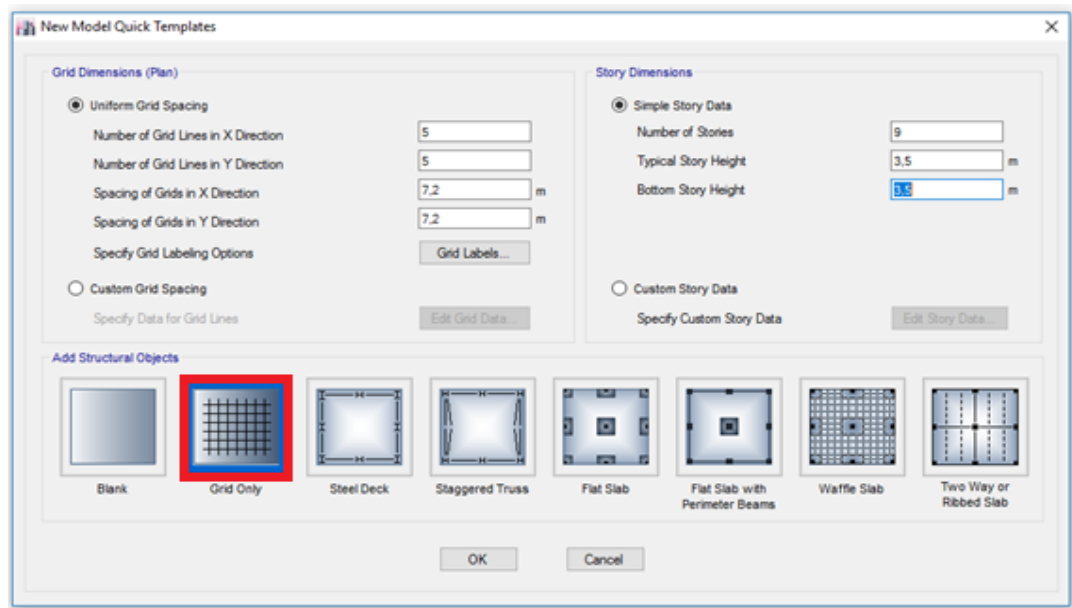


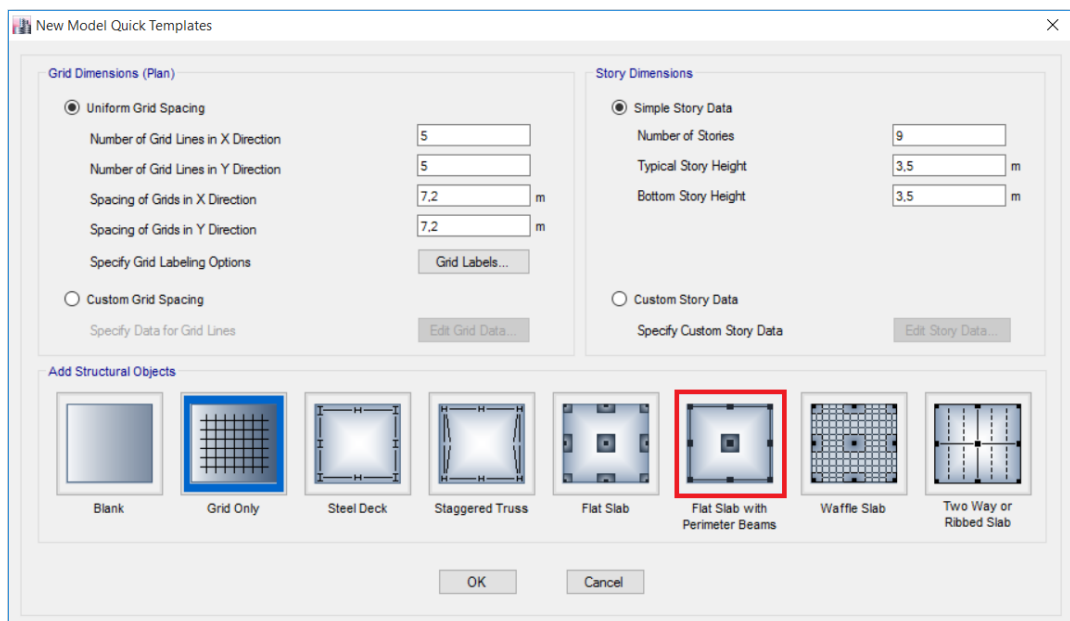
LAMPIRAN 2

APLIKASI PROGRAM KOMPUTER

1. Klik menu file > New model
2. Pilih display units Metric SI
3. Edit grid, jumlah lantai dan tinggi antar lantai sesuai dengan denah gedung kemudian klik template grid only



Konvensional



Flat slab with drop panel menggunakan balok tepi

4. Klik menu Define > Material Properties > Add new material. Isi spesifikasi material beton yang digunakan.

The 'Material Property Data' dialog box is shown with the following settings:

- General Data:**
 - Material Name:
 - Material Type:
 - Directional Symmetry Type:
 - Material Display Color:
 - Material Notes:
- Material Weight and Mass:**
 - ☐ Specify Weight Density
 - ☒ Specify Mass Density
 - Weight per Unit Volume: kN/m³
 - Mass per Unit Volume: kg/m³
- Mechanical Property Data:**
 - Modulus of Elasticity, E: MPa
 - Poisson's Ratio, U:
 - Coefficient of Thermal Expansion, A: 1/C
 - Shear Modulus, G: MPa
- Design Property Data:**
 -
- Advanced Material Property Data:**
 -
 -
 -

Buttons:

The 'Material Property Design Data' dialog box is shown with the following settings:

- Material Name and Type:**
 - Material Name:
 - Material Type:
- Design Properties for Concrete Materials:**
 - Specified Concrete Compressive Strength, f_c: MPa
 - ☐ Lightweight Concrete
 - Shear Strength Reduction Factor:

Buttons:

5. Klik menu Define > Material Properties > Add new material. Isi spesifikasi material baja tulangan yang digunakan.

The 'Material Property Data' dialog box is shown with the following settings:

- General Data:**
 - Material Name:
 - Material Type:
 - Directional Symmetry Type:
 - Material Display Color:
 - Material Notes:
- Material Weight and Mass:**
 - ☐ Specify Weight Density
 - ☒ Specify Mass Density
 - Weight per Unit Volume: kN/m³
 - Mass per Unit Volume: kg/m³
- Mechanical Property Data:**
 - Modulus of Elasticity, E: MPa
 - Coefficient of Thermal Expansion, A: 1/C
- Design Property Data:**
 -
- Advanced Material Property Data:**
 -
 -
 -

Buttons:

6. Klik menu Define > Section Properties > Frame Sections > Add new property. Isi spesifikasi balok yang digunakan. Pada property modifiers, masukkan nilai inersia efektif penampang balok 0,35.

The first screenshot shows the 'Frame Section Property Data' dialog box. It contains the following fields and values:

- General Data:**
 - Property Name: Balok 40 x 60 cm
 - Material: f'c 35 MPa
 - Notional Size Data: Modify/Show Notional Size...
 - Display Color: Yellow
 - Notes: Modify/Show Notes...
- Shape:**
 - Section Shape: Concrete Rectangular
- Section Property Source:**
 - Source: User Defined
- Section Dimensions:**
 - Depth: 600 mm
 - Width: 400 mm
- Property Modifiers:**
 - Modify/Show Modifiers... (Currently User Specified)
- Reinforcement:**
 - Modify/Show Rebar...

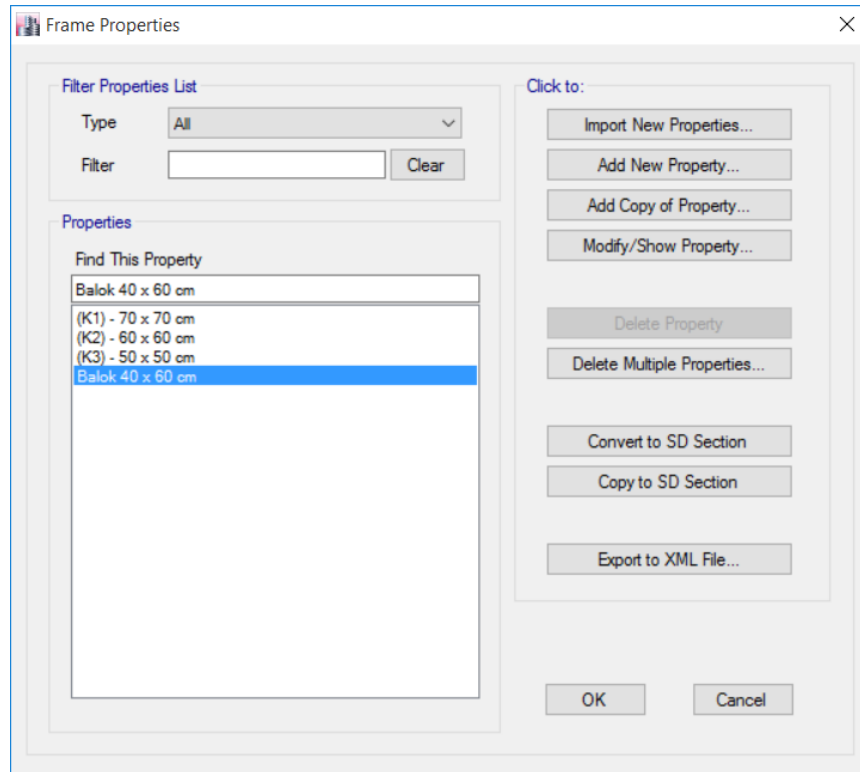
The second screenshot shows the 'Property/Stiffness Modification Factors' dialog box. It contains the following fields and values:

- Property/Stiffness Modifiers for Analysis:**
 - Cross-section (axial) Area: 1
 - Shear Area in 2 direction: 1
 - Shear Area in 3 direction: 1
 - Torsional Constant: 1
 - Moment of Inertia about 2 axis: 0,35
 - Moment of Inertia about 3 axis: 0,35
 - Mass: 1
 - Weight: 1

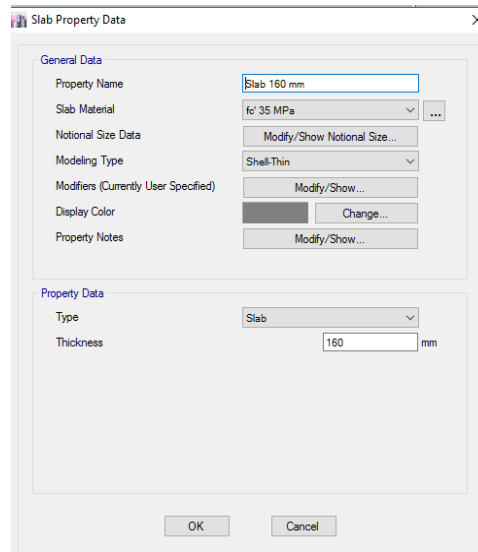
The screenshot shows the 'Frame Section Property Reinforcement Data' dialog box. It contains the following fields and values:

- Design Type:**
 - ☐ P-M2-M3 Design (Column)
 - ☒ M3 Design Only (Beam)
- Rebar Material:**
 - Longitudinal Bars: fy 420 MPa
 - Confinement Bars (Ties): fy 420 MPa
- Cover to Longitudinal Rebar Group Centroid:**
 - Top Bars: 40 mm
 - Bottom Bars: 40 mm
- Reinforcement Area Overwrites for Ductile Beams:**
 - Top Bars at I-End: 0 mm²
 - Top Bars at J-End: 0 mm²
 - Bottom Bars at I-End: 0 mm²
 - Bottom Bars at J-End: 0 mm²

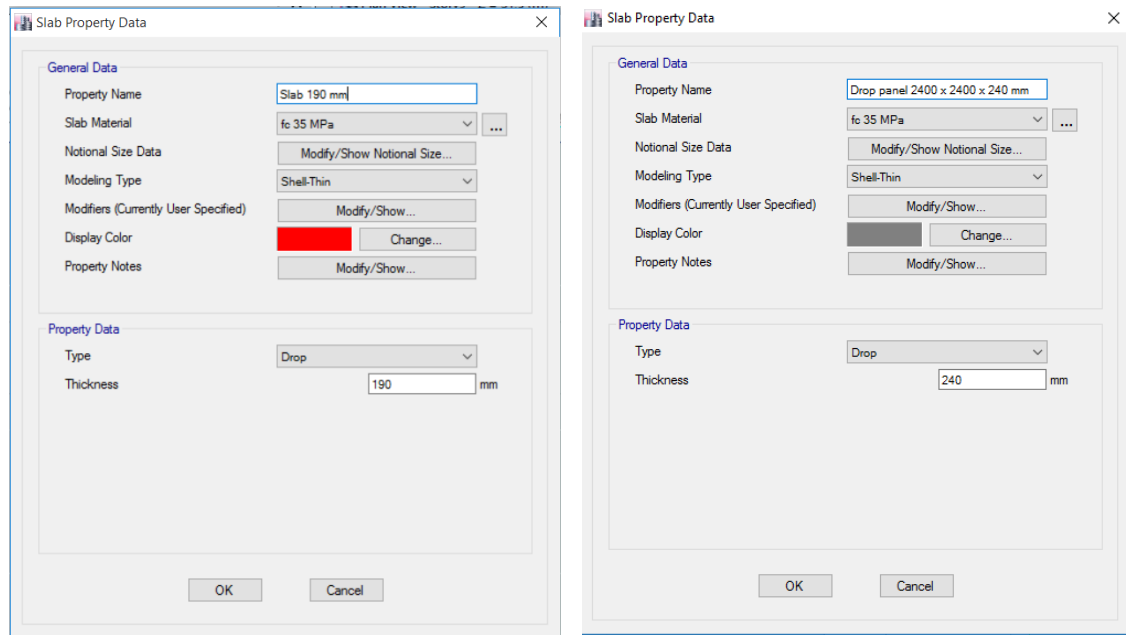
7. Klik menu Define > Section Properties > Frame Sections > Add new property. Isi spesifikasi kolom yang digunakan. Pada property modifiers, masukkan nilai inersia efektif penampang kolom 0,7.



8. Klik menu Define > Section Properties > Slab Sections > Add new property.

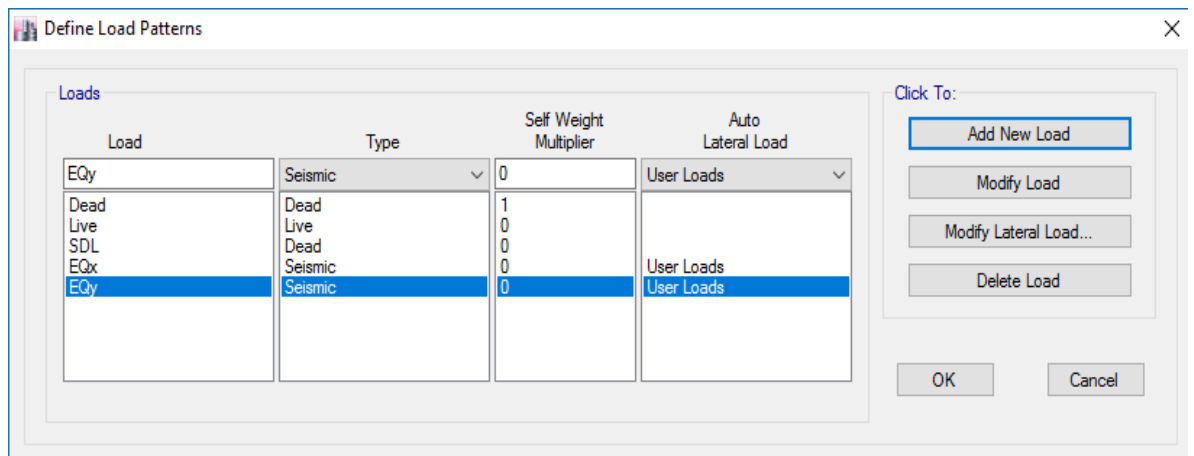


Untuk pelat konvensional

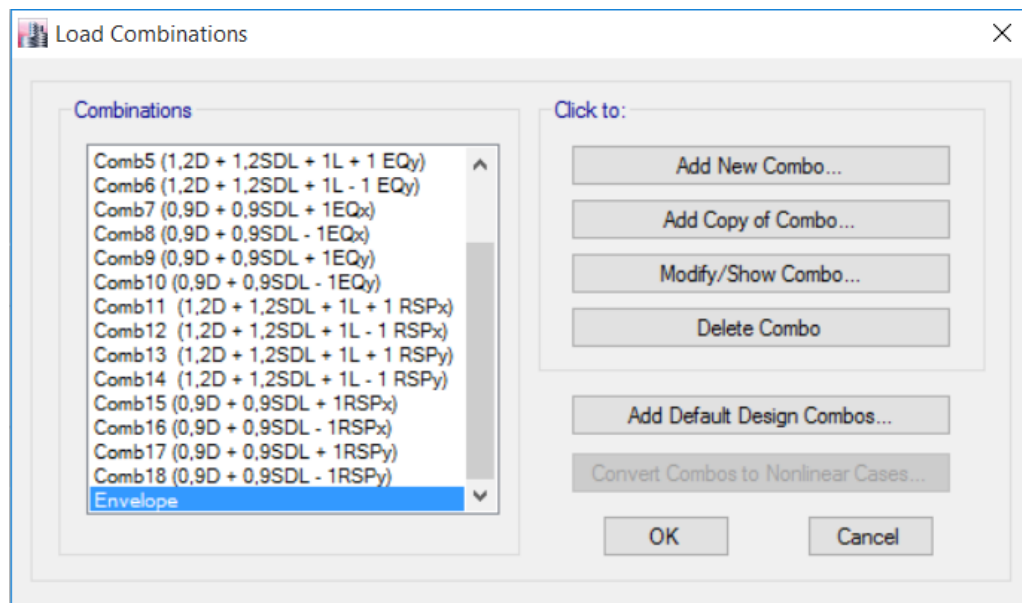


Untuk *flat slab* dan *drop panel*

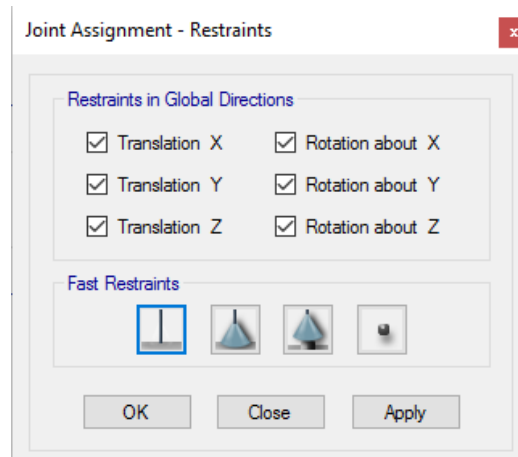
9. Klik menu Define > Load Patterns



10. Klik menu Define > Load combinations > Add new combo



11. Menggambar elemen frame (balok dan kolom). Klik tombol Quick Draw Beams/Columns 
12. Menggambar elemen pelat. Klik Draw Rectangular Floor/Wall
13. Pondasi dimodelkan sebagai perletakan jepit pada lantai dasar bangunan, yaitu pada ujung-ujung bawah kolom lantai dasar. Klik Assign > Joint > Restraints



14. Input beban mati tambahan dan beban hidup pada pelat serta beban dinding.

Klik Assign > Frame Loads > Distributed.

Pada Load Pattern Name pilih jenis beban yang akan diinput.

Pada Uniform Load masukkan nilai beban.

Beban mati tambahan pelat lantai = 1,33 kN/m

Beban mati tambahan pelat atap = 0,73 kN/m

Beban hidup pelat lantai = 2,4 kN/m

Beban hidup pelat atap = 1 kN/m

Beban dinding lantai tipikal = 7,25 kN/m

Beban dinding lantai atap = 2,5 kN/m

15. *Run analisis*