

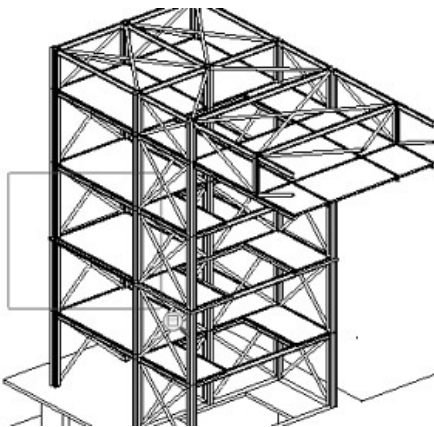
## Terviklik mudel

### Ülesande püstitus

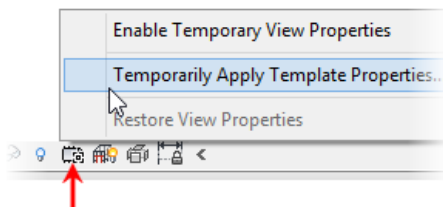
Selles näites tutvud sa klassikalise projekteerimise tööprotsessiga. Kuvad mudeli analüütilised jooned ning konstruktsiooni elemendid. Lisaks paigutad mudelisse koormused ja tähistad süsteemi komponente.

### Analüütiliste joonte kuva

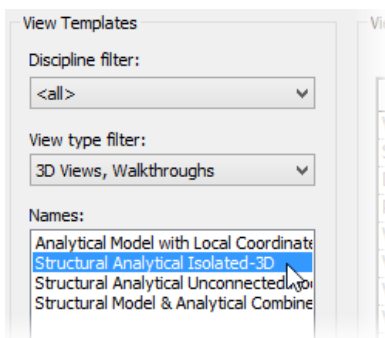
1. Autodesk Revit tarkvaras ava fail: *Single\_Model\_Analysis.rvt*.
2. Suurenda vaadet nii nagu näidatud pildil.



3. *View Control > Temporary View Properties > Temporarily Apply Template Properties.*

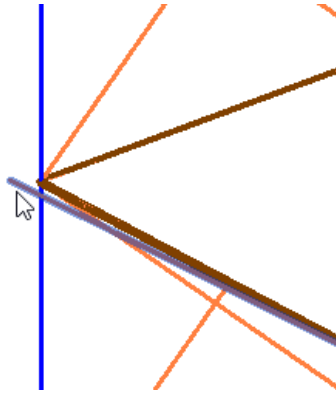


4. Dialogis *Temporarily Apply Template Properties > Names > Structural Analytical Isolated – 3D.*

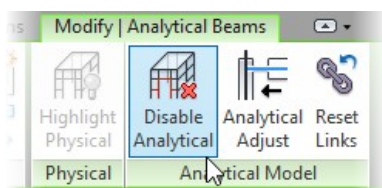


**Märkus:** Analüütilised jooned on nüüd kuvatud.

5. Joonise alas, vali analüütiline tala (vt pilti).

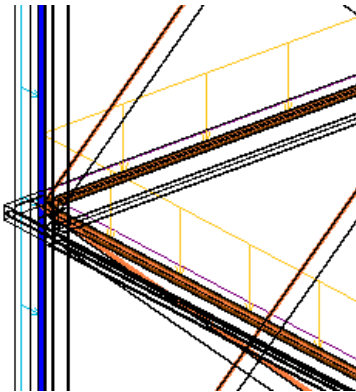


- Keela analüütilise joone kuva ainult selle konkreetse elemendi korral, paanil *Modify / Analytical Beams > Analytical Model > Disable Analytical*.



**Märkus:** Analüütilist joont enam ei kuvata.

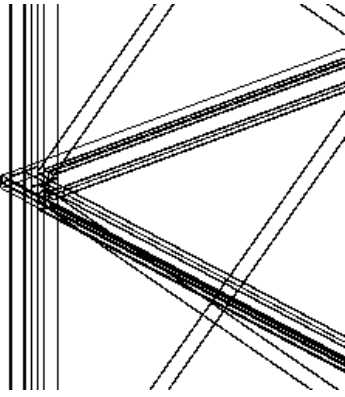
- View Control > lisa nüüd ajutine vaate mall > Structural Model & Analytical Combined.*



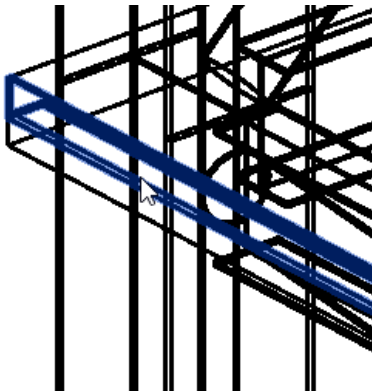
- View Control > Hide Analytical Model.*



**Märkus:** Analüütilised jooned peidetakse.

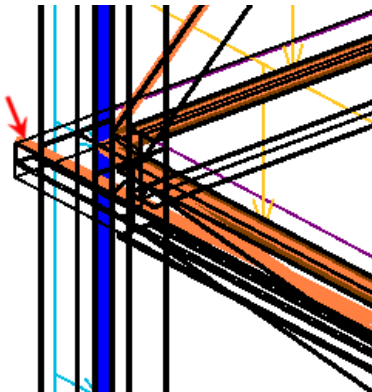


9. Joonise alas, vali pildil näidatud *L-Angle*.



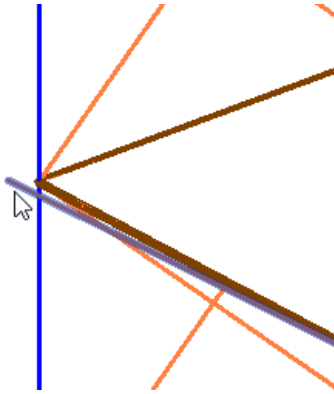
10. Paletil *Properties > Structural > vali > Enable Analytical Model*. Klikki *Apply*.

11. *View Control > Show Analytical Mode*, et see välja lülitada. Pane tähele, et analüütiline joon kuvatakse taas koos teiste analüütiliste joontega.



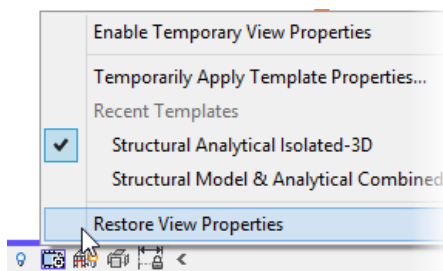
12. *View Control > rakenda ajutiselt vaate mall > Structural Analytical Isolated – 3D*.

13. Joonise alas vali analüütiline tala (vt pilti).

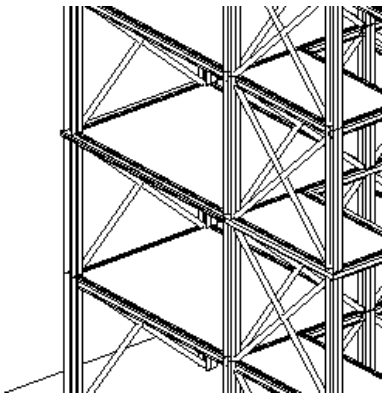


14. Selleks, et selle analüütilise joone kuva peita, *Modify | Analytical Beams > Analytical Model > Disable Analytical.*

15. *View Control > Temporary View Properties > Restore View Properties.*

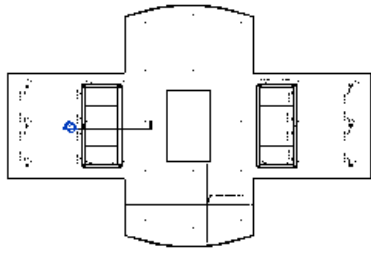


**Märkus:** Elemendid kuvatakse selliselt nagu ka projekti avamise järgselt, kus kuvatakse vaid mudeli jooni ja mitte analüütilise mudeli jooni.

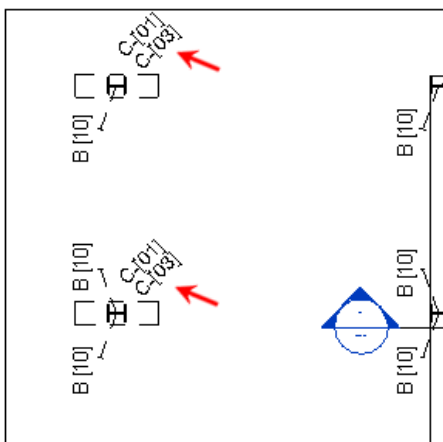


## Analüütilise elemendi redigeerimine

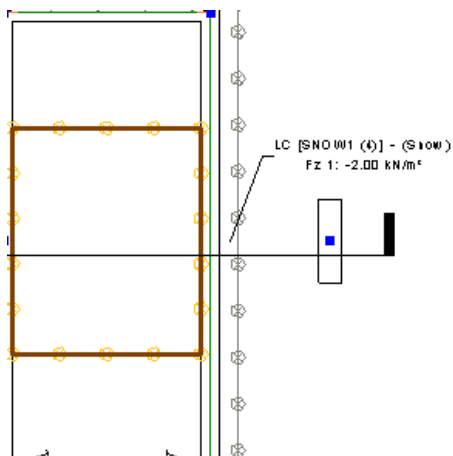
1. Aktiveeri vaade: *Structural > Framing > Structural Plans > 7*.



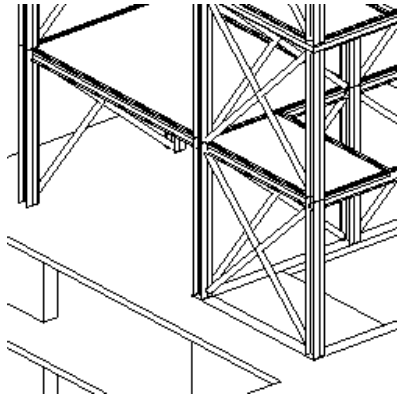
2. Suurenda vasakusse nurka ning pane tähele postide tähiseid.



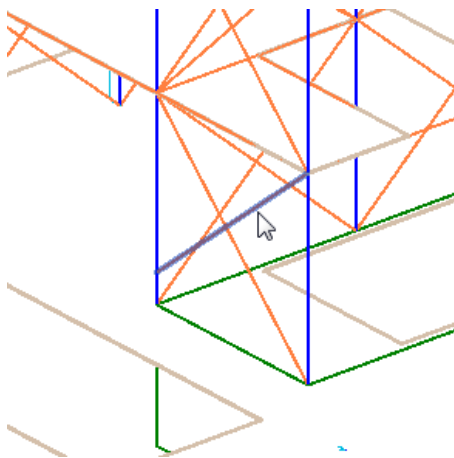
3. Aktiveeri vaade: *Structural > Analytical > Structural Plans > 7(1)*.
4. Suurenda ning liigu vaates ringi, et panna tähele erinevaid lisatud koormuseid (osadel elementidel).



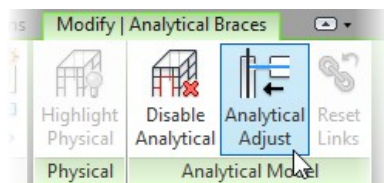
5. Aktiveeri vaade: *Structural > Analytical > 3D Views > Section box – Analytical*.
6. Suurenda/nihuta vaadet järgmise pildi järgi.



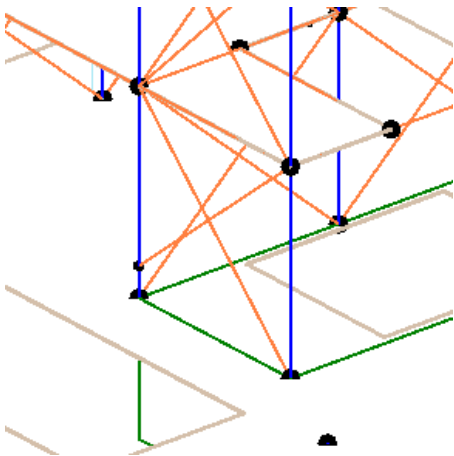
7. *View Control > Temporary View Properties > Structural Analytical Isolated – 3D.*
8. Vali analüütiline tugitala (vt pilti).



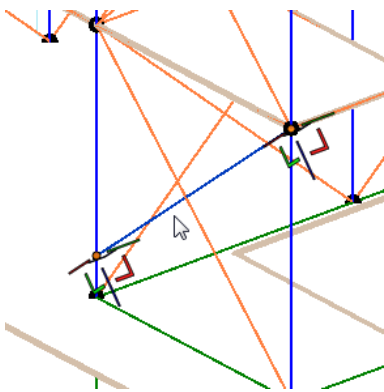
9. Paanil *Modify | Analytical Braces > Analytical Model > Analytical Adjust.*



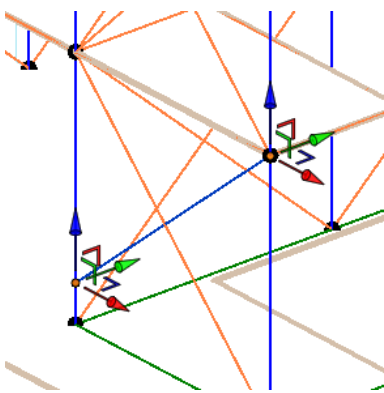
**Märkus:** Sõlmed kuvatakse koos analüütiliste joontega.



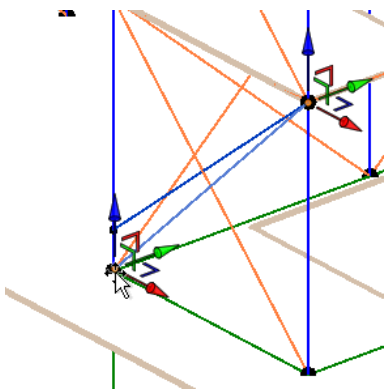
10. Vali analüütiline tugitala (vt pilti). Kuvatakse koordineerimiseks vajalikud nupukesed.



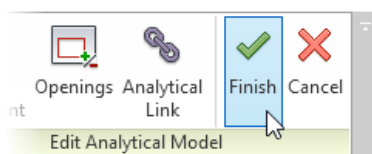
11. Koordinaatide muutmiseks vajuta SPACEBAR.



12. Vali alumine sõlm. Tiri see võrgustiku ristumispunkti (vt pilti).

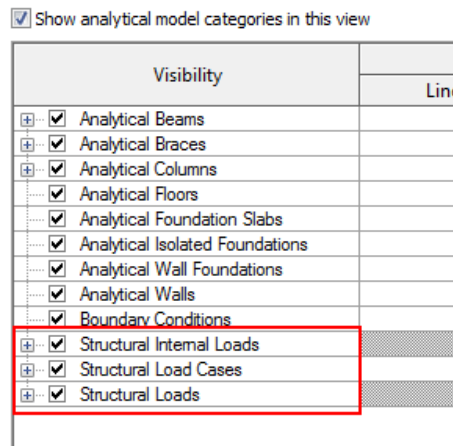


13. Riba paanil: *Edit Analytical Model* > *Finish*.



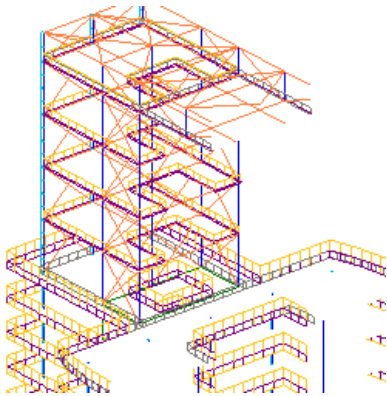
## Koormuste defineerimine ning lisamine

1. Paletil *Properties > Visibility/Graphics Overrides > Edit*.
2. Dialoogis *Visibility/Graphic Overrides > Analytical Model Categories > Visibility* : vali järgmised read:
  - *Structural Internal Loads*
  - *Structural Load Cases*
  - *Structural Loads*



**Märkus:** Kui vastavaid ridasid ei kuvata, siis veendu, et *Filter list: Structure* oleks valitud.

3. Kliki OK.



4. Riba paanil: *Analyze > Analytical Model > Load Cases*.
5. Dialoogis *Structural Settings > Load Cases*:
  - *Under Load Cases*, kliki *Add*.
  - *Name = Equip*.
  - Sektsioonis *Load Natures > Add*.
  - Sisesta *Name = Equipment*.
6. Sektsioonis *Load Cases*, *Equip* osas:
  - *Nature* nimekirjast *> Equipment*.
  - *Category* nimekirjast *> Dead Loads*.

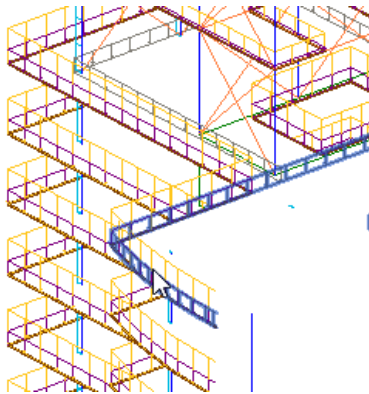


	Name	Case	Nature	
1	DL1	1	Dead	Dead Loads
2	LL1	2	Live	Live Loads
3	WIND1	3	Wind	Wind Loads
4	SNOW1	4	Snow	Snow Loads
5	LR1	5	Roof Live	Roof Live Loads
6	ACC1	6	Accidental	Accidental Loads
7	TEMP1	7	Temperatur	Temperature Loads
8	SEIS1	8	Seismic	Seismic Loads
9	Equip	9	Equipment	Dead Loads

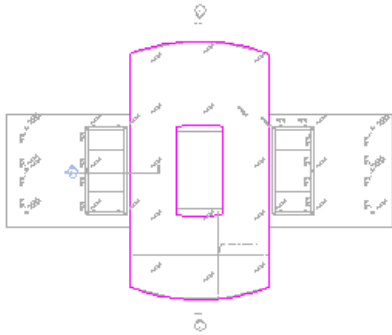
7. Vaata lisaõppematerjali *ASCE-7-02-20-Load Combinations-S02.pdf*, kus toodud näiteid koormuste arvutamise kohta.
8. Tagasi *Revit* tarkvaras.
9. Dialoogis *Structural Settings, Load Combinations*:
  - *Load Combination > Add*.
  - Sektsioonis *Edit Selected Formula > Add*.
  - Sisesta *Factor = 1.4*.
  - Lisa veel kaks faktorit ning määra nende seaded kui:

	Factor	Case or Combination
1	1.400000	DL1
2	9.000000	LL1
3	1.400000	WIND1

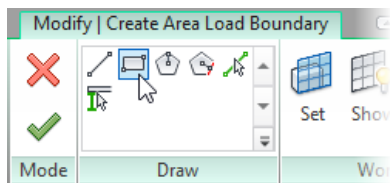
10. Sektsioonis *Load Combination Usage > Add*.
11. Kliki OK, et dialoogist väljuda.
12. Joonise alas vali pildil näidatud koormus.



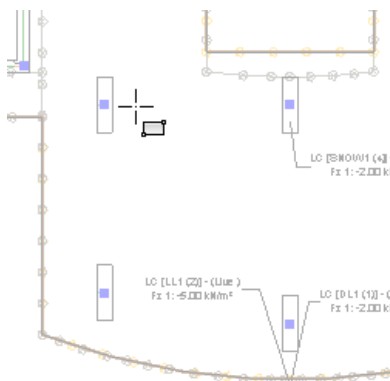
13. Paanil *Modify | Area Loads > Mode > Edit Boundary*.
14. Aktiveeri *Structural > Framing > Structural Plans > 7*.



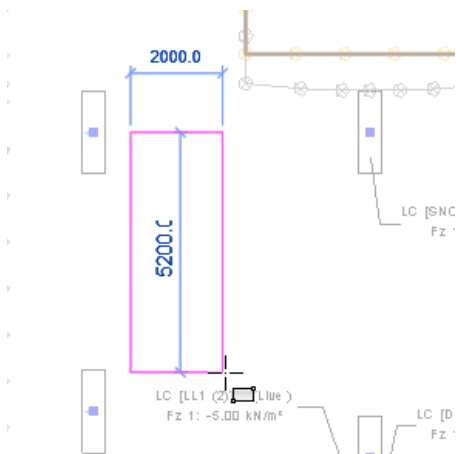
15. Paanil *Modify | Area Loads > Edit Boundary > Mode > Finish Edit Mode*.
16. Aktiveeri vaade: *Structural > Analytical > Structural Plans > 7(1)*.
17. Paanil *Analyze > Analytical Model > Loads*.
18. Paanil *Modify | Place Loads > Loads > kliki Area Load*.
19. Paanil *Modify | Create Area Load Boundary > Draw > Rectangle*.



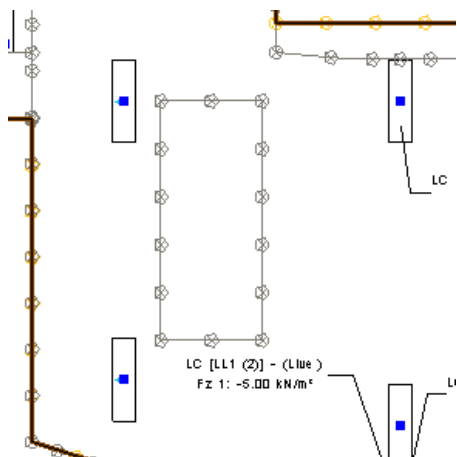
20. Ristküliku algpunkti määramiseks vali punkt nii nagu näidatud pildil.



21. Määramaks ristküliku diagonaali teine punkt, vali punkt järgmise pildi põhjal.

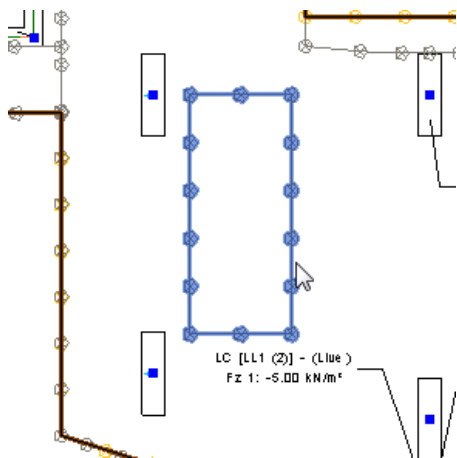


22. Paanil *Modify | Create Area Load Boundary > Mode > Finish Edit Mode*.



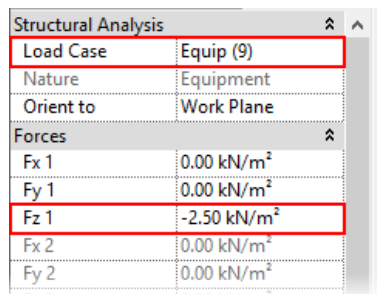
23. Vajuta ESC klahvi, et käsk lõpetada.

24. Joonise alas vali koormus (vt pilti).

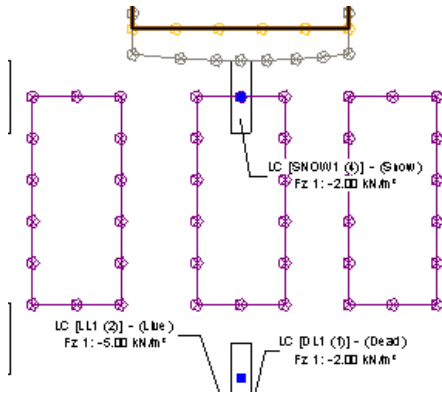


25. Paletil *Properties*:

- Sektsioonis *Structural Analysis > Load Case > vali Equip*.
- Sektsioonis *Forces*,  $Fz1 = -2.50 \text{ kN/m}^2$ .
- Kliki *Apply*.



26. Kasutades *Copy* töövahendit, loo veel kaks lisakoormust (vt pilti).

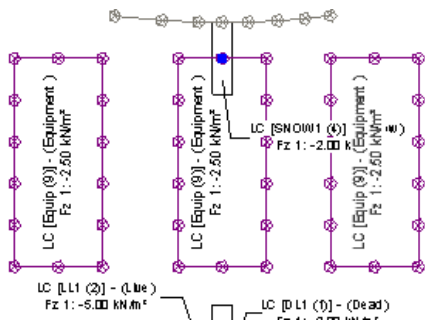


27. Paanil *Annotate* > *Tag* > *Tag by Category*.

28. *Options* ribal:

- *Direction* = *Vertical*.
- Tühista *Leader* valik.

29. Lisa tähised kolmele koormusele (vt pilti).



See lõpetab käesoleva näite. Sulge failid.