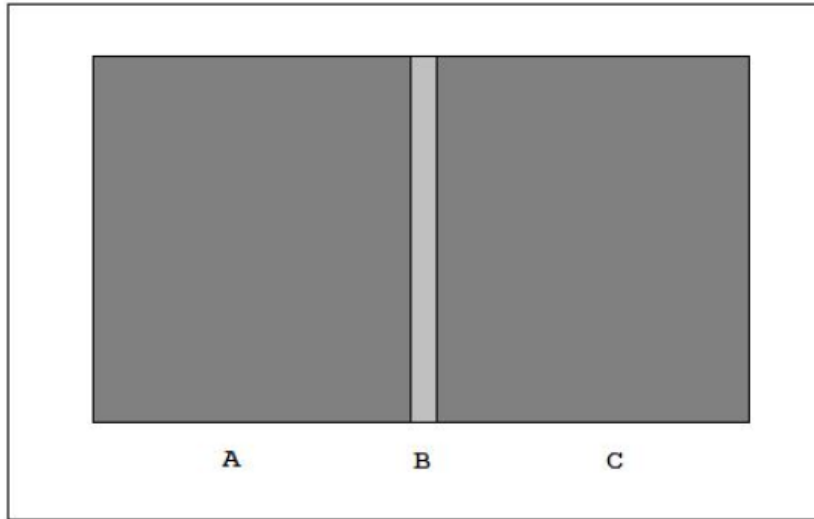


MODELING CONSTRUCTION JOINTS IN THE SPMATS PROGRAM

In structural mat foundations and slabs on grade, construction joints are typically required to transfer vertical shear force between adjacent concrete placements. Transfer of moments across the joint may or may not be required. There are two possible ways to model construction joints in spMats to analyze and design a concrete foundation where only shear is transferred and moment is not.

1. Introduce weak elements characterized by a narrow width at the location of the joint. In the illustration below, a thin element is defined with a low modulus of elasticity for the construction joint B that connects concrete block A and C. Since B is very flexible, moment transferred between blocks A and C is negligible.



2. If dowels are employed to transfer shear they may be modeled by slaving node pairs in the direction of D_z (vertical displacement). In the illustration below, there are three dowels being modeled along the joint. Node pairs A-B, C-D, E-F may be slaved, respectively. Since nodes are just slaved in the direction of D_z , only shear force is transferred. It is recommended that three separate slaved node criteria are defined and assigned to the three node pairs, respectively. If only one slaved node criteria is defined and assigned to all the six nodes, then all the nodes will be forced to share the same displacement after the model is solved. For that reason, this approach is not recommended.

