

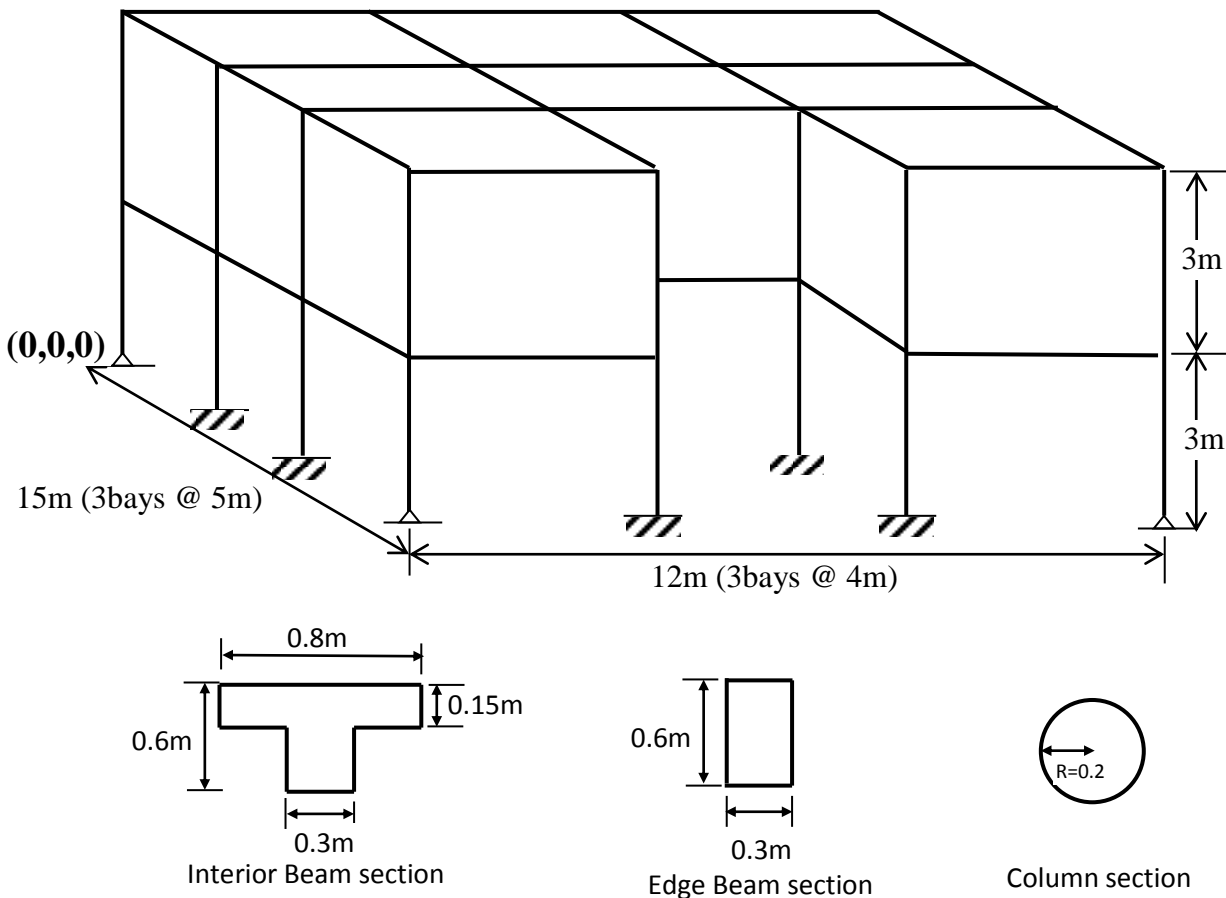
Example 1 (Reinforced Concrete Building)

(MODELING)

Using concept of **auto-generation method** by STAAD-Pro V8i software, sketch and construct the idealization numbering of joints and members **concrete structure** shown below (All dimensions unit in meters). Edit the commands for the modeling of the reinforced concrete structure shown below:

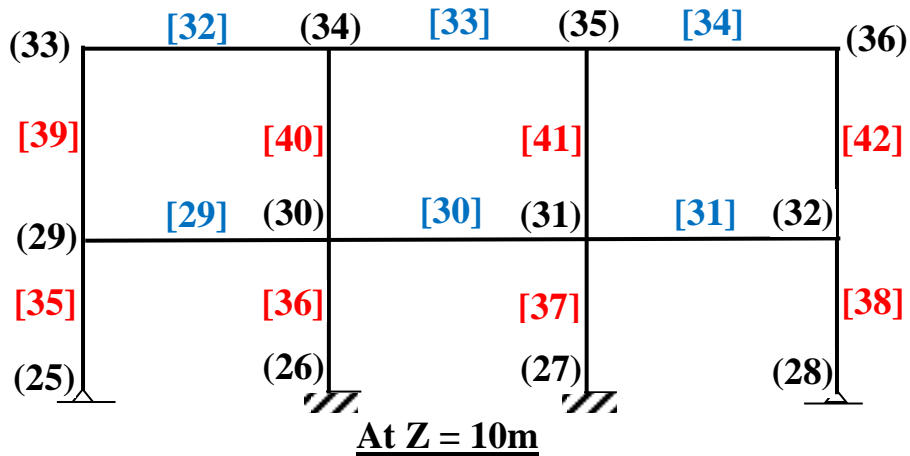
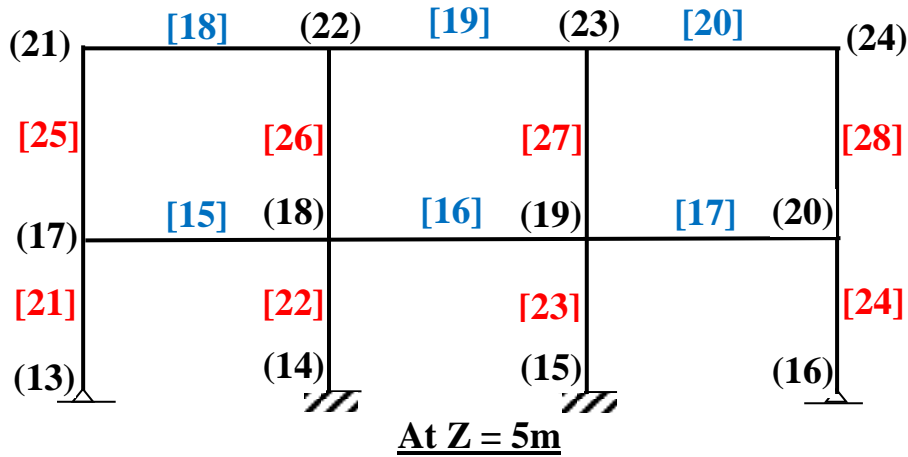
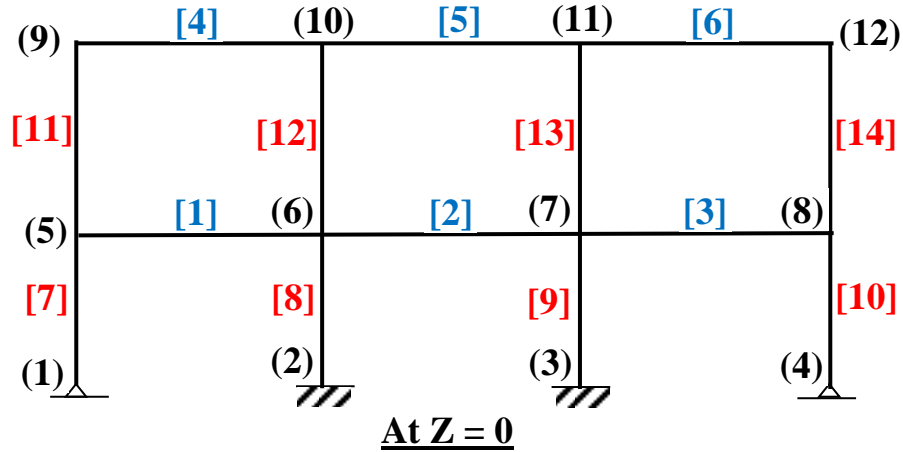
(x- 3bays @ 4m, y- 2story @ 3m, z- 3bay @ 5m)

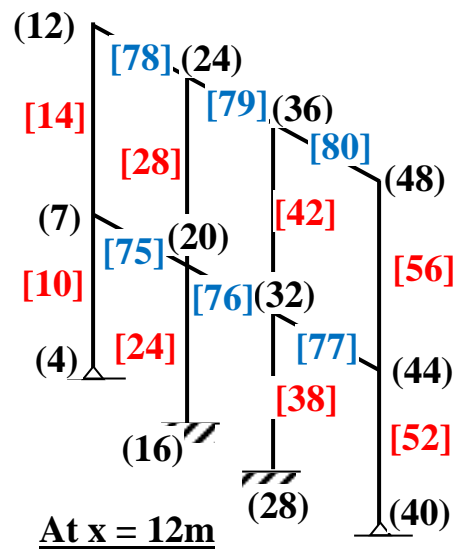
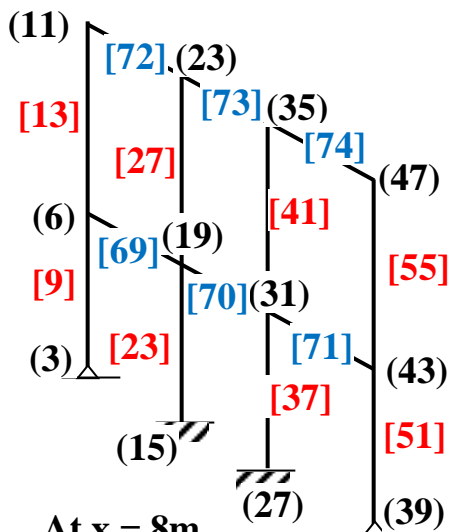
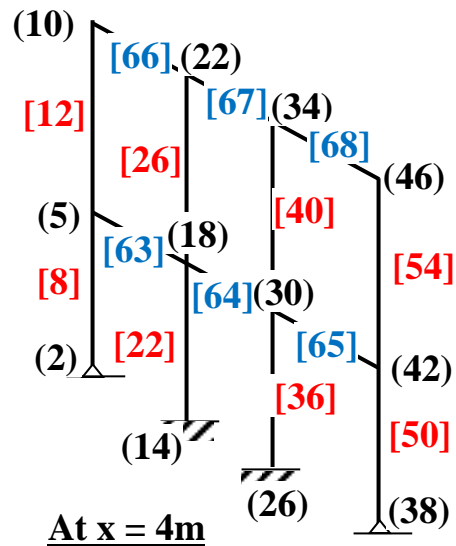
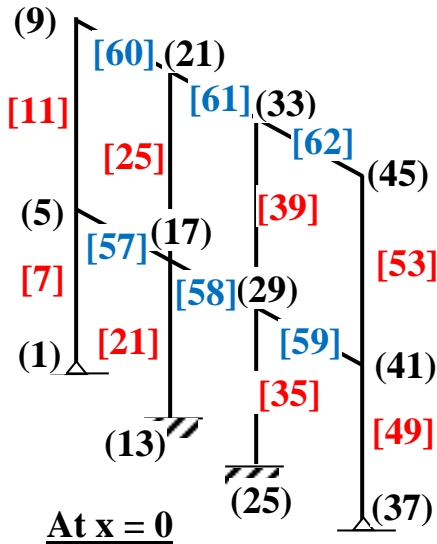
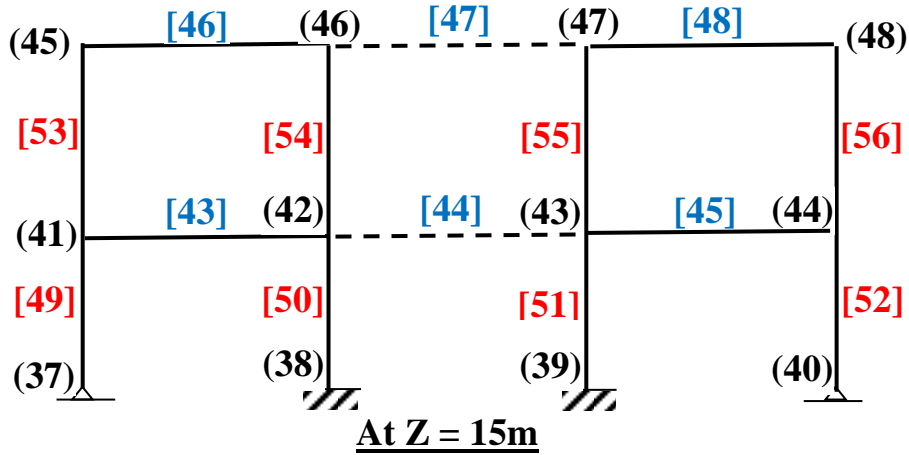
Note: $E_c = 3200 \text{ kip/in}^2$, Density = 2500 kg/m^3 circular column section (Radius = 20cm), interior beam size (T-section) [flange bf = 80cm, tf=15cm], [web H = 60cm, bw = 30cm], edge beam size (30*50), roof and floor slab thickness = 15cm. external and internal support (fixed), corner support hinge.



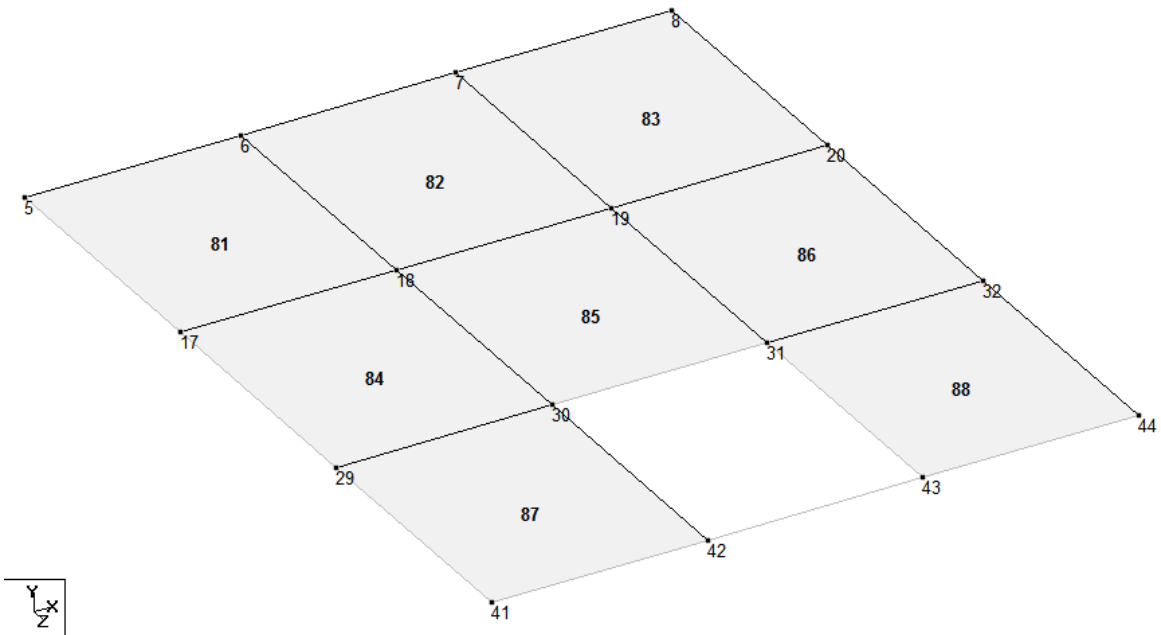
SOLUTION:

Frame Idealizations (Beams and Columns)

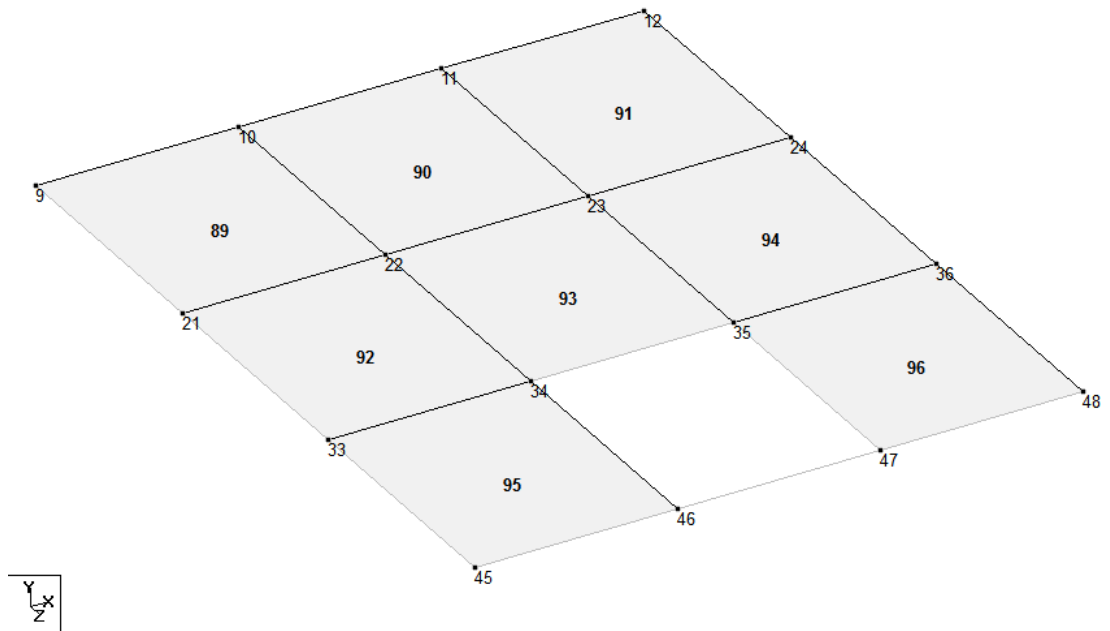




Frame Localizations (Slabs)



At y = 3m



At y = 9m

STAAD-Pro Solution Editor

STAAD SPACE Example (1) concrete building modeling
UNIT METER KN

JOINT COORDINATES

1 0 0 4 12 0 0

REP 2 0 3 0

REP ALL 3 0 0 5

MEMBER INCIDENCES

*Beams Numbering in x-direction at z = 0

1 5 6 3

REPEAT 1 3 4

*Columns Numbering in y-direction at z = 0

7 1 5 10

REPEAT 1 4 4

*Copy Frame in xy-plane at x = 0 to z = 5m, z = 10m and z = 15m

REPEAT ALL 3 14 12

*Transverse Beams Numbering in z-direction at x = 0 and y = 3m

57 5 17 59 1 12

*Copy Transverse Beams in z-direction from y = 3m to y = 6m

REP 1 3 4

*Copy Transverse Beams in z-direction to x = 4m, x = 8m and x = 12m

REP ALL 3 6 1

DEL MEM 44 47

ELEMENT INCIDENCES

*Floor Slab Numbering at y = 3m from x = 0 to x = 12m and z = 0 to z = 5m

81 5 6 18 17 TO 83

*Copy Previous Slab at y = 3m from x = 0 to x = 12m and z = 5 to z = 10m

REP 1 3 12

87 29 30 42 41 TO 88 1 2

REP ALL 1 8 4

MEMBER PROPERTY AMERICAN

*Define Beam Section Dimensions Edge

1 TO 6 30 33 43 45 46 48 57 TO 62 65 68 71 74 TO 80 PRIS YD 0.6 ZD 0.3

UNIVERSITY of TECHNOLOGY
(Building & Construction Engineering Department)
Structural Engineering Branch

Staad-Pro V8i Examples

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by: Prof. Dr. Nabeel Al-Bayati

*Define Interior Beam Section Dimensions

15 TO 20 29 31 32 34 63 64 66 67 69 70 72 73 PRIS YD 0.6 ZD 0.8 YB 0.45
ZB 0.3

*Define Columns Section Dimensions

7 TO 14 21 TO 28 35 TO 42 49 TO 56 PRIS YD 0.4

ELEMENT PROPERTY

*Define Floor and Roof Slab Section

81 TO 96 THICKNESSES 0.15

*Define Materials Properties

CONSTANTS

POI CONCRETE ALL

ALPHA CONCRETE ALL

UNIT KIP INCHES

CONSTANTS

E 3200 ALL

UNIT KG METER

CONSTANTS

DEN 2500 ALL

UNIT METER KNS

*Define Support Type

SUPPORTS

1 4 37 40 PIN

2 3 13 TO 16 25 TO 28 38 39 FIX

FINISH