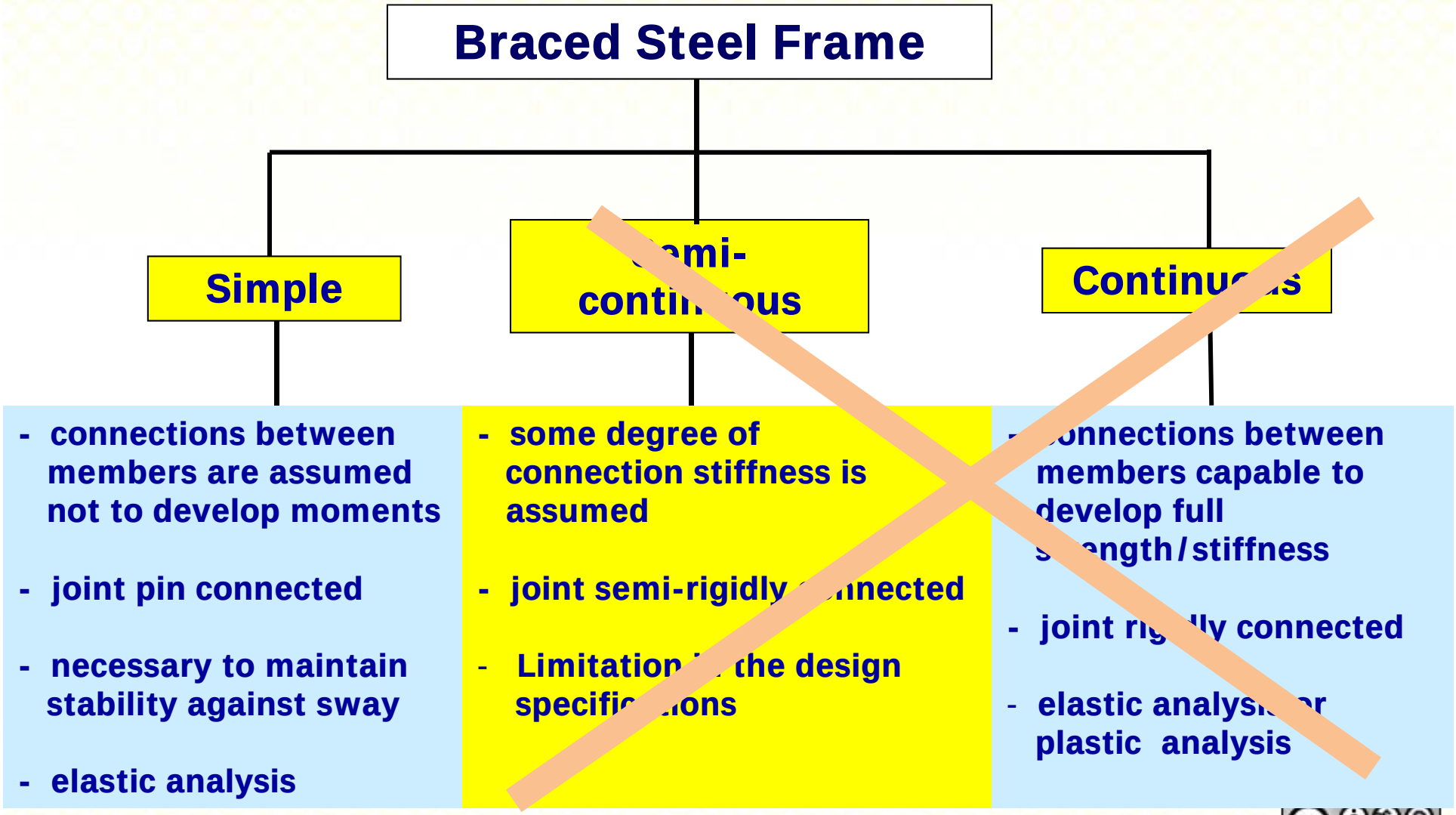
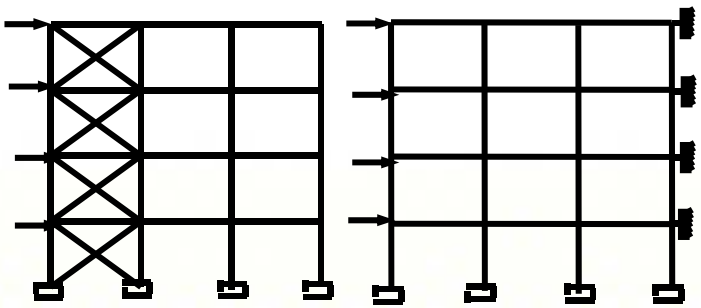
Methods of design :

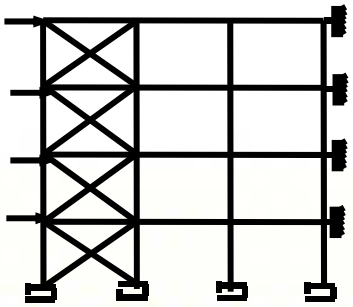
1. Simple Construction The joints should be assumed not to develop moments adversely affecting either the members or the structure as a whole.
2. Rigid Construction The joints should also be capable of resisting the moments and forces resulting from the analysis.
3. Semi-Continuous Construction The joints have some degree of strength and stiffness, but insufficient to develop full continuity.

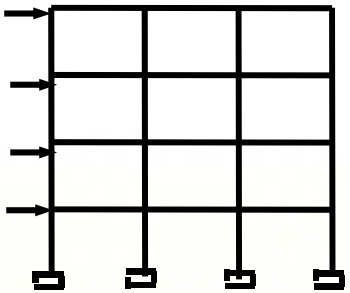

Braced Steel Frame
Simple
Continuous
- connections between members are assumed not to develop moments
- joint pin connected
- necessary to maintain stability against sway
- elastic analysis
- some degree of connection stiffness is assumed
- joint semi-rigidly connected
- Limitation in the design specifications
- connections between members capable to develop full strength/stiffness
- joint rigidly connected
- elastic analysis or plastic analysis

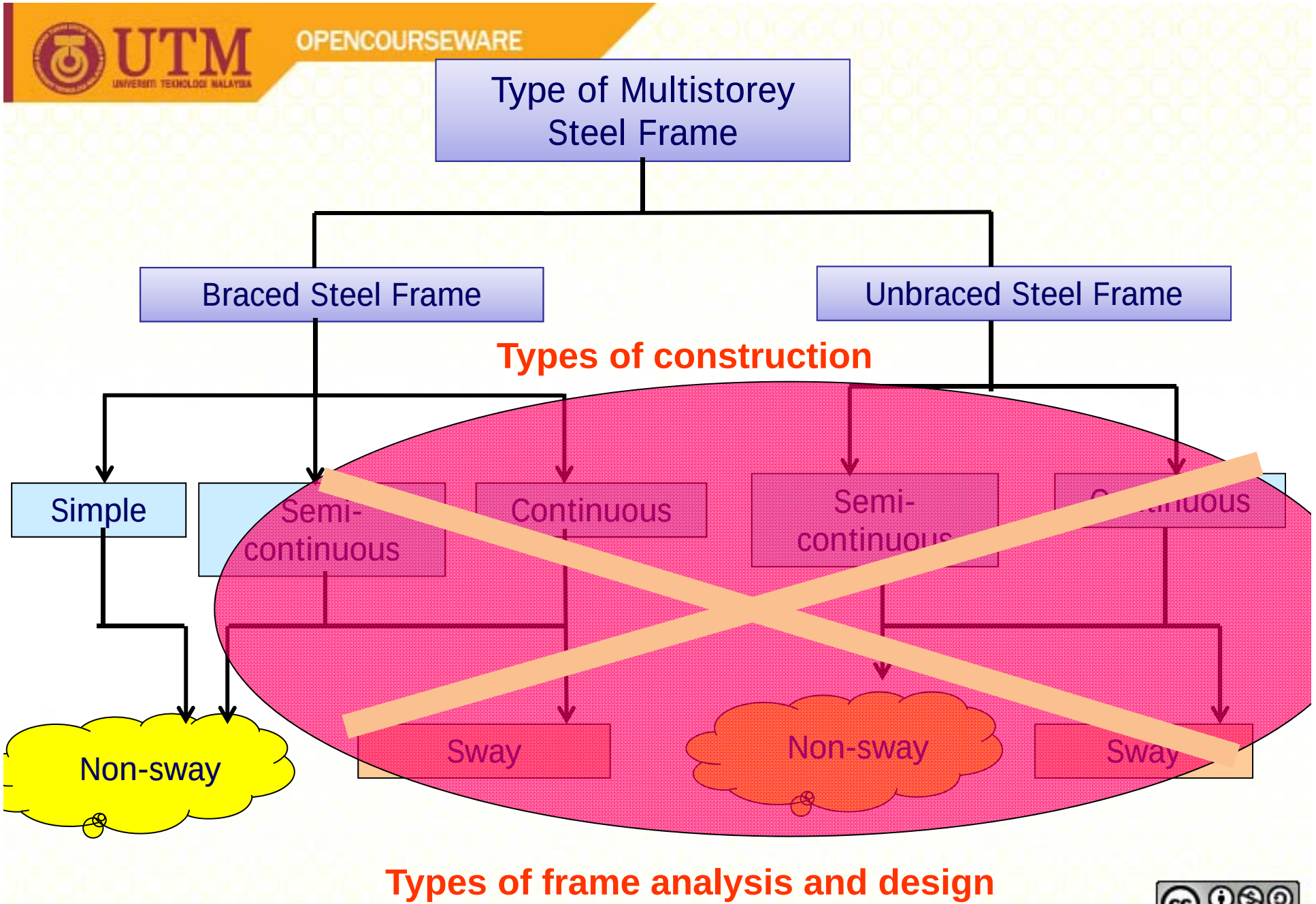
Types of Multistorey Steel Frame

- Braced Steel Frame
  - Horizontal loads are carried by the bracing or by horizontal support
- Unbraced Steel Frame
  - Horizontal forces are carried by the frame

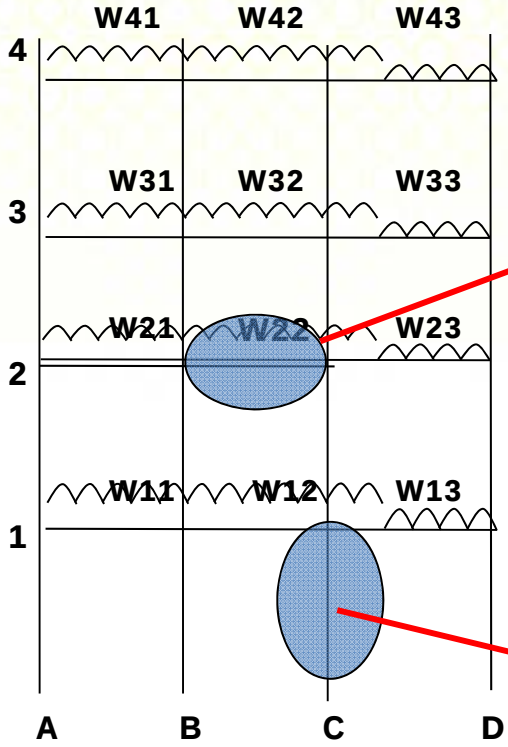




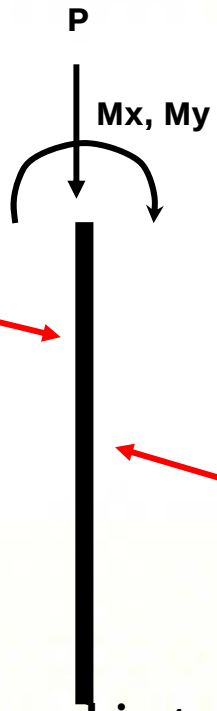


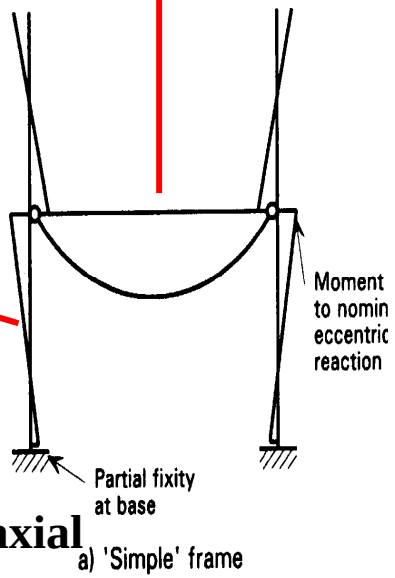

Type of Multistorey Steel Frame
Braced Steel Frame
Unbraced Steel Frame
Types of construction
Simple
Semi-continuous
Continuous
Semi-continuous
Continuous
Non-sway
Sway
Non-sway
Sway
Types of frame analysis and design

Beam subjected to shear and moment

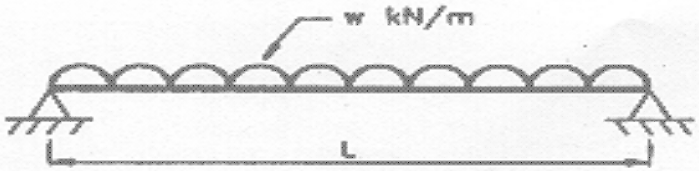


Simple Construction :
Simple beam analysis
nominal moment transferred to column

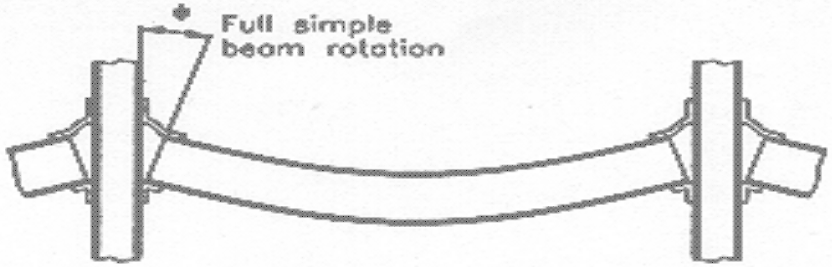




Column subjected to axial load and moment

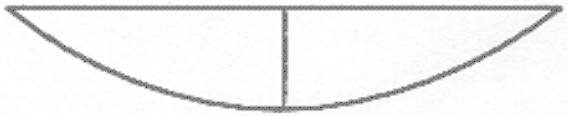


Kena redraw



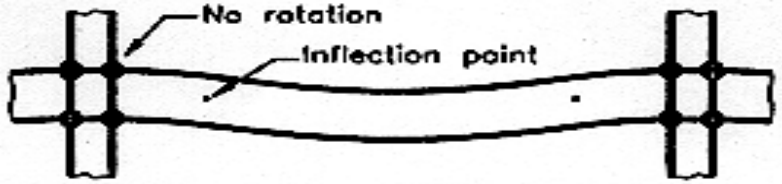
(a). Flexible (pinned) connection

Bending moment diagram

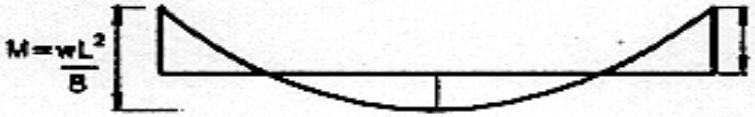


No end moment, $M=0$

Midspan moment, $M=\frac{wL^2}{8}$



(b). Rigid connection

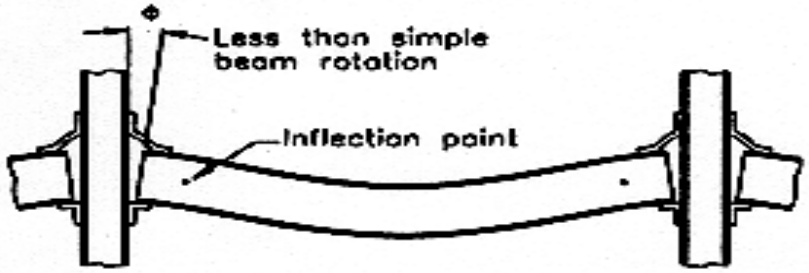


$M=\frac{wL^2}{8}$

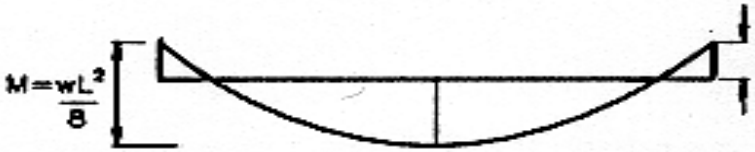
Midspan moment, $M=\frac{wL^2}{24}$

Fixed end moment, $M=\frac{wL^2}{12}$

(Assuming that the stiffness of the columns is infinity)



(c). Semi-rigid connection



$M=\frac{wL^2}{8}$

Midspan moment, $M<\frac{wL^2}{8}$

Less than fixed end moment, $M<\frac{wL^2}{12}$

Thank You