Figure 3.7.2-56: Control Building SASSI2010 Solid Elements Modeling the Basemat
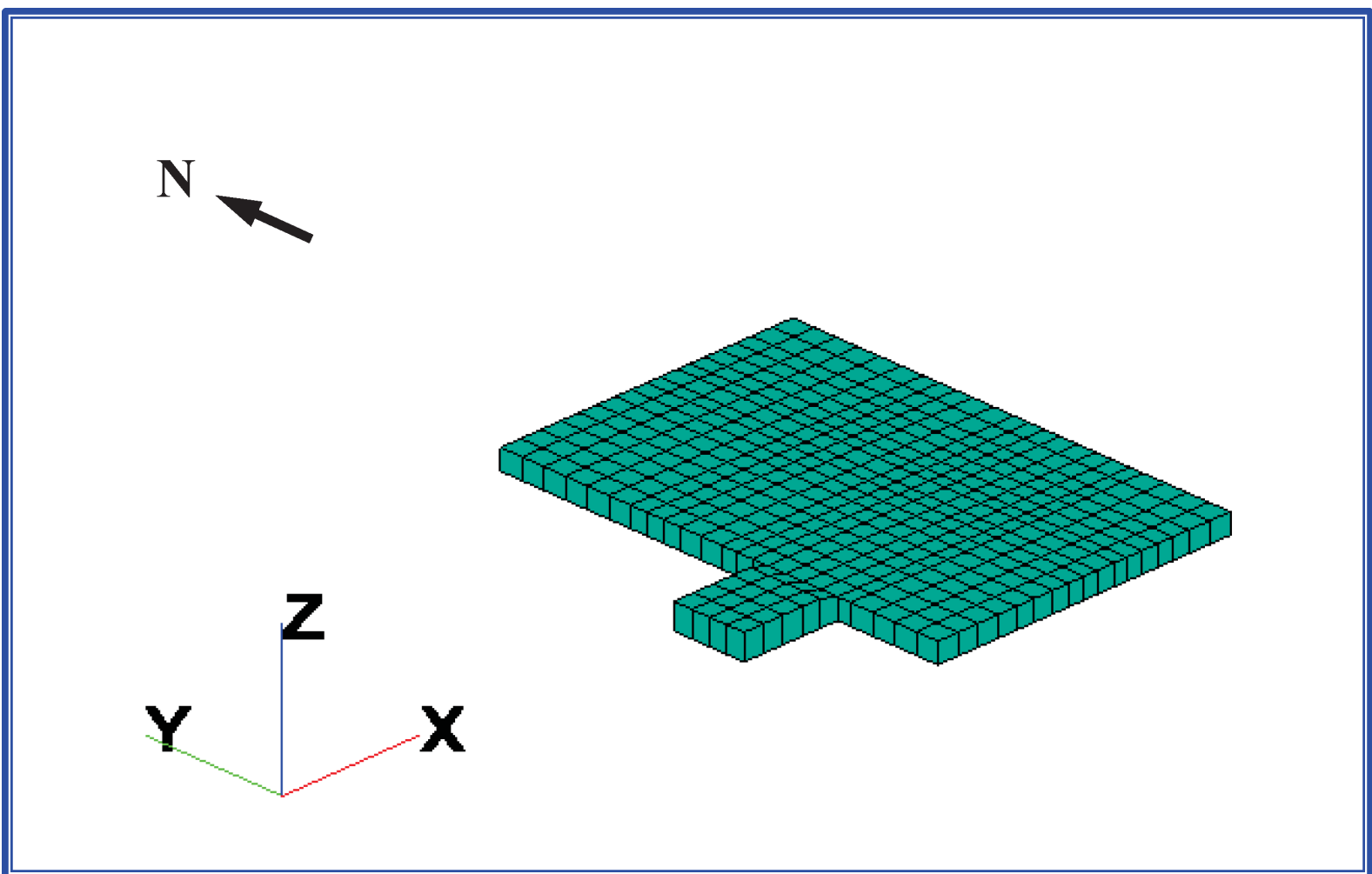
Figure 3.7.2-57: Control Building SASSI2010 Model Shell and Beam Element
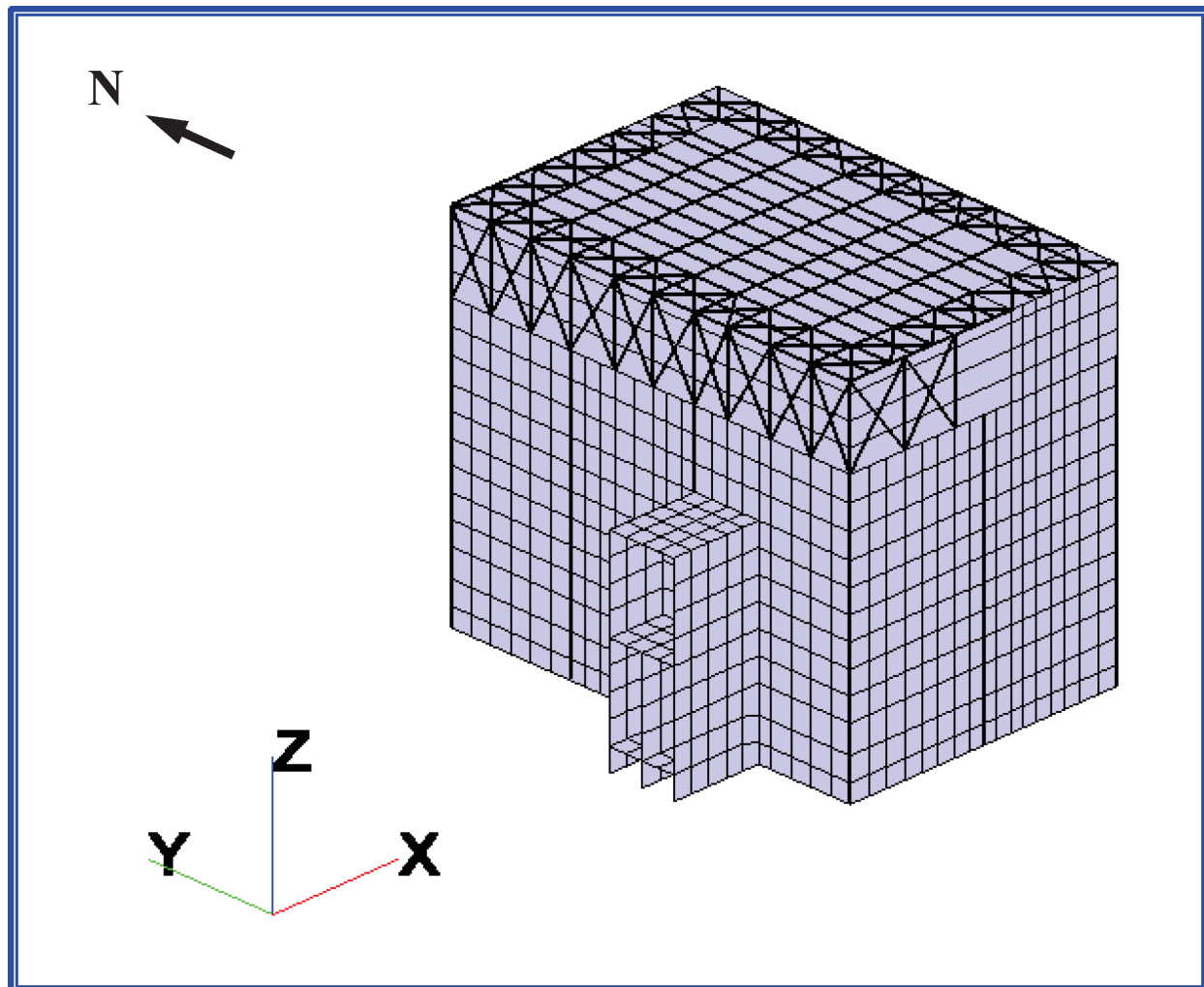
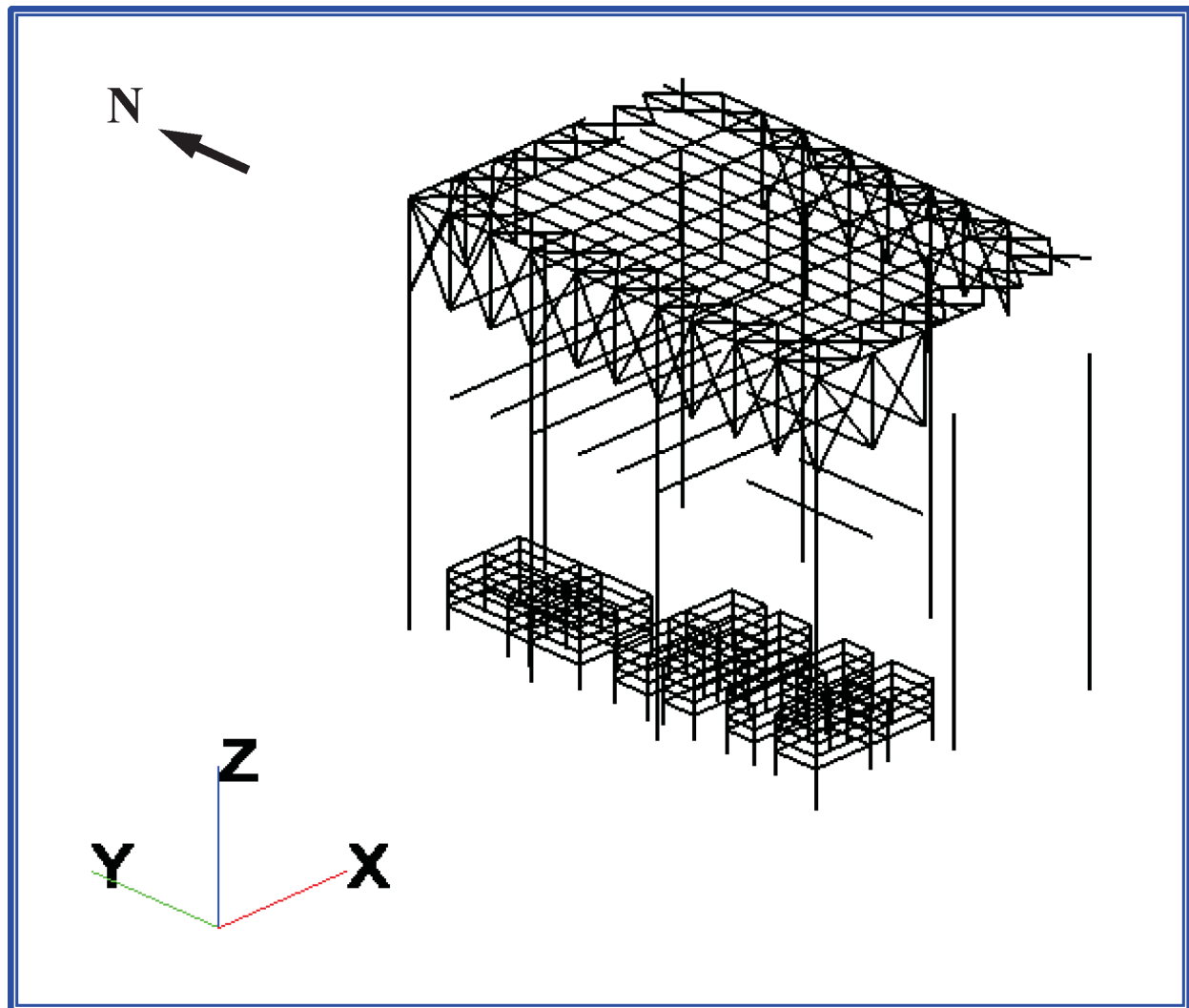**Figure 3.7.2-58: Control Building SASSI2010 Model Beam Elements**

Figure 3.7.2-59: Structures and Backfill Soil of Triple Building SAP2000 Model
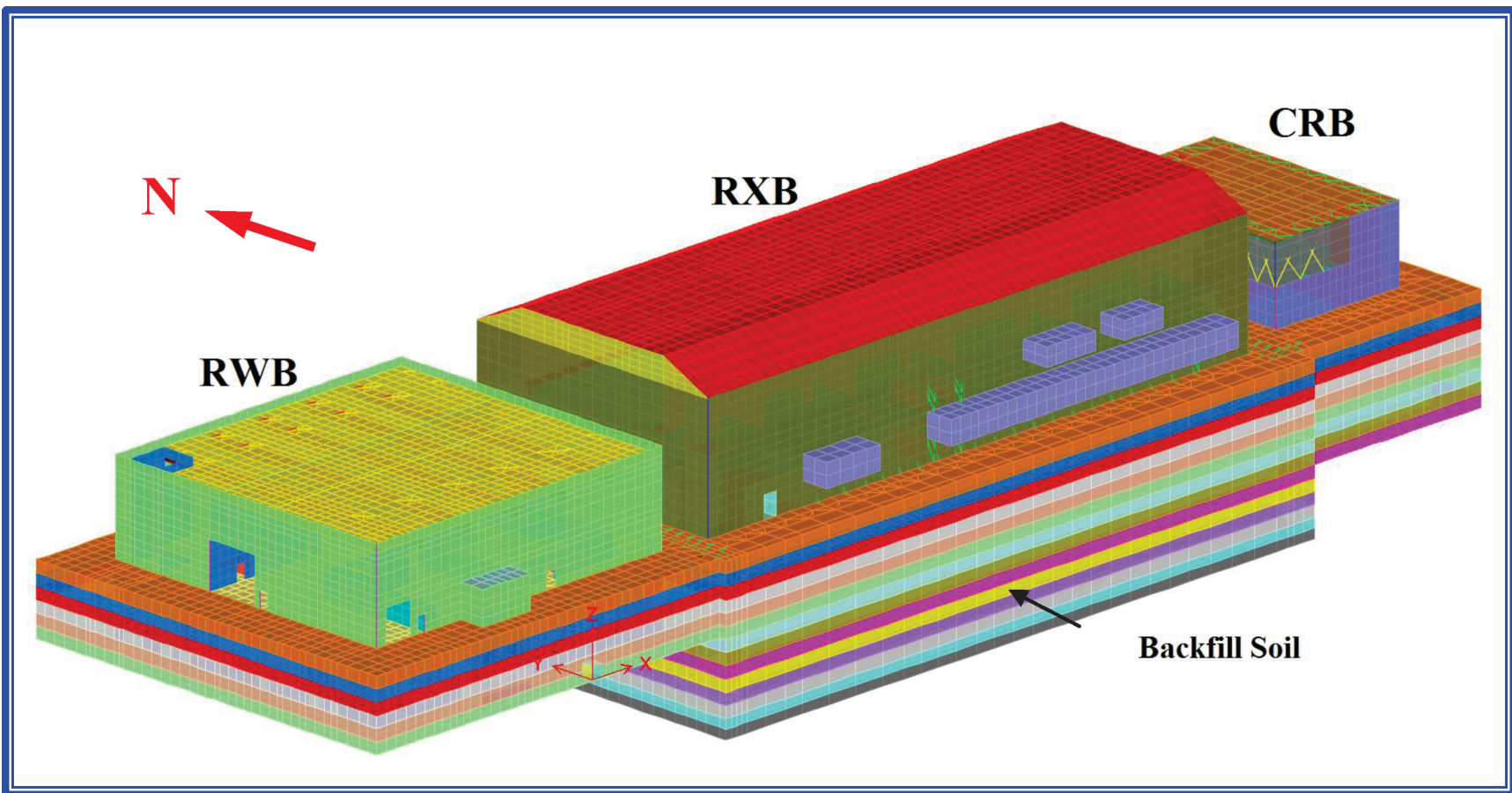
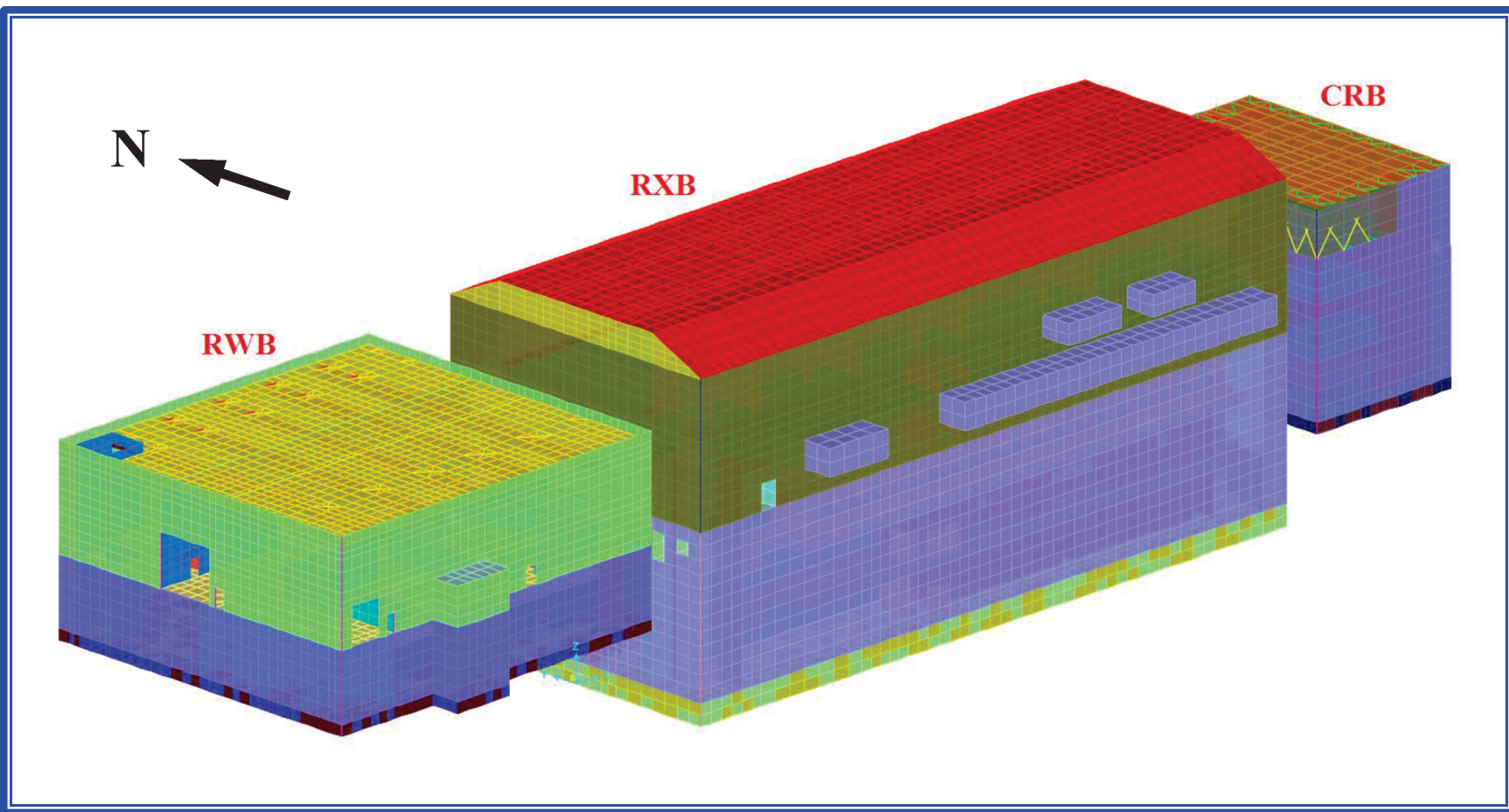**Figure 3.7.2-60: Isometric View of South Side of Triple SAP2000 Model (Looking Northeast)**

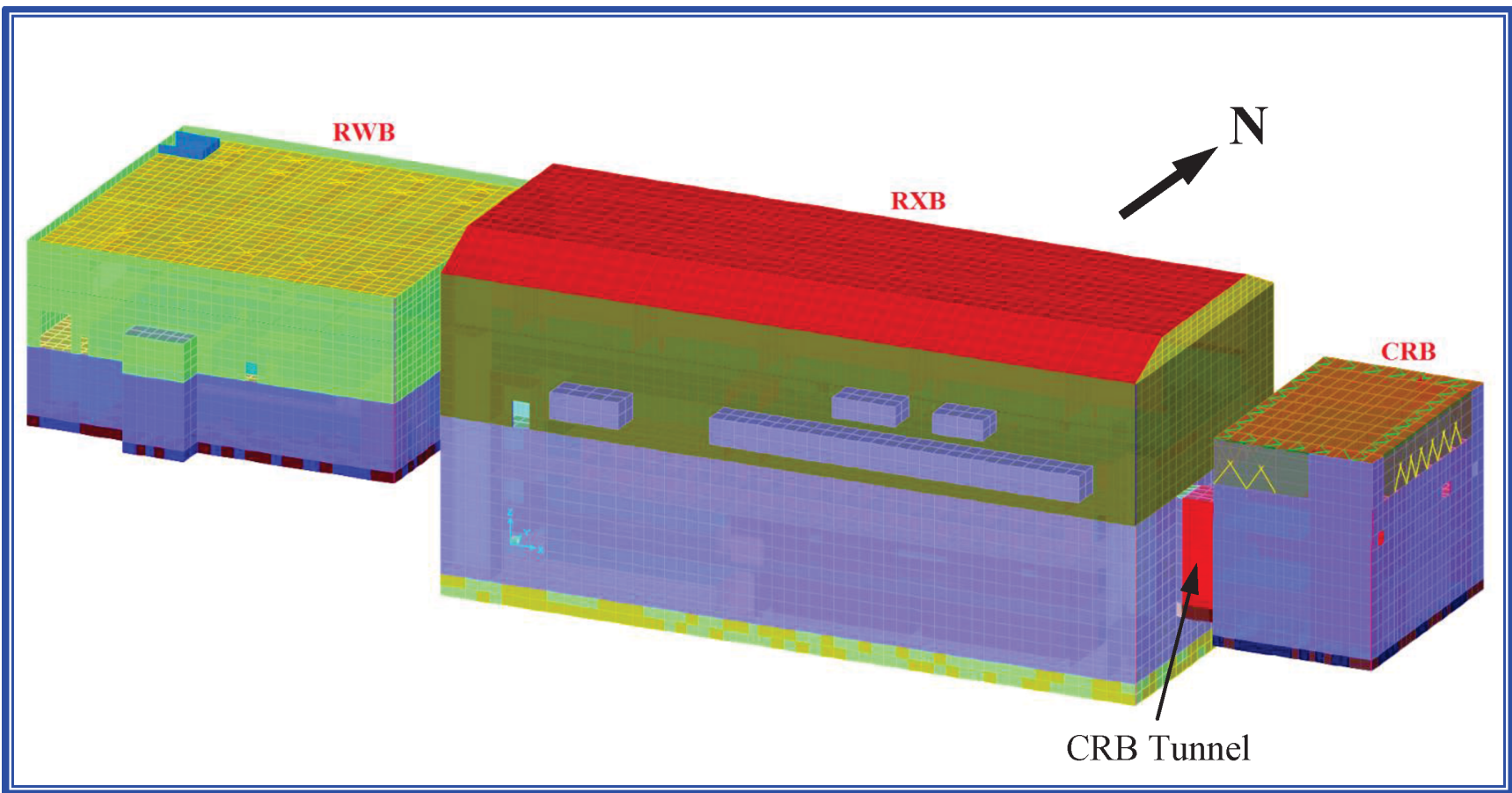**Figure 3.7.2-61: Isometric View of South Side of Triple Building SAP2000 Model (Looking Northwest)**

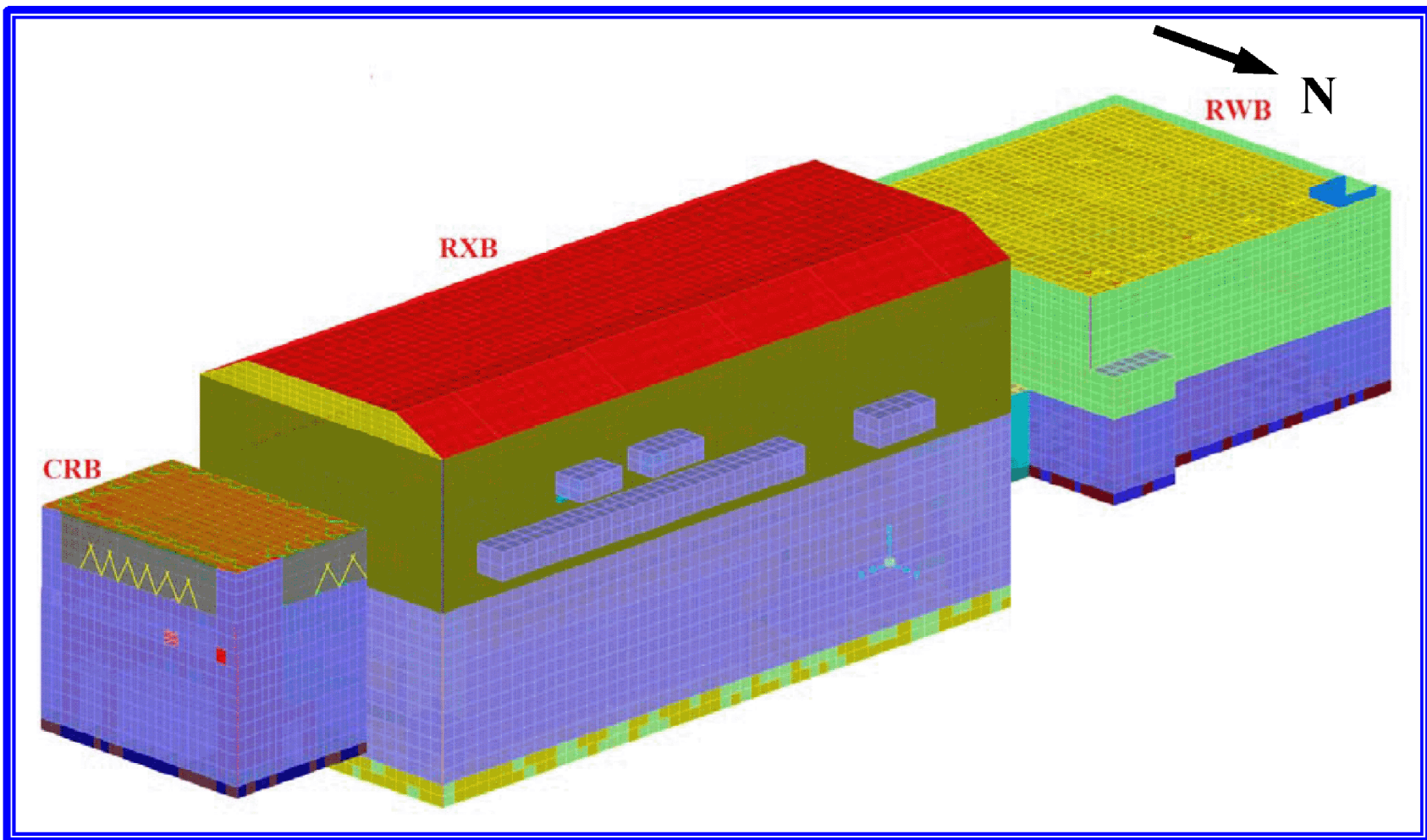**Figure 3.7.2-62: Isometric View of North Side of Triple Building SAP2000 Model (Looking Southwest)**

Figure 3.7.2-63: Isometric View of Backfill Soil Elements around the Three Buildings
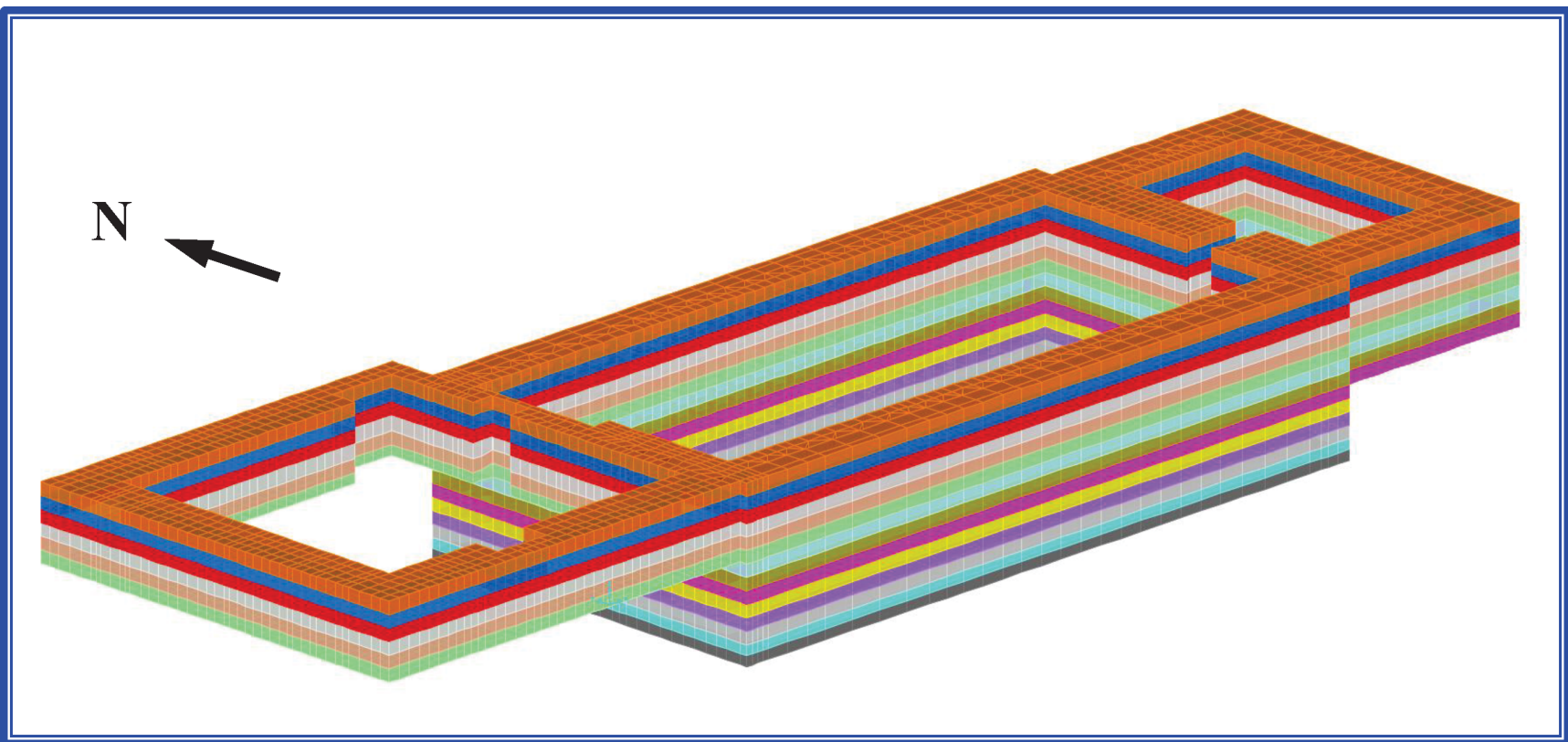
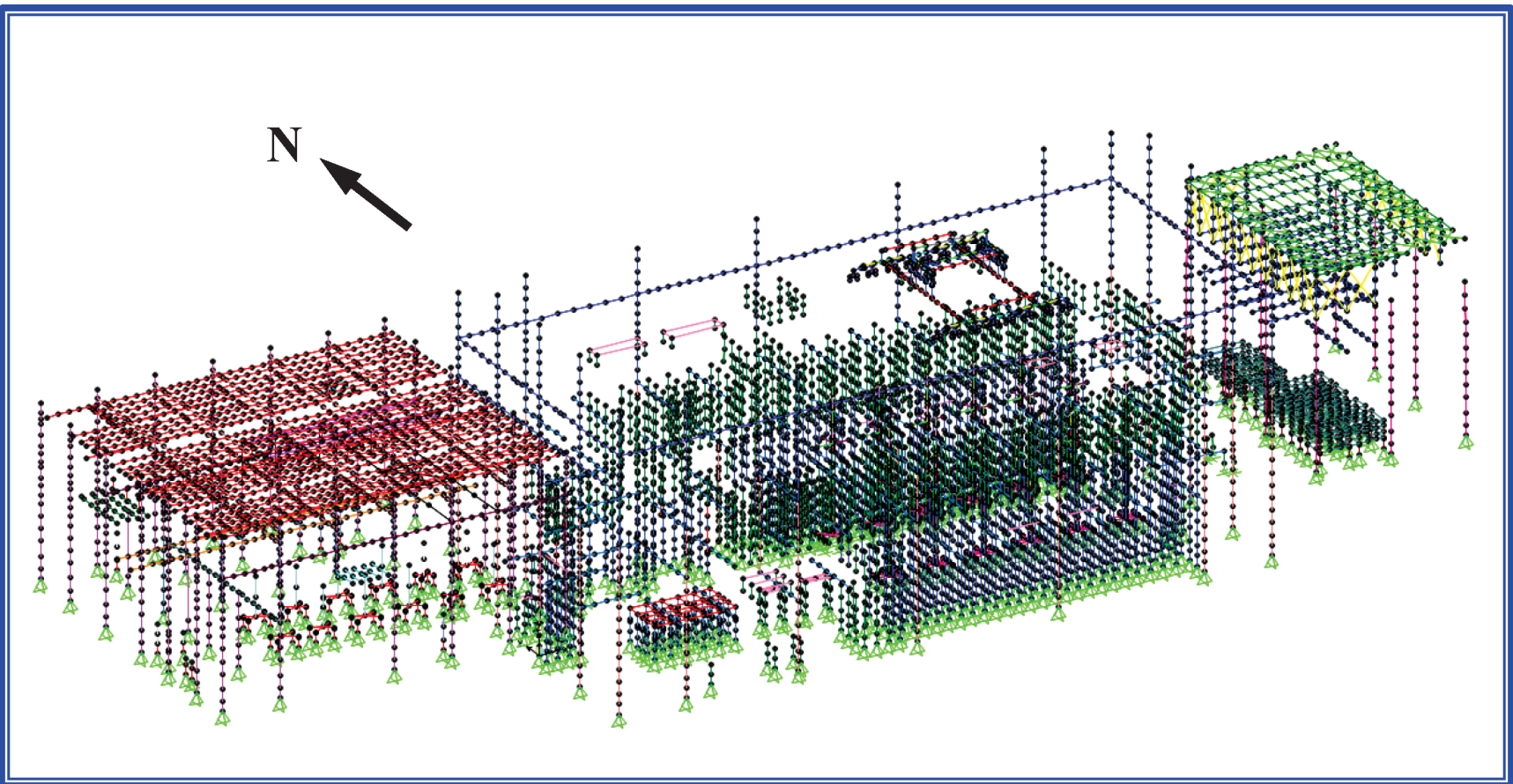**Figure 3.7.2-64: Beam Elements of Triple Building SAP2000 Model**

N

Figure 3.7.2-65: Spring or Link Elements of Triple Building SAP2000 Model

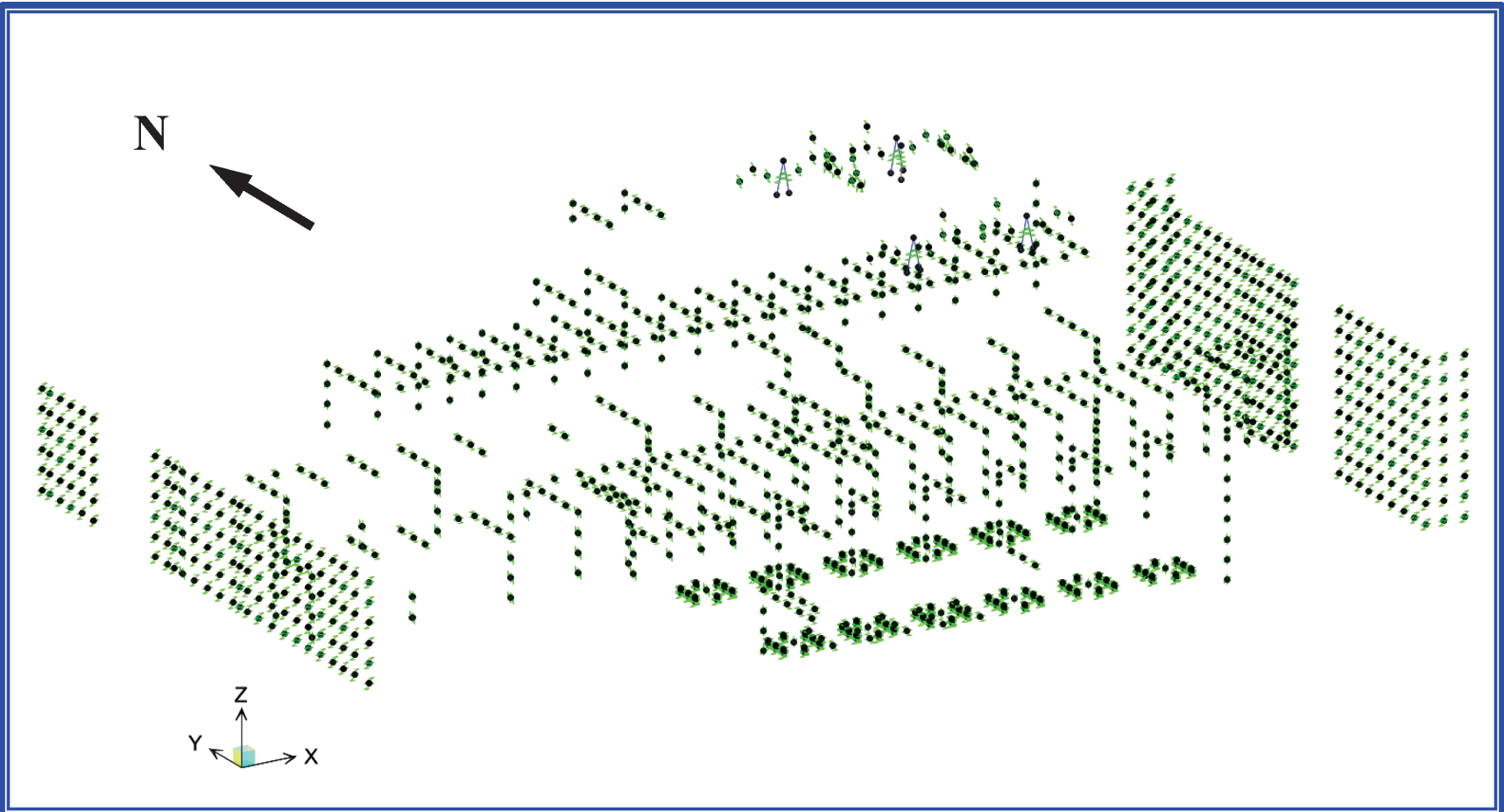**Figure 3.7.2-66: Elevation View of Triple Building SAP2000 Model Showing Separation**
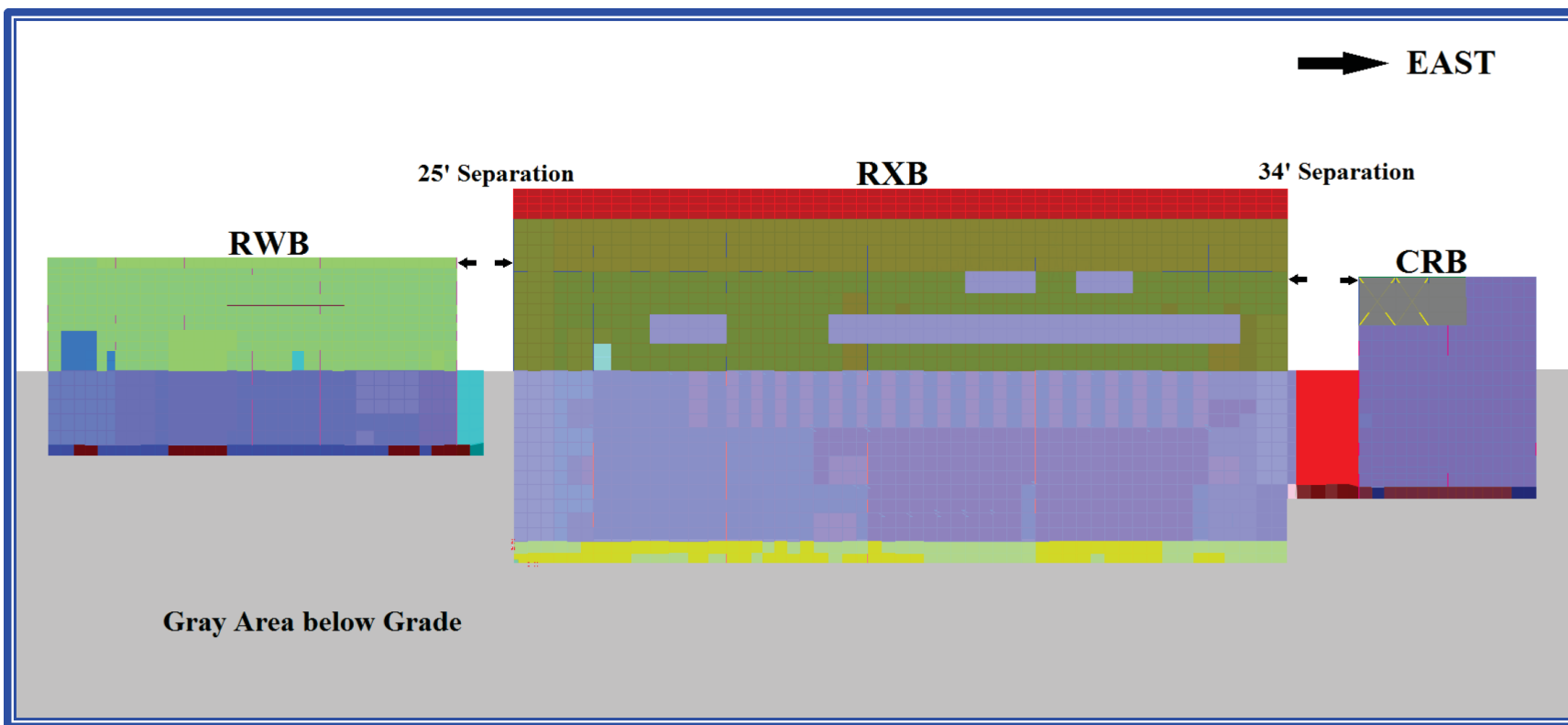
Figure 3.7.2-67: Isometric View of SASSI2010 Triple Building

SASSI2010 Legend
Color
Blue - Plate/Shell Elements
Green - Solid Elements
Red - Beam Elements
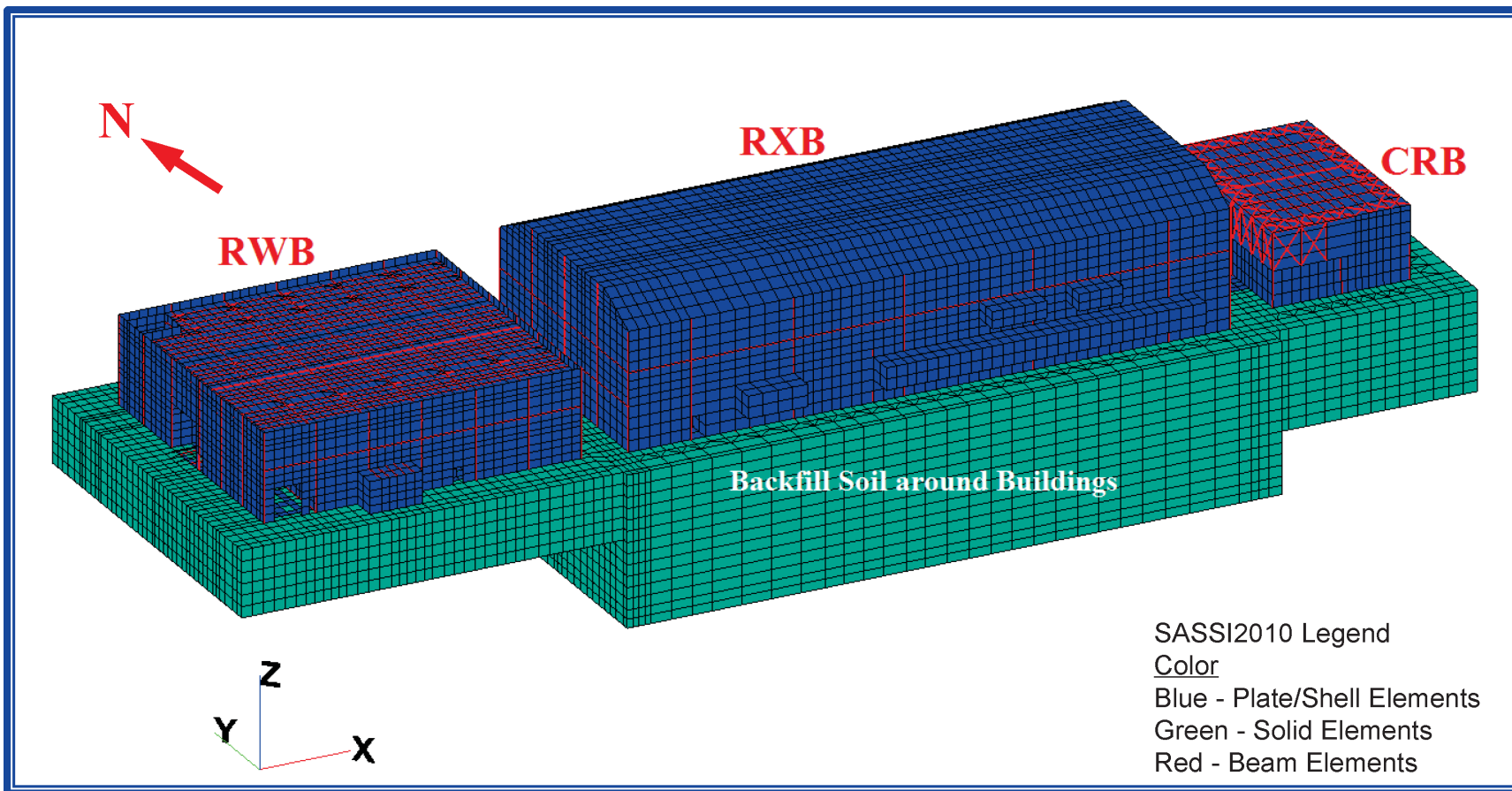
Figure 3.7.2-68: North Half View of SASSI2010 Triple Building Model

CRB

RXB

RWB

Backfill (in green)

SASSI2010 Legend
Color
Blue - Plate/Shell Elements
Green - Solid Elements
Red - Beam Elements
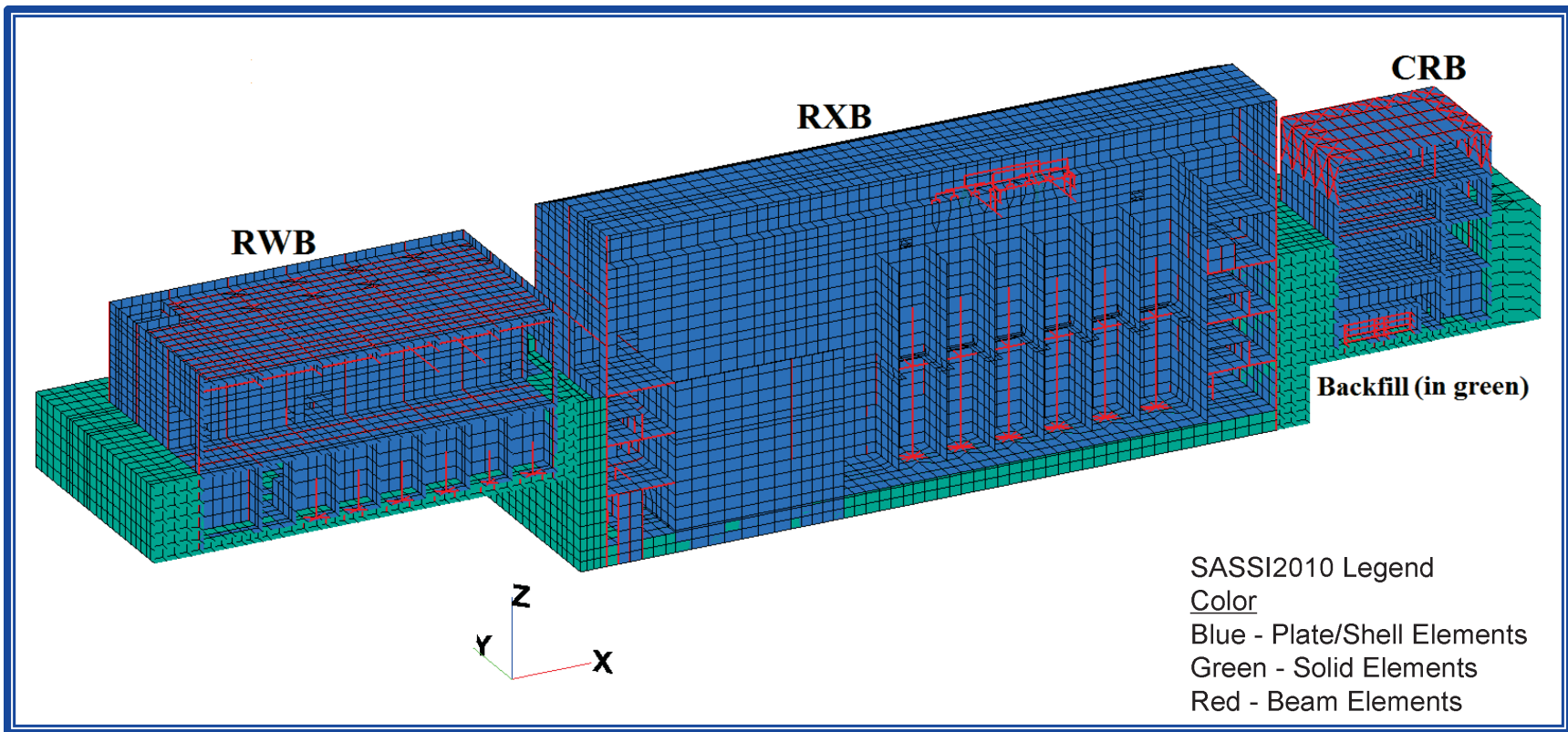
Figure 3.7.2-69: SASSI2010 Triple Building Model Shown without Backfill

N

RWB

RXB

CRB

SASSI2010 Legend
Color
Blue - Plate/Shell Elements
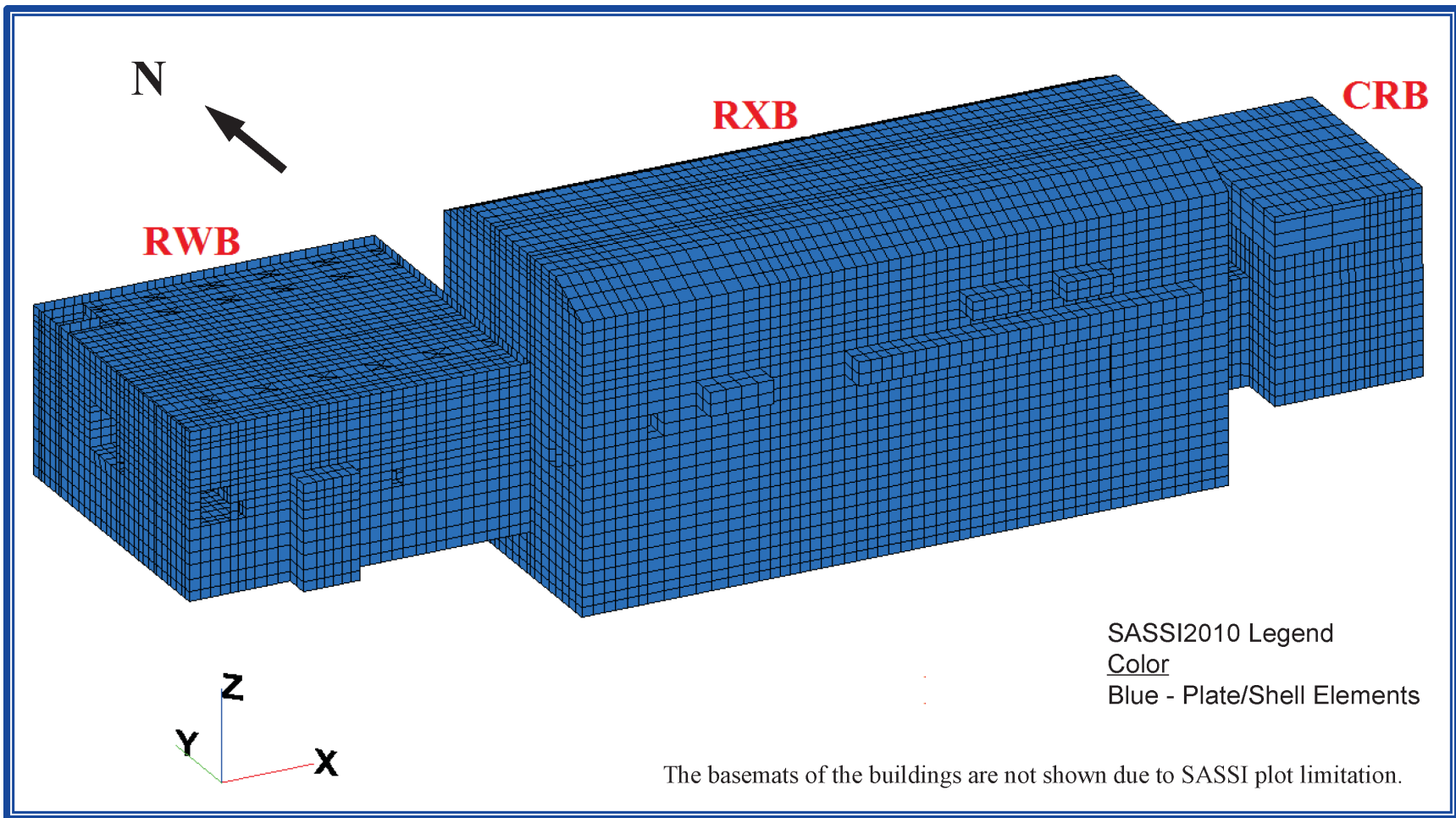
The basemats of the buildings are not shown due to SASSI plot limitation.

Figure 3.7.2-70: SASSI2010 Triple Building Model Showing South Side of Three Buildings (Looking Northwest)

SASSI2010 Legend
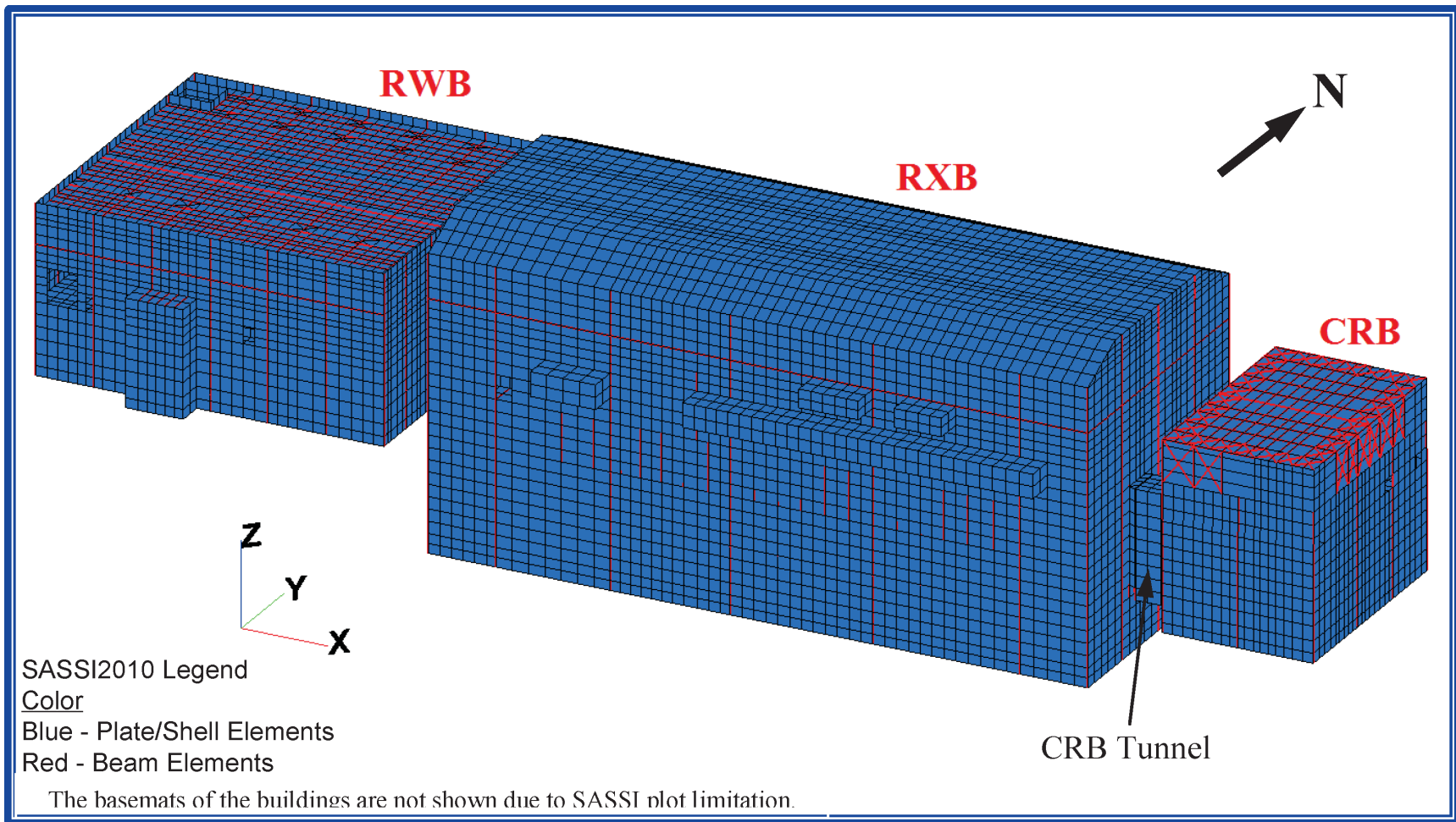Color
Blue - Plate/Shell Elements
Red - Beam Elements

The basemats of the buildings are not shown due to SASSI plot limitation.

Figure 3.7.2-71: SASSI2010 Triple Building Model Showing North Side of Three Buildings (Looking Southwest)

RWB

RXB

CRB

N

RWB Tunnel

SASSI2010 Legend
Color
Blue - Plate/Shell Elements
Red - Beam Elements

The basemats of the buildings are not shown due to SASSI plot limitation.

Z

X

Y
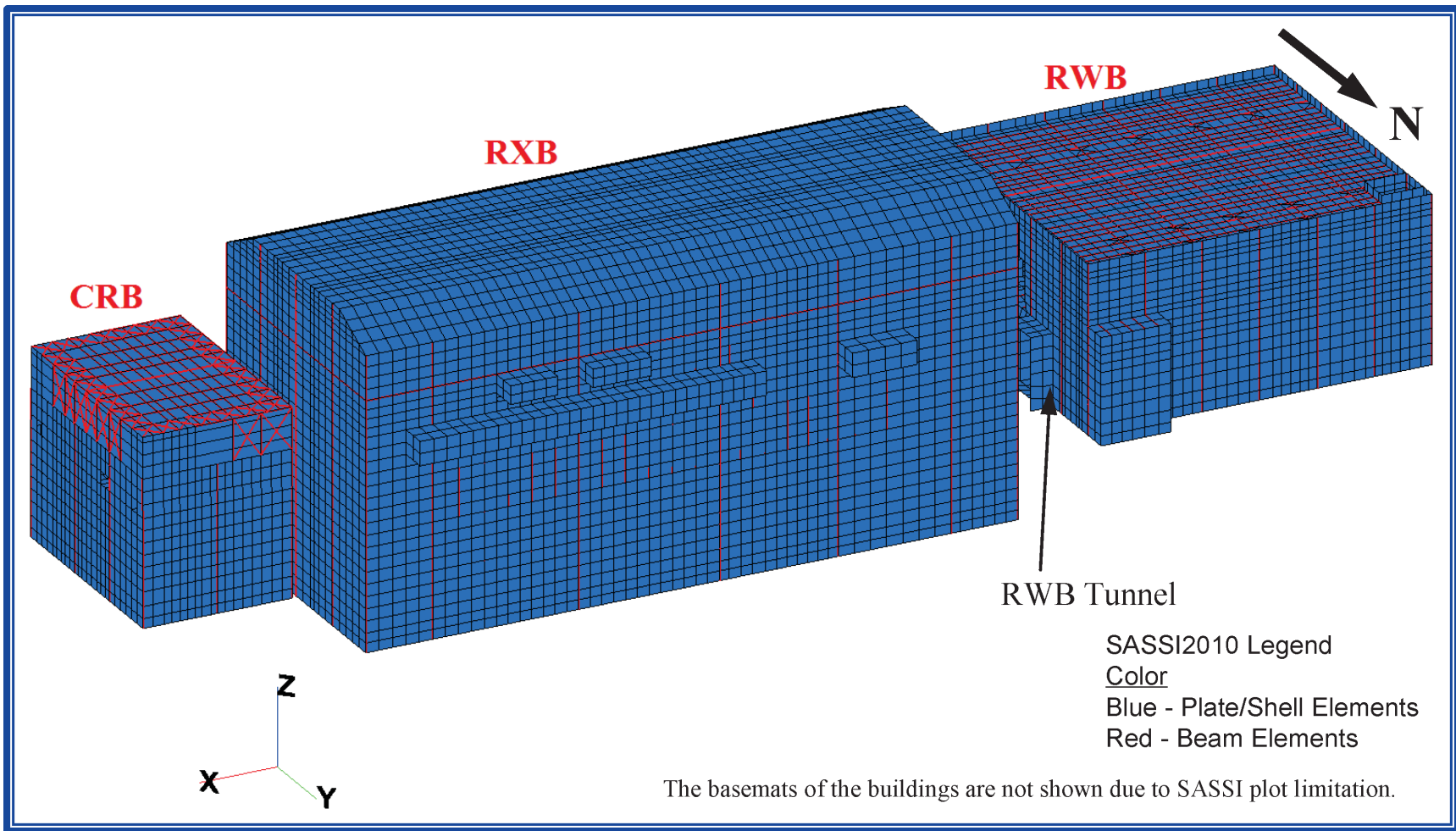
Figure 3.7.2-72: Beam Elements of SASSI2010 Triple Building Model

SASSI2010 Legend
Color
Red - Beam Elements
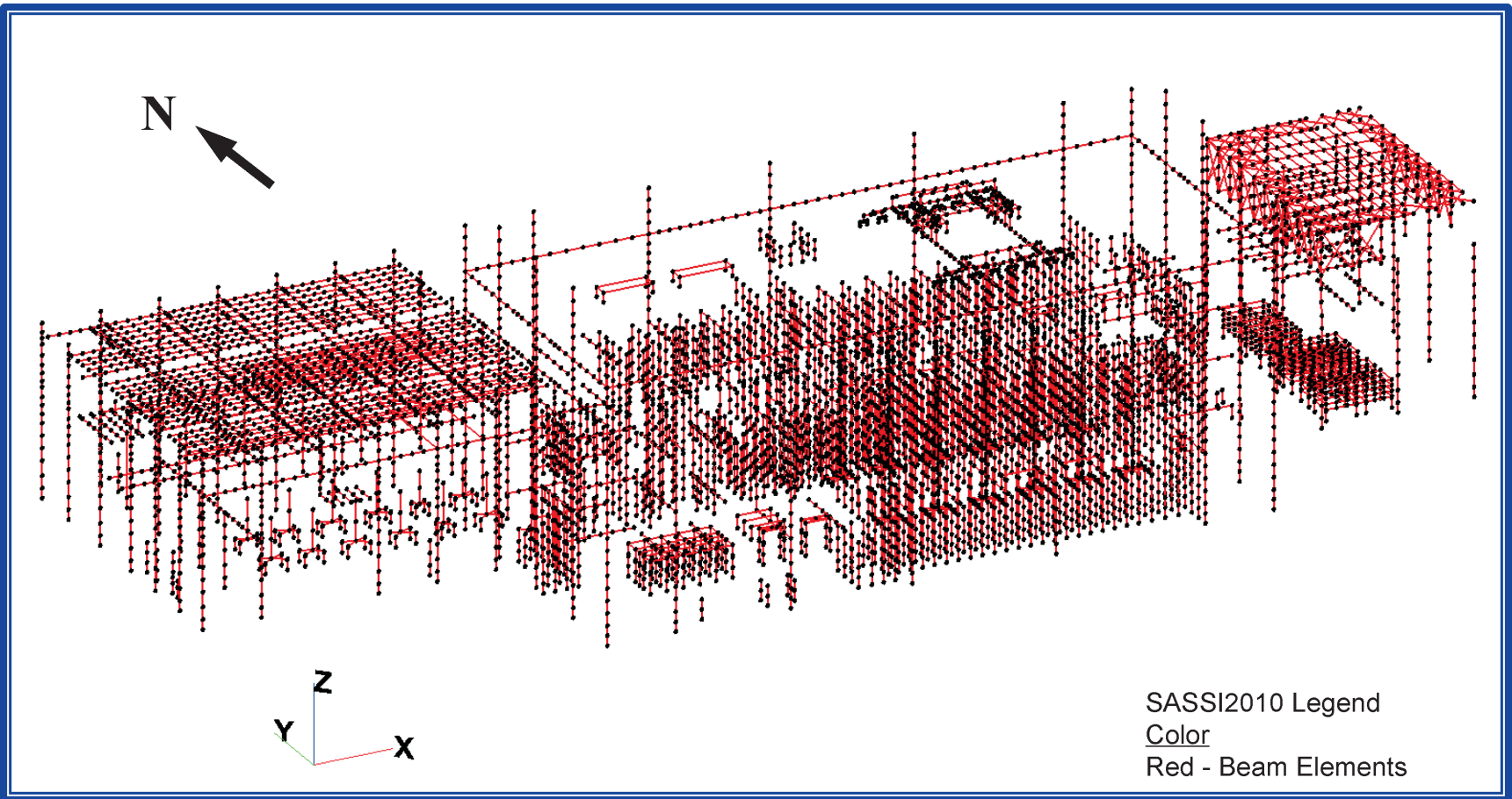
Figure 3.7.2-73: Excavated Soil Solid Elements of the SASSI2010 Triple Building Model

SASSI2010 Legend
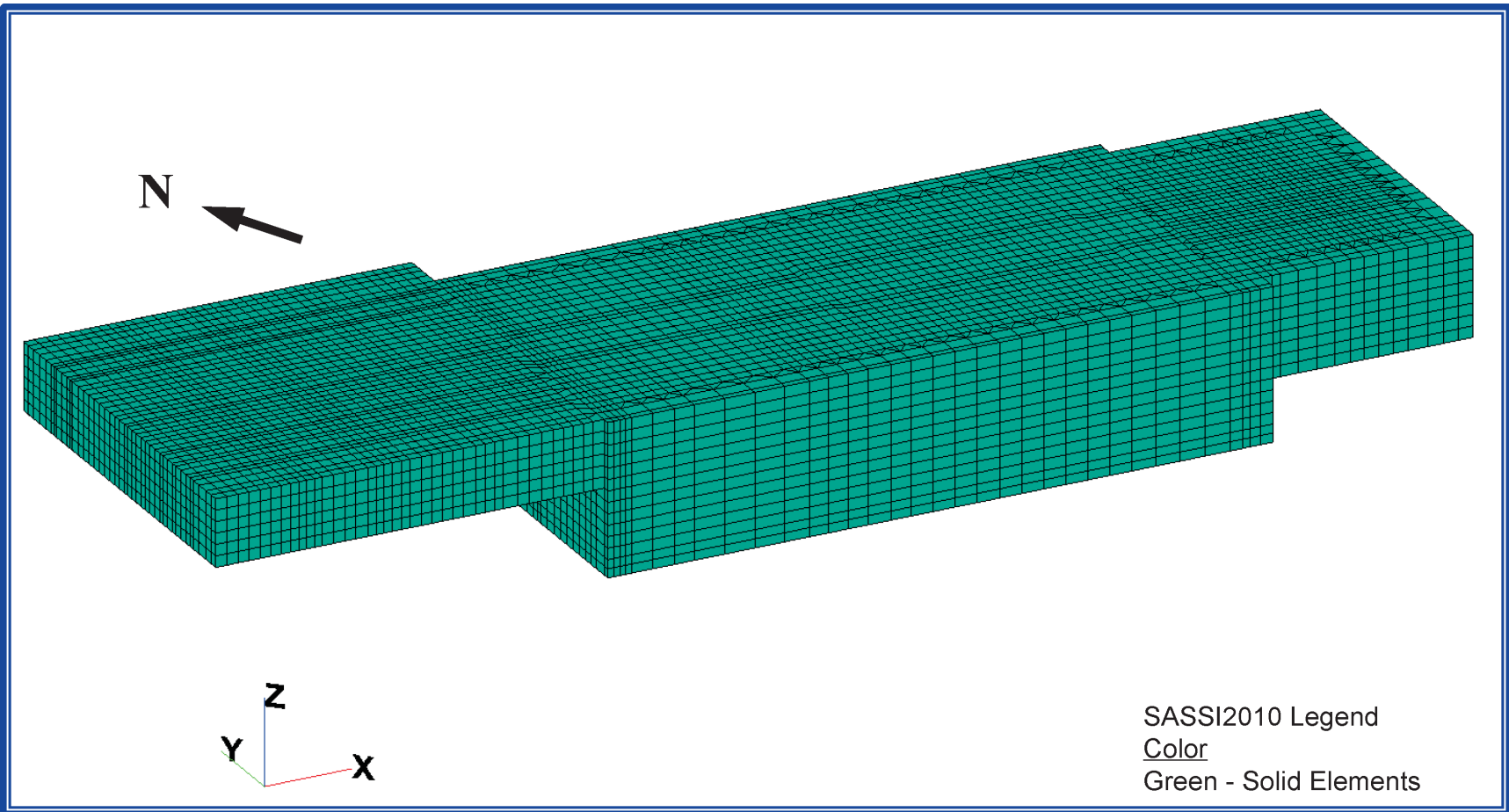Color
Green - Solid Elements

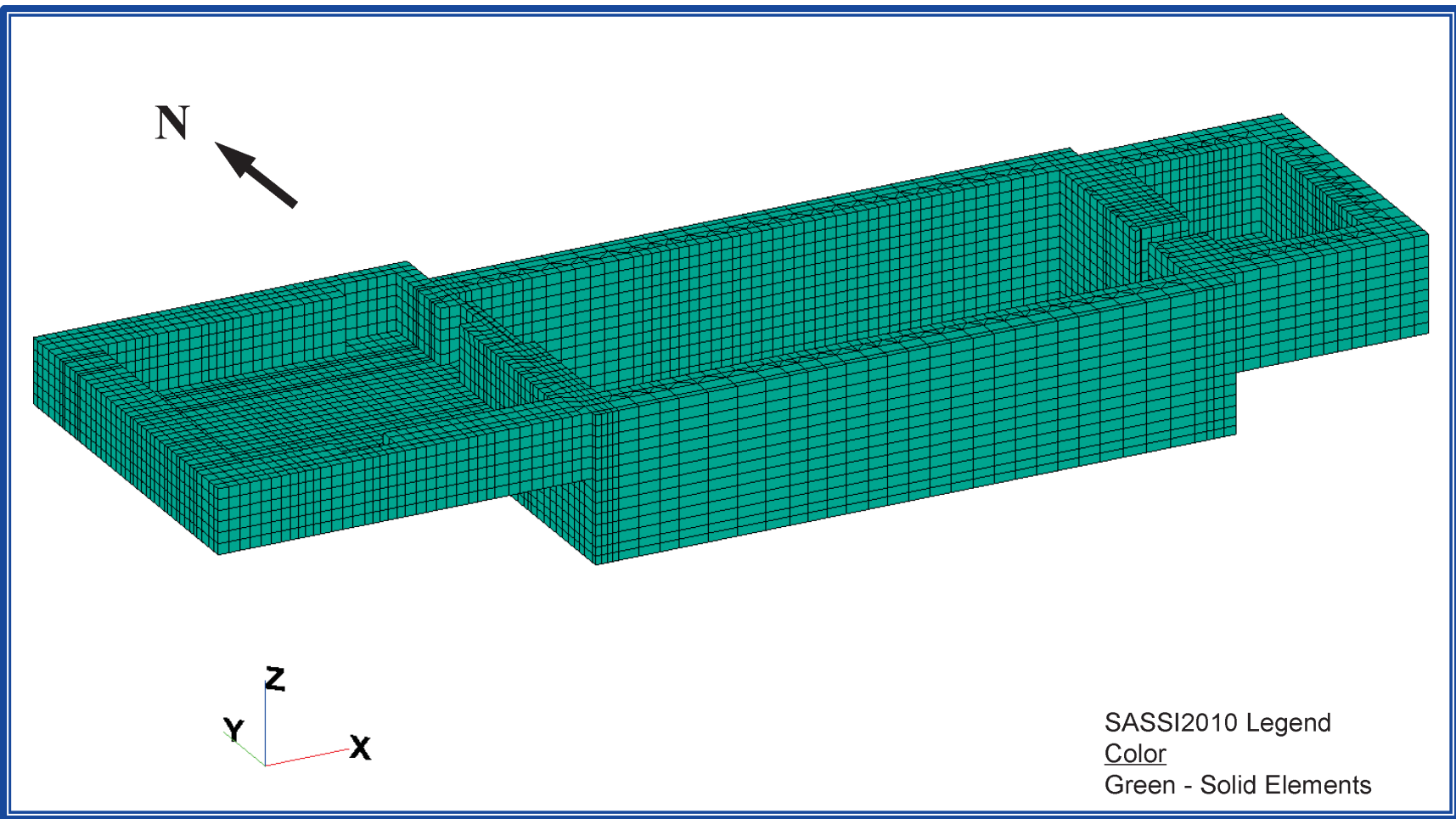**Figure 3.7.2-74: Backfill Soil Solid Elements of the SASSI2010 Triple Building Model**

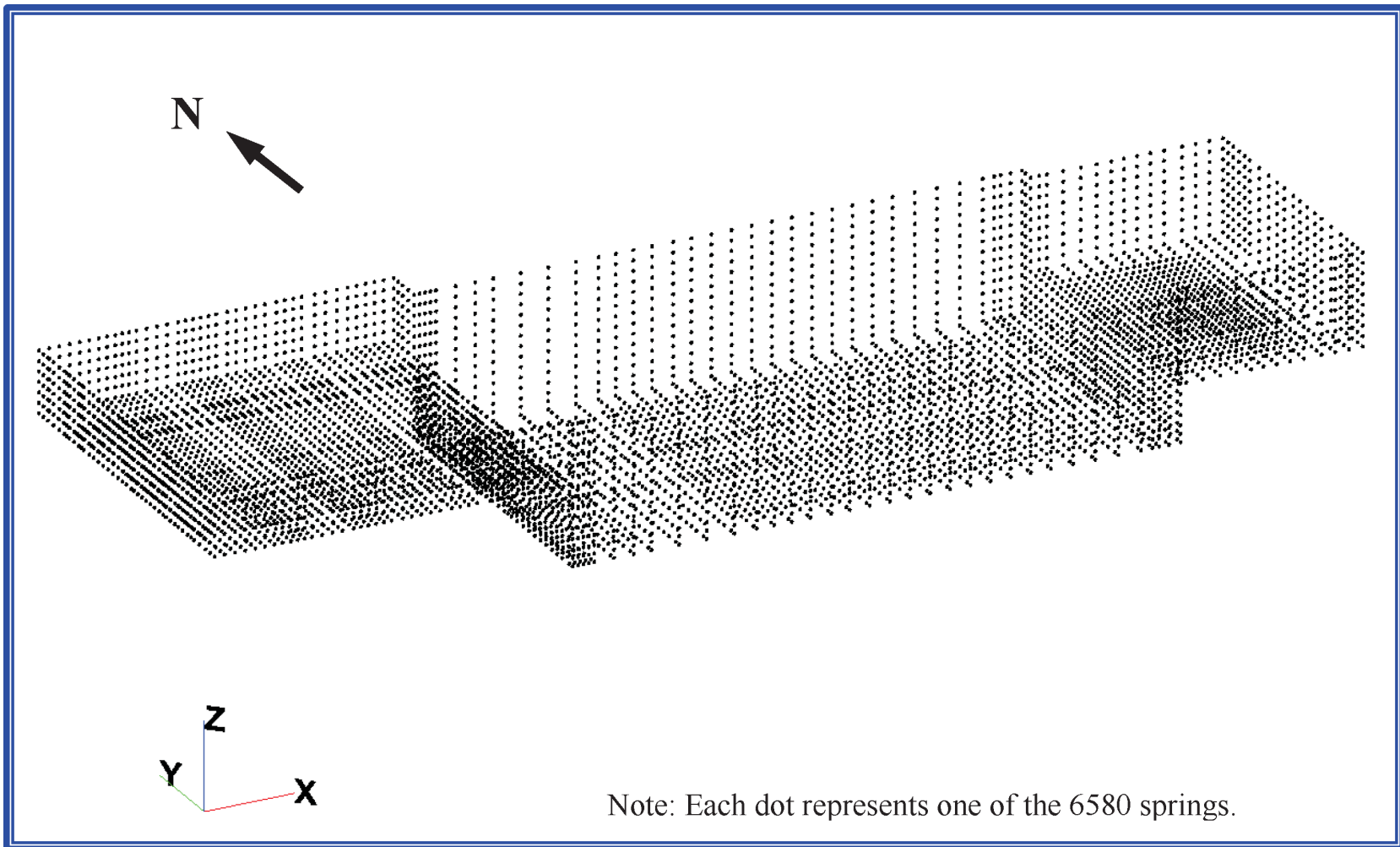**Figure 3.7.2-75: Rigid Soil Springs between Backfill and Free Field Soils of the SASSI2010 Triple Building Model**
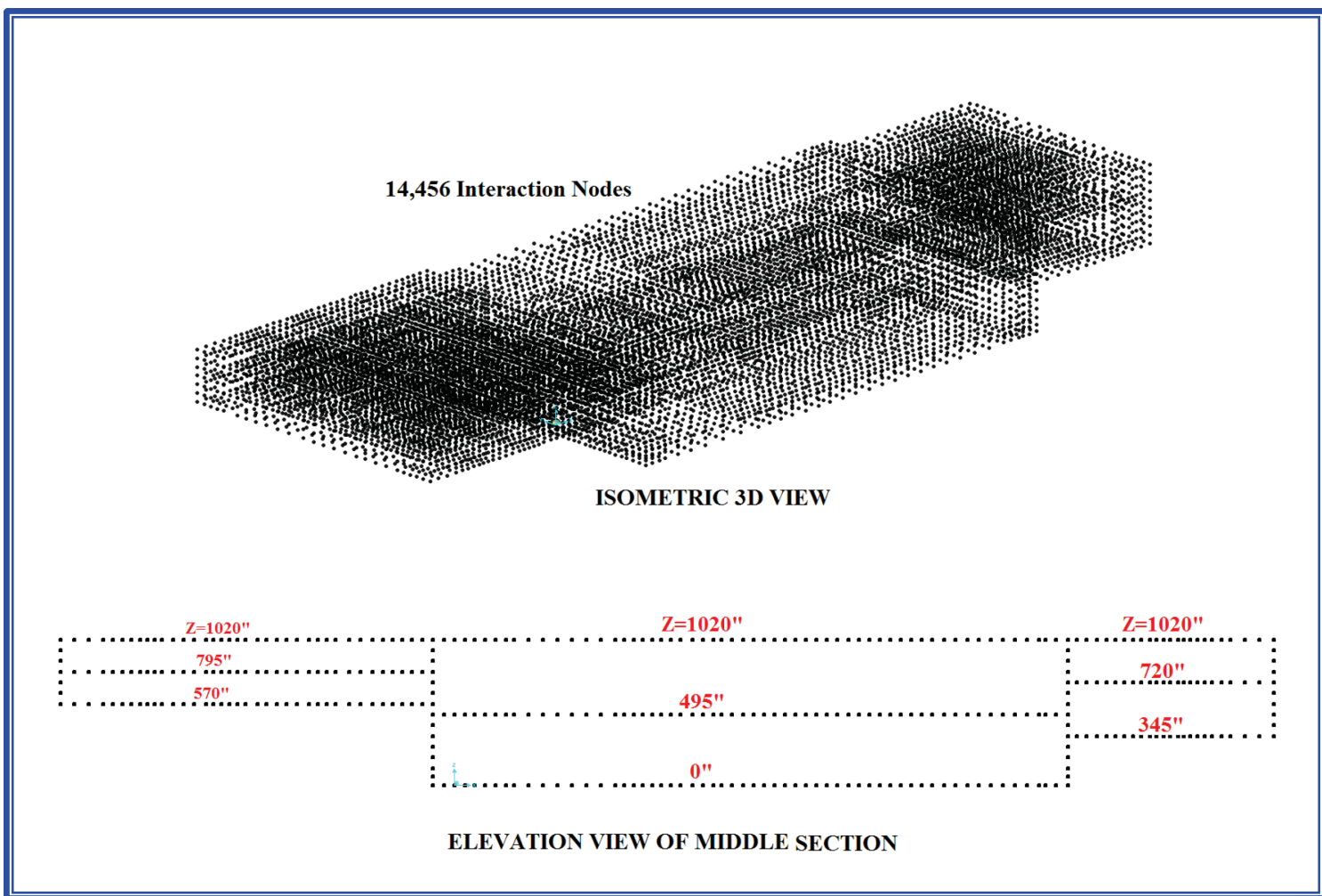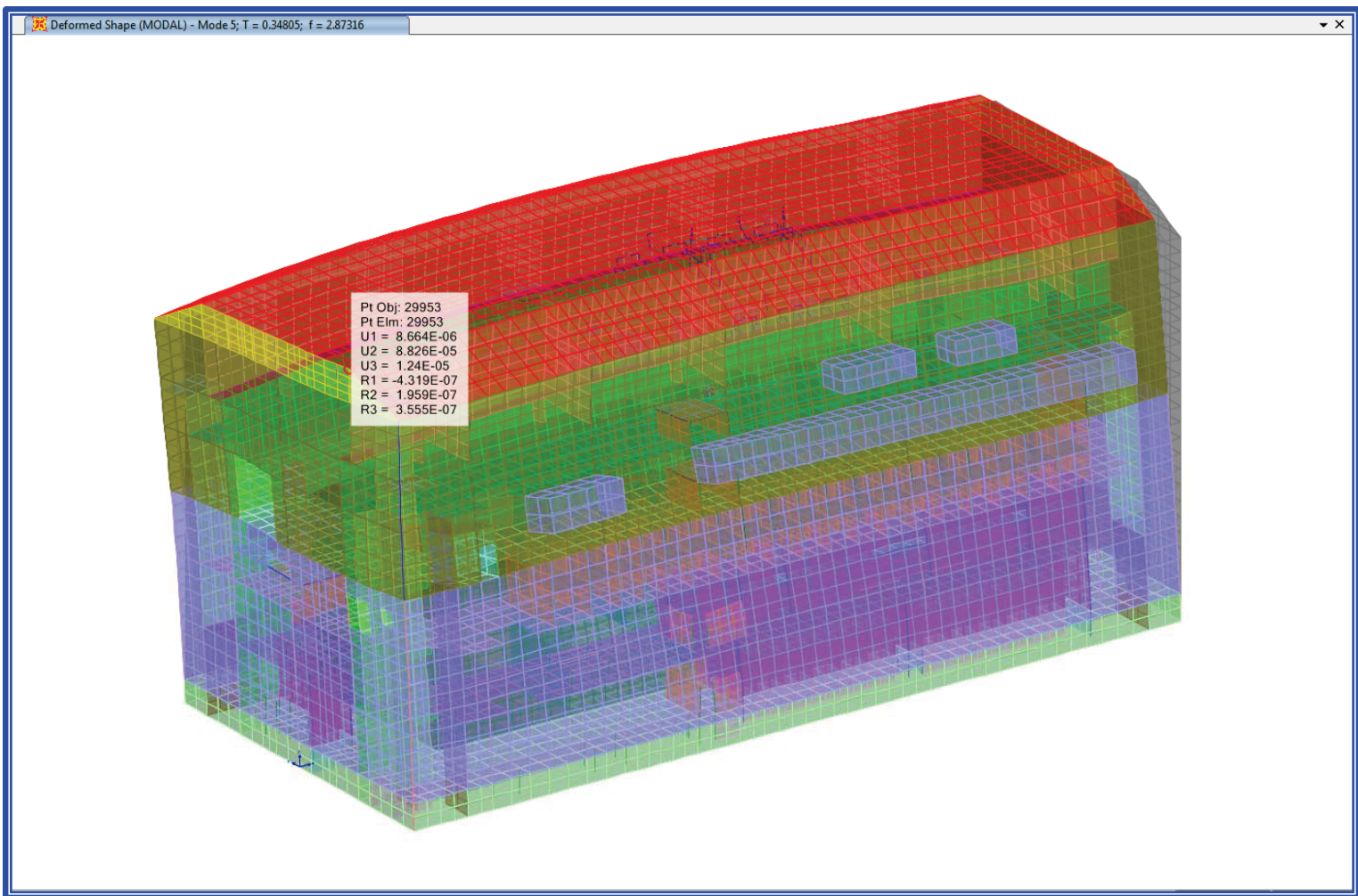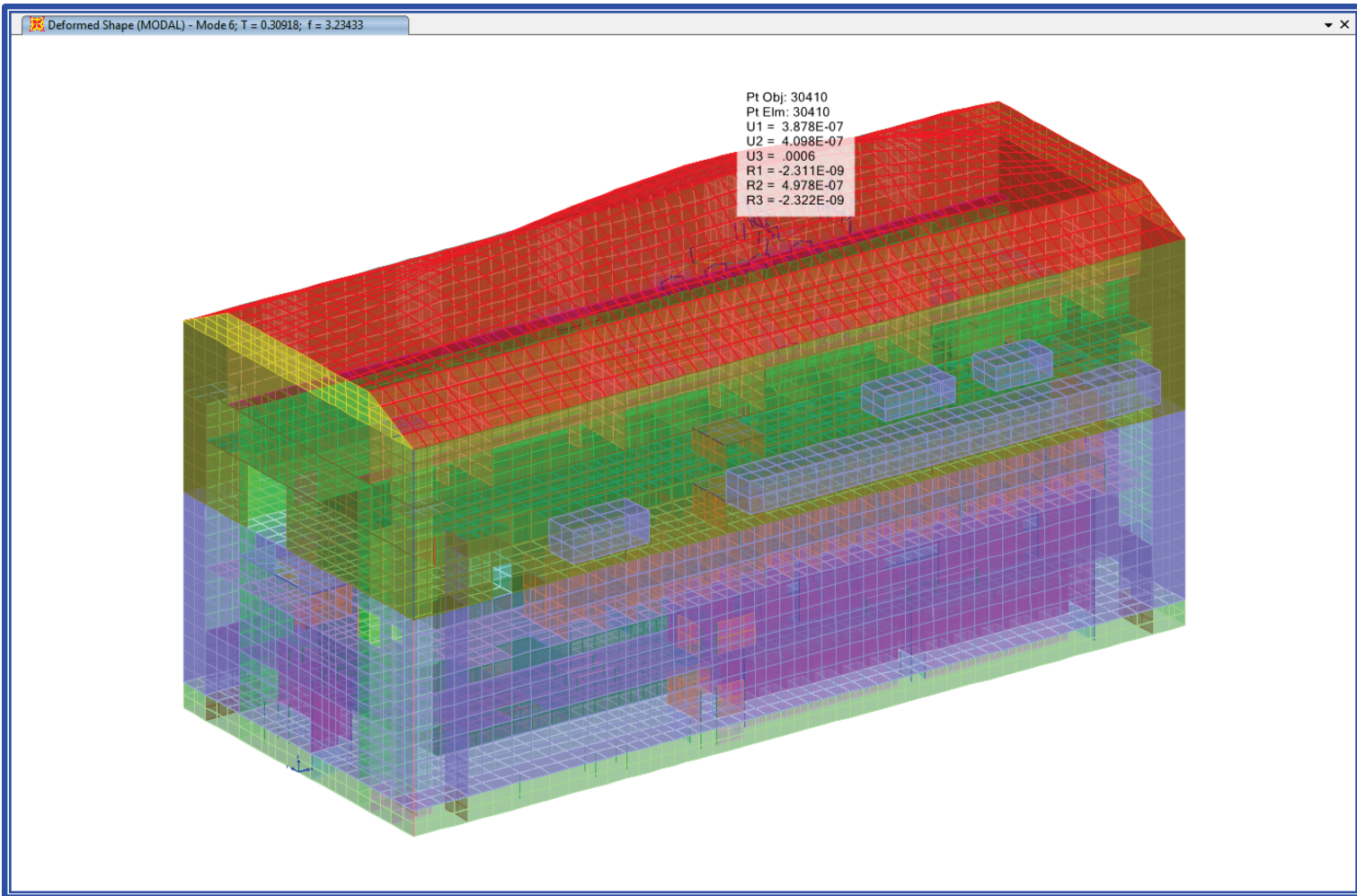

Note: Each dot represents one of the 6580 springs.

Figure 3.7.2-76: Interaction Nodes for Soil Impedance Calculation

14,456 Interaction Nodes

ISOMETRIC 3D VIEW

Z=1020" Z=1020" Z=1020"

795" 720"

570" 495" 345"

0"
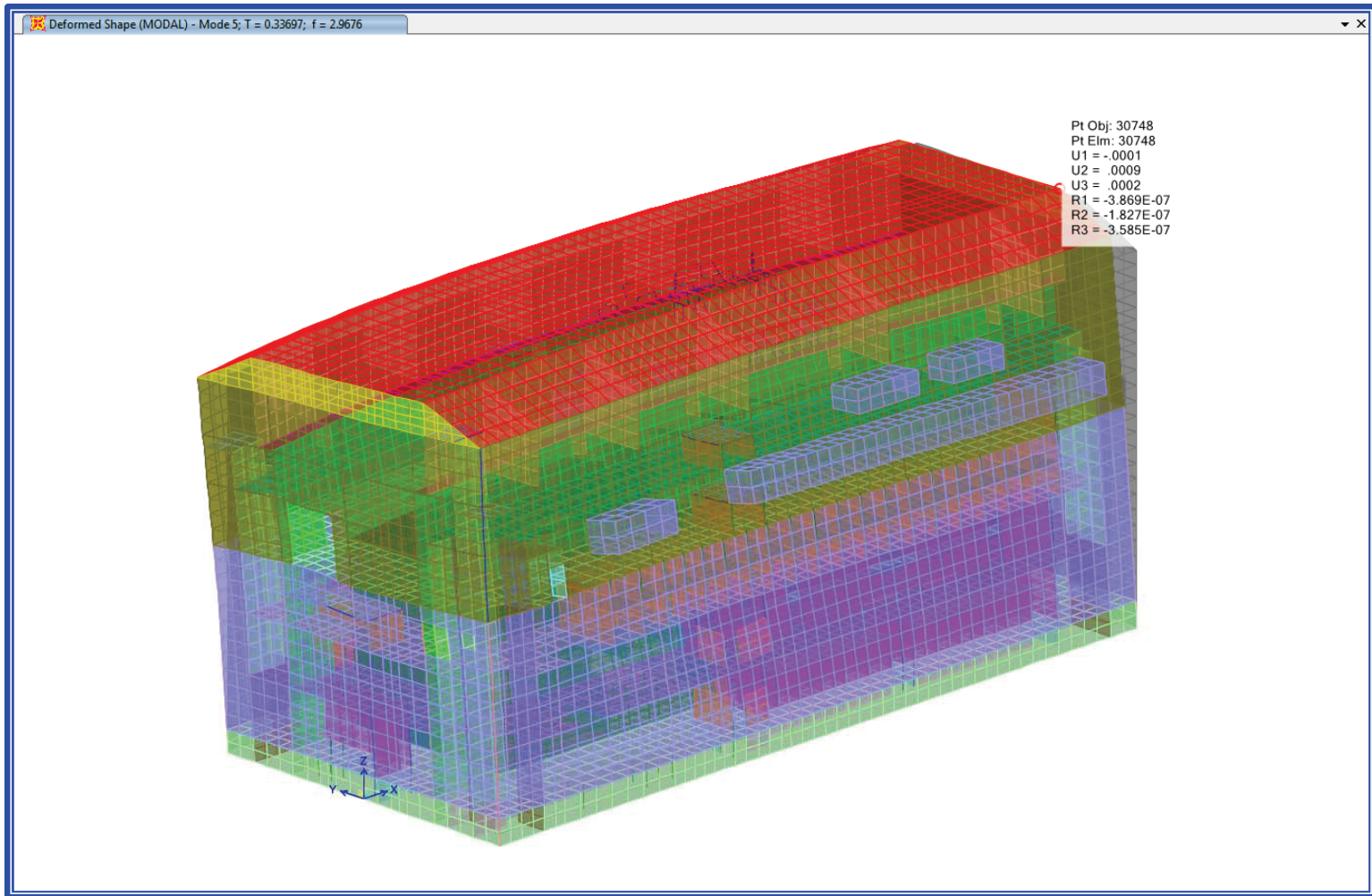
ELEVATION VIEW OF MIDDLE SECTION

Figure 3.7.2-77: Reactor Building Cracked Model - Modal Shape - (Mode 5)

Figure 3.7.2-78: Reactor Building Cracked Model - Modal Shape - (Mode 6)

Deformed Shape (MODAL) - Mode 6; T = 0.30918; f = 3.23433

Pt Obj: 30410
Pt Elm: 30410
U1 = 3.878E-07
U2 = 4.098E-07
U3 = .0006
R1 = -2.311E-09
R2 = 4.978E-07
R3 = -2.322E-09

Figure 3.7.2-79: Reactor Building Cracked Model - Modal Shape - (Mode 14)

Deformed Shape (MODAL) - Mode 14; T = 0.21451; f = 4.66184

Pt Obj: 30243
Pt Elm: 30243
U1 = -2.244E-05
U2 = 9.981E-06
U3 = 2.103E-05
R1 = 4.839E-07
R2 = -2.859E-08
R3 = -6.687E-08
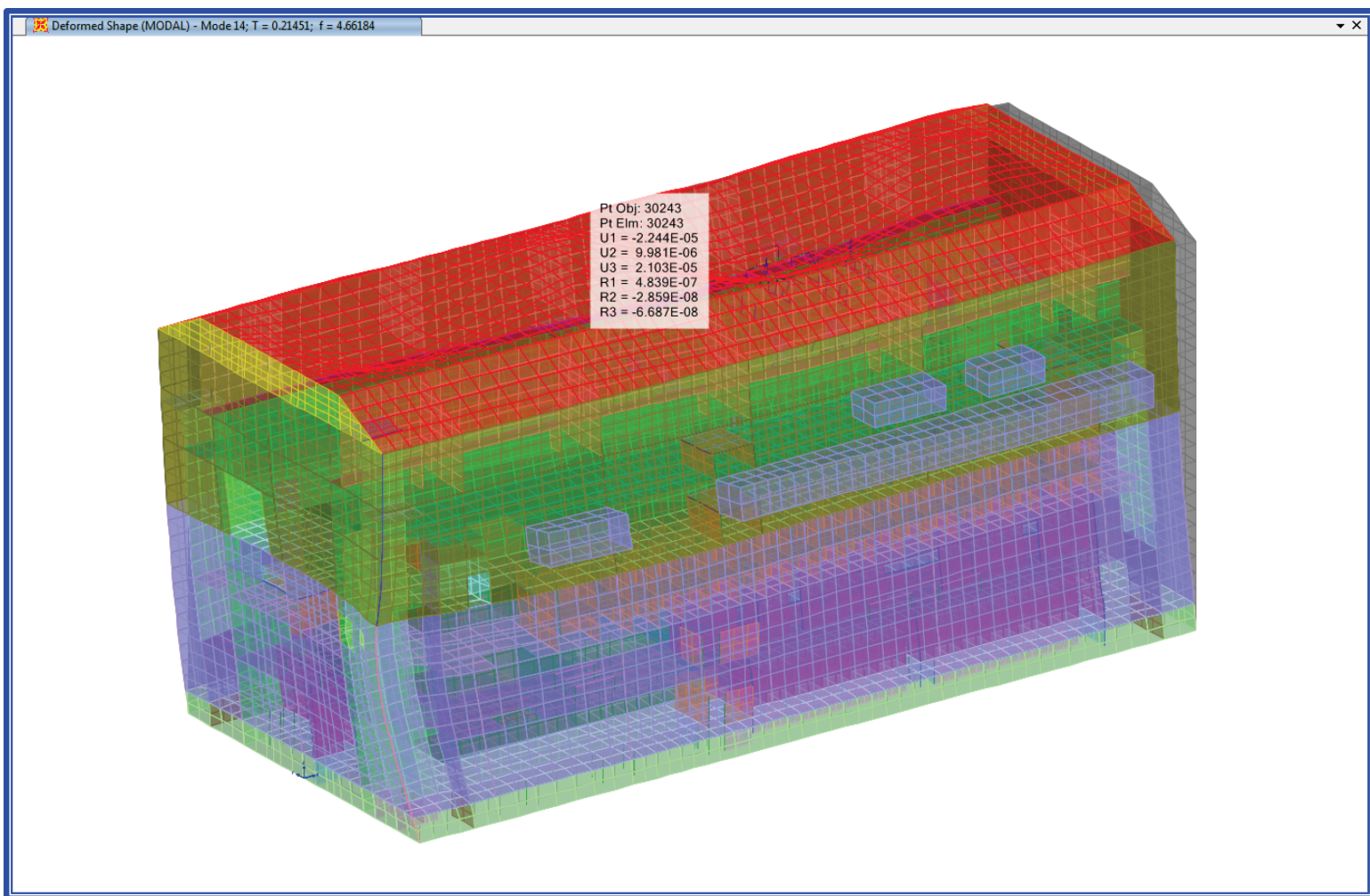
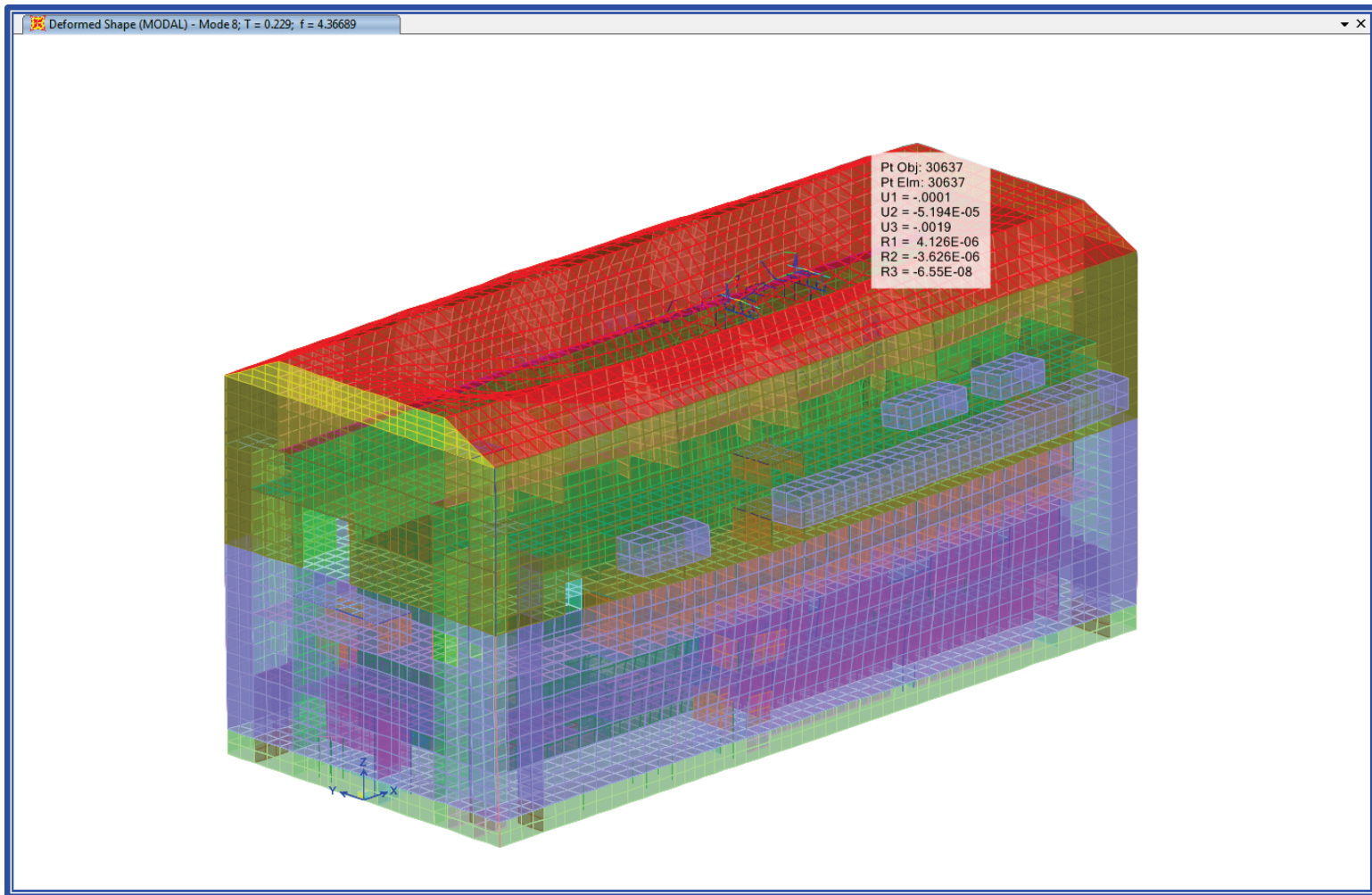**Figure 3.7.2-80: Reactor Building Uncracked Model - Modal Shape - (Mode 5)**

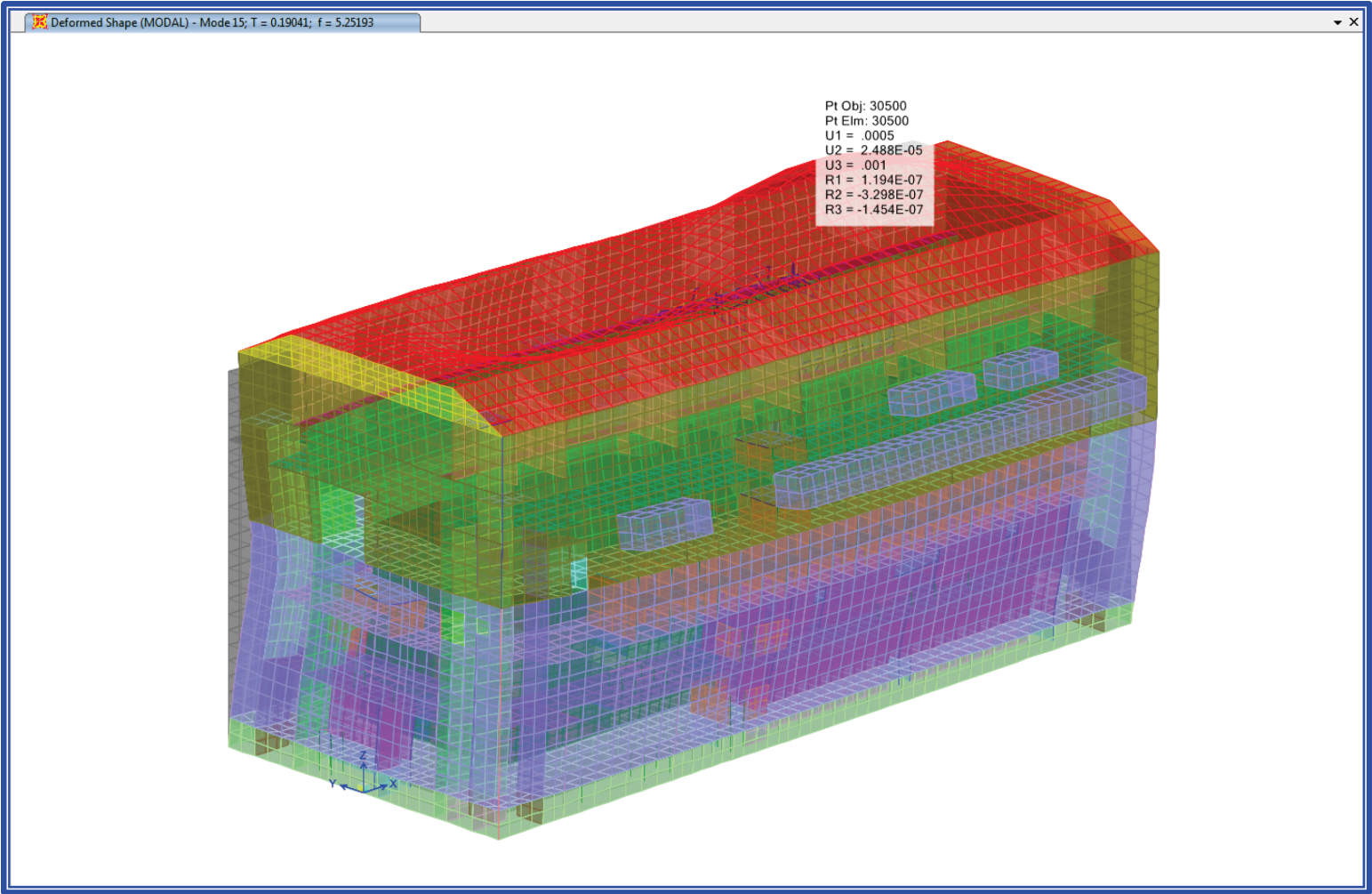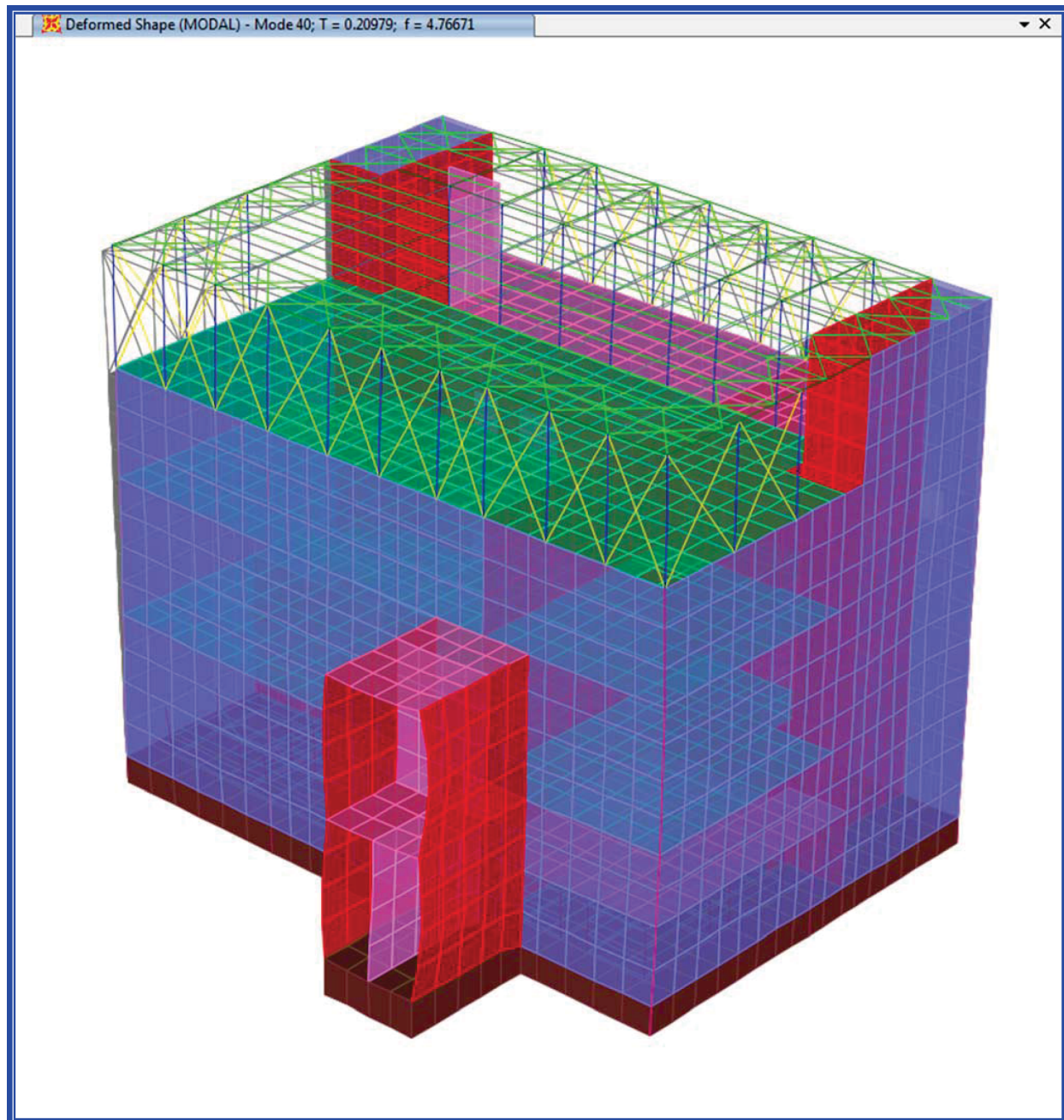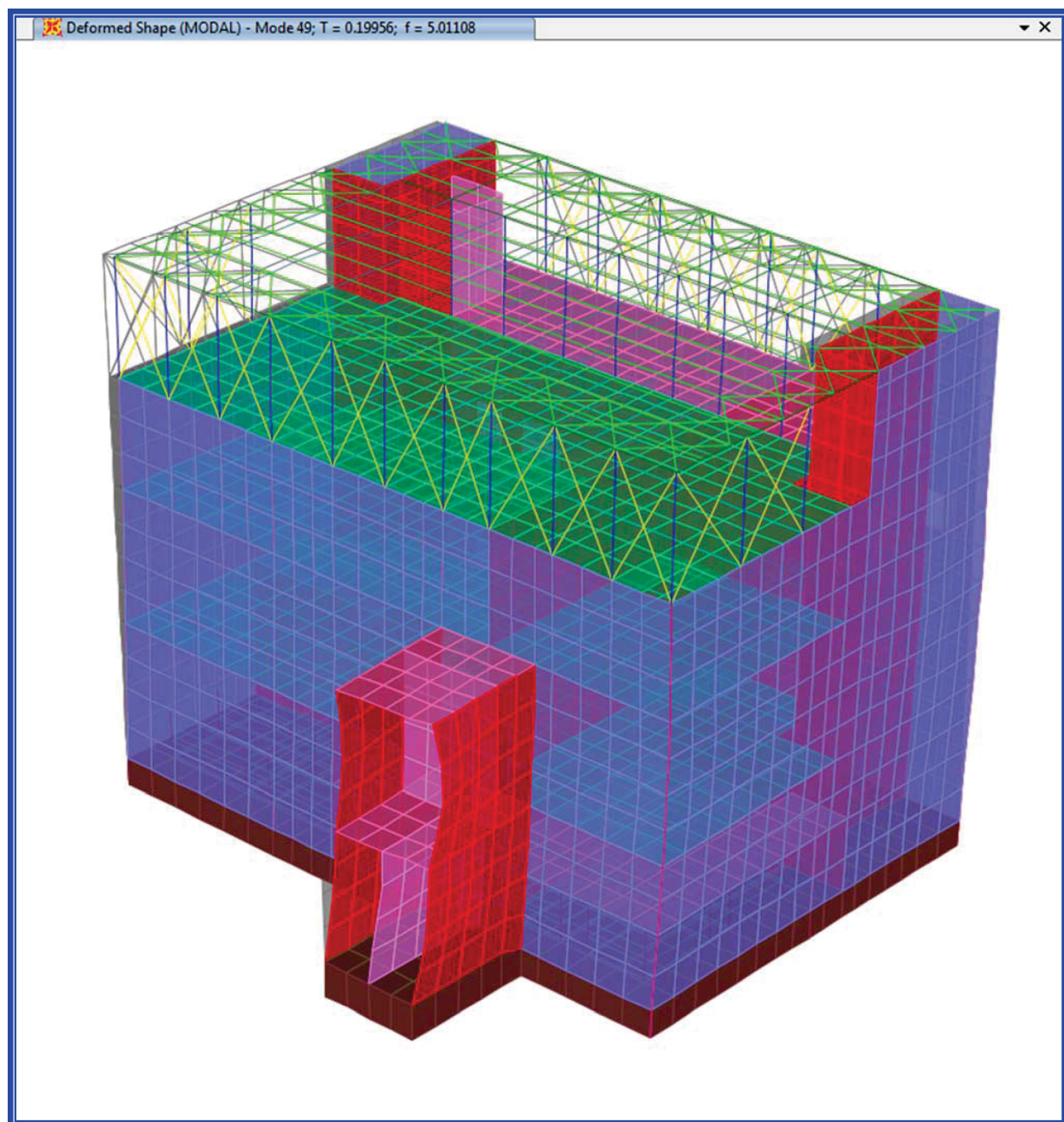**Figure 3.7.2-81: Reactor Building Uncracked Model - Modal Shape - (Mode 8)**

Deformed Shape (MODAL) - Mode 8; T = 0.229; f = 4.36689

Pt Obj: 30637
Pt Elm: 30637
U1 = -.0001
U2 = -5.194E-05
U3 = -.0019
R1 = 4.126E-06
R2 = -3.626E-06
R3 = -6.55E-08

Figure 3.7.2-82: Reactor Building Uncracked Model - Modal Shape - (Mode 15)

Figure 3.7.2-83: Control Building Cracked Model - Modal Shape - (Mode 40)

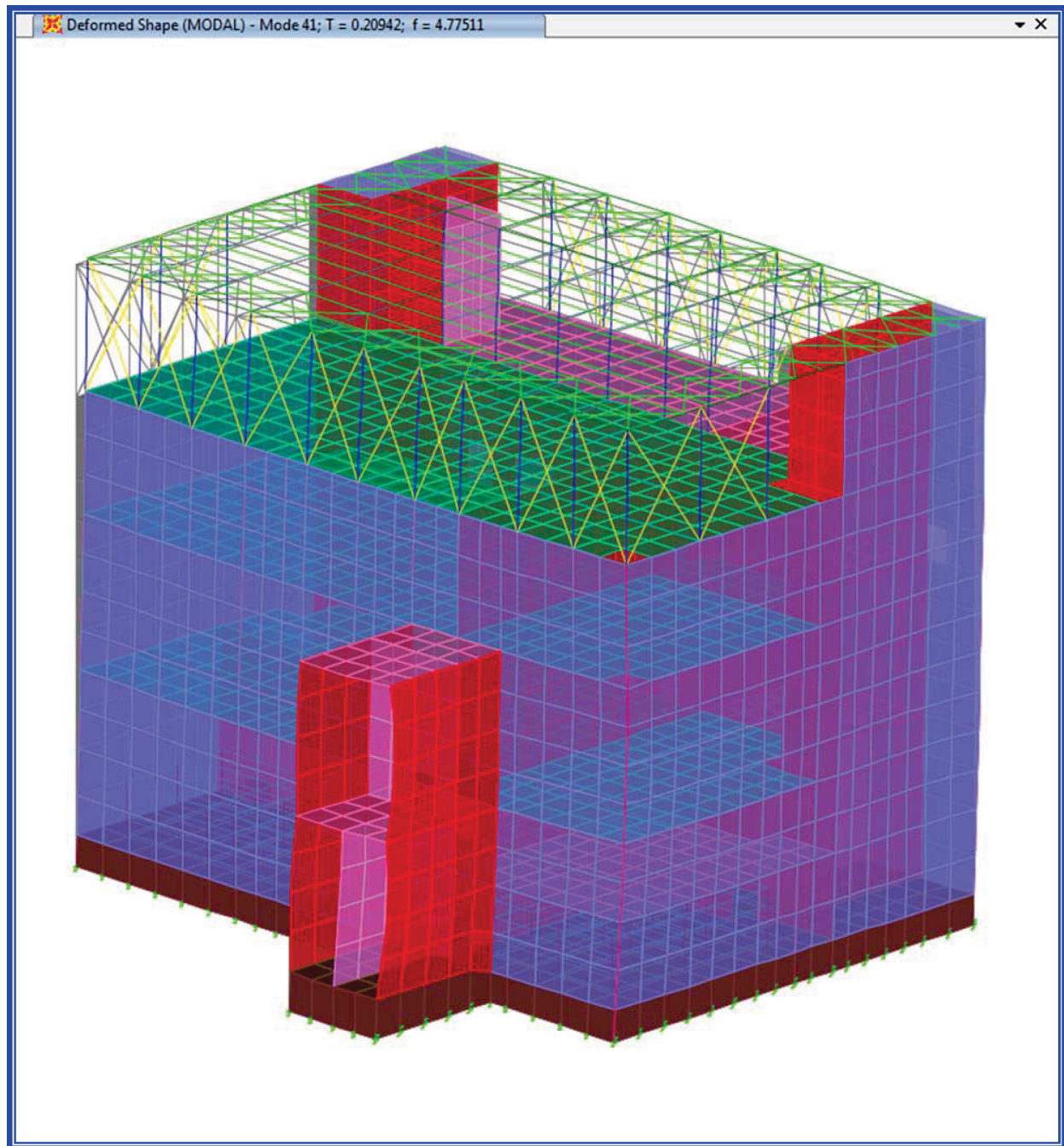Deformed Shape (MODAL) - Mode 40; T = 0.20979; f = 4.76671
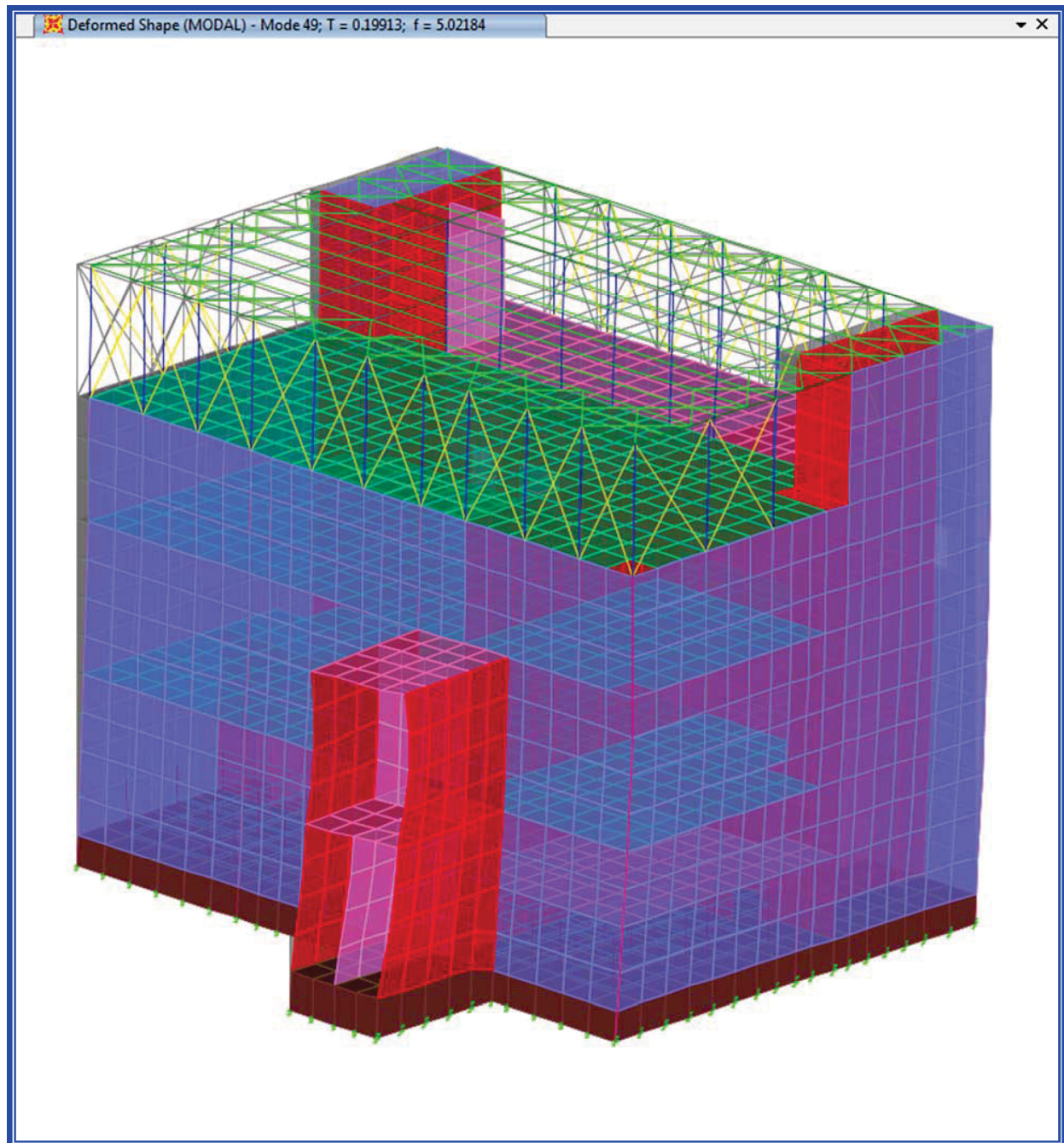
Figure 3.7.2-84: Control Building Cracked Model - Modal Shape - (Mode 49)

Figure 3.7.2-85: Control Building Cracked Model - Modal Shape - (Mode 81)

Deformed Shape (MODAL) - Mode 81; T = 0.16841; f = 5.93774
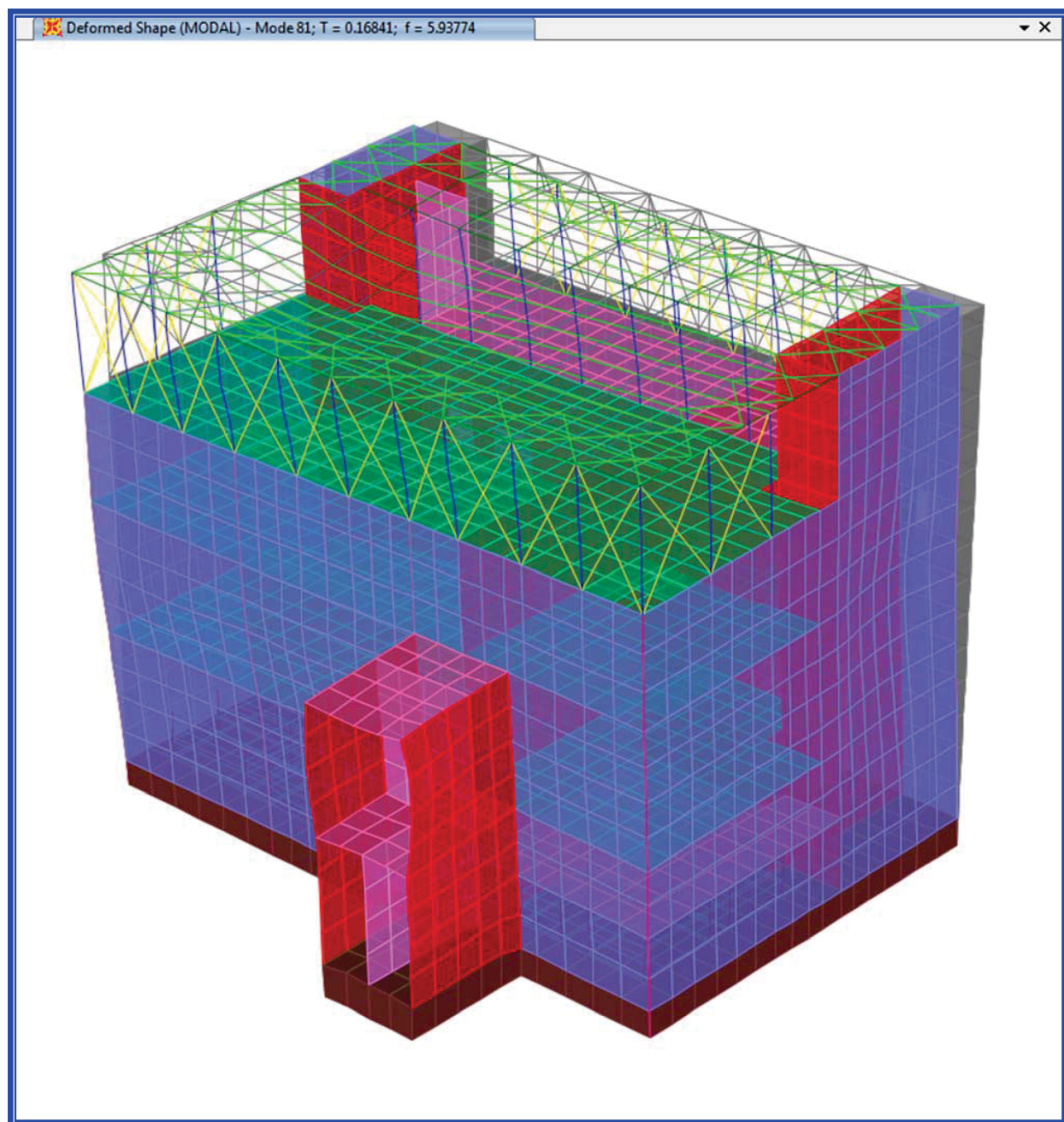
Figure 3.7.2-86: Control Building Uncracked Model - Modal Shape - (Mode 41)

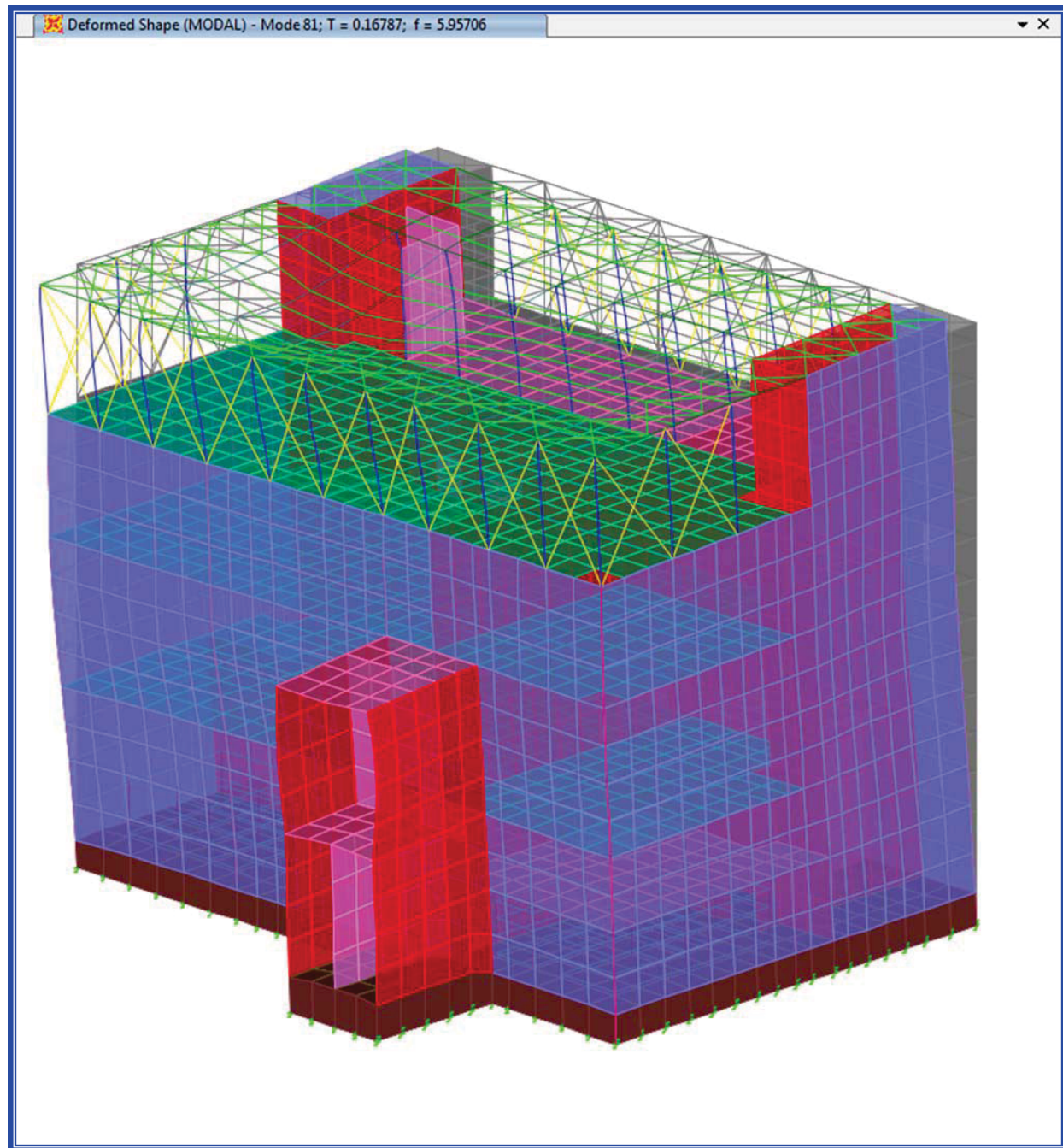**Figure 3.7.2-87: Control Building Uncracked Model - Modal Shape - (Mode 49)**

Figure 3.7.2-88: Control Building Uncracked Model - Modal Shape - (Mode 81)

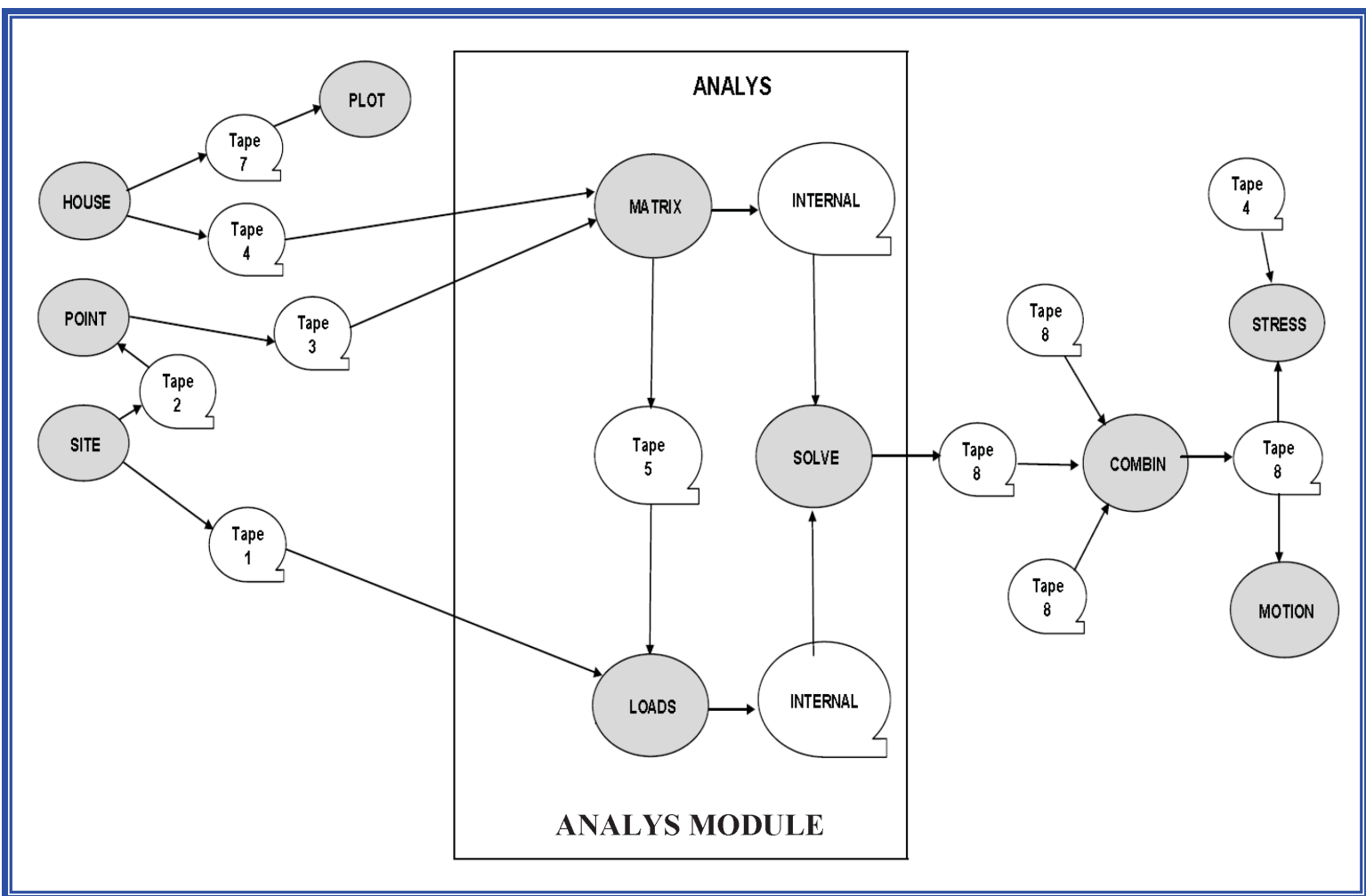**Figure 3.7.2-89: Flow of Files among SASSI2010 Modules**

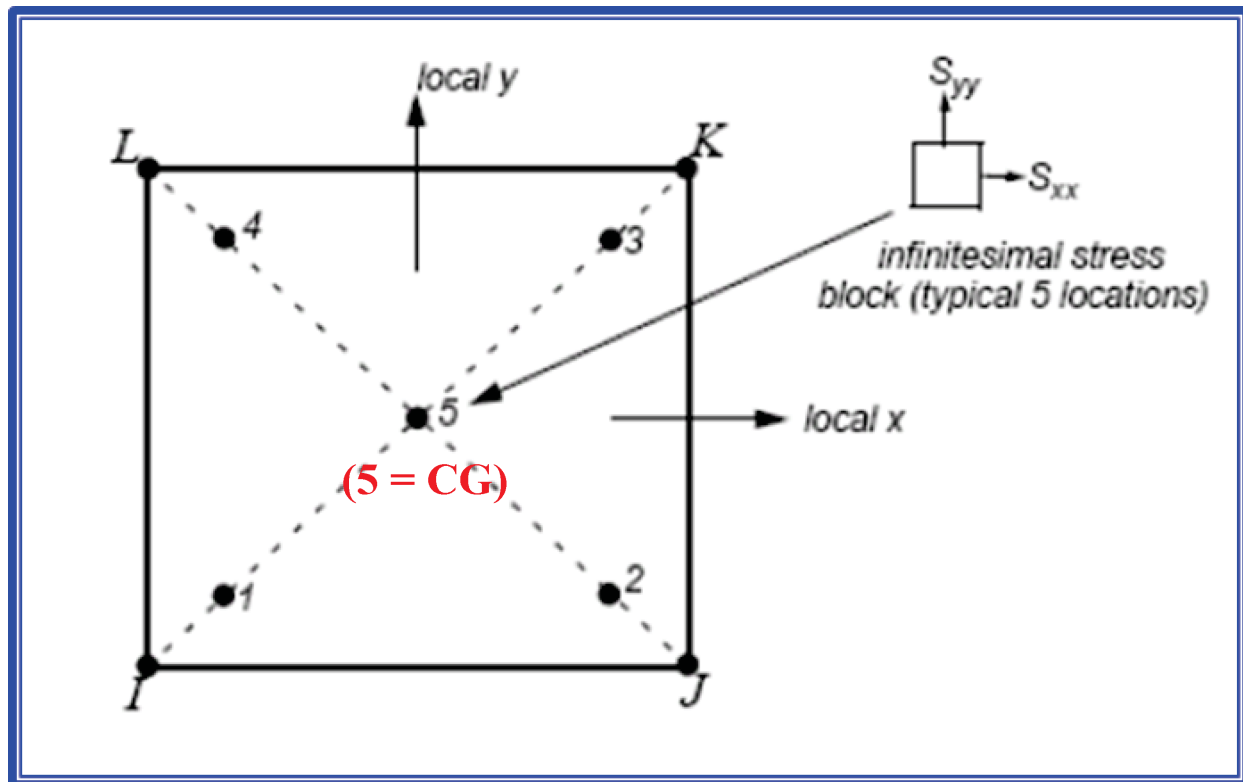**Figure 3.7.2-90: Four I, J, K, and L Nodes and 1 through 5 Output Locations of Thick Shell Element**

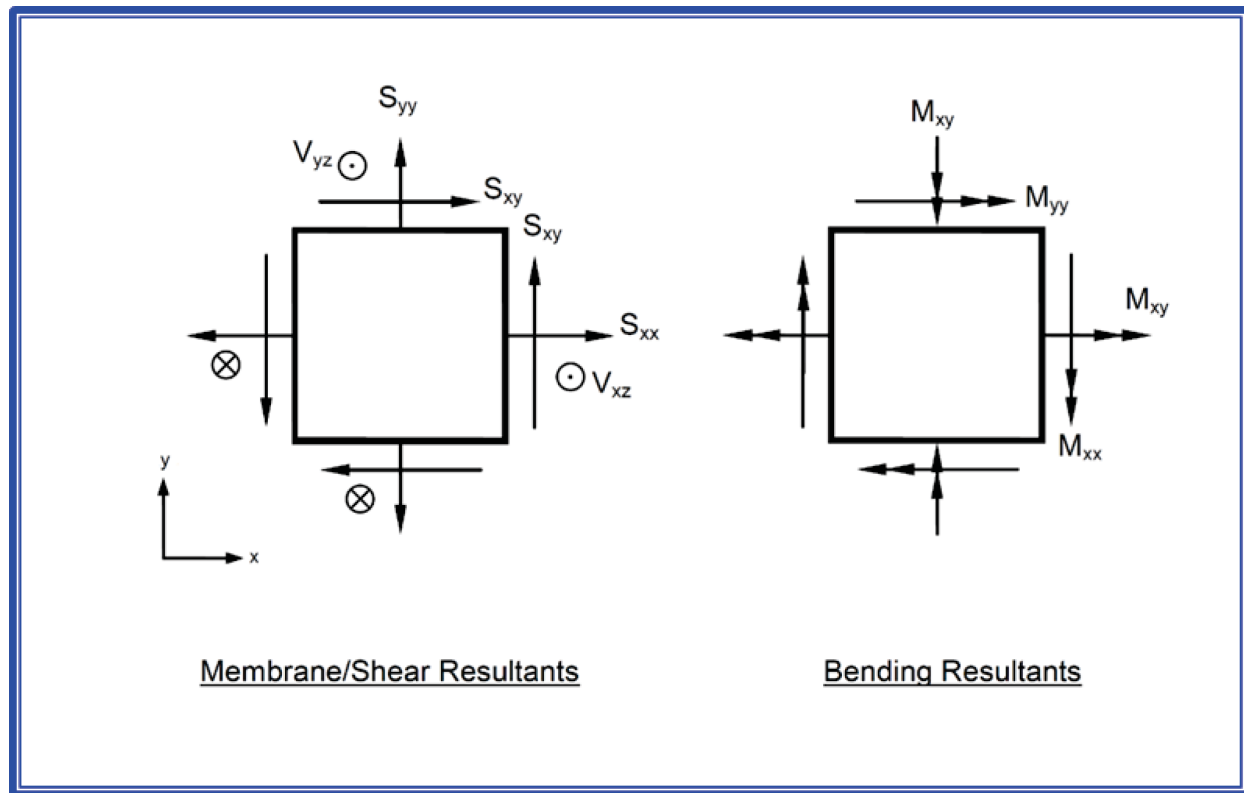**Figure 3.7.2-91: SASSI2010 Shear and Moment Resultants**

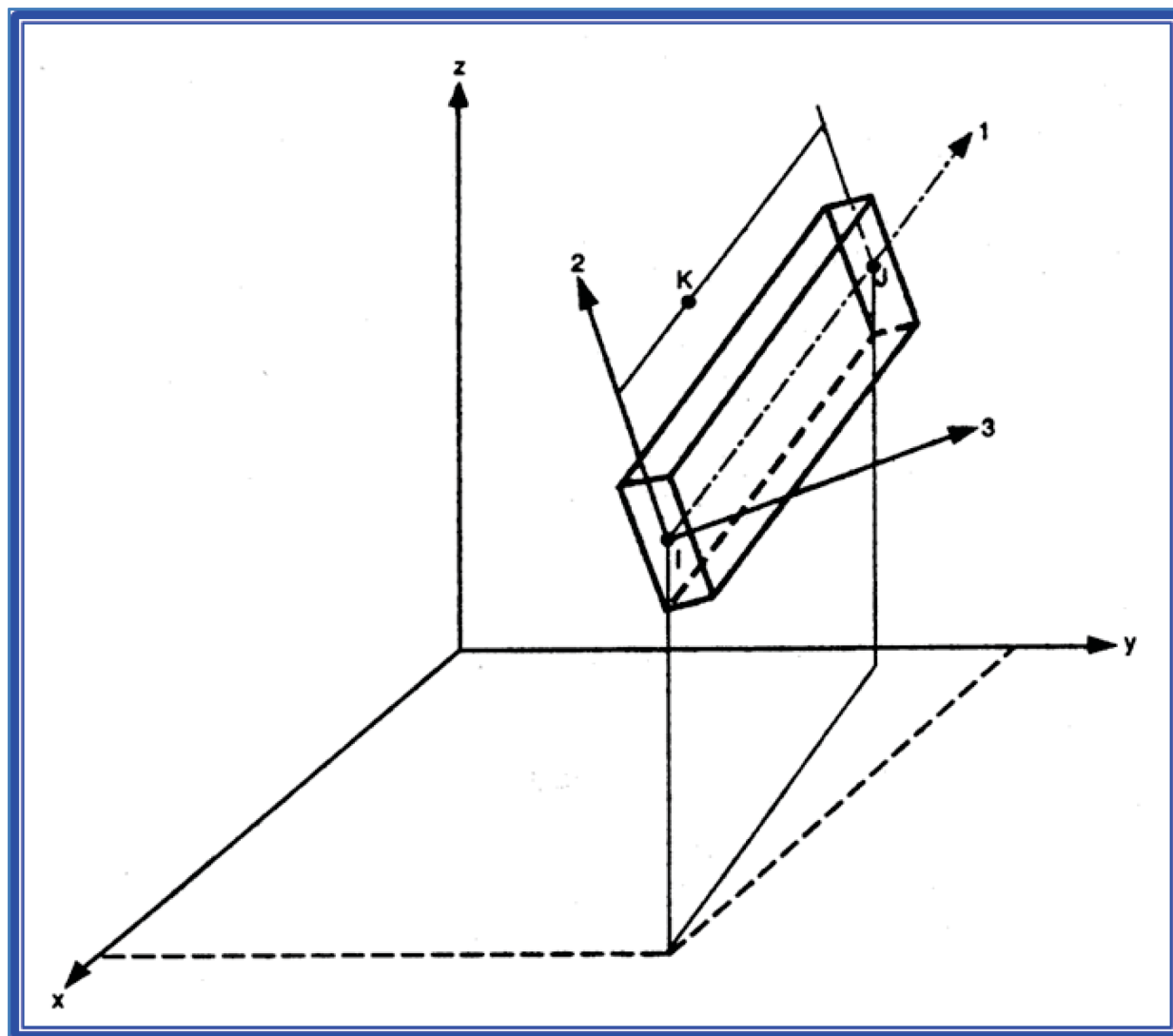**Figure 3.7.2-92: SASSI2010 Beam Element Local Axes for Forces and Moments**

Figure 3.7.2-93: SASSI2010 Global Stresses at Centroid of a Solid Element