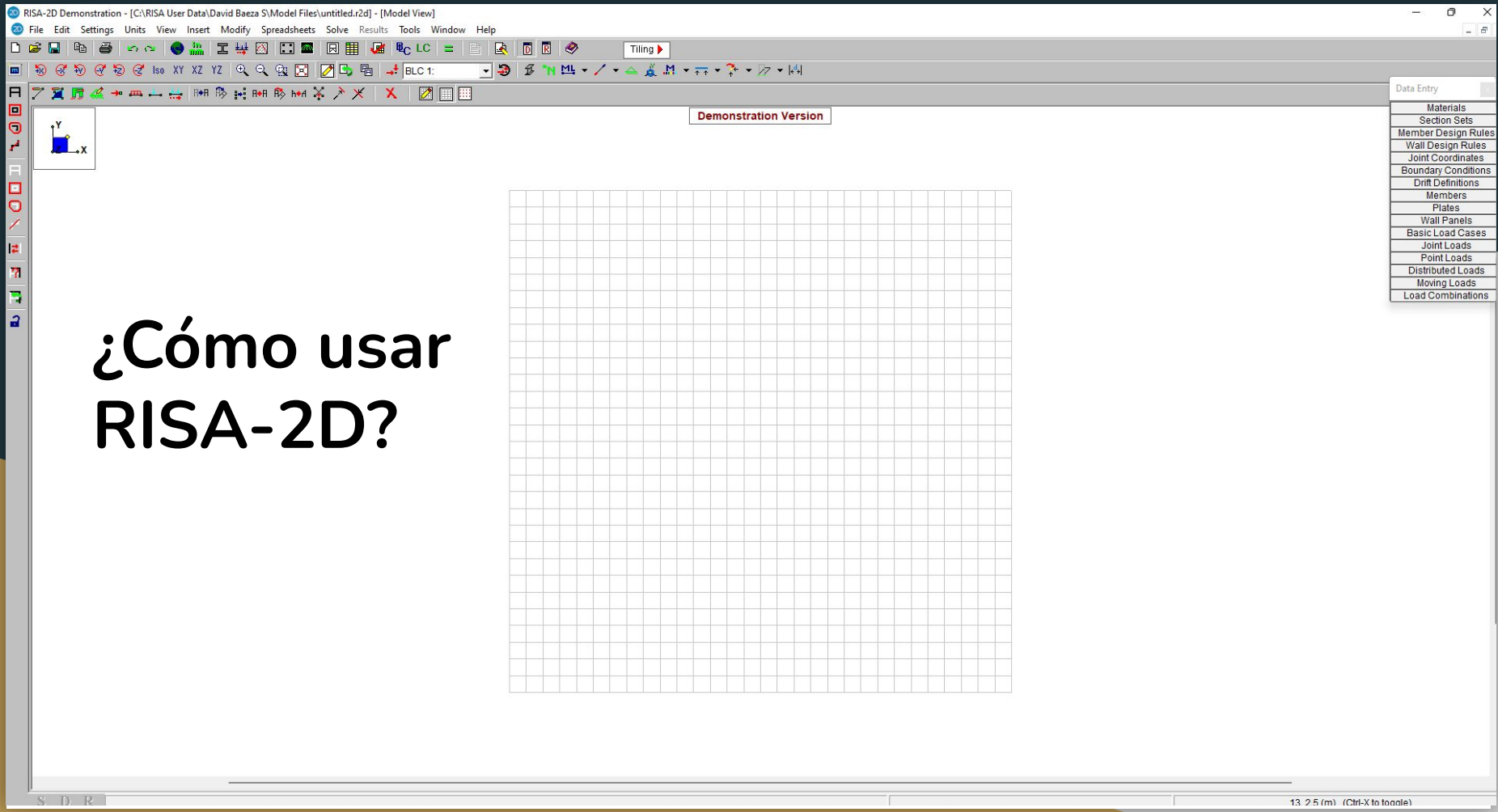
Guía para usar RISA 2D

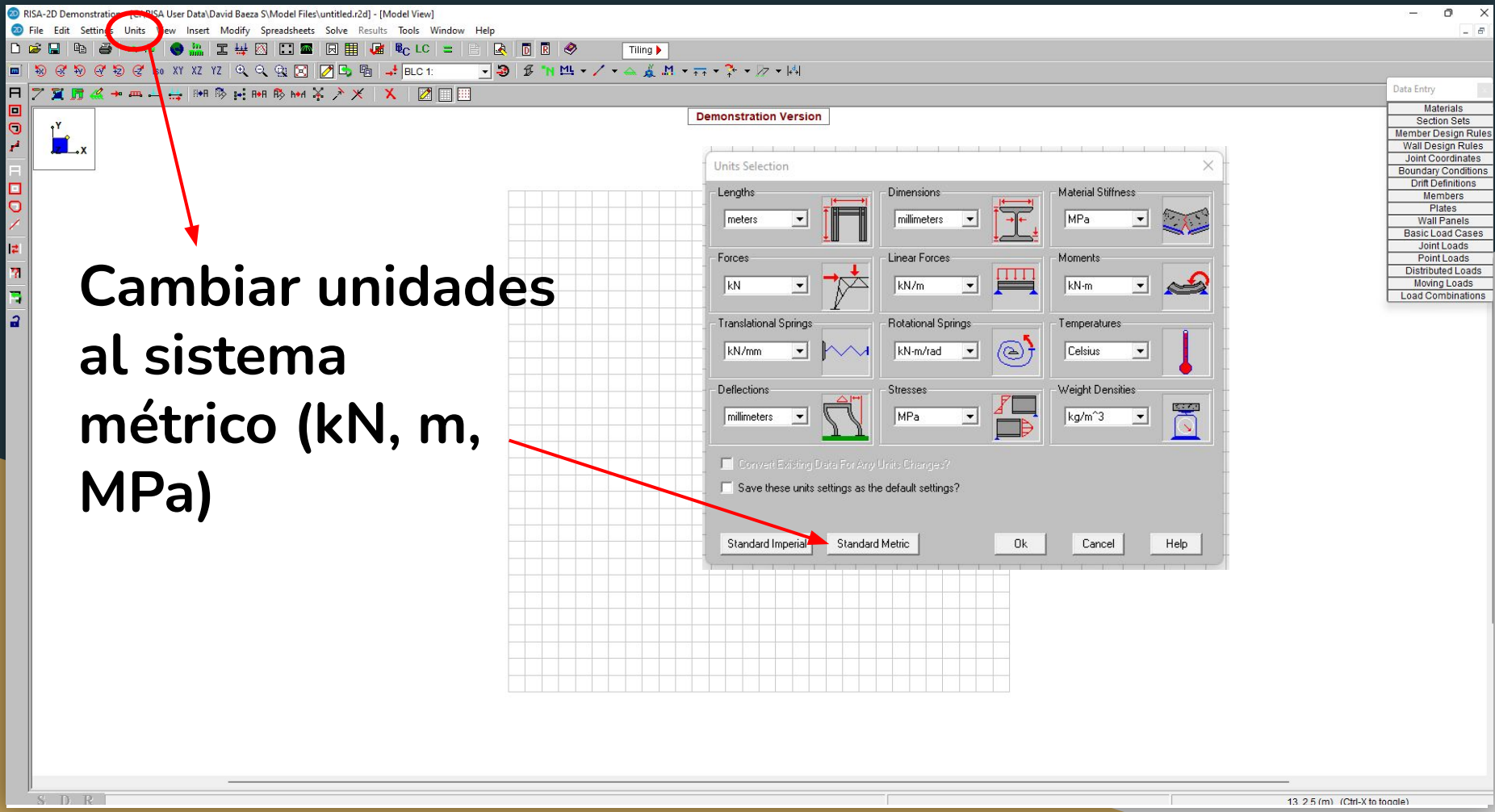
Programa

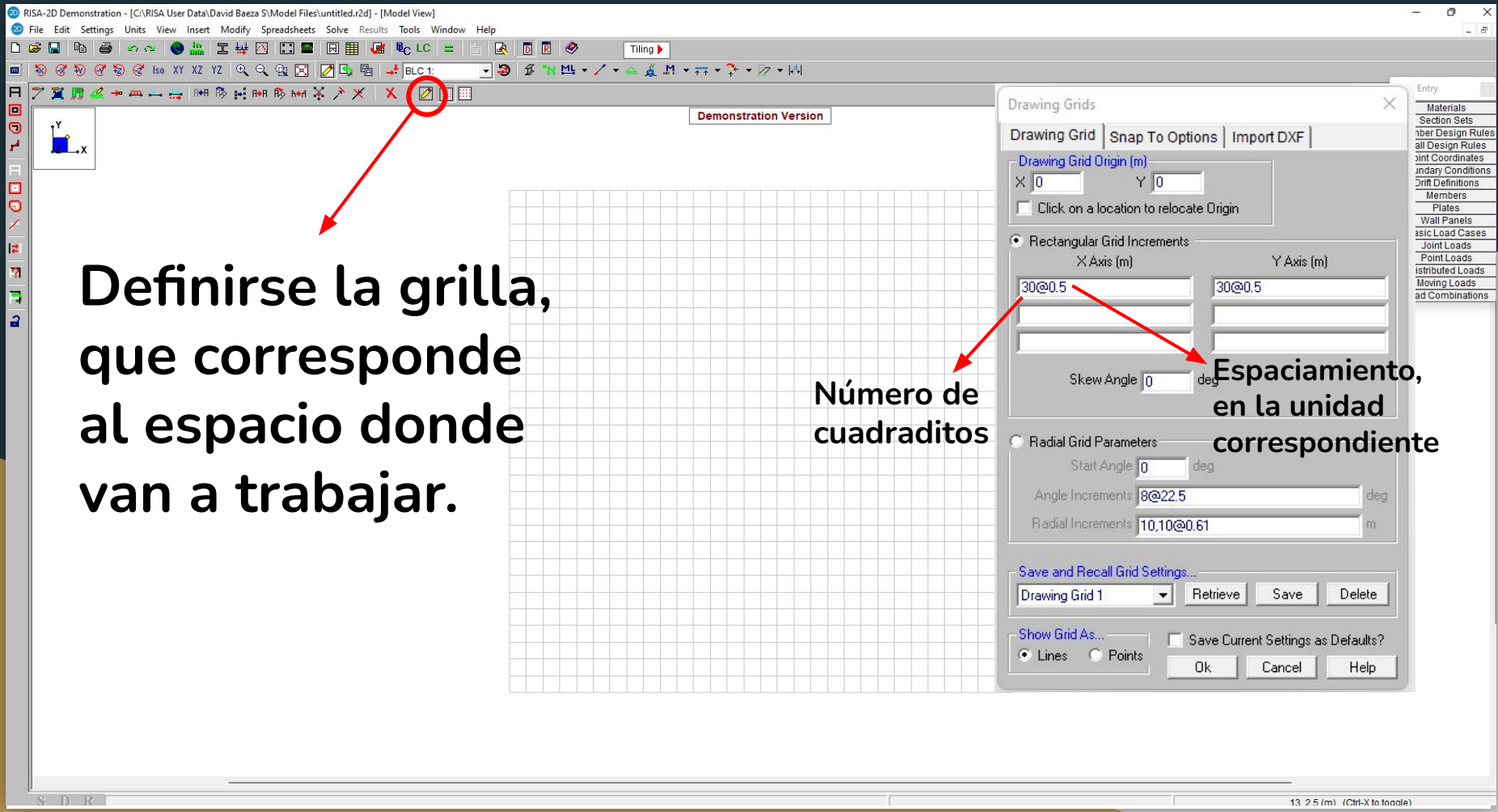
Necesitan crearse una cuenta para descargar el programa:

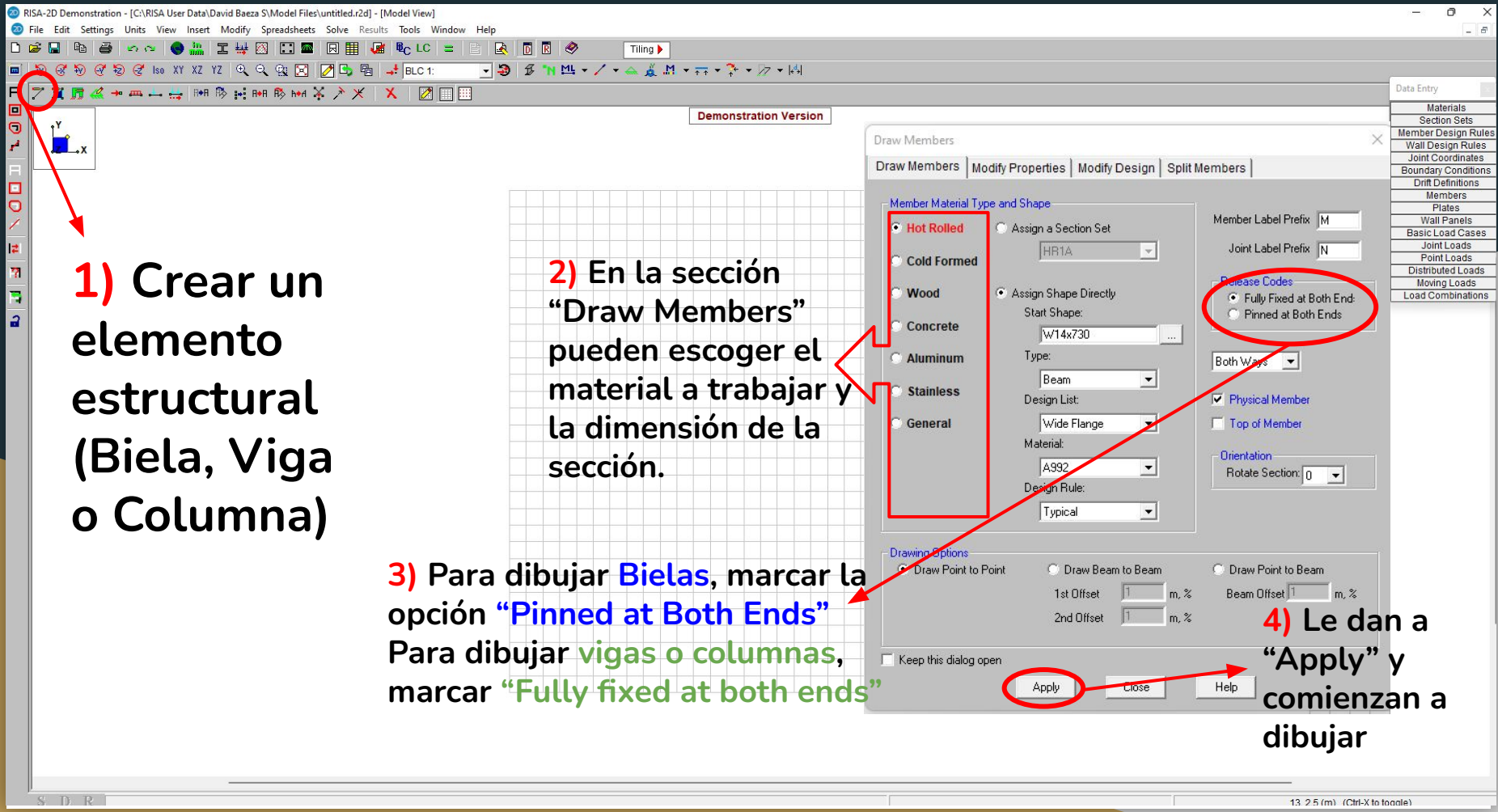
https://risa.com/products/risa-2d


RISA-2D Demonstration - [C:\RISA User Data\David Baeza S\Model Files\untitled.r2d] - [Model View]
File Edit Settings Units View Insert Modify Spreadsheets Solve Results Tools Window Help
Tiling
BLC 1:
Demonstration Version
Data Entry
Materials
Section Sets
Member Design Rules
Wall Design Rules
Joint Coordinates
Boundary Conditions
Drift Definitions
Members
Plates
Wall Panels
Basic Load Cases
Joint Loads
Point Loads
Distributed Loads
Moving Loads
Load Combinations
¿Cómo usar RISA-2D?

Cambiar unidades al sistema métrico (kN, m, MPa)




Definirse la grilla, que corresponde al espacio donde van a trabajar.
Número de cuadraditos
Espaciamiento, en la unidad correspondiente
Drawing Grids
Drawing Grid
Snap To Options
Import DXF
Drawing Grid Origin (m)
X 0
Y 0
Click on a location to relocate Origin
Rectangular Grid Increments
X Axis (m)
Y Axis (m)
30@0.5
30@0.5
Skew Angle 0 deg
Radial Grid Parameters
Start Angle 0 deg
Angle Increments 8@22.5 deg
Radial Increments 10,10@0.61 m
Save and Recall Grid Settings...
Drawing Grid 1
Retrieve
Save
Delete
Show Grid As...
Lines
Points
Save Current Settings as Defaults?
Ok
Cancel
Help
Demonstration Version


1) Crear un elemento estructural (Biela, Viga o Columna)
2) En la sección "Draw Members" pueden escoger el material a trabajar y la dimensión de la sección.
3) Para dibujar Bielas, marcar la opción "Pinned at Both Ends"
Para dibujar vigas o columnas, marcar "Fully fixed at both ends"
4) Le dan a "Apply" y comienzan a dibujar
Demonstration Version
Draw Members
Draw Members
Modify Properties
Modify Design
Split Members
Member Material Type and Shape
Hot Rolled
Cold Formed
Wood
Concrete
Aluminum
Stainless
General
Assign a Section Set
HR1A
Assign Shape Directly
Start Shape:
W14x730
Type:
Beam
Design List:
Wide Flange
Material:
A992
Design Rule:
Typical
Member Label Prefix
M
Joint Label Prefix
N
Release Codes
Fully Fixed at Both End
Pinned at Both Ends
Both Ways
Physical Member
Top of Member
Orientation
Rotate Section:
0
Drawing Options
Draw Point to Point
Draw Beam to Beam
Draw Point to Beam
1st Offset
2nd Offset
Beam Offset
Keep this dialog open
Apply
Close
Help
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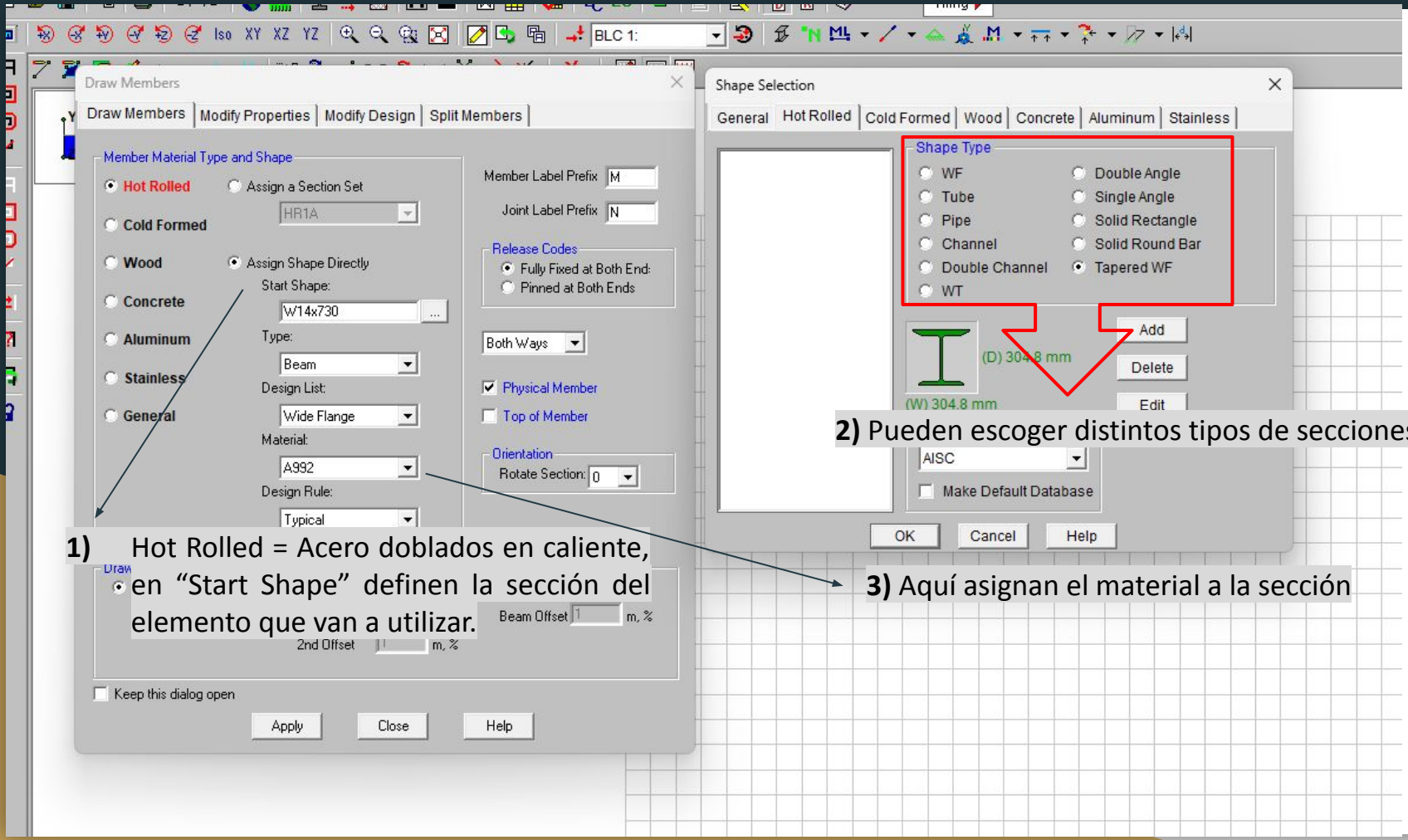


1) Hot Rolled = Acero doblados en caliente, en “Start Shape” definen la sección del elemento que van a utilizar.

2) Pueden escoger distintos tipos de secciones.

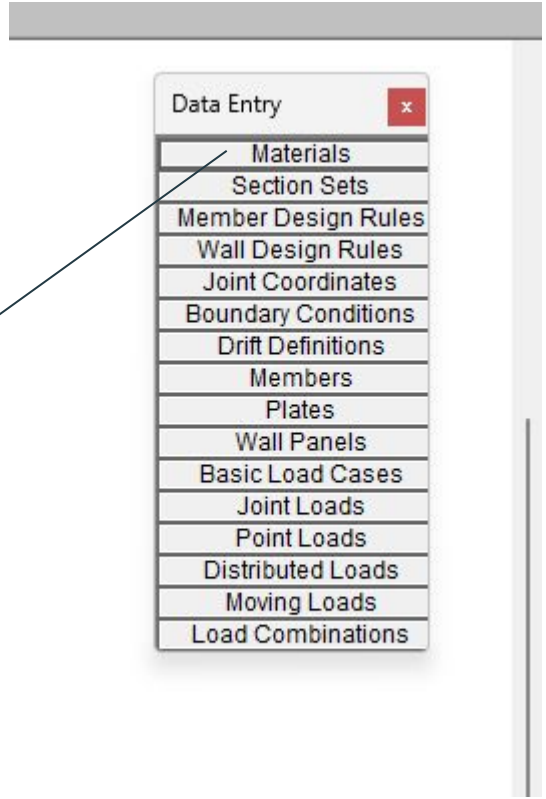
3) Aquí asignan el material a la sección

version

Hot Rolled Steel Properties

Hot Rolled | Cold Formed | Wood | Concrete | Masonry | Aluminum | Stainless | General

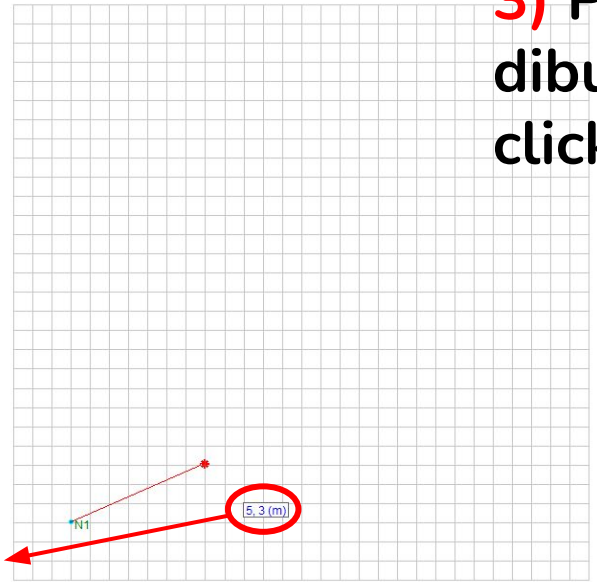
	Label	E [MPa]	G [MPa]	Nu	Therm ...	Densit...	Yield[M...
1	HR1	1.999e+5	76904.123	0.3	1.17	7849.047	248.211
2	A992	1.999e+5	76904.123	0.3	1.17	7849.052	344.738
3	A36 Gr.36	1.999e+5	76904.123	0.3	1.17	7849.052	248.211
4	A572 Gr.50	1.999e+5	76904.123	0.3	1.17	7849.052	344.738
5	A500 Gr.B RND	1.999e+5	76904.123	0.3	1.17	8441.734	289.58
6	A500 Gr.B RECT	1.999e+5	76904.123	0.3	1.17	8441.734	317.159
7	A500 Gr.C RND	1.999e+5	76904.123	0.3	1.17	8441.734	317.159
8	A500 Gr.C RECT	1.999e+5	76904.123	0.3	1.17	8441.734	344.738
9	A53 Gr.B	1.999e+5	76904.123	0.3	1.17	7849.052	241.317
10	A1085	1.999e+5	76904.123	0.3	1.17	7849.052	344.738
11	A913 Gr.65	1.999e+5	76904.123	0.3	1.17	7849.052	448.159



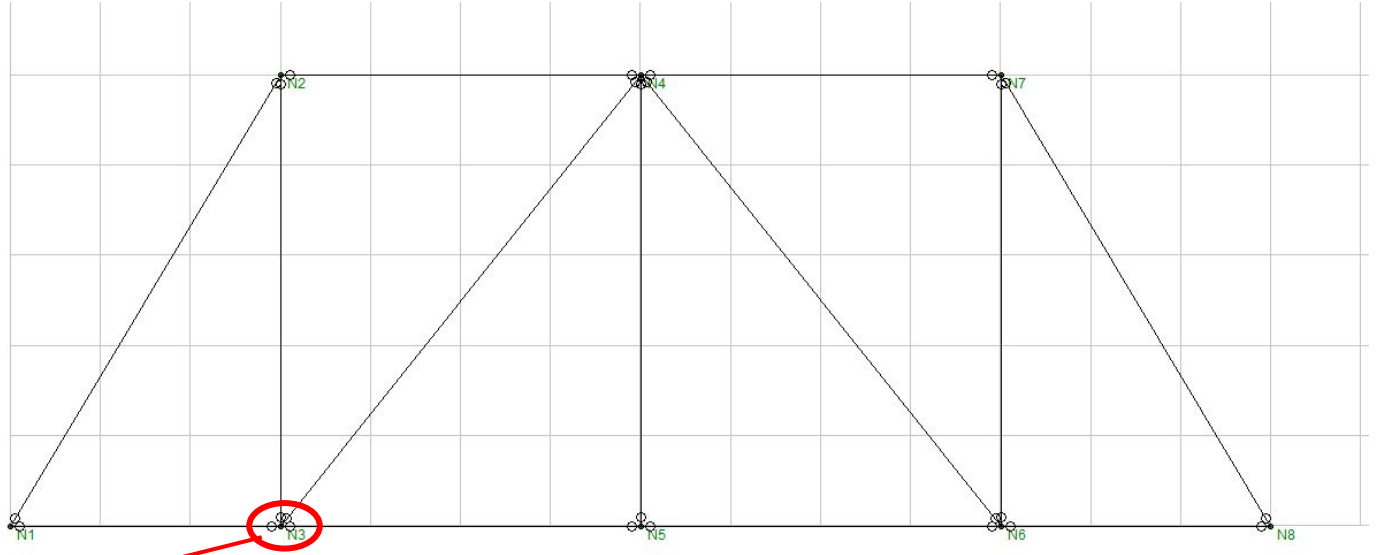
1) En la ventana de materiales pueden agregar y modificar los existentes para después incluirlo en las secciones.

1) Al dibujar, con click izquierdo van marcando los puntos que separe a las secciones

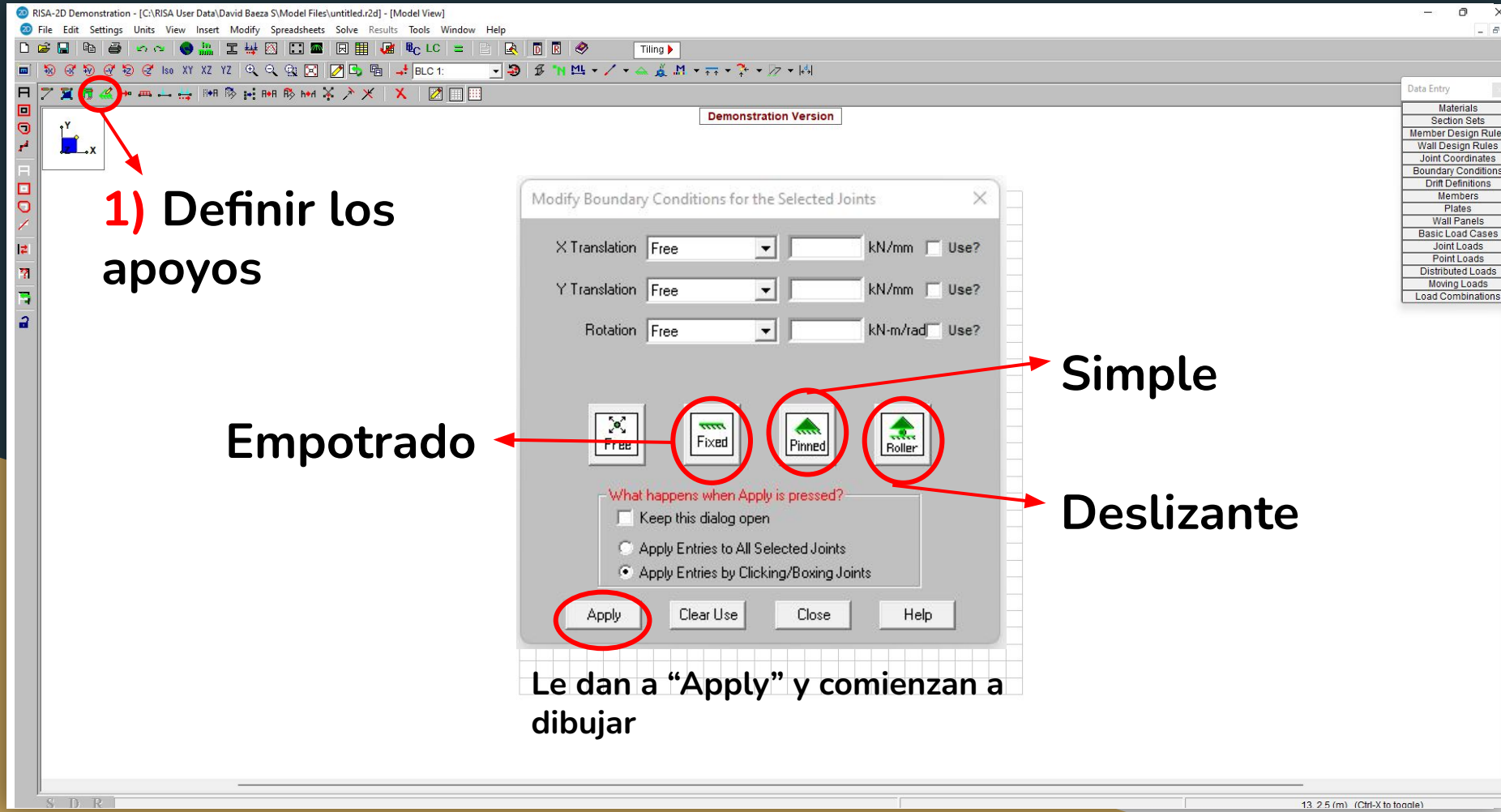
2) Al pararse en cualquier zona de la grilla, les indicará la posición x,y

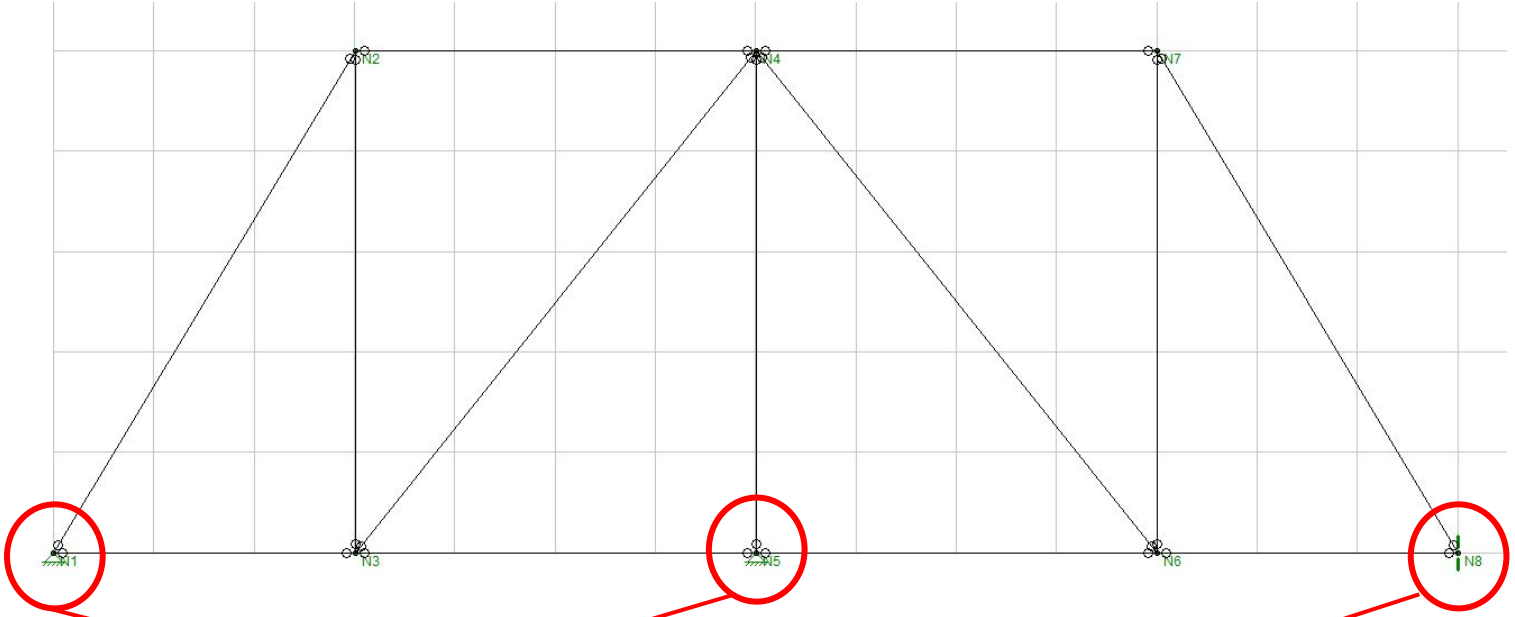


3) Pueden “soltar” el dibujo apretando el click derecho.



Al dibujar bielas, fijarse que aparezcan estos círculos en todos los extremos

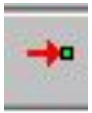

1) Definir los apoyos
Modify Boundary Conditions for the Selected Joints
X Translation
Free
kN/mm
Use?
Y Translation
Free
kN/mm
Use?
Rotation
Free
kN-m/rad
Use?
Free
Fixed
Pinned
Roller
What happens when Apply is pressed?
Keep this dialog open
Apply Entries to All Selected Joints
Apply Entries by Clicking/Boxing Joints
Apply
Clear Use
Close
Help
Empotrado
Simple
Deslizante
Le dan a “Apply” y comienzan a dibujar



Apoyo Simple

Apoyo Deslizante

1) Definir las cargas

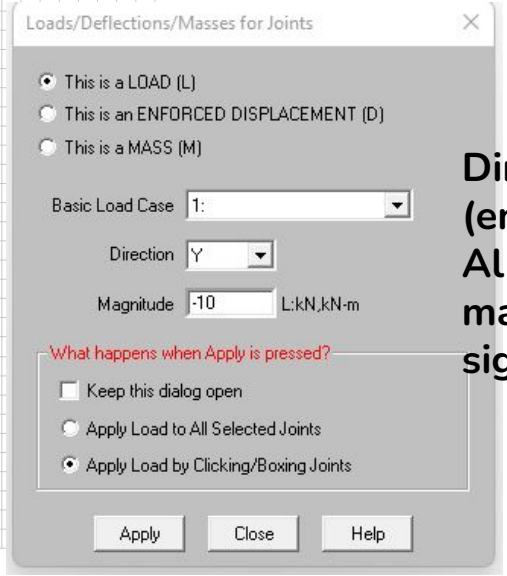


Carga puntual en un nodo

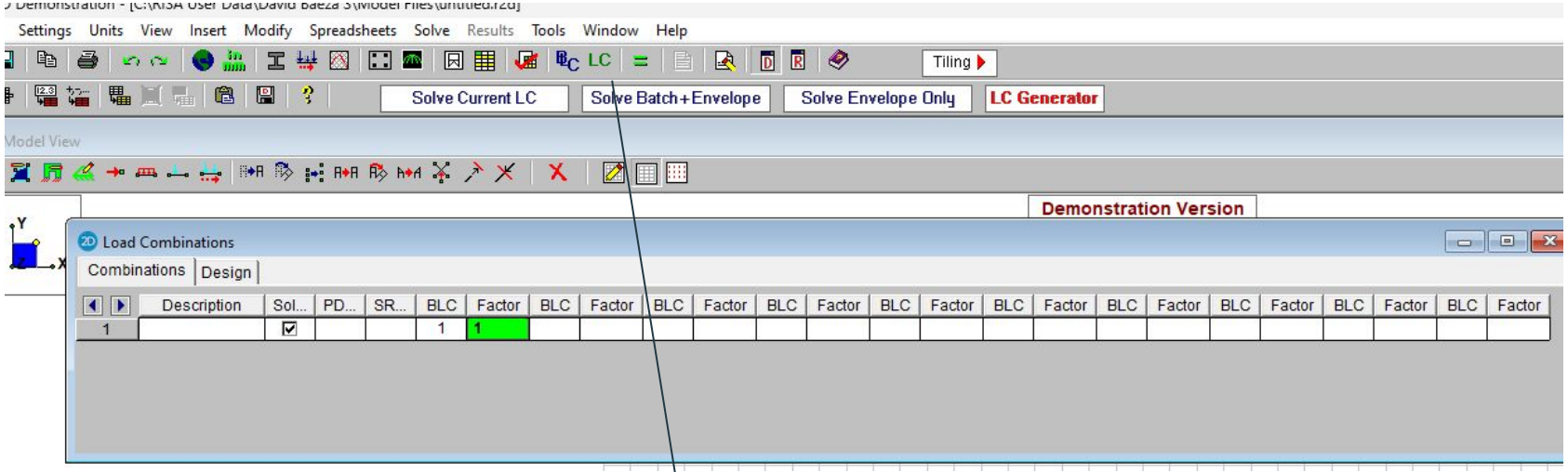
Carga distribuida

Carga puntual en cualquier parte de la sección

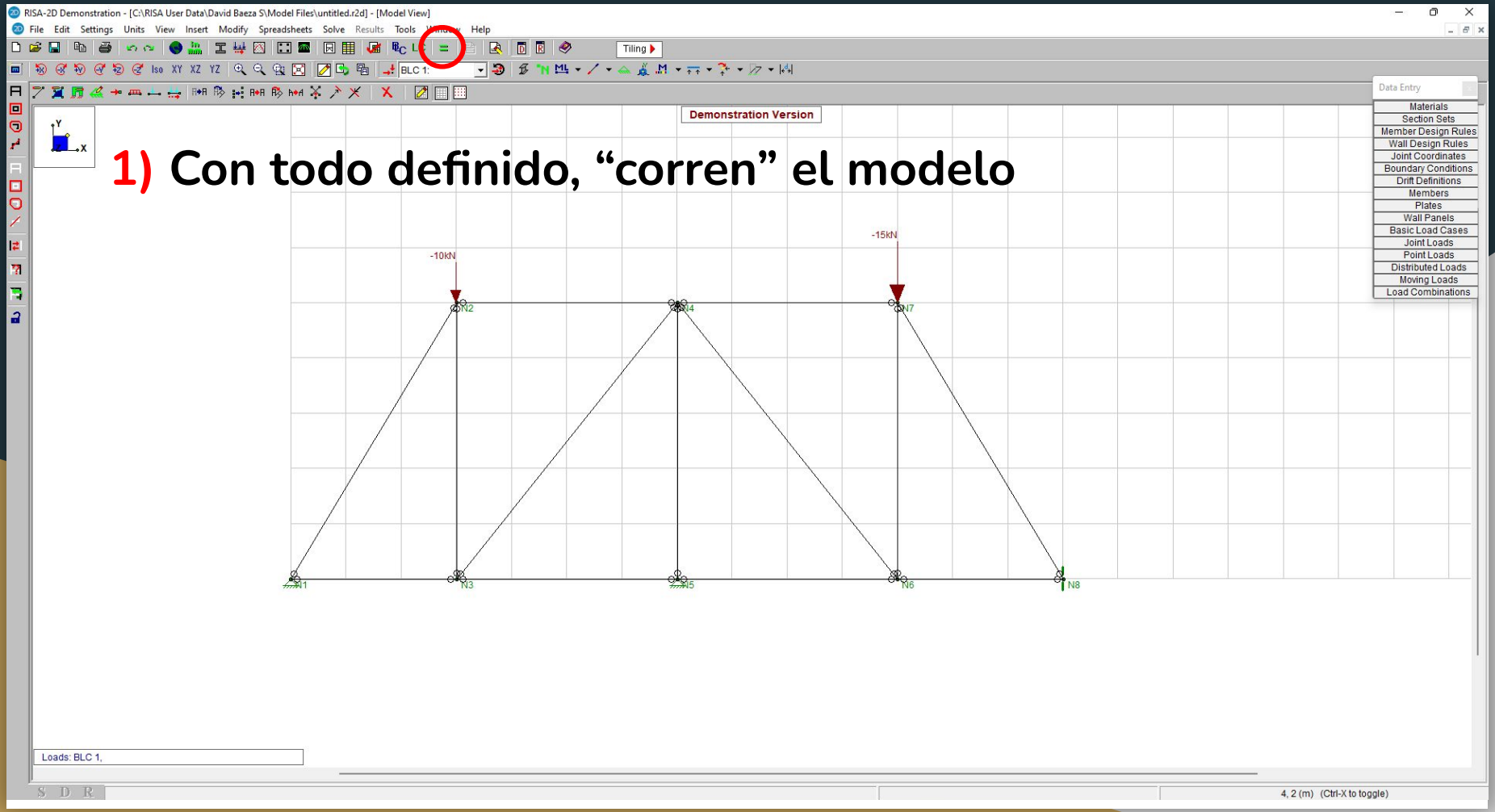
Carga puntual, pero con opción de moverse



Dirección X o Y (en mayúscula)
Al definir la magnitud, usar el signo



Antes de correr, deben indicar los factores de amplificación de cargas. Para efectos del curso estos son 1, así que deben tener lo mismo que aparece aquí.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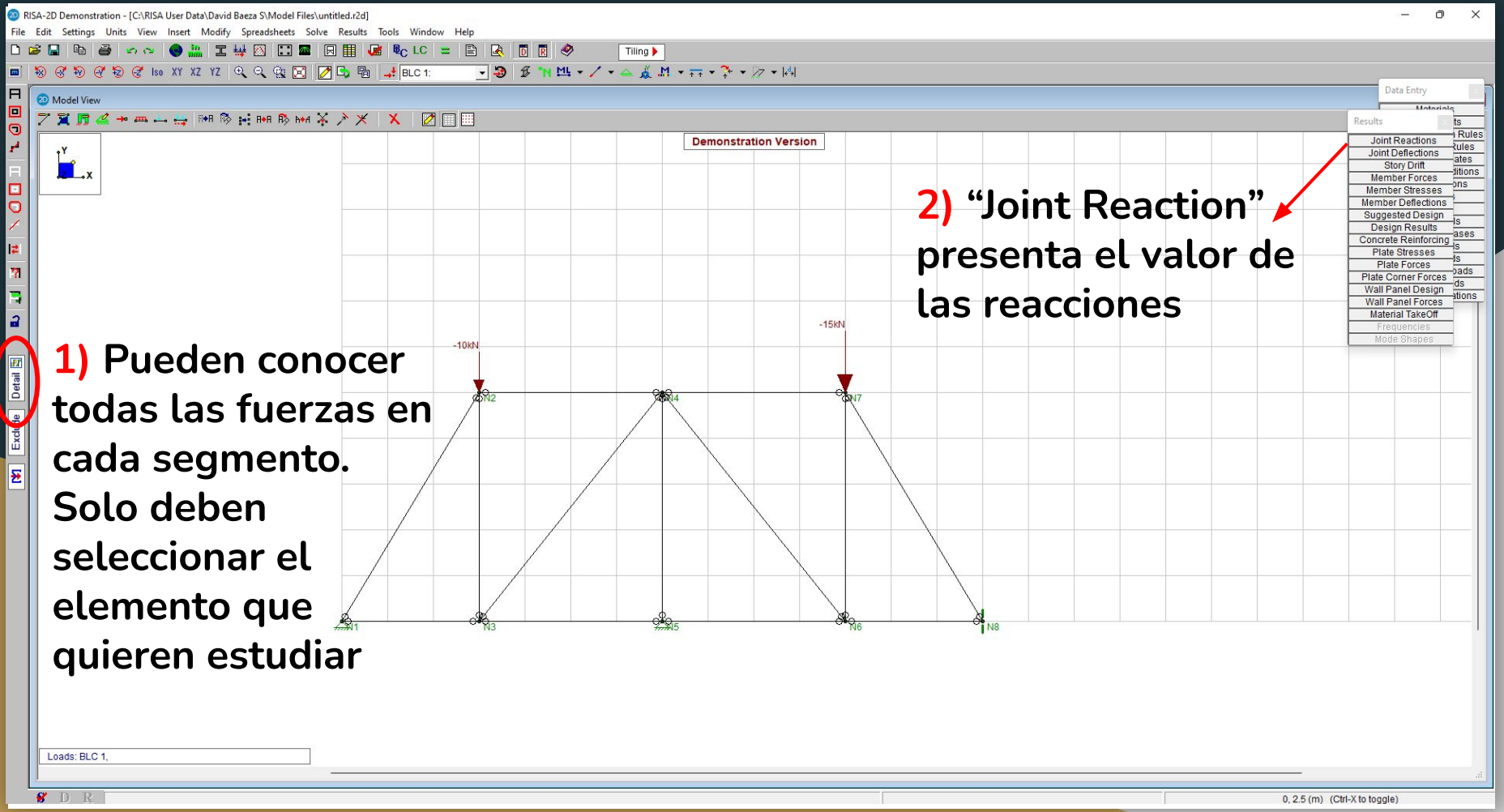
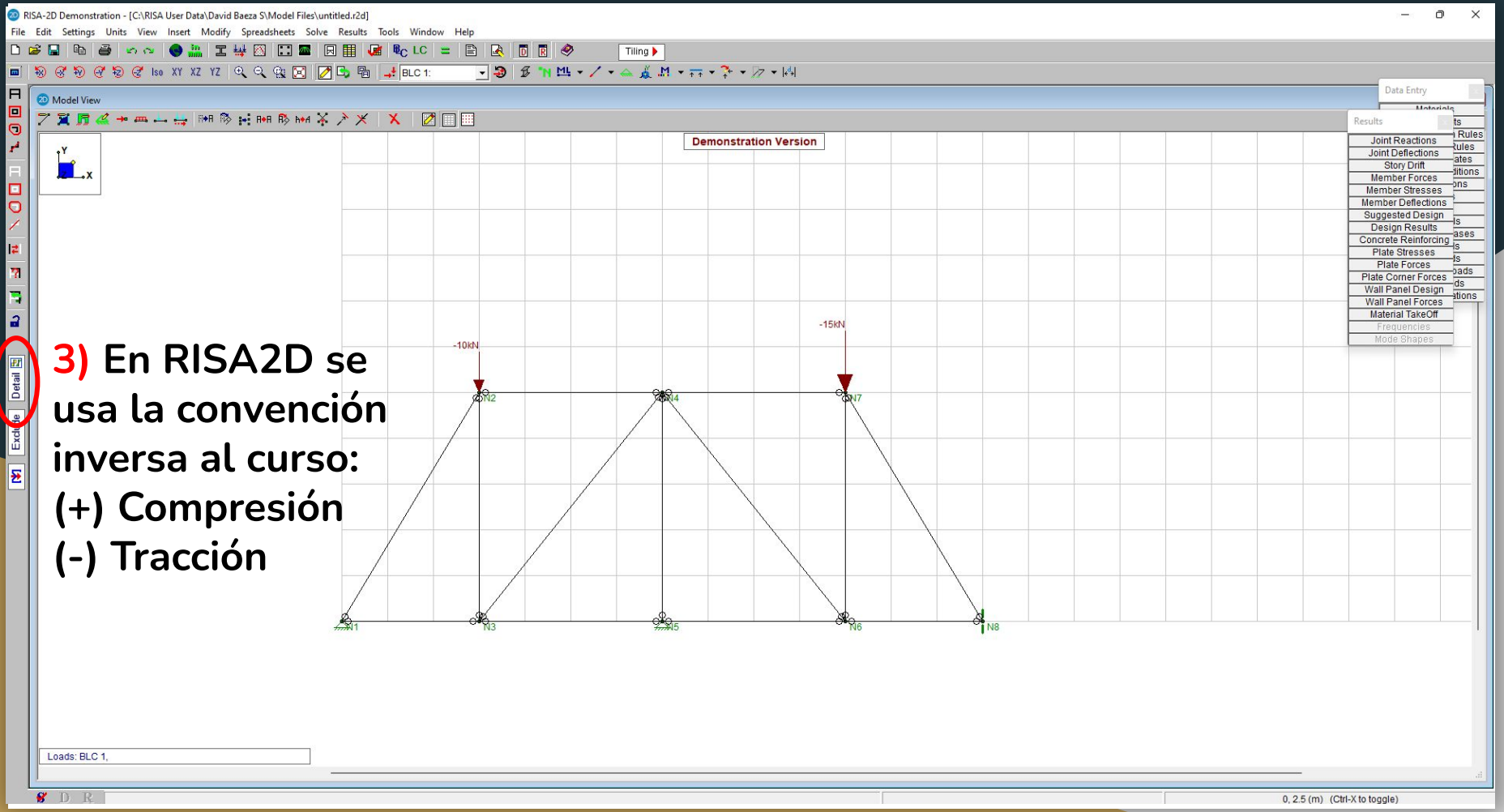
1) Con todo definido, “corren” el modelo
-10kN
-15kN
N1
N2
N3
N4
N5
N6
N7
N8
Loads: BLC 1,
4, 2 (m) (Ctrl-X to toggle)



1) Pueden conocer todas las fuerzas en cada segmento. Solo deben seleccionar el elemento que quieren estudiar

2) "Joint Reaction" presenta el valor de las reacciones



3) En RISA2D se usa la convención inversa al curso:
(+) Compresión
(-) Tracción