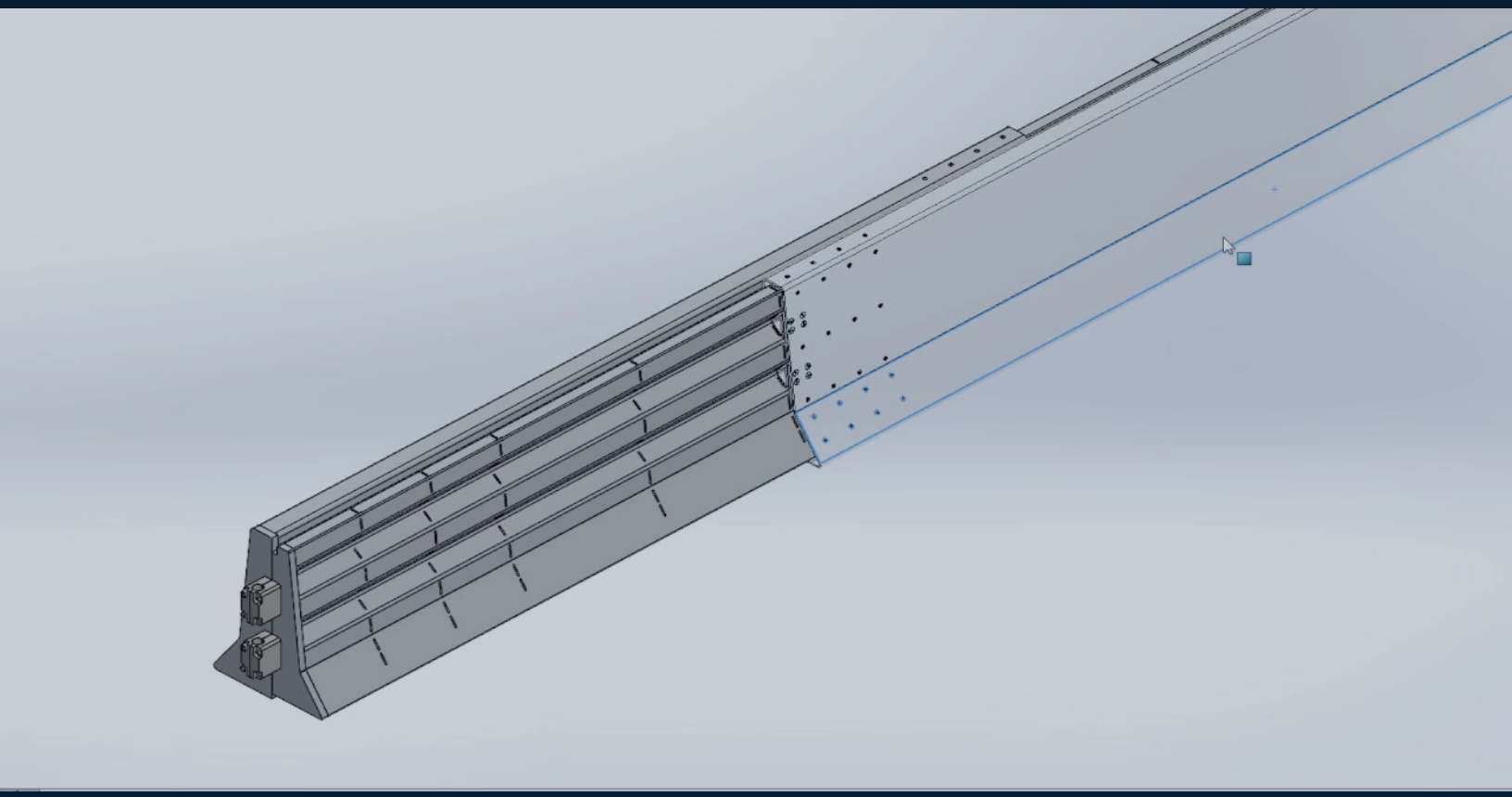
MDS BARRIERS®



3-AXE SEISMIC BRIDGE BARRIER

Multidirectional continuity across expansion joints

PATTULLO BRIDGE REPLACEMENT • COMPLETED DECEMBER 2025

TL-4 & TL-5 project configurations | Lateral and median applications

A continuous safety line—even when the joint moves.

Conventional barrier transitions can become vulnerable where bridge segments move independently. The MDS 3-AXE multidirectional movable barrier (MDMB) is engineered to span an expansion joint while accommodating longitudinal, transverse, and vertical movement. The system preserves the roadway restraint profile across the joint and transfers traffic-barrier loads into fixed end sections.

3 AXES	TL-4 / TL-5	975-YEAR
longitudinal • transverse • vertical	project-specific configurations	seismic movement basis

Telescopic longitudinal movement

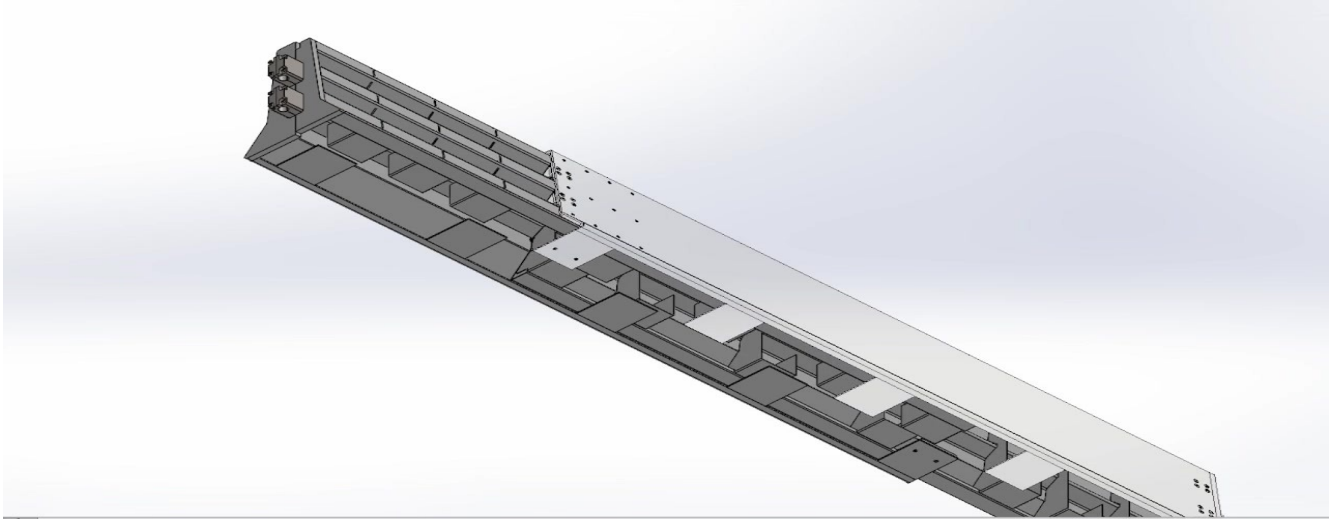
Nested central elements extend and retract as the expansion joint opens and closes.

Articulated transverse movement

Hinge assemblies accommodate lateral offset between adjacent bridge segments.

Vertical articulation

End connections permit elevation change while maintaining the protective barrier envelope.

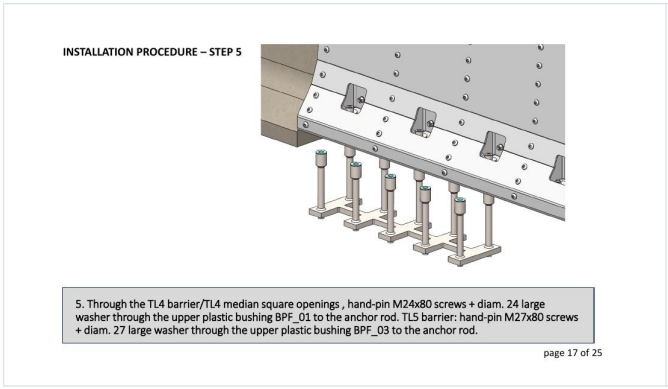


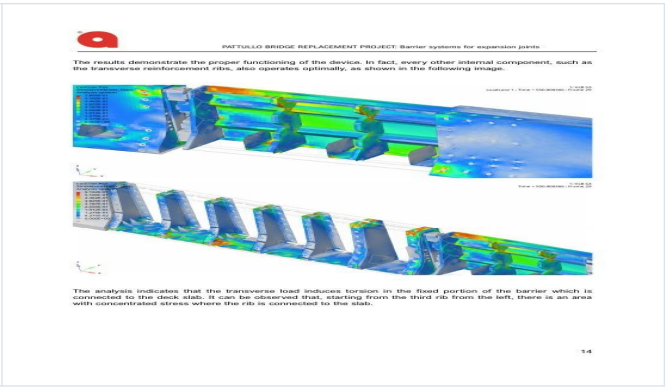
The central movable assembly combines telescoping elements with hinged interfaces at the fixed sections.

Pattullo Bridge: project-proven engineering delivery

MDS engineered and delivered lateral and median expansion-joint barrier configurations for the Pattullo Bridge Replacement in Metro Vancouver, Canada. The project required barrier solutions tailored to multiple pier locations, traffic-containment levels, installation envelopes, and movement combinations.

Project configuration	Nominal section	Project range / result
TL-4 outer barrier	810 mm high × 390 mm wide	6.235 m to 11.470 m long
TL-4 median barrier	810 mm high × 600 mm wide	Project-specific pier locations
TL-5 outer barrier	1,070 mm high × 420 mm wide	Project-specific pier locations
Largest scheduled seismic input	Location S3	Ux +1,376 / −1,328.683 mm; Uy up to ±857 mm; Uz up to 77 mm
FEM-reported deflection	TL-4 S3 outer / TL-4 S3 median	121 mm total / 155 mm
Functional movement test	TL-4 S3 Left	Accepted: X, Y, Z and compound movements





Installation engineering and finite-element assessment formed part of the project delivery package.

Engineered for the bridge—not selected from a catalog.

Every bridge joint has its own movement envelope, restraint geometry, barrier demand, anchorage, constructability constraints, and inspection strategy. MDS develops each 3-AXE solution around the project's governing criteria and interfaces.

01	Define Joint movement matrix, SLS/ULS combinations, seismic return period, barrier level, available envelope and adjacent barrier geometry.
02	Engineer Telescopic stroke, hinge geometry, fixed sections, anchorage interfaces, materials, drainage/access and installation sequence.
03	Verify Project-specific structural analysis, drawing review, movement checks, fabrication QA and functional testing as required.
04	Deliver Preassembled modules, installation documentation, lifting plan inputs, inspection guidance and engineering support.

Built for owners and design teams managing seismic movement, complex expansion joints and high-consequence barrier discontinuities.

Applications include cable-stayed and long-span bridges, seismically isolated structures, large-movement joints, roadway edges, pedestrian-side parapets and center medians.

START WITH YOUR MOVEMENT MATRIX

Send MDS the joint movement requirements, barrier performance level, typical sections and anchorage zone. We will develop a project-specific concept for engineering coordination.

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Performance, dimensions, materials and movement capacity are project-specific. Final suitability, anchorage and interfaces must be confirmed by the project engineer of record. References to TL-4/TL-5 and seismic movements describe the Pattullo Bridge project configurations and supporting analyses; they are not a universal certification for every installation.