



## MUNICIPAL BRIDGES

Single and Double Lane - Modular Type



Designed for Low Volume Roads

CL-625 Ontario Truck Design - CHBDC CAN / CSA-S6-19

Complies with 2016 MTO "Exceptions to the CHBDC - CSA S6-19 for Ontario"

Bridge Post Pockets Meet The Requirements of a "MTO TL-1 Barrier System"

## INFORMATION GUIDE

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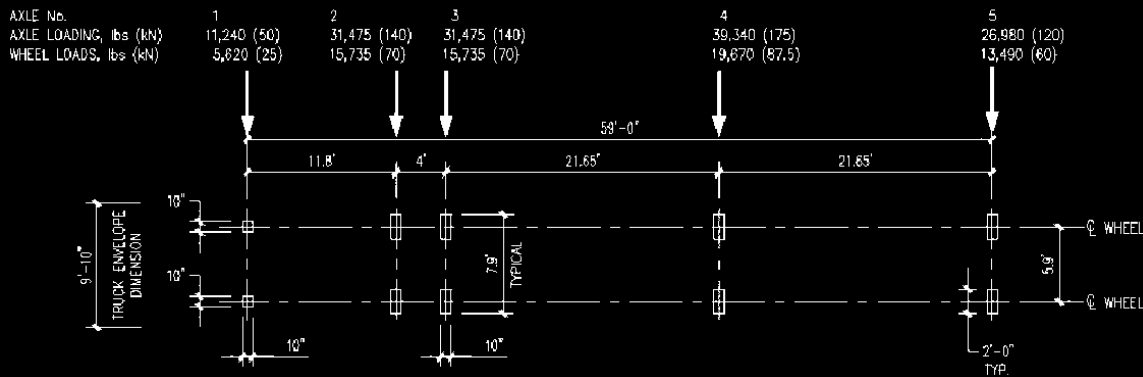
### Bridge Solutions "Built in Ontario for Ontario"

Northern Mat & Bridge LP (NMB) in partnership with Lessard Welding is Ontario's largest provider of permanent Modular Bridge solutions to municipalities and government organizations. NMB is the exclusive distributor of all Lessard Welding bridge products and offers full turnkey installations, project management and bridge removals. Lessard modular/stringer bridges are certified to meet the 2019 Canadian Highway Bridge Design Code (CSA S6-19) and the 2016 MTO exceptions to the CHBDC code standards. We also offer a full complement of matting products designed to minimize the environmental impact of the ground you're working on.

Satisfied customers include MTO, MNRF, Renfrew County, Hydro One, Ontario Parks and many rural Ontario Municipalities. NMB together with Lessard Welding have the experience, inventory and the most economical bridge and matting solutions available in the marketplace.

Modular Bridges are designed for ease of installation, use on low volume roads & have a life span of > 75 years.

**Simple Span Permanent Bridges Don't Have To Cost Millions Of Dollars - Let NMB Show You How To Save Time And Taxpayer Money**



**Lessard Welding Modular Bridges Use the CL-625 ONT Design Vehicle**  
(With a Permissible Deflection of Less than L/360)

### Conventional (Existing) Bridge Substructures and Modular Bridges

Integration of Modular Bridges into your infrastructure is easy. Simply put, all bridge substructures must provide 12" (300 mm) of continuous support at each end of the superstructure. On new or existing concrete abutments, steel bearing with elastomeric pads are generally recommended to absorb lateral bridge movement and vibration directly onto exposed concrete surfaces.

Modular Bridges are available in standardized lengths and custom fit solutions. Exact measurements are required and must be identified at the time of order.

**Easy to Install, Durable, Maintain and Economical**

**a) SAFE AND DURABLE DESIGN**

Lessard Modular Bridges are professionally designed with safety in mind. The heavy-duty design consists of 2 separate sections; each having four girders (total of 8 for each bridge). Interior diaphragms provide lateral support to steel stringer beams during bridge loading. Bridge decking consists of a 3/8" (10 mm) thick steel checker plate that is supported across all steel stringers by structural channels at 12" (300 mm) centers. The reinforcing prevents checker plate deformation and distributes vehicle loads across each steel stringer. All structural steel used in the fabrication of Modular Bridges is certified to be NEW.



**b) WIDE DECKS AND LOW PROFILE SUPERSTRUCTURES**

Modular Bridges handle loads efficiently and because they incorporate 8 stringers into each bridge, the structures provide the lowest of profiles available in the marketplace. Having a low profile, our Modular Bridges are also easier to transport, handle and install.

Each bridge section measures 7'8" wide and when assembled, provides a total running surface width of 15'4". Single lane bridges are also available 20' widths. Double lane bridges are also available with a travel width of 24' width.

**Low Profile Lessard Modular Bridges**

Superstructure	20 ft.	30 ft.	40 ft.	50 ft.	60 ft.
Height	18"	22"	25"	28"	31"
Actual Length (tip to tip)	20'8"	30'8"	40'8"	50'8"	60'8"

Custom widths and lengths are also available.

**c) TAPERED OR SQUARE BRIDGE ENDS**

Our bridges are manufactured with either tapered or square ends - both options at no additional cost.



Tapered End

**Tapered End Bridges** are excellent for use in temporary installations where gravel can be tapered up and onto the bridge and prevents exposed ends that could be damaged during snow plowing operations.

**Square End Bridges** are best suited for use on permanent installations at sites with existing or new concrete substructures with decks - requiring an elevation match. They are also well suited for integration with paved roads.



Square End

### d) DURABLE STEEL DECKING

The wear surface on Modular Bridges is a highly durable 3/8" welded steel checker plate deck. When used with steel retainers, the wear surface can also be paved. A steel deck offers significant maintenance savings over the lifespan of the structure.



Modular Bridge decking is designed to ensure a level and uniform surface between bridge sections. With proper substructure planning, heavy traffic moves smoothly across the structure. An even surface also minimizes most of the damage caused by plowing and grading operations. Since the bridge sections are fabricated with precision, the gap between the two sections is less than 1/8" - preventing materials from entering the water body below or collecting on lower flanges of bridge.

### e) HIGH PERFORMANCE COATING AND ANTI-SLIP SURFACE

To ensure proper adhesion of paint and non-slip coatings, all main stringer beams are cleaned and shot blasted in accordance with SSPC-SP 6 industry standard. A high-performance red oxide primer is used to coat the entire structure (including underneath). As part of the painting process, a dense grit product is added that provides additional traction for traffic and pedestrians.



If the product is to be installed in a highly corrosive environment - additional protective coating options should be considered. We are prepared to work with clients on a one-on-one basis to determine the coating options that best meet their needs.

### f) DECKING ACCESS POINTS AND WEIGHTED COVER PLATES

Each Modular Bridge is fabricated with access points or "cut outs" in the surface of the decking to allow installers to lift the bridge and to bolt the two sections together. Weighted Cover Plates are provided to ensure all openings are well covered and that the deck surface remains level and flush.

We recommend using high strength construction adhesive to secure the cover plates. Cover plates and cutouts are uniform in size and are interchangeable.



**g) BRIDGE INSTALLATION - PULLING LUGS**

There are (8) Pulling Lugs pre-welded to each end of each section for a total of (16). These lugs are reinforced to provide safe lifting and pulling locations for easy bridge installation.



**h) BRIDGE INSTALLATION - LIFTING LUGS**

There are (4) recessed lifting lugs welded within the bridge deck. Our Modular Bridges come complete with (4) Load Rated lifting Slings for use by you or your contractor to easily lift and place the product into position. Cover caps plates are also provided to cover these openings.



**i) BRIDGE INSTALLATION - TIE DOWNS & TIE DOWN GUIDES**

Modular Bridge sections are connected to each other via Tie Downs. These are located opposite each other along the centerline of the bridge. Tie Down Guides are small angle iron sections welded to the top of the Tie Downs of bridge section #1 (see right photo). The guides ensure quick and easy alignment of bridge section #2 to section #1. Bridge Assembly Bolts are dropped into position once the Tie Downs are aligned and snug.



**j) BRIDGE INSTALLATION - NUT LOCKING BARS**

Once the Bridge Bolts have been inserted into the Tie Downs, simply position the nut underneath the Tie Down and turn it minimum of 1 1/2 turns. Locking Bars on the bottom of the Tie Down on Section # 1 (see right photo) will grip and lock the nut in place. The Locking Bars allow the Bridge Assembly Bolt to tightened to a 'snug + 1 turn' position - all from the top of the deck. Since Modular Bridge sections are fabricated in the shop beside each other, the Tie Downs and guides will line up perfectly in the field.



**k) BRIDGE INSTALLATION - STRUCTURAL GRADE BRIDGE ASSEMBLY BOLTS**

These are included with every bridge. Light oil or a product like "Never Seize" should be applied to the bolts during installation to ensure long term maintenance.



**l) BRIDGE INSTALLATION - BOLTED POST POCKETS (Field Assembled)**

Guard rail Post Pockets are bolted to the superstructure to provide better performance & maintenance. The Pockets meet the anchoring requirements of the TL1 Barrier standard identified in the MTO 2016 "Exceptions To The Canadian Highway Bridge Design Code CSA S6-19, For Ontario".



**m) BRIDGE INSTALLATION - EASY TO INSTALL (or Remove)**

Modular Bridges are easy to install. Each product arrives in either 2 or three complete sections and is identified accordingly (1,2,3). Bridge sections are typically delivered stacked one on top of each other with guard rail pockets plates on opposite or alternating sides of the truck trailer.



Shorter span structures (20ft to 30ft) can be easily lifted into position one at a time with either a small crane or medium sized track excavator. After the first section is placed, the second section is lined up with the first and nudged into position until the bolt holes from the Tie Downs all line up and Bridge Assembly bolts have been installed and tightened.



### Standard Modular Bridge Sizes

A standard width (15'4") Modular Bridge consists of two (2) sections. Overall dimensions and typical weights are as follows:

**Dimensions and Weight per Lessard Modular Bridge Section**

Bridge Span	Actual Length (from tip to tip)	Width	Height	Weight (lbs)
20 ft.	20' 8"	7' 8"	18"	6,500
30 ft.	30' 8"	7' 8"	22"	11,200
40 ft.	40' 8"	7' 8"	25"	17,360
50 ft.	50' 8"	7' 8"	28"	24,800
60 ft.	60' 8"	7' 8"	31"	34,350

### n) BRIDGE INSTALLATION - ANCHORING

Each Modular Bridge section has pre-drilled anchor holes at each outside corner. One end has round (fixed bridge end) holes and one end has slotted holes (sliding bridge end) that allow the expansion and contraction of the bridge superstructure caused by heat and cold temperatures. Anchor bolts are NOT provided as anchoring depends on the engineer designed abutment and bearing.



### o) UNIQUE IDENTIFICATION NUMBER

Modular Bridges are fabricated with a unique identification number for record keeping purposes. During fabrication, a raised color-contrasting plate is welded to the outer stringers of each bridge section. The ID plate provides the bridge ID number, bridge section and the weight of the bridge section. We maintain an up-to-date database of all Modular Bridges and can provide owners with date of fabrication, purchase date and other related information.



### p) INTERNAL QUALITY CONTROL INSPECTION

As a certified ISO9001:2015 company, Lessard Welding follows a stringent QA inspection and sign-off process to ensure completeness and adequacy of fabrication in accordance with the sealed design drawings.

As part of the fabrication process and quality control, Modular Bridges are shop assembled before shipping to ensure each section is an exact match and that assembly in the field will be hassle free.

### q) BRIDGE DOCUMENTATION

All customers receive 'double sealed' generic general arrangement drawings which provide basic measurements and assembly information for the product purchased.

#### 1. Sealed Bridge Specific General Arrangement Drawing

Bridge specific 'double sealed' drawings are available at extra cost.

#### 2. Certificate of Conformance

Certificates of conformance for specific bridges are available at extra cost. The certificate is a sealed letter from the bridge design engineer confirming that the product has been fabricated in accordance with their design drawing and specifications.



### r) MODULAR BRIDGE OPTIONS AND UPGRADES (Available at Extra Cost)

- Custom bridge ends to accommodate standard OPSD/MTO Expansion joints.
- Steel pavement retainers to permit up to 2" of HM/HL Asphalt pavement.
- Specialty coatings to meet customer needs.

### s) TECHNICAL SUPPORT (and Expert Advice)

Our bridge specialists have over 45 years of bridge construction experience. We can provide advice related to any or all of the following:

- Logistics involved with bridge installations, road construction and maintenance
- Bridge superstructure span selection and hydrology
- MNR/DFO approvals process
- Simple crossings in assembling complete information packages to obtain approvals – thereby speeding up the review time by various agencies involved



**t) TURNKEY SOLUTIONS AND PREMIUM SERVICES (Extra Cost - Details available upon request)**

In addition to our expert advice and basic technical support, NMB also provides turnkey project solutions encompassing project management, engineering, construction and environmental approvals.

We also regularly work with Municipalities to deliver hybrid solutions using municipal forces to replace closed or posted bridges on low volume roads.

**u) MODULAR BRIDGE MAINTENANCE**

Simple maintenance can dramatically extend the service life of any asset. Recommended maintenance activities include the following:

- Routine visual inspections to confirm that the bridge is fully supported at each end by a level and competent bridge bearing seat. The inspection should also focus on guiderail integrity, guidepost pockets and required signage.
- Power wash or sweep gravel buildup on the steel deck and bearing seats. Gravel by itself is abrasive to painted surfaces and in larger volumes can retain water which may accelerate surface oxidation.
- Modular Bridges in storage should be elevated on blocks to ensure the structure does not come in direct contact with standing water.
- When handling Modular Bridges, use only the lifting locations identified. Lifting at other locations may damage flanges, decking and guiderail post pockets.
- Maintain a bridge file with original bridge drawings and update with maintenance records.

**Unlike conventional bridges, Modular Bridges can easily be temporarily removed (if needed) for substructure (differential settlement, concrete issues) or water way maintenance.**