lateral buckling restraint – attaches – steel check – creep – charges climatiques – dynamic analysis – lateral buckling – brandweerstandsanalyse - timber – 1st order – verstijvers – buisverbinding – diseño de planos de armaduras – pandeo lateral – verbindingen – shear connection – verificación – armatures longitudinales – pórtico – unión base columna – voorontwerp – unión tubular – haunch – connexion moment – cimbras – vérification acier – unity check – Eurocode 2 – mesh – retaining wall – raidisseur – Eurocode 3 – longitudes de pandeo – connections – ACI 318 – acero – 2nd ordre – portal frame – Eurocode 8 – andamios – kip – dwarskrachtverbinding – BS 8110 – dalle de fondation – seismische analyse – armaduras longitudinales – BIM – gelaste verbinding – 2de orde – buckling – funderingszool – poutre sur plusieurs appuis – maillage – malla – uniones – 2D raamwerken – fire resistance analysis – voiles – cracked deformation – gescheurde doorbuiging – longueurs de flambement – pandeo – reinforcement – unity check – cantonera – dynamische analyse – hout – ossatures 3D – koudgevormde profielen – placa de extreme – 1er orden – continuous beam – connexion soudée – momentverbinding – praktische wapening – renforts au déversement – fluencia – estribos – déformation fissurée — CE21 – beugels – Eurocódigo 3 – platine de bout – análisis dinámico – column base plate – kruip – rigid link – welded connection – charpente métallique – moment connections – estructuras 2D – kniestuk – assemblage métallique – 3D raamwerken – second ordre – beam grid – cargas climáticas – Eurocode 2 – Eurocode 5 – wall – deformación fisurada – lien rigide – enlace rígido – 2D frames – estructuras 3D – éléments finis – vloerplaat – steel connection – scheurvorming – integrated connection design – armatures pratiques – analyse sismique – nieve y viento – practical reinforcement – charges mobiles – dalle – wapening – perfiles conformados en frío – Eurocode 3 – connexion tubulaire – unión a momento – 3D frames – treillis de poutres – roof truss – practical reinforcement design – portique – kipsteunen – análisis sísmico – Eurocode 8 – seismic analysis – B.A.E.L 91 – uniones atornilladas – bolts – ossatures 2D – eindige elementen – losa de cimentación – restricciones para el pandeo lateral – optimisation – wand – kniklengtes – end plate – dakspanten – kolomvoetverbinding – stirrups – acier – staalcontrole – cálculo de uniones integrado – paroi – dessin du plan de ferraillage – stiffeners – mobiele lasten – Eurocódigo 8 – Eurocódigo 5 – longitudinal reinorcement – doorlopende liggers – rigidizador – beton armé – fluage – CTE – connexion pied de poteau – langswapening – connexions – hormigón – neige et vent – elementos finitos – armaduras – cold

Release information

Diamonds 2023

formed steel – jarret – uittekenen wapening – puente grúa – analyse dynamique – flambement – keerwanden – optimisation – steel – cercha – 2º orden – slab on grade foundation – entramado de vigas – Eurocode 5 – prédimensionnement – multi span beam – bouten – armatures – floor slab – poutre continue – pared – staal – 1er ordre – NEN 6770-6771 – connexion cisaillement – losa – déversement – viga continua – predimensionering – 1ste orde – unión metálica – CM 66 – madera – análisis resistencia al fuego – verbindingen – 2nd order – bois – Eurocode 2 – profilés formés à froid – verificación acero – predesign – unión soldada – fisuración – beton – muro de contención – optimalisatie – foundation pads – fissuration – concrete – AISC-LRFD – HCSS – assemblage métallique – Eurocode 3 – viga con varios apoyos – armaduras prácticas – balkenroosters – unión a cortante – buckling length – boulons – cracking – Eurocode 8 – knik – Eurocode 2 – radier – eindplaat – Eurocódigo 2 – FEM – tornillos – NEN 6720 – moving loads – balk op meerdere steunpunten – cargas móviles – funderingsplaat – étriers – analyse resistance au feu– cercha– globale knikfactor– dynamische analyse– wapening – unión soldada– profilés formés– cercha – 2º orden – slab on grade foundation – análisi
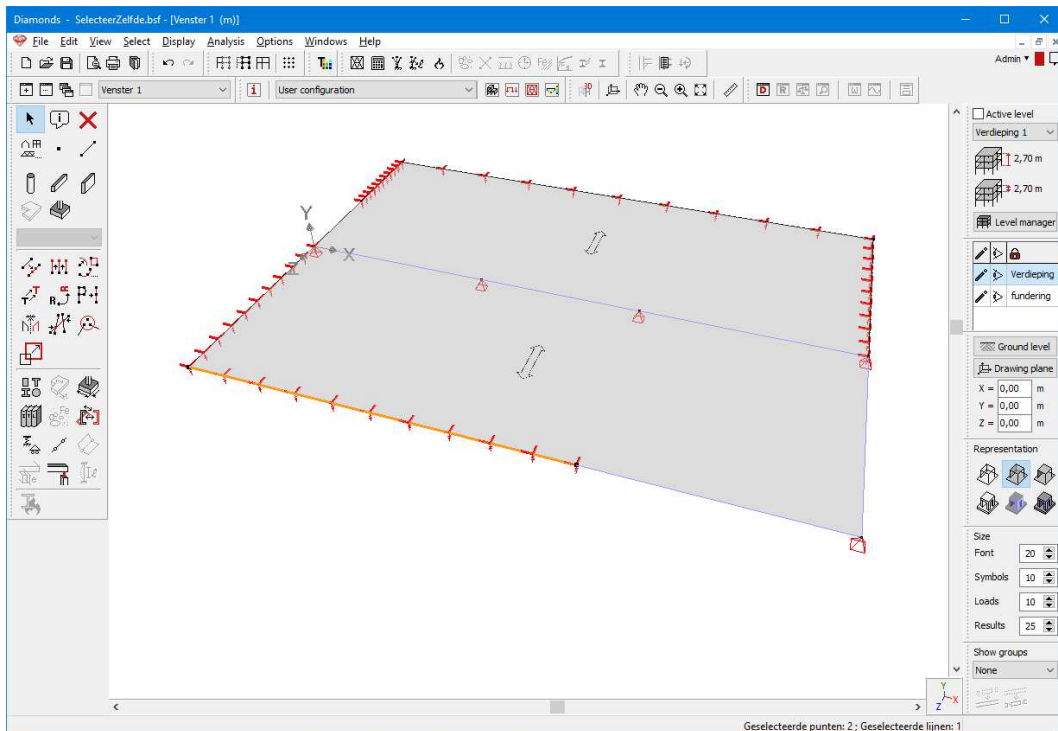
Content

1. Work environment

1.1. Select elements with the same properties

It is now possible to select elements (points, bars, surfaces) with the same properties using the right mouse button.

For example: in the model below the selected support line has a spring constant of 300000kN/m/m in the Y-direction.


To select all support lines with that same support conditions, proceed as follows:

- Select the source of the property.
  In this example the relevant support line, but the same principle can be applied to points or surfaces as well.
- Click with the right mouse button in the drawing area of Diamonds.
  Go to the menu 'Select same (bar)' and select the desired option. In this example you should choose 'Support'.
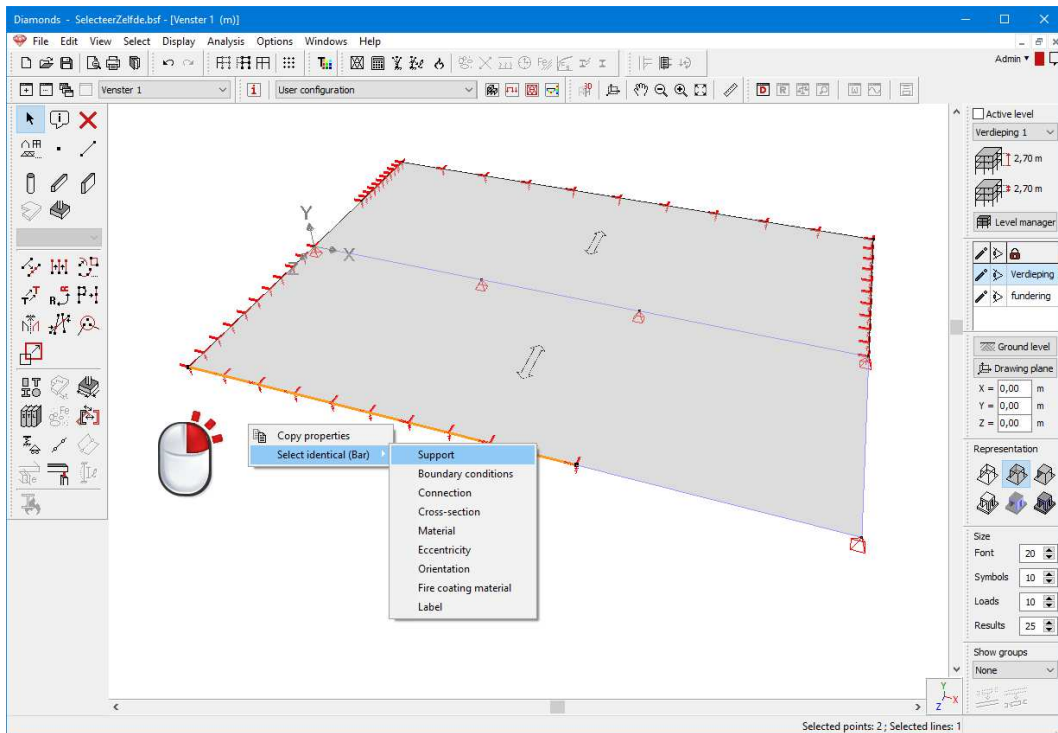
- Result: Diamonds selects all lines with the same support conditions as defined in the dialog .
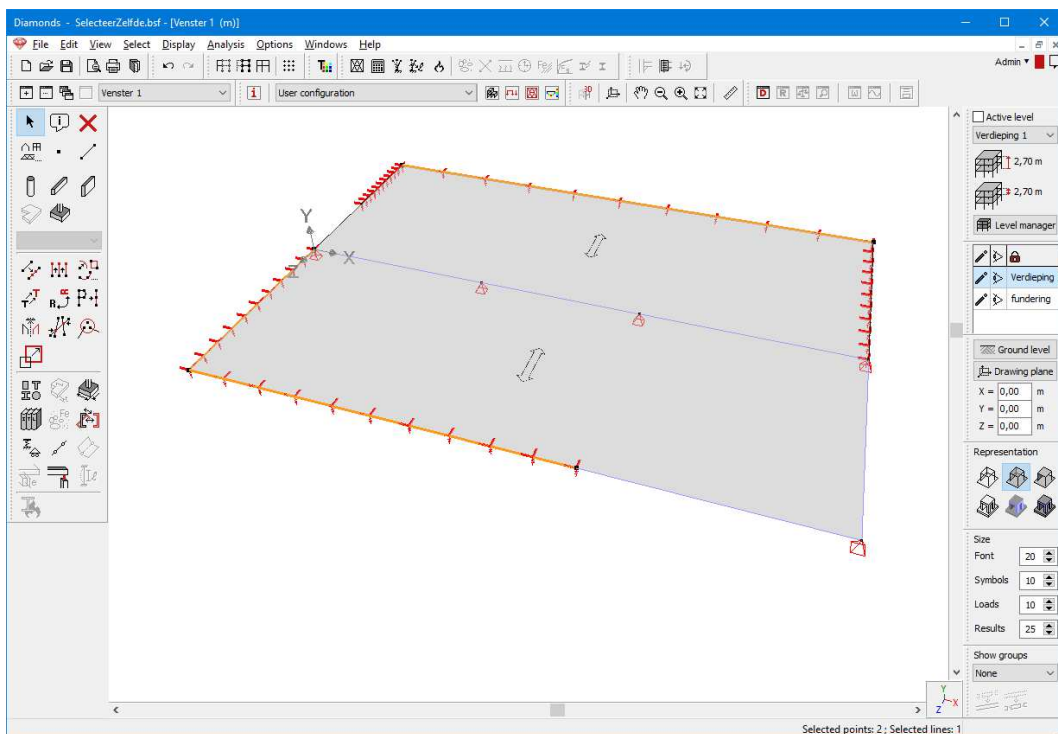
Note: you can select based on the following properties:

- Points: support, footing and label.
- Bars: support, boundary condition, connection, cross-section, material, eccentricity, orientation, fire protection materials and label.
- Surfaces: support, boundary conditions, cross-section, material and label.

1.2. Select elements with a skull

Using the menu *Select > Most loaded bars > Selection parameters* you can define a new selection criterion with which you can select all bars containing a skull.

Using the menu *Select > Most loaded plates > Skull* you can select all surfaces containing a skull.
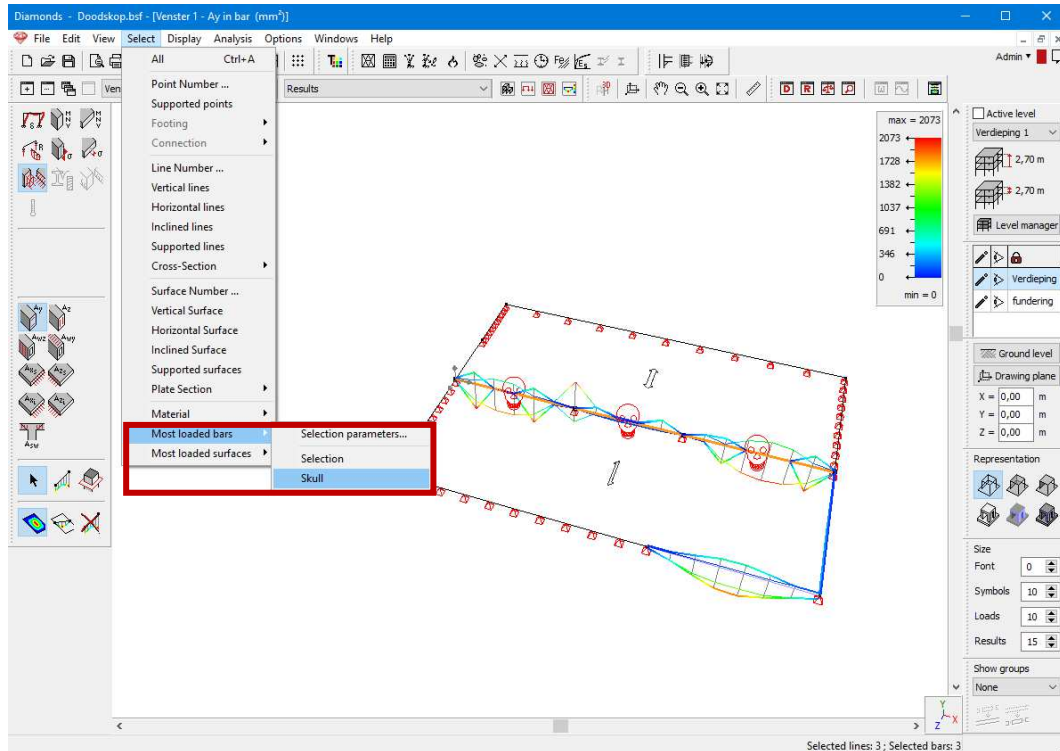
Note: the skull arises when more reinforcement is required than the maximum allowed amount imposed by the standard.

1.3. Levels are easier to set visible/ invisible

The pallet 'Manage levels' is expanded with a pallet 'Show levels'. With the latter you can easily set certain levels visible/ invisible.
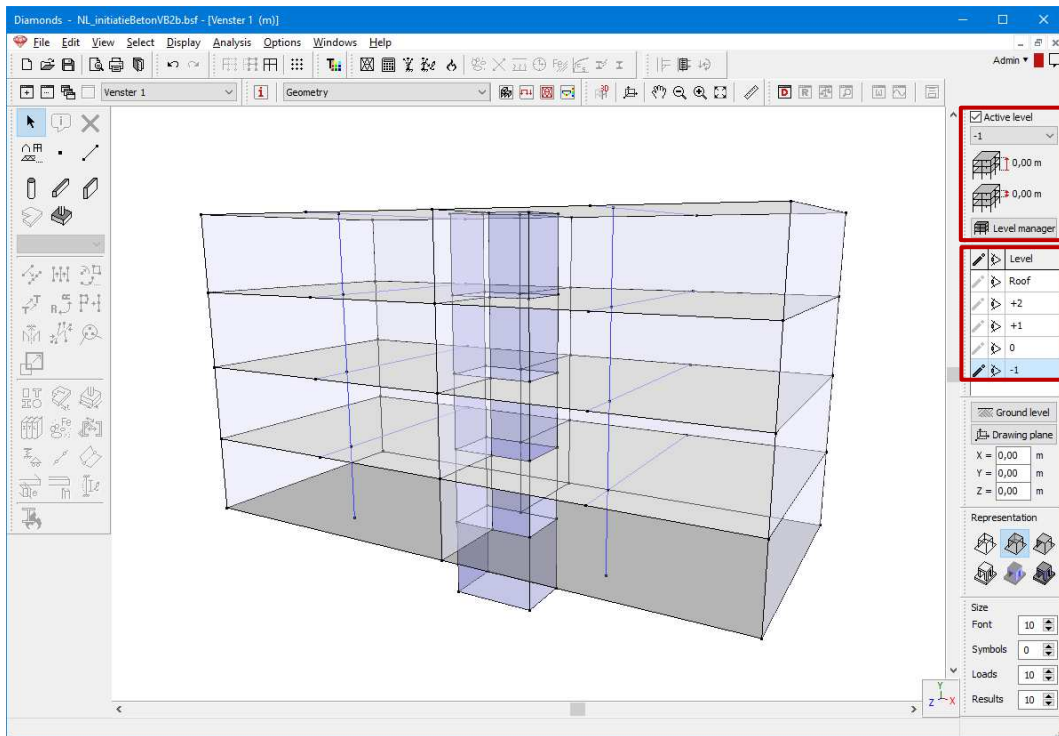
1.4. Short cuts

The following short cut has been added:

- ESC   Close the window *Detailed Results*

2. Geometry

2.1. Visual indication of 'no tension/ compression' in supports points and support lines

In both point and line support a visual indication is implemented to mark the presence of non-linear behaviour. A few examples for point supports:

Vertical spring constant that can take both tension and compression.

Vertical spring constant that either can take no tension or no compression.

Horizontal support that can take both tension and compression.

Horizontal support that either can take no tension or no compression.
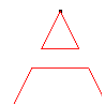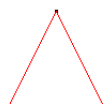
| Pinned support that can take both tension and compression.	Pinned support in which one the translation components (X, Y or Z) either cannot take tension or cannot take compression.
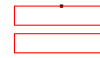
| Fixed support that can both take tension and compression.	Fixed support in which one the translation components (X, Y or Z) either cannot take tension or cannot take compression

2.2. Fire resistant paints

- These fire resistant paints were added: FX2002, FX2007, FX6010, C-Therm S100/S101 FD and C-Therm S110/S111 FD
- The properties of these fire resistant pains have been updated: FX2004, FX5090, FX6002
- These fire resistant paints are no longer available: FX2005, FX5120

3. Analysis and results

3.1. Show calculation time

During the calculations (⊠, ▦, 𝕐, 𝒌, ☰, 🕐, ⚙, 𝕰), Diamonds will show the current calculation time in the bottom right corner. If no other calculation is started, the calculation time from your last calculation will remain visible.
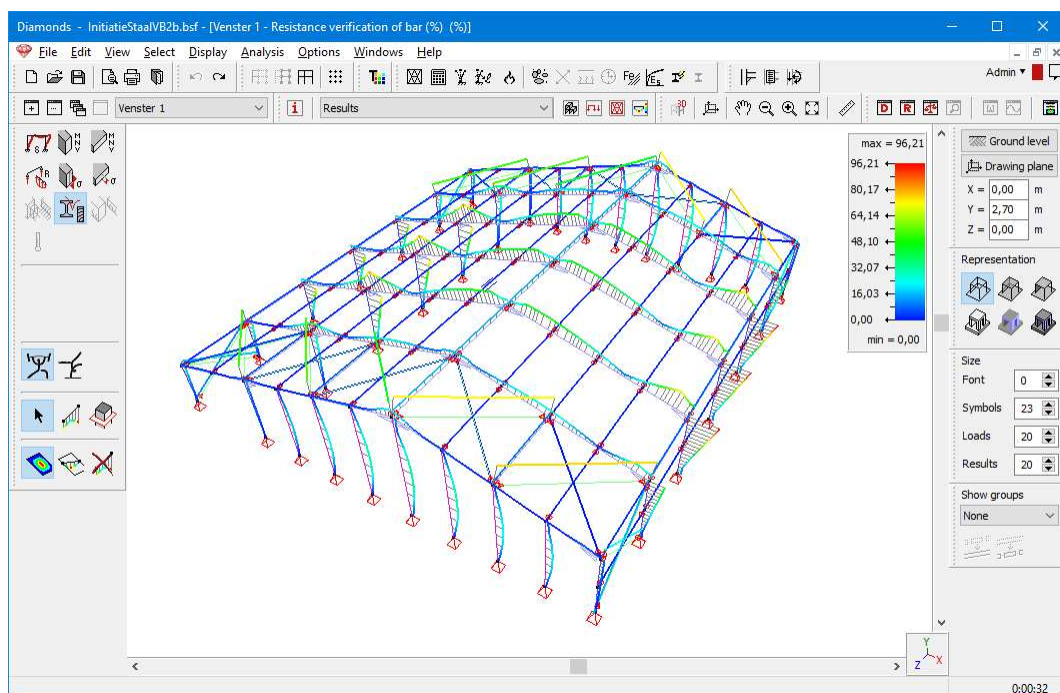

Notes:

- If the calculation time is very small (< 1s), no calculation time will be shown.

- For these calculation functions, the calculation time is not shown: ⚒, 𝐼, 𝐼₆.

3.2. Detect invalid plates

In Diamonds you need a closed circumference to generate a slab/ wall. Moreover, the lines describing the circumference should be in the same plane. If that's not the case, you have a 'broken' plate definition. Also called 'an invalid plate'. It is possible Diamonds will still draw the slab/ wall, but the calculation will sooner or later results in errors.

Diamonds 2023 can track down these invalid plates. If you model contains invalid plates, you'll receive the error message below on generating the mesh:
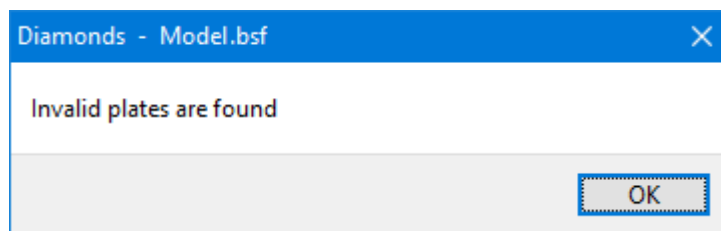
You must solve the invalid plates before Diamonds will be able to generate the mesh.

Note: it is also possible to select the invalid plates using the menu *Select > Plates > Invalid plates*.
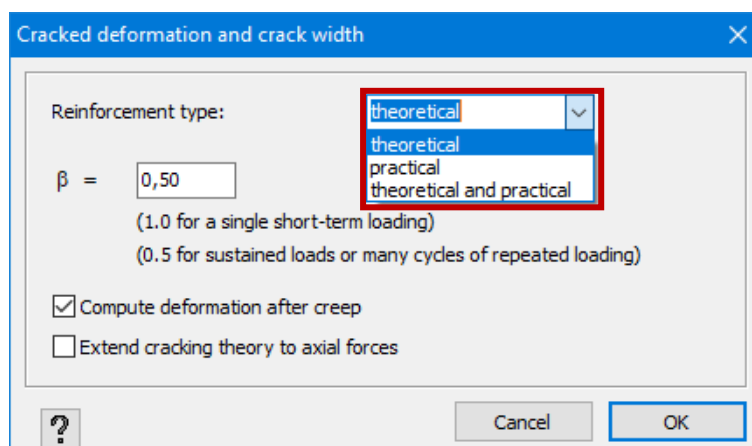
4. Design

4.1. Concrete

When calculating the cracked deformation ⚏ or the cracked deformation in time 🕐 you can now indicate with which reinforcement Diamonds should calculate:

- Either only the theoretical reinforcement (incl. minimum reinforcement)
- Either only the practical reinforcement
- Either both theoretical (incl. minimum reinforcement) and practical reinforcement.
  This option was the only option available up to Diamonds 2022.

The option 'only practical reinforcement' is interesting when you need to recalculate the cracked deformation in an existing slab for example. Using the button ✕ (this function requires the license *Reinforcement design)* you can accurately draw practical reinforcement in the plate.