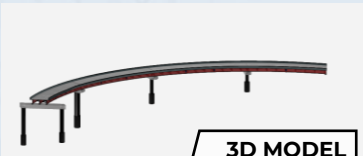
OPENBRIM LOAD RATING AND ASSET MANAGEMENT

How Can OpenBrIM Support Asset Management and Continuous Monitoring?

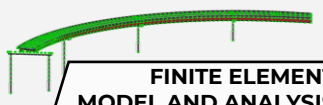
When a consultant submits a parametric OpenBrIM model, they provide a foundation for ongoing asset management. During construction, as-built parameters can be updated in real time, ensuring that the model reflects the latest field conditions. Later, after each inspection, new values for deterioration parameters can be directly entered into the model through a spreadsheet interface. This instantly recalculates the bridge's load rating using influence surface-based live load analysis, allowing for accurate and efficient tracking of the bridge's structural health over time. All of these processes are seamlessly performed in a web browser, requiring no software installation, making the model easily accessible and updatable from anywhere.

What is Parametric Digital Delivery for Bridges?

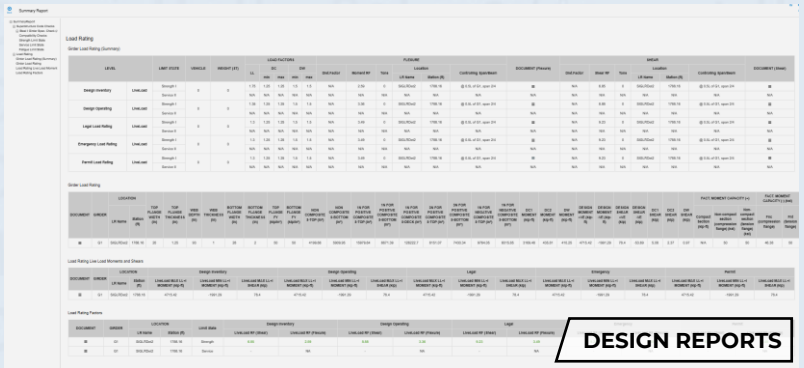
OpenBrIM redefines Digital Delivery through what we call Parametric Digital Delivery, enabling dynamic, real-time updates across all critical outputs when parameters are adjusted. With OpenBrIM, modifying parameters doesn't just alter basic model attributes; it directly impacts finite element analysis (FEA) results, load rating factors, code compliance checks, and 3D geometry. This integrated responsiveness means that as parameters change, the model instantly recalculates and updates these outputs, providing accurate insights that reflect the current state of the bridge. Coupled with OpenBrIM's cloud accessibility and collaborative capabilities, engineers can work together seamlessly on up-to-date, compliant models, enhancing both precision and efficiency across project teams. This synergy empowers engineers to keep all aspects of a project aligned without reworking multiple components in separate environments.



3D MODEL



FINITE ELEMENT MODEL AND ANALYSIS



DESIGN REPORTS

FEDERATED MODEL

RATING FACTORS AND DETERIORATION PARAMETERS

Top Flange Width (%) Loss	Top Flange Thickness (%) Loss	Bottom Flange Width (%) Loss	Bottom Flange Thickness (%) Loss	Web Thickness (%) Loss
0.00	0.00	0.00	0.00	0.00

Load Rating Factors

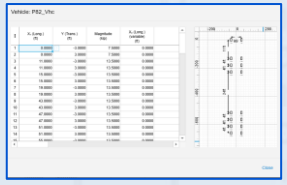
DOCUMENT	GIRDER	LOCATION		Limit State	Design Inventory		Design Operating		Legal		Emergency		Permit	
		LR Name	Station (ft)		LiveLoad RF (Shear)	LiveLoad RF (Flexure)	LiveLoad RF (Shear)	LiveLoad RF (Flexure)	LiveLoad RF (Shear)	LiveLoad RF (Flexure)	LiveLoad RF (Shear)	LiveLoad RF (Flexure)	LiveLoad RF (Shear)	LiveLoad RF (Flexure)
≡	G1	SIGLRnoDet	1788.16	Strength	10.27	3.14	13.31	4.07	13.82	4.23	13.82	4.23	13.82	4.23
≡	G1	SIGLRnoDet	1788.16	Service	-	NA	-	NA	-	NA	-	NA	-	NA

Top Flange Width (%) Loss	Top Flange Thickness (%) Loss	Bottom Flange Width (%) Loss	Bottom Flange Thickness (%) Loss	Web Thickness (%) Loss
12.50	12.50	12.50	12.50	12.50

Load Rating Factors

DOCUMENT	GIRDER	LOCATION		Limit State	Design Inventory		Design Operating		Legal		Emergency		Permit	
		LR Name	Station (ft)		LiveLoad RF (Shear)	LiveLoad RF (Flexure)	LiveLoad RF (Shear)	LiveLoad RF (Flexure)	LiveLoad RF (Shear)	LiveLoad RF (Flexure)	LiveLoad RF (Shear)	LiveLoad RF (Flexure)	LiveLoad RF (Shear)	LiveLoad RF (Flexure)
≡	G1	SIGLRDet2	1788.16	Strength	6.85	2.59	8.88	3.36	9.23	3.49	9.23	3.49	9.23	3.49
≡	G1	SIGLRDet2	1788.16	Service	-	NA	-	NA	-	NA	-	NA	-	NA

PERMIT ROUTING



Permit	
LiveLoad RF (Shear)	LiveLoad RF (Flexure)
6.29	2.37
-	NA

Can I View Multiple Bridges in Real-Time Context with GIS Mapping?

Yes, OpenBrIM enables you to see all bridge assets in a single, unified view with GIS coordinates, allowing you to monitor exact locations and current conditions across multiple bridges on a map. This centralized perspective supports efficient, context-aware management and planning, providing a real-time overview of your infrastructure assets.

Can I Request Custom Deterioration Parameters for Specific Project Needs?

Certainly. Bridge owners can ask consultants to implement custom deterioration parameters specific to their project. OpenBrIM can then reflect these parameters in the finite element model and adjust capacity calculations, accordingly, giving you a precise view of how these changes impact structural integrity and performance.

Can I Track Changes in My Bridge and Monitor Rating Factors Over Time?

Absolutely. OpenBrIM's revision history enables you to see how your bridge changes over time, including any updates to deterioration parameters and rating factors. This historical tracking helps you monitor the bridge's condition and performance consistently.

Can OpenBrIM Be Used for Permit Routing?

Yes, OpenBrIM simplifies permit routing. You can input specific permit trucks into the system, which will then calculate the bridge's Rating Factor and run code compliance checks. Using influence surface-based live load analysis, OpenBrIM assesses whether the bridge can safely accommodate each load based on its current condition.