Direction 2

Direction 1 (considered)

Tributary floor area, interior MF column

Bay width

Gravity Beams

Gravity Columns

Gravity Framing System (GFS)

Main Frame (MF)

Interior column

Exterior column

Tributary floor area, exterior MF column

Tributary facade area, interior MF column

Gravity Columns

Main Frame (MF)

Tributary facade area, exterior MF column

Considered Direction

Gravity Framing System (GFS)

Main Frame (MF)

Main Frame (MF)

Equivalent Gravity Frame (EGF)

Floor links
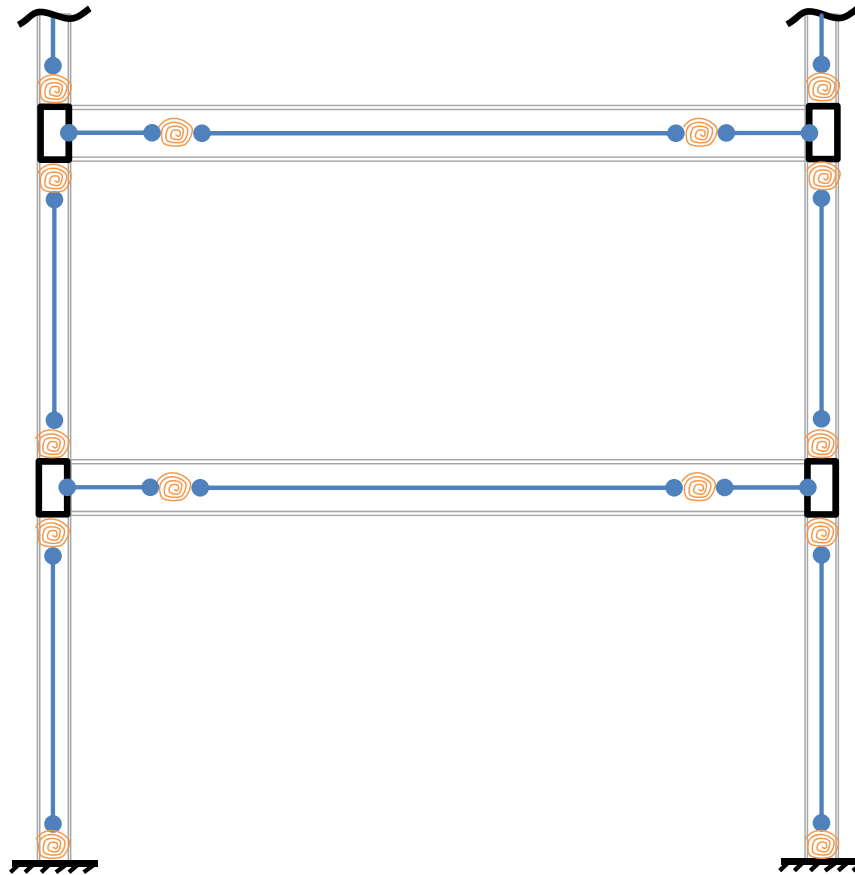
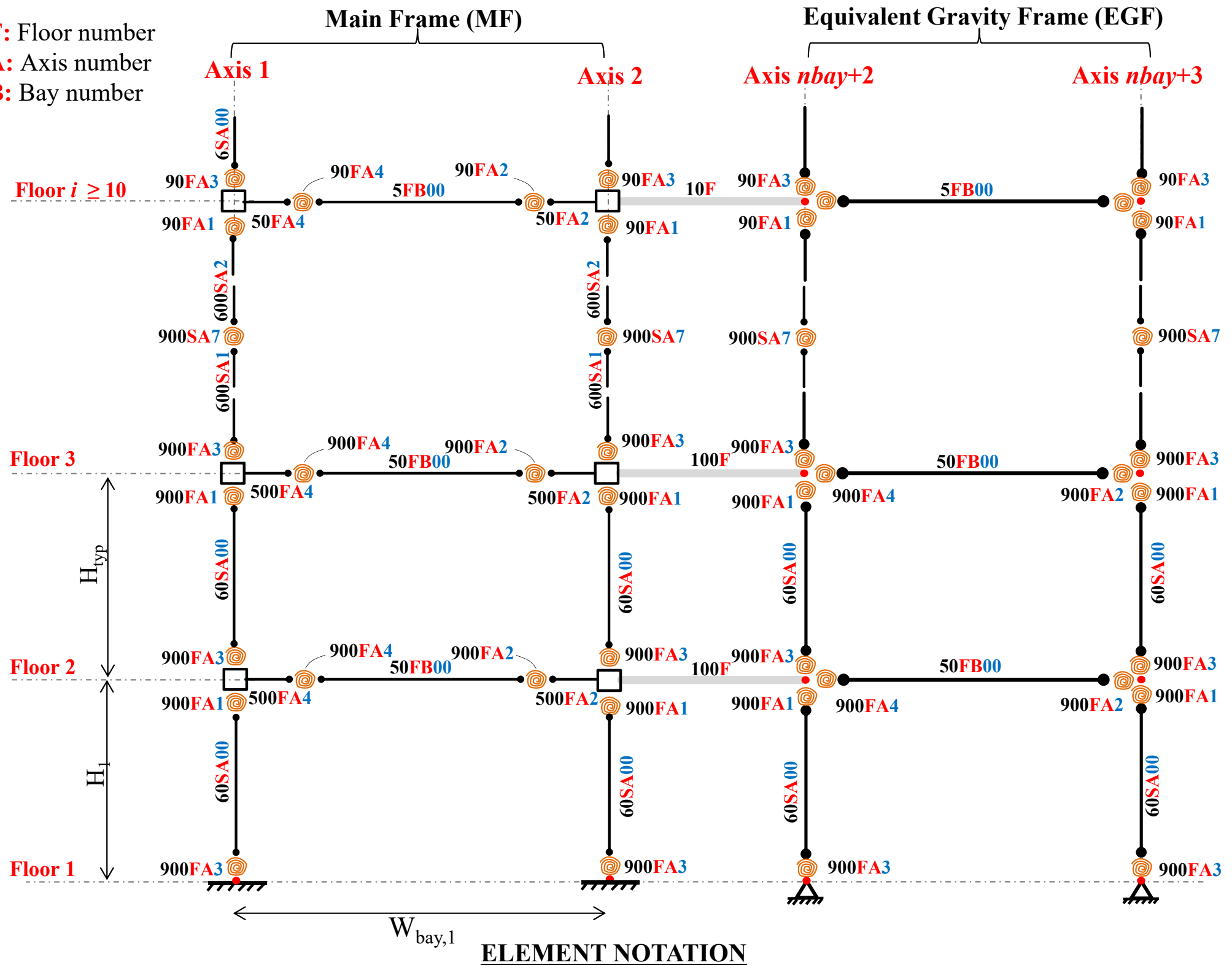Floor links (truss elements)

N
W E
S

MF

EGF

F

F_s

K_s

F_s

δ

Rotational spring
Rigid element

MRF IDEALIZATION
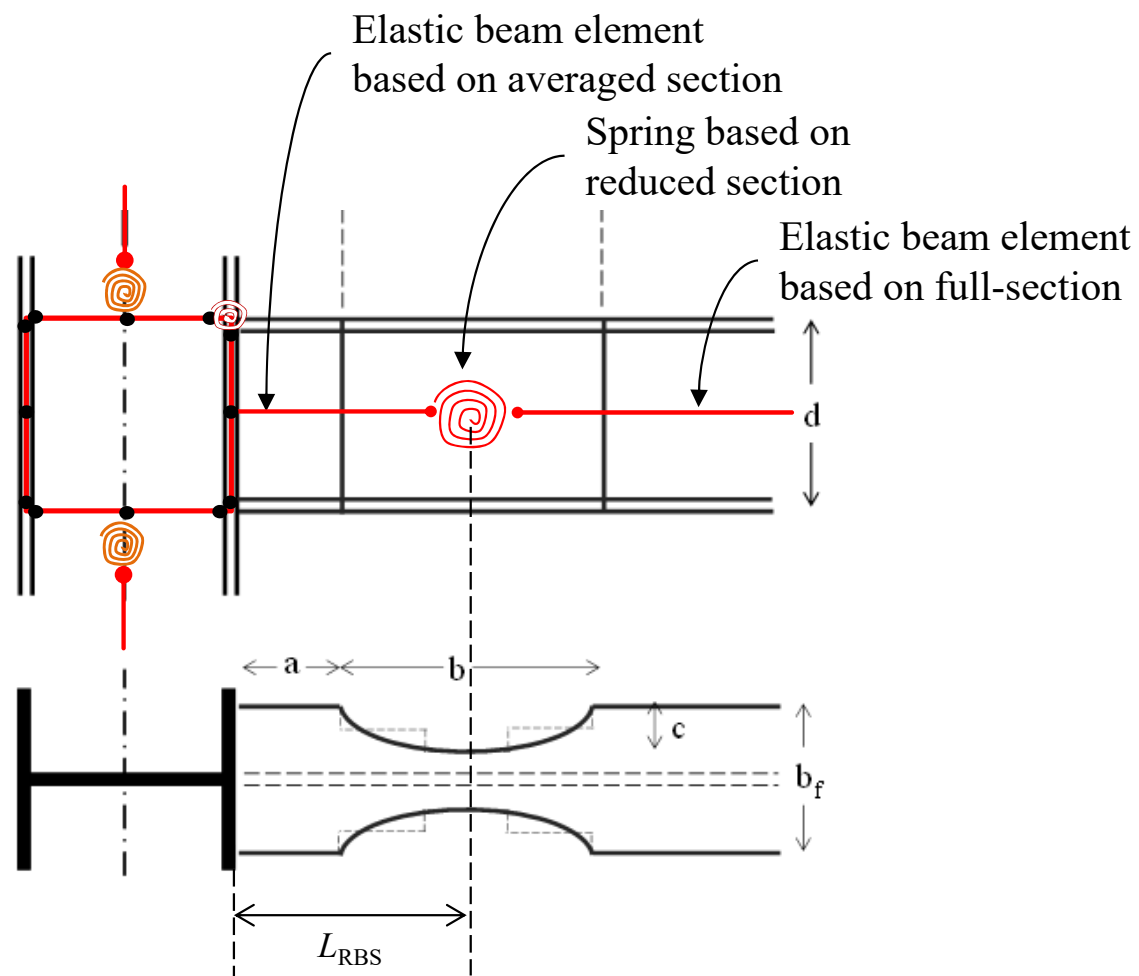
Elastic beam element based on averaged section

Spring based on reduced section

Elastic beam element based on full-section

d

$\leftarrow a \rightarrow$ b

c

b_f

L_{RBS}

NODE NOTATION

ELEMENT NOTATION

PANEL ZONE MODELING

Column elastic beam-column element

Column rotational spring

Panel zone rotational spring

Beam rotational spring

Beam elastic beam-column element

Beam depth

Panel zone rigid elements

Column depth
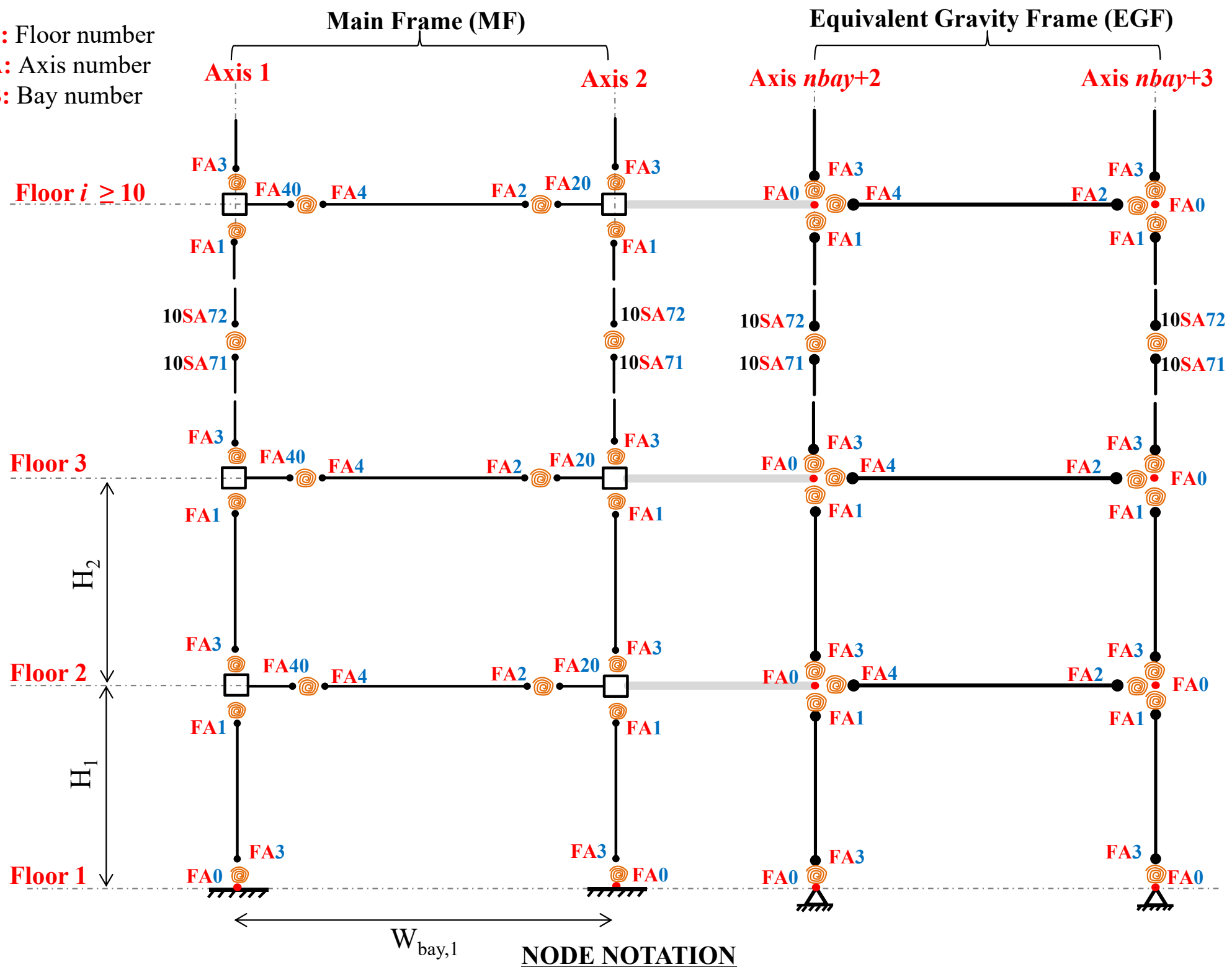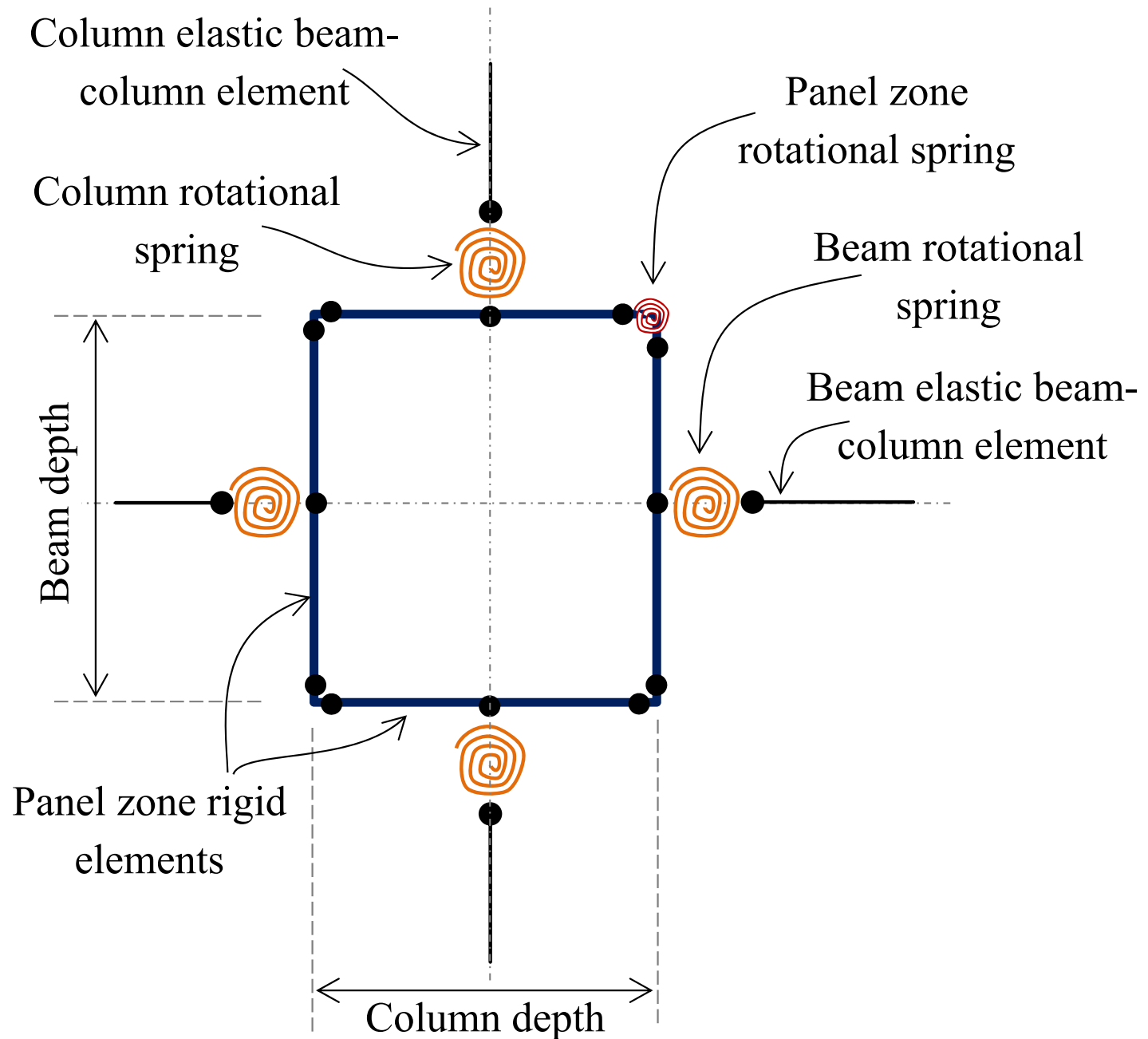
PANEL ZONE MODELING

Nodes at which Mass is Allocated
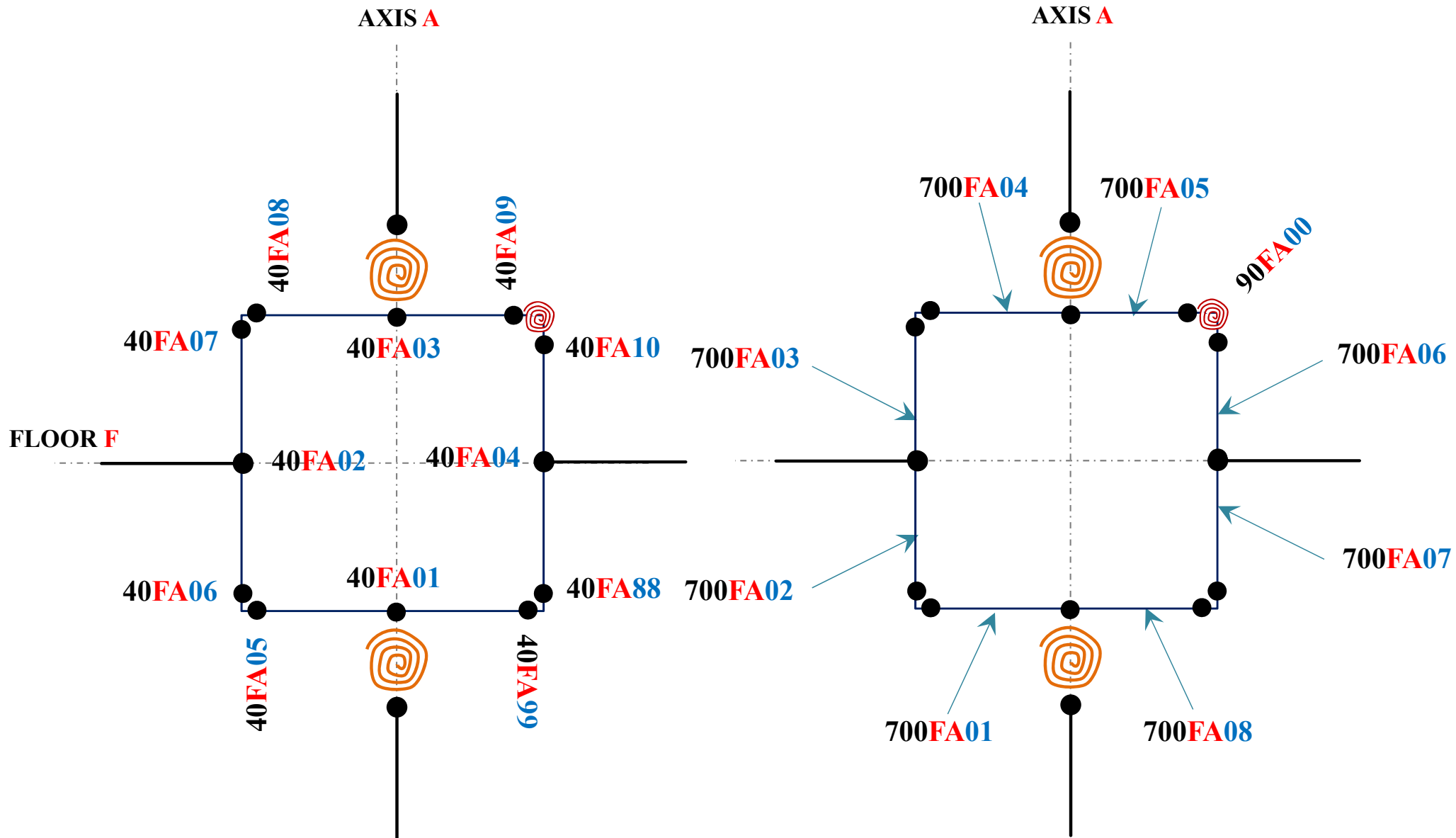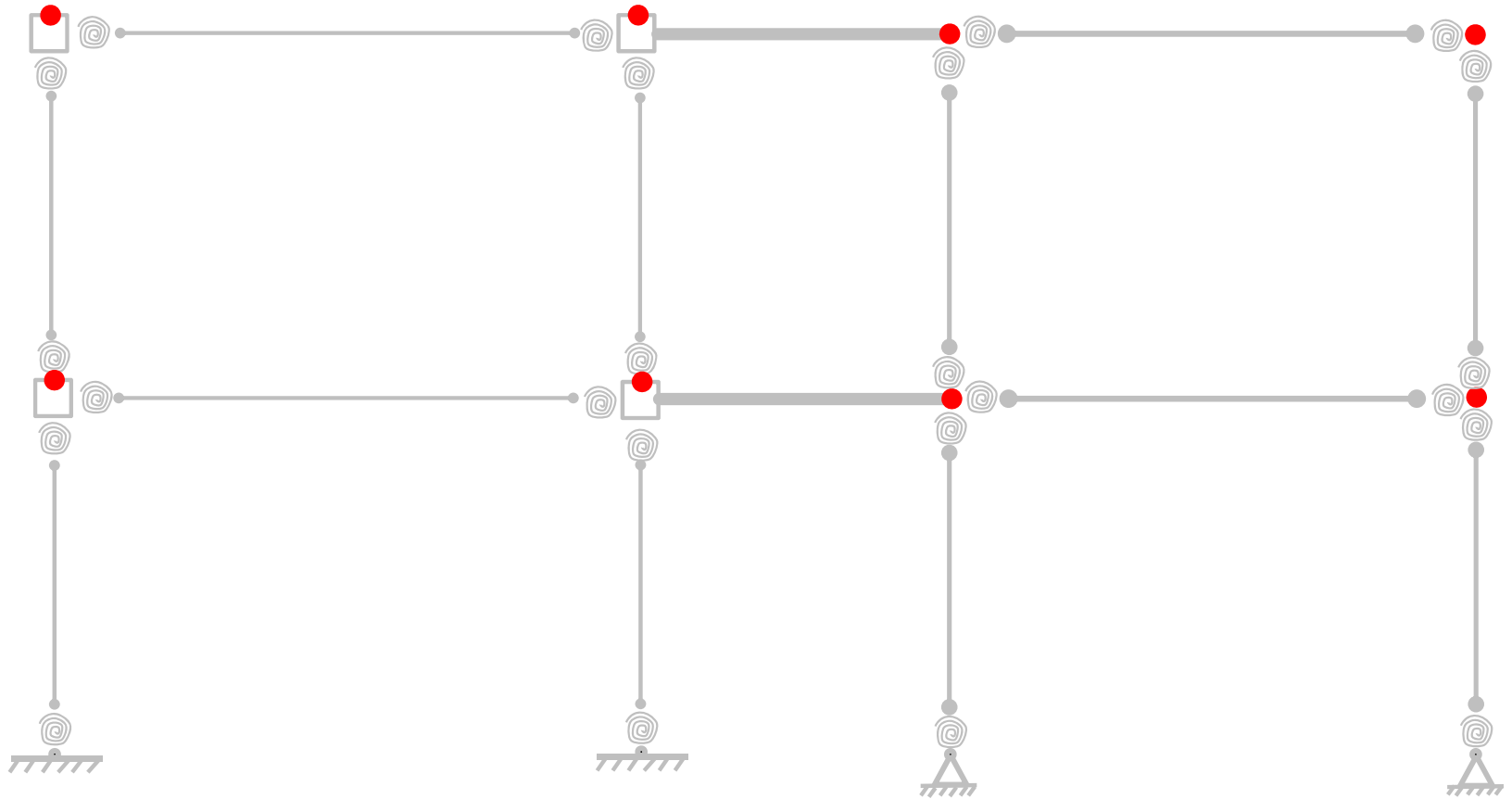
Nodes at which Gravity Load is Allocated