
Postgraduate Certificate in Structural Steel Design

Steel Bridge Design.

****AASHTO****: The American Association of State Highway and Transportation Officials, which develops standards and guidelines for transportation infrastructure, including steel bridges.

****ABC (Accelerated Bridge Construction)****: A construction method that uses innovative planning, design, and construction techniques to reduce the on-site construction time of bridge projects.

****AASHTO LRFD (Load and Resistance Factor Design)****: A standard for the design of bridges that uses load and resistance factors to account for uncertainty in loads and material properties.

****Bearing****: A device used to support and transfer loads from the bridge superstructure to the substructure.

****Bent****: A vertical or near-vertical column that supports the bridge superstructure and transfers loads to the foundation.

****Bridge Deck****: The horizontal surface of the bridge that supports the traffic.

****Camber****: The intentional upward curvature of a bridge deck or beam to counteract the effects of dead load deflection.

****Cantilever****: A structural member that projects beyond its support, such as the ends of a bridge deck or beam.

****Composite Beam****: A beam made of two or more different materials, such as steel and concrete, that act together to resist loads.

****Connections****: The elements that join steel members together, such as bolts, welds, or rivets.

****Continuous Beam****: A beam that spans over multiple supports, allowing for more efficient use of materials.

****Diaphragm****: A horizontal or vertical bracing element used to stiffen and stabilize a steel frame.

****Fatigue****: The progressive and permanent structural damage that occurs when a material is subjected to repeated loading.

****Fracture Critical Member (FCM)****: A steel member whose failure could cause the collapse of the entire bridge.

****Fracture Toughness****: A material's ability to resist fracture when subjected to high stresses.

****Gerber Beam****: A type of continuous beam that uses a series of vertical web stiffeners to resist torsional forces.

****Haunch****: The portion of a beam or girder that is thicker than the rest of the member to resist higher bending moments.

****High-Performance Steel (HPS)****: A type of steel with enhanced properties, such as increased strength, toughness, and corrosion resistance.

****Hinge****: A point in a bridge where rotation is allowed, such as at the connection between two beams or girders.

****Live Load****: The load imposed on a bridge by moving vehicles, pedestrians, or other dynamic forces.

****Moment Connection****: A connection that allows for the transfer of moments between steel members.

****Parker Rolling Lift Bridge****: A type of lift bridge that uses a rolling mechanism to raise and lower the bridge deck.

****Pile Foundation****: A type of foundation that uses deep piles driven into the ground to support the bridge substructure.

****Plate Girder****: A type of beam made of steel plates, used for long spans and heavy loads.

****Pony Truss****: A type of truss bridge that has a single plane of triangular members supporting the bridge deck.

****Rolled Beam****: A beam that is formed by rolling a steel plate into a curved shape.

****Simple Beam****: A beam that is supported at two ends, allowing for the transfer of vertical loads only.

****Stay-in-Place Forms****: Formwork used for casting concrete that remains in place after the concrete has cured.

****Stiffener****: A thin piece of steel added to a beam or girder to increase its stiffness and resistance to buckling.

****Strut-and-Tie Model****: A method of analyzing and designing a concrete structure by modeling it as a system of tension and compression members.

****Superstructure****: The part of a bridge that supports the bridge deck and traffic.

****Tension Member****: A member in a bridge that is subjected to tensile forces.

****Through Girder****: A type of beam that is supported at three or more points, allowing for the transfer of

vertical and horizontal loads.

****Torsion****: The twisting force that is applied to a member, causing it to rotate.

****Truss****: A structural framework made of triangular members, used for supporting bridges, buildings, and other structures.

****Ultimate Limit State (ULS)****: The point at which a bridge fails or becomes unsafe for use.

****Vierendeel Girder****: A type of girder that uses rectangular instead of triangular members, allowing for greater flexibility in the placement of openings and connections.

****Web Stiffener****: A thin piece of steel added to a beam or girder to increase its stiffness and resistance to buckling.

****Welded Connection****: A connection that uses welding to join steel members together.

****Yield Strength****: The amount of stress that a material can withstand before it starts to deform permanently.