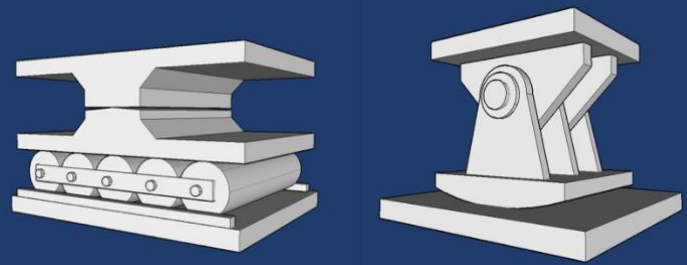
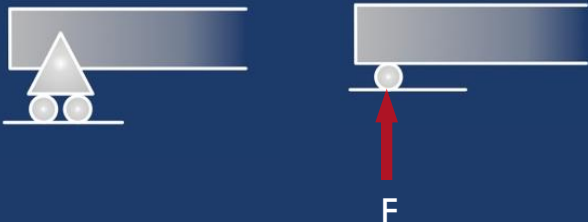
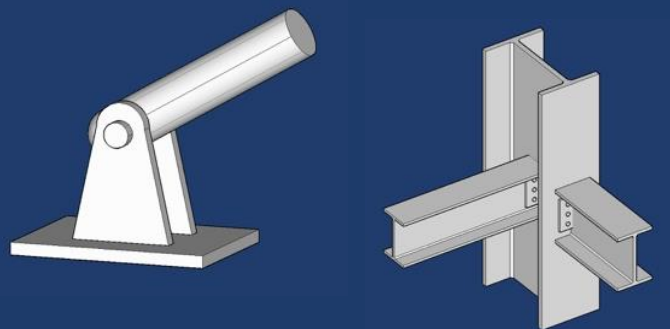

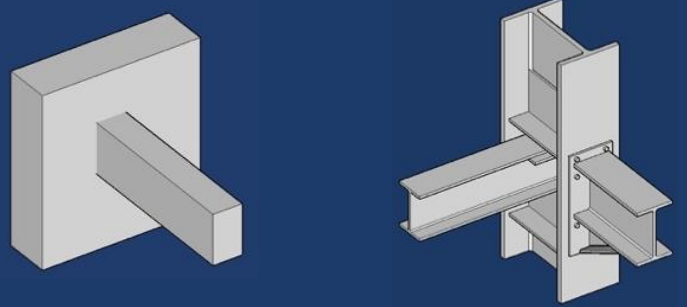
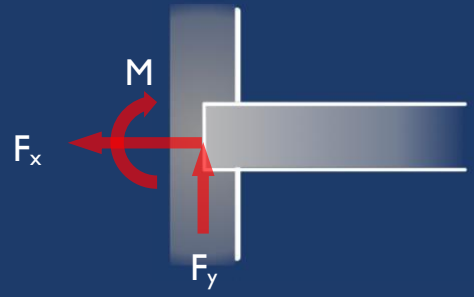




Structural Connections

Type	Real Life Examples	Symbolic Representations	Movements Allowed or Prevented	Reaction Forces	Number of Unknowns
Roller or Rocker	 <p>Roller Rocker</p>		<p>Allowed: Horizontal Movement and Rotation Prevented: Vertical Movement</p> <p>A roller or rocker can only prevent movement in the vertical direction so the roller can only exert a reaction in that direction</p>	<p>One force (F) either pushing up or pulling down. This force acts perpendicular to the beam at the point of contact.</p>	<p>1 Unknown:</p> <p>1) F</p>
Pin	 <p>A steel beam connected to a column without welds or stiffeners behaves like a pin connector</p>		<p>Allowed: Rotation Prevented: Horizontal and Vertical Movement</p> <p>Note: A pin can prevent translation in any direction but the force of the reaction is usually analysed as having two parts – F_x and F_y</p>	<p>A horizontal force (F_x) and a vertical force (F_y) which are the components of a single force of unknown direction</p>	<p>2 Unknowns:</p> <p>1) F_x and 2) F_y</p>
Fixed	 <p>A concrete beam connected to a wall with reinforcing behaves like a fixed connection</p> <p>A steel beam connected to a column with welds and stiffeners behaves like a fixed connection</p>		<p>Allowed: None Prevented: Horizontal and Vertical Movement; and Rotation</p> <p>The most constrained kind of support and it prevents the component from translation and rotation</p>	<p>A horizontal force (F_x) and a vertical force (F_y) which are the components of a single force of unknown direction; AND a moment force (M)</p>	<p>3 Unknowns:</p> <p>1) F_x 2) F_y and 3) M</p>