 mm)
- 2" (50 mm) hand clearance
- Standard height: 36" (915 mm)
- ADA height: 24" (610 mm)

Option
- Double handrails (ADA) are available upon request

Integrated LED lighting system

Specifications
- Integrated into the guardrails

Options
- Programmable RGB LED
- White LED

Projects

Mingan Archipelago National Park Reserve Gangway

Havre-Saint-Pierre, Quebec

Location

Overall span
48' 6" (14.8 m)

Clear width
4' (1.2 m)

Pedestrian load
84 psf (4 kPa)

Vehicular load
N/A

Bridge self-weight
2,780 lb (1,260 kg)

Wind pressure
16.4 psf (785 Pa)

Options
Aluminum decking, midrails and kick plates, clear anodized finish

Bota Bota Spa-sur-l'eau

Montreal, Quebec

Location

Overall span
45', 20' & 12'
(13.7 m, 6.1 m & 3.7 m)

Clear width
6' & 4' (1.8 m & 1.2 m)

Pedestrian load
100 psf (4.8 kPa)

Vehicular load
N/A

Bridge self-weight
2,866 lb, 1,100 lb & 606 lb
(1,300 kg, 500 kg & 275 kg)

Wind pressure
12.5 psf (600 Pa)

Options
Ribbed aluminum decking, aluminum guardrails and kick plates, LED lighting

Tactical and Emergency Bridges

- **Lightning fast deployment**
- **Easy assembly**
- **Adaptable to any situation**
- **Durable investment**


Our bridges are designed for fast installation with basic tools.

Keeping communities prepared

With floods and forest fires on the rise, civil security becomes increasingly vital to communities preparing for unforeseen minor and major disasters.

The versatile lightweight vehicle tactical bridges (LVTB), bundled for easy transport and set-up, make emergency preparedness planning by municipalities and governments easier.

The unique patented MakeABridge® weld-free system optimizes durability and efficiency. Easy to assemble, it allows on-site repairs without any specialized labour.

Structurally strong and cover long spans, our LVTB-1811 and LVTB-2418 bridges can withstand heavy use and harsh climates.

MakeABridge®

← LVTB-1811

Specifications

The high-strength yet lightweight aluminum alloy components of our bridges are engineered to maximize load-bearing capacity with minimal structural weight.

Design and materials

- 100% recyclable aluminum structural components and energy-efficient recycling.
- No welding – the aluminum maintains its full structural integrity.
- Corrosion-resistant and suited to extreme cold, aluminum does not crack at low temperatures.
- High-strength alloy construction using 6005A-T6, 6061-T6, AA357-T6.
- Fasteners in stainless steel 300 series.
- Aluminum anti-skid deck panels.
- Durable powder coat finish.

Award

The LVTB-2418 won 1st place in the Structure category at the 2022 International Aluminum Extrusion Design Competition, organized by the ET Foundation.

Maintenance

- Low maintenance structure.
- The weld-free system allows on-site repairs without any specialized labour.

Our Bridges

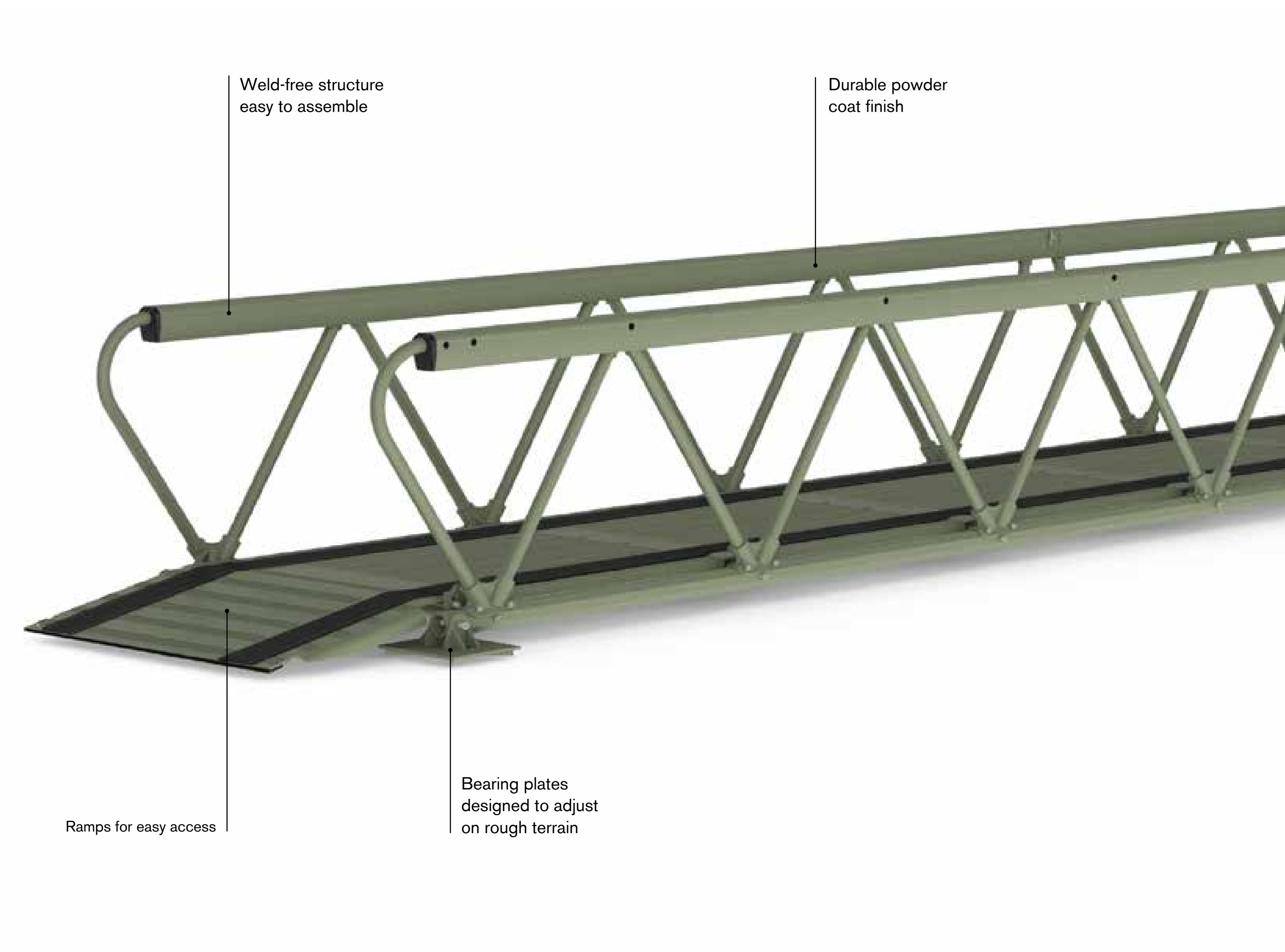
Characteristics	LVTB-1811 More details	LVTB-2418 More details
Modular design	No	Yes, six modules. More details
Overall span	From 20' to 60' (From 6.1 to 18.3 m)	From 26' 3" to 78' 9" (From 8 m to 24 m)
Clear width	From 3' to 6' (From 0.9 m to 1.8 m)	7' 2" (2.18 m)
Pedestrian load	84 psf (4 kPa)	90 psf (4.3 kPa)
Vehicular load	2,510 lb (1,140 kg)	5,000 lb (2,268 kg) – 3 axles
Horizontal launching system	Yes	Yes
Fast assembly time	Less than 90 minutes More details	Four hours More details
Custom trailer	No	Yes. More details

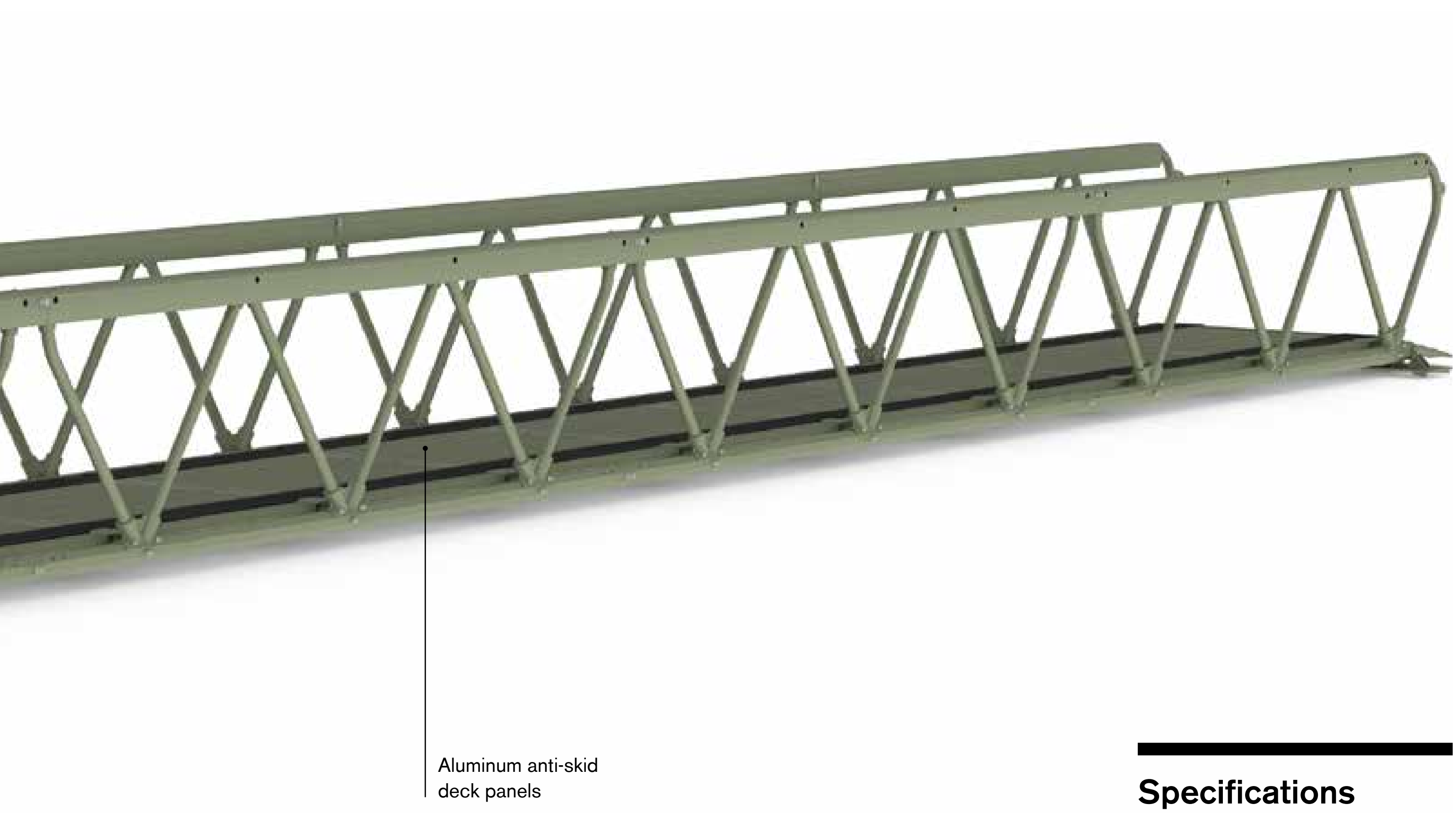
LVTB-1811

Lightweight Bridges

- **Strong and light**
- **Ultra-fast assembly**
- **Quick shipping**

Strong and light





Specifications

Overall span

From 20' to 60'
(From 6.1 m to 18.3 m)

Clear width

From 3' to 6'
(From 0.9 m to 1.8 m)

Pedestrian load

84 psf (4 kPa)

Vehicular load

2,510 lb (1,140 kg)

Ultimate tensile strength (UTS)

260 to 290 MPa

Fast Assembly and Installation

Lighter and easier to install than competitive steel products

On-site assembly with standard tools and equipment

Requires a minimum of four soldiers with basic tools

Bridge 59’ 5” (18.1 m) in less than 90 minutes by 8 soldiers

See how it works

Technical guide

Step-by-step assembly and installation instructions, from site preparation to bridge launching

Includes a complete bill of materials (BOM) of the components, hardware and tools

With the horizontal launching system, the bridge installation requires no heavy machinery.

Bridge in a Box

Sturdy and optimized for travel

The container is designed to protect components during transport and arranged for easy access once at destination.

Easy shipping

Standard off-the-shelf components ready to be shipped worldwide

Shipped in a standard size 20' (6 m) container

Much lower shipping costs than steel structures

Delivery is four to eight times faster than for conventional welded bridges

LVTB-2418

Modular Bridges

- Bridge in a box
- Lightning-fast assembly
- Structurally strong


Designed specifically for
NATO side-by-side UTV

Modular solution

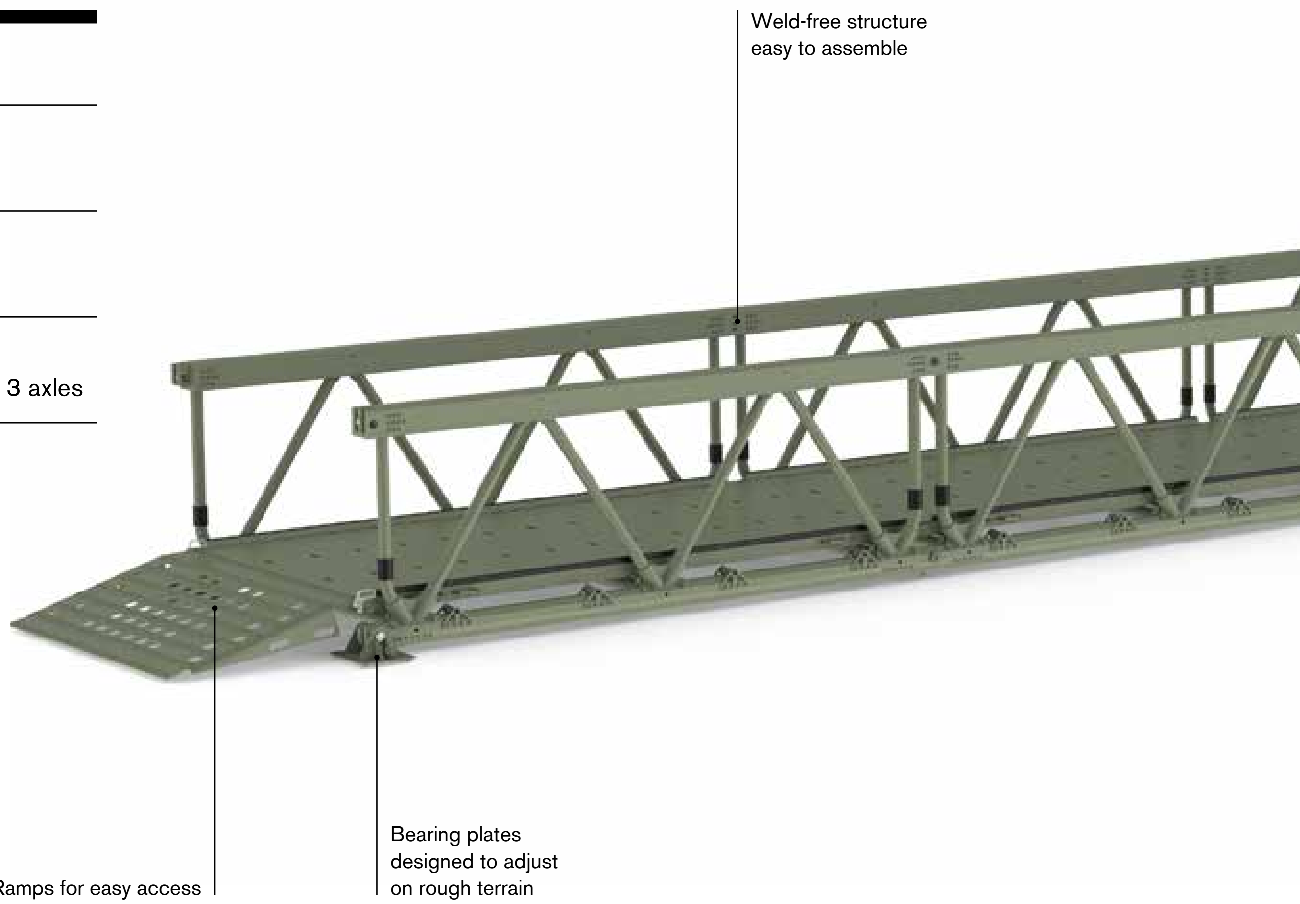
Allows the length to be adjusted according to the size of the obstacle to cross.

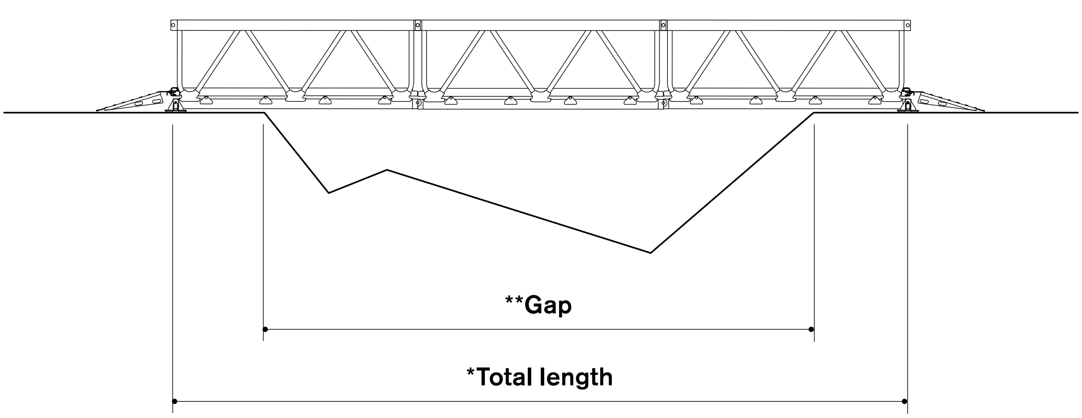
Specifications

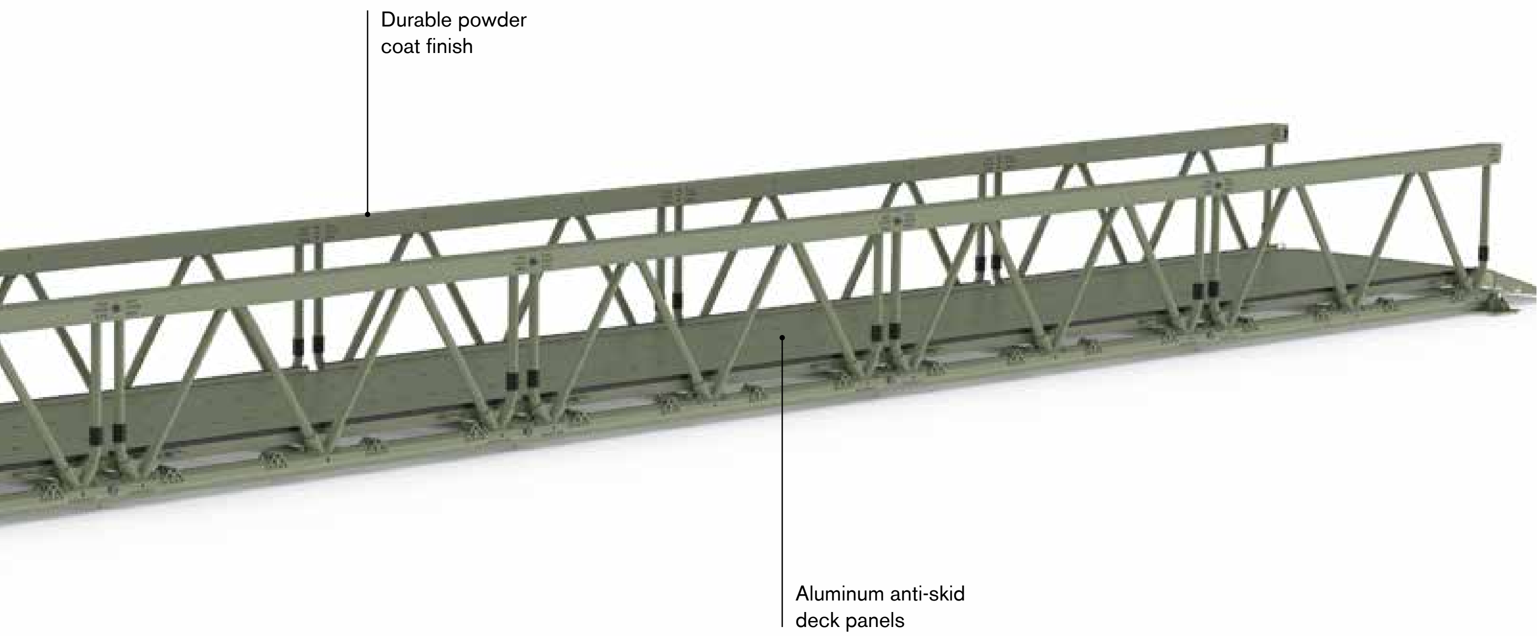
Clear width
7' 2" (2.18 m)

Pedestrian load
90 psf (4.3 kPa)

Vehicular load
5,000 lb (2,268 kg) – 3 axles







The bridge is comprised of up to six sections. Each section is easily transported by an Otan vehicle with the help of a custom-designed trailer.

Number of modules	Total length*	Gap**	Total weight
2	26' 3" (8 m)	Up to 16' 10" (5.14 m)	4,023 lb (1,825 kg)
3	39' 4" (12 m)	16' 10" to 30' 2" (5.14 m to 9.2 m)	5,787 lb (2,625 kg)
4	52' 6" (16 m)	30' 2" to 43' 4" (9.2 m to 13.2 m)	7,551 lb (3,425 kg)
5	65' 7" (20 m)	43' 4" to 56' 3" (13.2 m to 17.15 m)	9,315 lb (4,225 kg)
6	78' 9" (24 m)	56' 3" to 69' 7" (17.15 m to 21.2 m)	11,078 lb (5,025 kg)

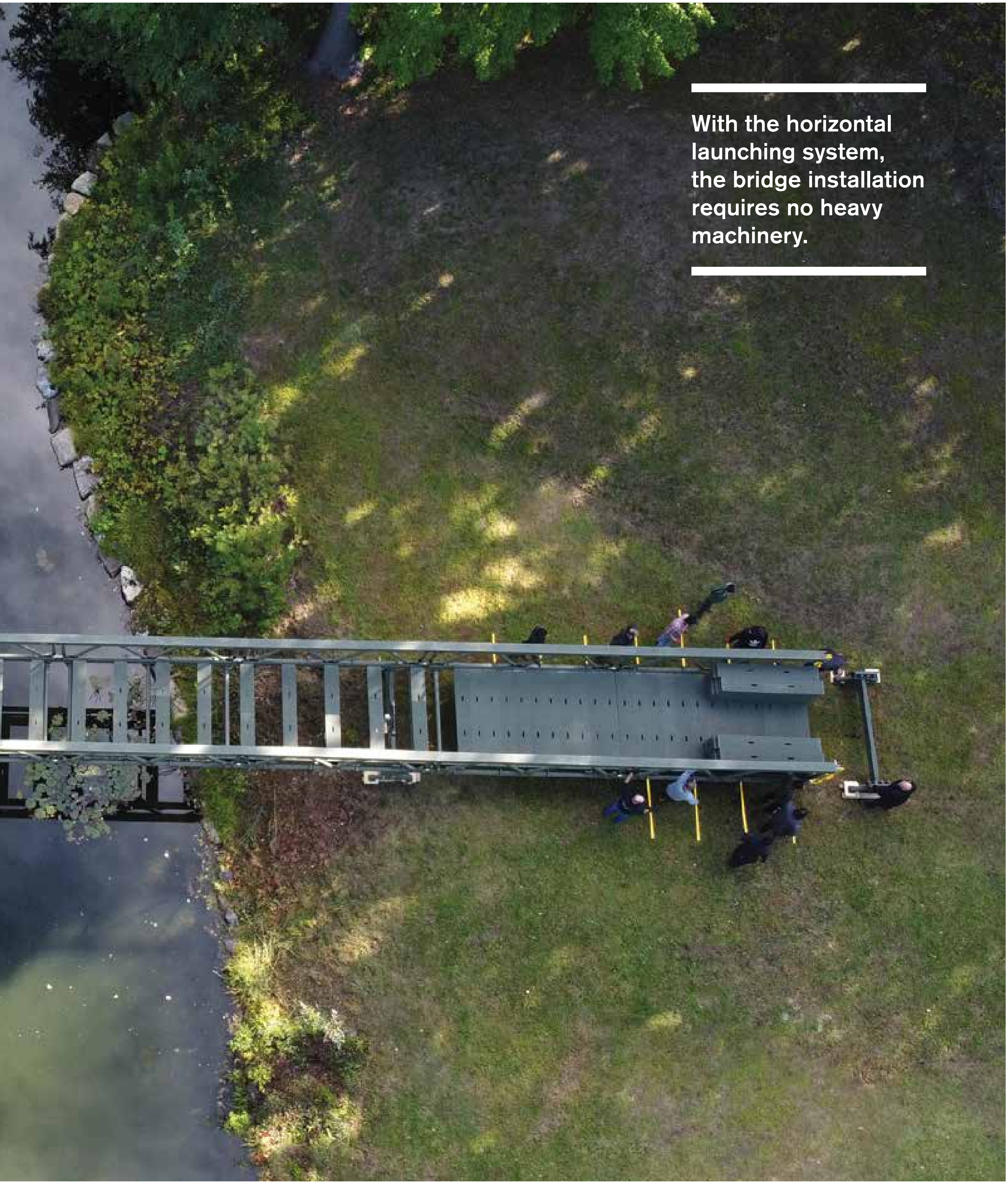
Fast Assembly and Installation

- Lighter and easier to install than competitive steel products
- On-site assembly with standard tools and equipment
- Requires a minimum of twelve soldiers with basic tools
- Six sections bridge assembled in four hours by thirteen soldier

See it in action

Technical guide

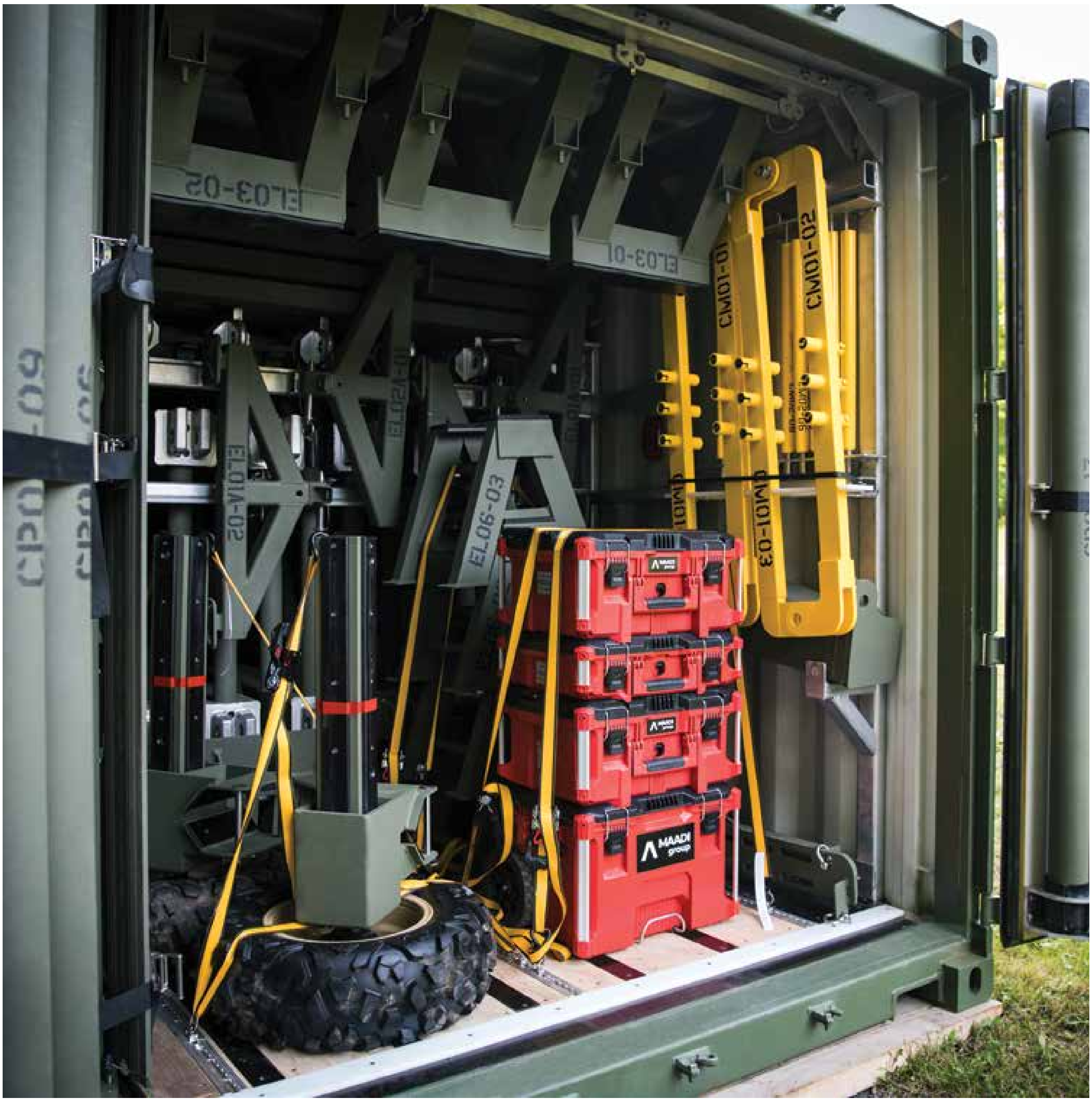
- Step-by-step assembly and installation instructions, from site preparation to bridge launching
- Includes a complete bill of materials (BOM) of the components, hardware and tools



With the horizontal launching system, the bridge installation requires no heavy machinery.

Bridge in a Box

Sturdy and optimized for travel



Easy shipping

Standard off-the-shelf components ready to be shipped worldwide

Shipped in a standard size 20' (6 m) container

Much lower shipping costs than steel structures

Delivery is four to eight times faster than for conventional welded bridges

The container is designed to protect components during transport and arranged for easy access once at destination.

↓ LVTB-2418

Custom Trailer

Multiple configurations for all eventualities

Specifications

Built to be transported by a utility task vehicle.

Quickly adjusts to streamline the transport of components in up to 4 different configurations.

Adapts to fit the bridge and can expand in width from 6' 6" to 10' 2" (1.83 m to 3.10 m).

Each trailer has a maximum load of 1,500 lb (680.4 kg).

Customized area for storing tools.

The weld-free system allows on-site repairs without any specialized labour.


CP01-03
CP01-02

Varied Structures

Turnkey aluminum solutions

Durable and tough

Long-term savings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Tailored Designs

MAADI Group designs and manufactures custom aluminum structures that are strong, durable and corrosion resistant.

Tell us about your project and our engineers will work out a solution perfectly suited to your needs. Our custom solutions are designed and manufactured to the highest structural and safety standards.

← Parc de la Rivière Beauport stair & guardrail, Quebec City, Quebec

Projects

Stairs

Parc de la rivière Beauport, Quebec, Quebec

Location

Height
50' (15 m)

Clear width
6' 7" (2 m)

Pedestrian load
100 psf (4.8 kPa)

Vehicular load
N/A

Self-weight
27,340 lb (12,500 kg)

Wind pressure
8.5 psf (410 Pa)

Options
Pressure-treated pine wood decking, aluminum expanded mesh guardrails and handrails

Design/build of a set of stairs & guardrails

Canopies

International Cruise Ship Terminal, La Baie, Quebec

Location

Design/build of canopies & guardrails

Lenght
20' 10" (76 m)

Clear width
6' (1.83 m)

Clear height
6' 7" (2 m)

Vehicular load
N/A

Self-weight
14,610 lb (6,640 kg)

Wind pressure
7.9 psf (380 Pa)

Options
Aluminum guardrails with vertical pickets railings, vinyl canopies

Display Panel

Centre Saint-Charles, Montreal, Quebec

Location

Design/build of display panel board for a mural

Dimensions
97' 2" x 13' 7"
(29.6 m x 4.1 m)

Clear width
N/A

Pedestrian load
N/A

Vehicular load
N/A

Self-weight
3,630 lb (1,650 kg)

Wind pressure
8.8 psf (420 Pa)

Options
N/A

Snow Removal Platform

Montreal, Quebec

Design/build of a semi-trailer snow removal platform

Overall span
53' (16.2 m)

Clear width
3' (0.9 m)

Pedestrian load
60 psf (3 Pa)

Vehicular load
N/A

Bridge self-weight
3,620 lb (1,650 kg)

Wind pressure
8.4 psf (410 Pa)

Options
Aluminum “Shur-Grip” decking, expanded mesh guardrails & kick plates

Work Platforms

Boucherville, Quebec

Overall span
40', 20' & 13'
(12.2 m, 6.1 m & 4 m)

Clear width
6', 4' & 2' 11"
(1.8 m, 1.2 m & 0.9 m)

Pedestrian load
50 psf (2.4 Pa)

Vehicular load
N/A

Bridge self-weight
6,120 lb (2,780 kg)

Wind pressure
N/A

Options
Aluminum “Shur-Grip” decking, guardrails with midrails & kick plates

Design/build of a set of mobile & fix work platforms

Lifting Equipment

↓ Aluminum aerial lifts, Montreal, Quebec

Our lifting equipment is designed for heavy-duty daily use to enhance worker productivity.

MAADI Group provides tough, dependable lifting equipment to withstand heavy daily use by industrial plant and factory personnel. Our lifting equipment includes rugged mud buckets, spreader bars, lifting beams, material baskets, personnel platforms and lifters. Our engineering team adapts each design to your specific needs and technical requirements, using advanced techniques to create a customized product that enables maximum workplace efficiency, safety and productivity.

MAADI Group aerial lifts are designed and manufactured to the most stringent structural and safety standards. We deliver cost-effective, top-quality lift equipment that adds exceptional durability and value to your work site. Every aspect of our lift equipment, including the work platform, basket and attachment parts are designed by our engineers and are fully certified in writing with a conformance certificate for each product.

↓ Aluminum aerial utility lift

↓ Aluminum industrial lift

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