

Bridge Moments, Shears and Reactions Calculation (“CBRIDGE”)

Description: CBRIDGE (meaning "continuous bridge") calculates moments, shears, reactions and deflections for any bridge from 1 to 4 spans, with the exception that hinges are not allowed. HS20, H20, HS15 or H15 truck live loading plus impact is calculated. Moment diagrams are printed along with tabulated results. Composite and non-composite beams can be analyzed. The designer is given the option of having AASHTO load factors applied to moments and shears.

Input can be read from files created by other programs, such as BRIJBEAM. Output can be written to a file for use by other programs, such as BRIJBEAM.

Theory: The program calculates influence line coefficients at 10th points by using the finite element stiffness method. Loads are applied only at 10th point nodes, resulting in a slight approximation to results.

Two types of live load cases are applied to the structure at maximum influence line ordinates: (1) Truck loading with axles apart and (2) Lane loading. "HS" trucks have axles spaced at 14' and 14' to 30'. The variable axle spacing is used to calculate the maximum negative live load moment.

For composite design the program automatically uses composite properties in positive dead load moment regions and non-composite properties in negative dead load moment regions. Composite design in negative dead load moment regions is not considered.