



# Bridge Technology Laboratory

The Bridge Technology Laboratory is located at Selfridge Air National Guard Base (SANGB), Harrison Township, MI. The lab is designed to conduct strength and durability testing of military bridges. It is capable of evaluating bridging components, subassemblies and complete systems in simulated environments. The lab offers unobstructed access to test fixtures within the building and storage of large bridge components outside of the building when they are not being tested.

**Purpose:** To provide superior engineering support and innovative technical advancements to the Warfighter across the life cycle of military bridging systems

**Vision:** To be the premier bridging technology innovators for the U.S. Armed Forces

## Background

TARDEC's Bridge Technology Laboratory can support testing for complete bridges or structures up to 210' long, 32' wide and 23' high. The lab contains 10 hydraulic actuators that can simulate vehicle crossings and loads up to 1 million pounds in a safe and controlled environment. Dedicated data acquisition equipment is also available to measure and record relevant information during tests.

The BTL provides Military Load Classification (MLC) ratings to designate the minimum safe reserve capacity of bridges. The MLC rating is conducted in accordance with international agreements:

- Trilateral Design and Test Code for Military Bridging and Gap-Crossing Equipment
- North Atlantic Treaty Organization (NATO) Standardization Agreement, STANAG 2021

## ISO 17025 Accreditation

Accredited to perform Structural Strength Testing

- Loads up to 1,000,000 lbs.
- Displacement up to 24"
- Dimensional outside diameter up to 6" and inside diameter between 0.7" - 6"



Assault Bridge under test



High-speed feedback controller



Material handling equipment device load test



# Bridge Technology Laboratory (BTL)

## Functional & Safety Features

- Maximum structure size: 210'L x 32'W x 23'H
- Safety windows allow live testing observation from control room, which also provides multi-camera views throughout test site
- Emergency Stops
- Adaptable, stable load footprint
- Large access door enables:
  - Structures to extend outside
  - Easy access for handling equipment
  - Larger structures to be constructed inside before moving outside
- Material handling equipment includes forklifts and man lift capable of lifting up to 475 lbs. a maximum height of 42'
- Some limited fabrication (mill, lathe, weld, etc.) available onsite



Long semi-permanent tactical bridge

## Load Control System

- 10 Computer-Controlled Hydraulic Cylinders
  - 36" Stroke
  - 100,000 lbs. each
- Deflection Safety Limits
- Lateral Safety Limit Switches
- 2500 PSI Pressure, 100 gallons per minute (gpm) Flow

## Data Acquisition System

- 120 Channels
- Strain Gages
- Displacement – Lasers, Linear Variable Differential Transformers (LVDTs)
- Thermocouples
- Inclinometers

The Bridge Technology Laboratory maintains unique capabilities within the **U.S. Army CCDC GVSC's Force Projection Technology** team, whose mission is to provide equipment lifecycle engineering support for the missions of gap crossing, petroleum and water systems, combat engineering, material handling and fluid quality surveillance.

## FOR FURTHER INFORMATION:

**U.S. ARMY COMBAT CAPABILITIES  
DEVELOPMENT COMMAND — GROUND VEHICLE  
SYSTEMS CENTER:**

<https://tardec.army.mil/>

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