

Defining Lane from Layout Line and from Frames

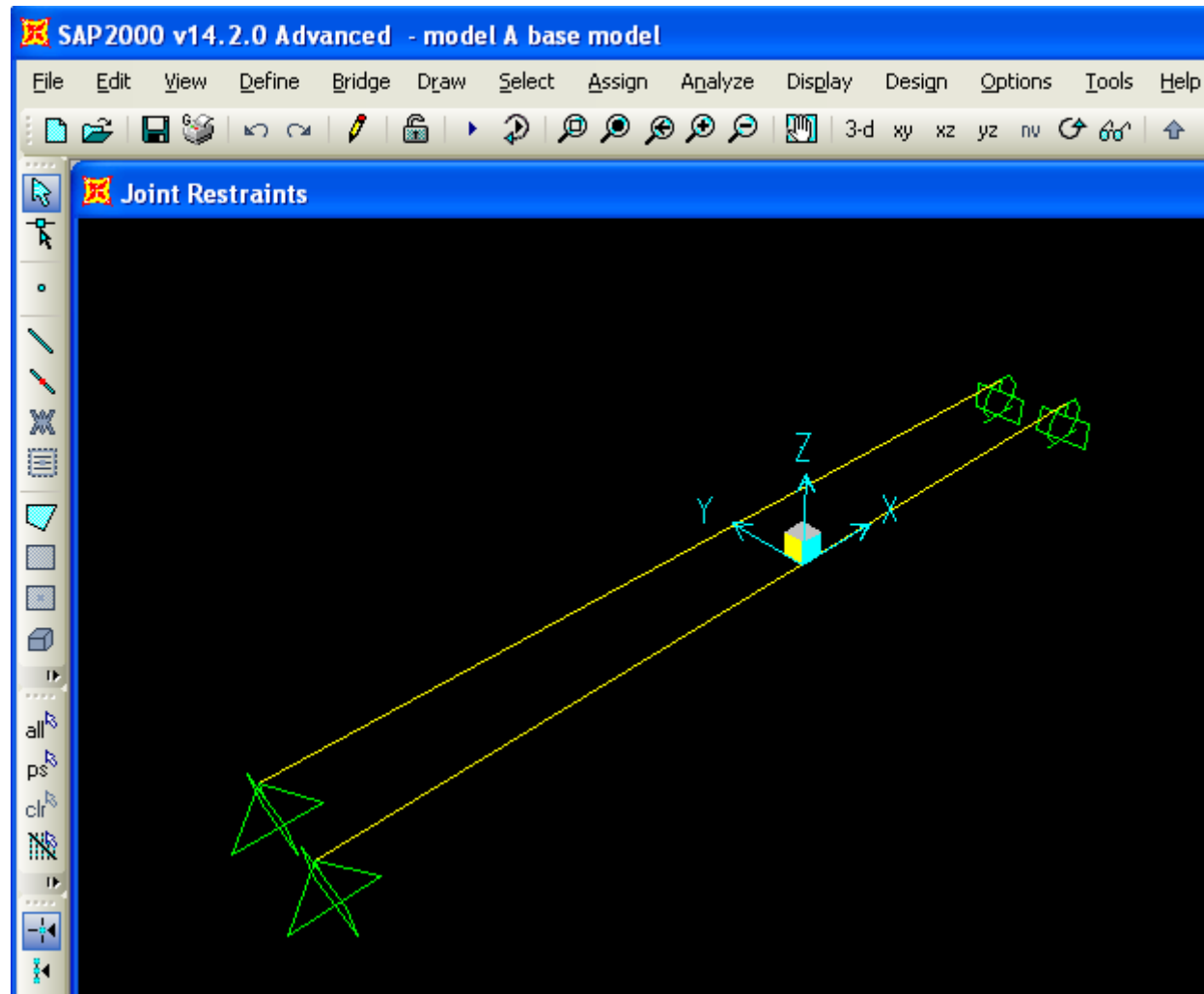
Overview

- This tutorial illustrates how lanes can be defined from layout lines and from frames.
- Defining lanes from layout lines is more powerful, but it requires the bridge modeler license.

Model Geometry

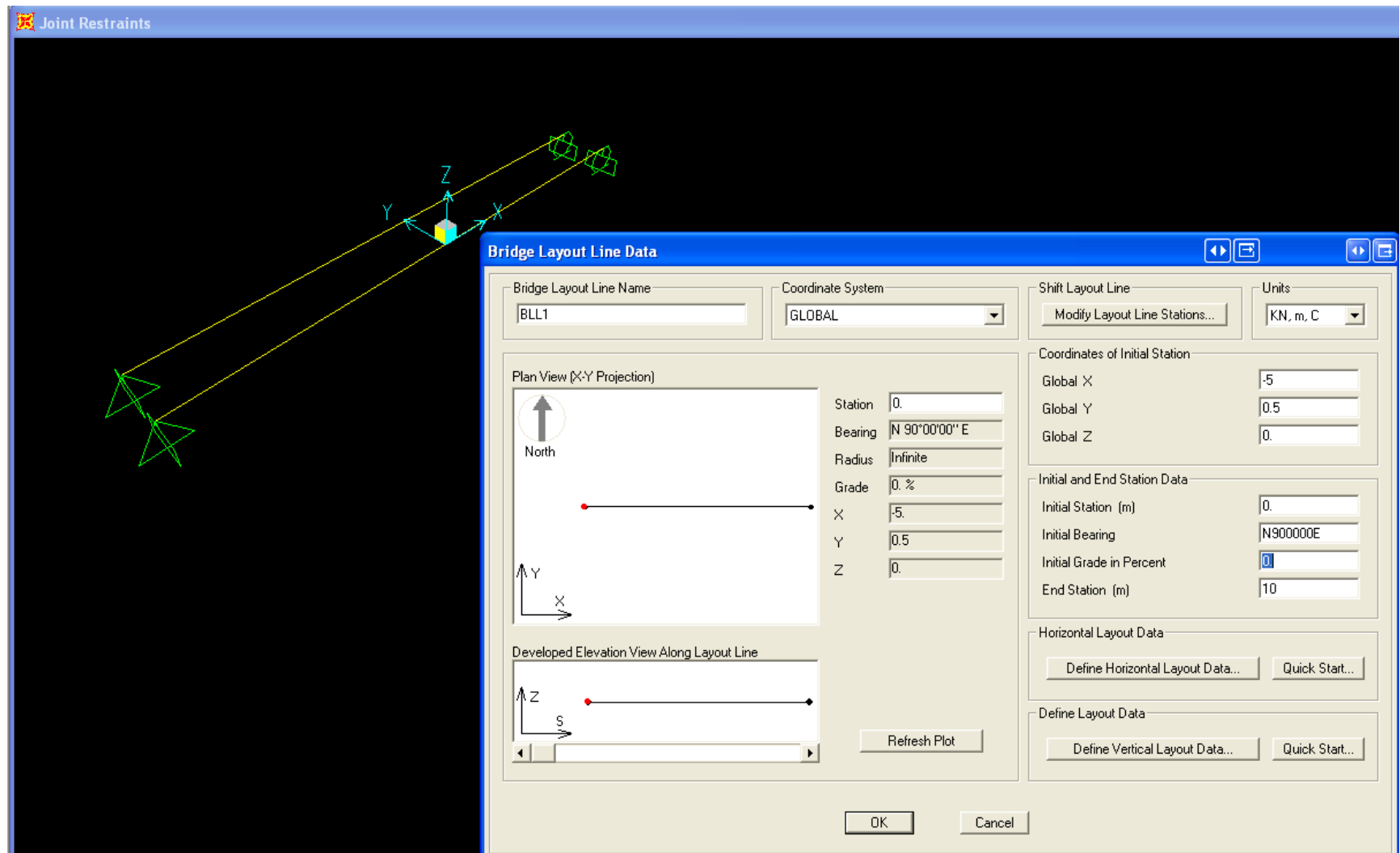
- The model consists of two 10m long simply supported girders spaced 1m apart.
- Unit moving load will be applied along a lane that is located between the two girders.
- The maximum midspan moment for each girder is expected to be $(0.5)(PL/4) = (0.5)(1\text{kN})(10\text{m})/4 = 0.125\text{kN-m}$.

Model Geometry, cont.

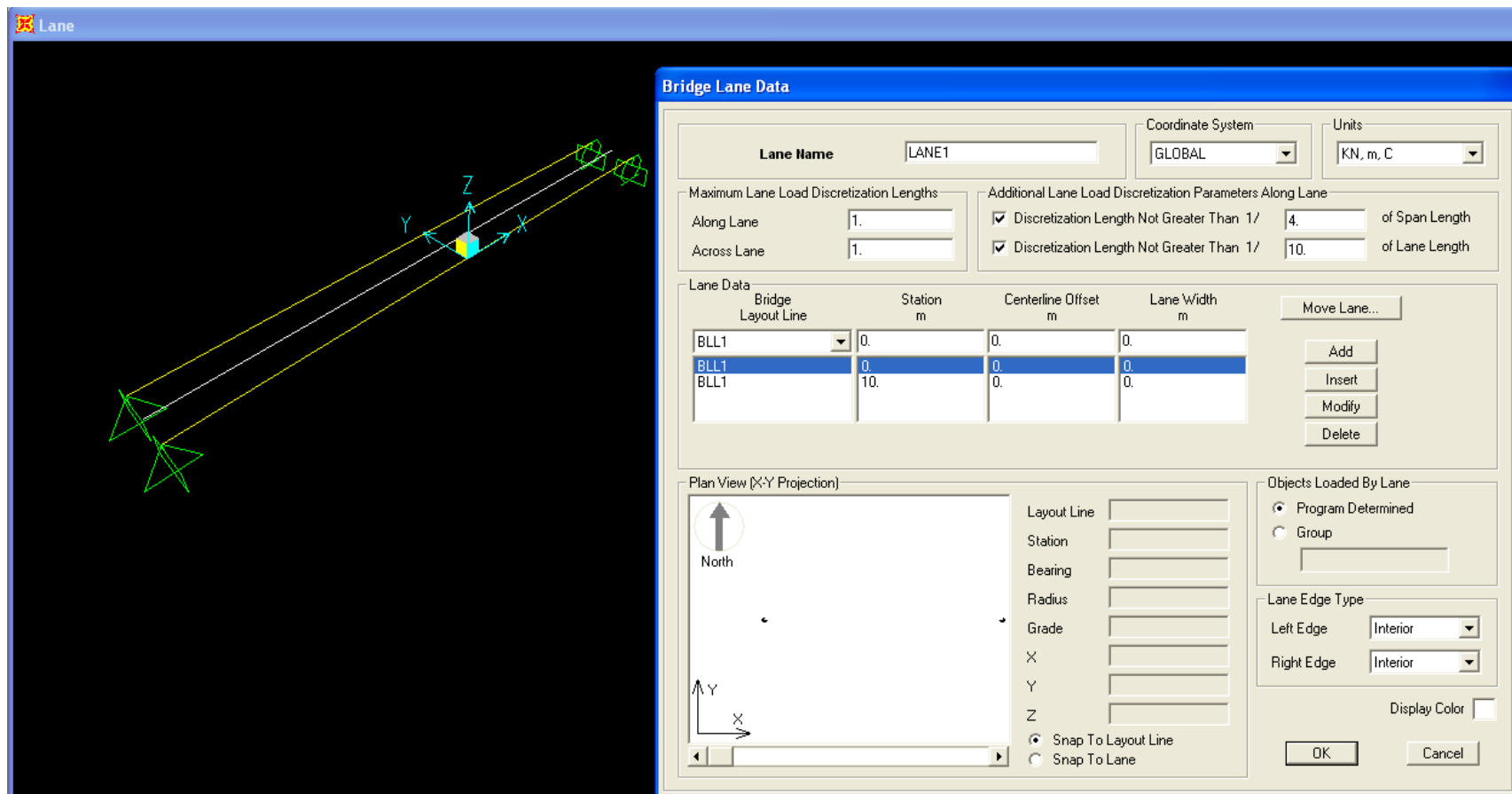


Define Lane from Layout Line

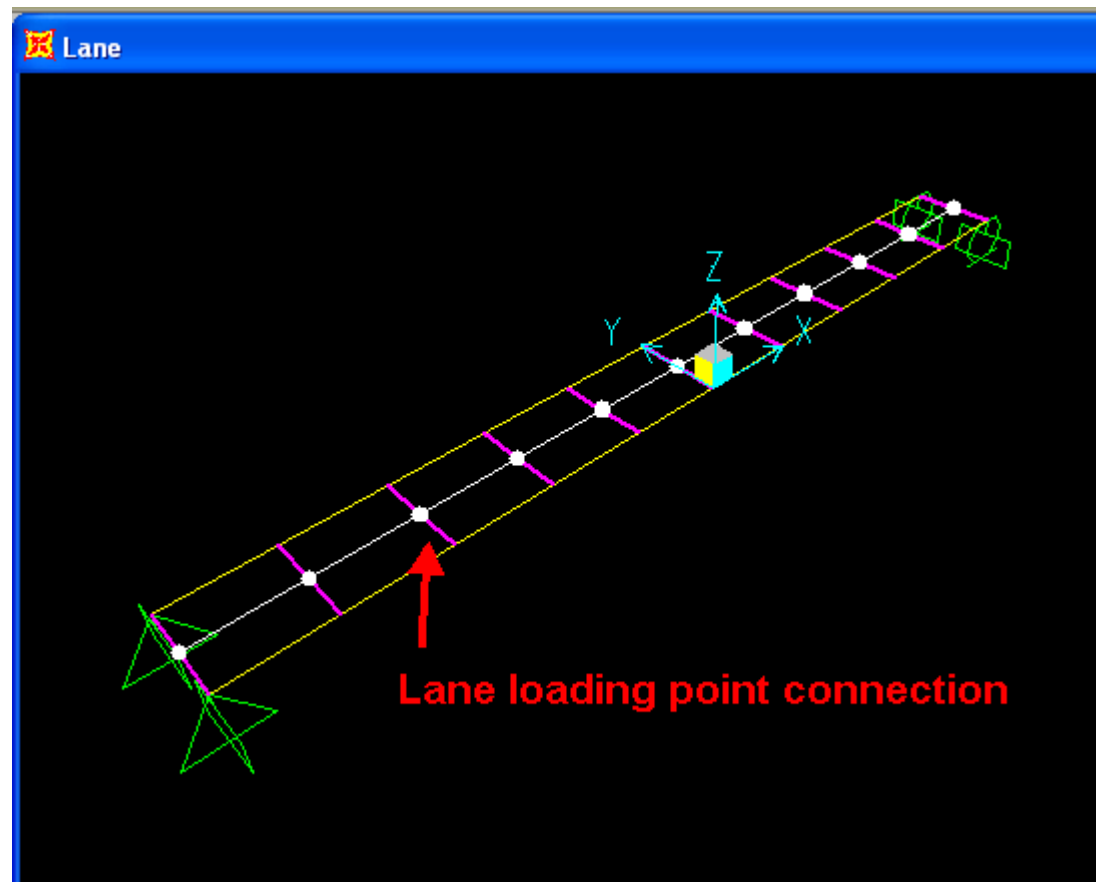
Define Layout Line



Define Lane From Layout Line



Check Lane Loading Points Connections



Define Moving Load Case

Load Case Data - Moving Load

Load Case Name: Notes:

Load Case Type:

Stiffness to Use:

☒ Zero Initial Conditions - Unstressed State

☐ Stiffness at End of Nonlinear Case

Important Note: Loads from the Nonlinear Case are NOT included in the current case

MultiLane Scale Factors

Number of Lanes Loaded	Reduction Scale Factor
1	1.

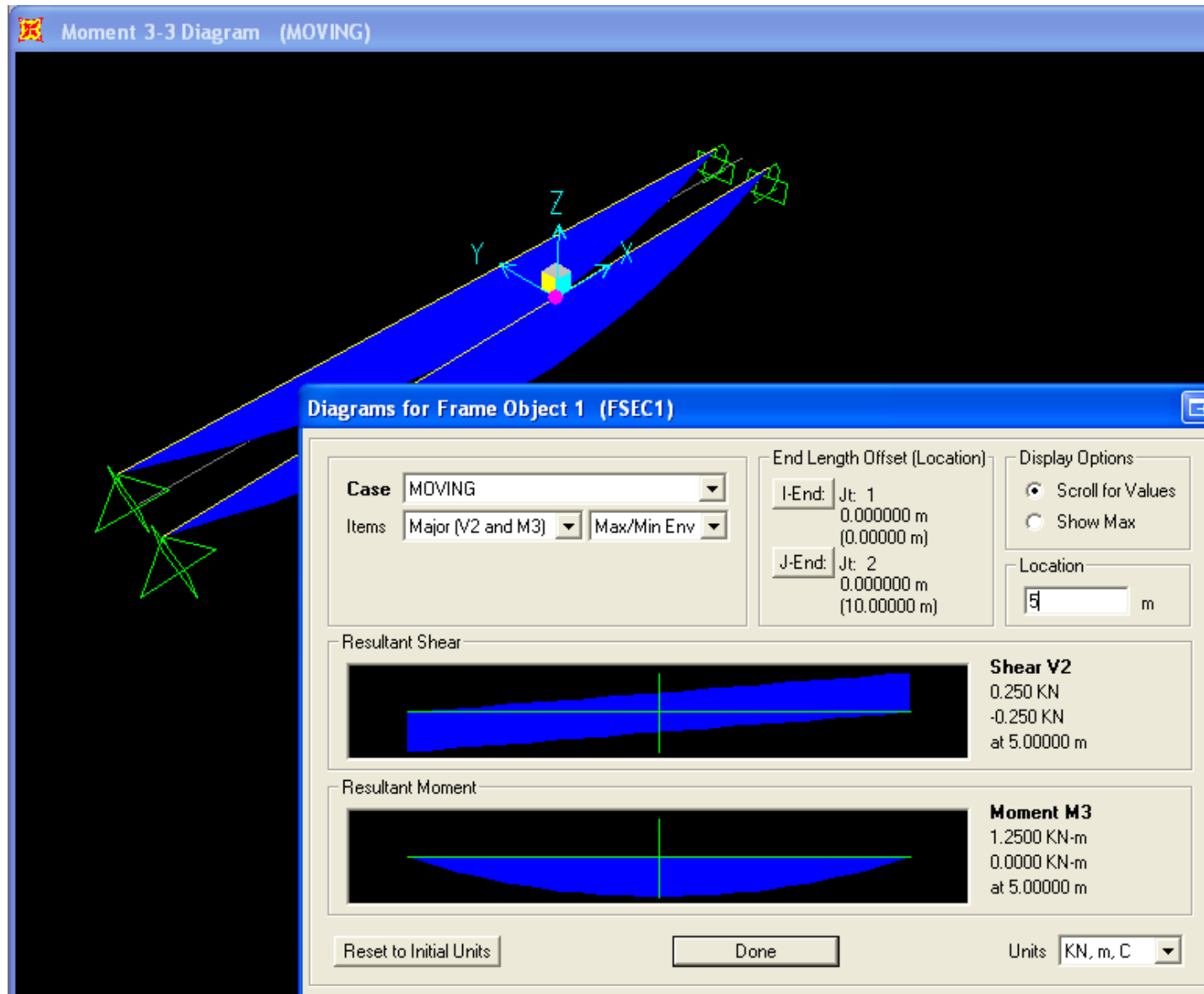
Loads Applied

Assign Number	Vehicle Class	Scale Factor	Min Loaded Lanes	Max Loaded Lanes	Lanes Loaded
1	UNIT	1.	0	0	All

Lanes Loaded for Assignment 1

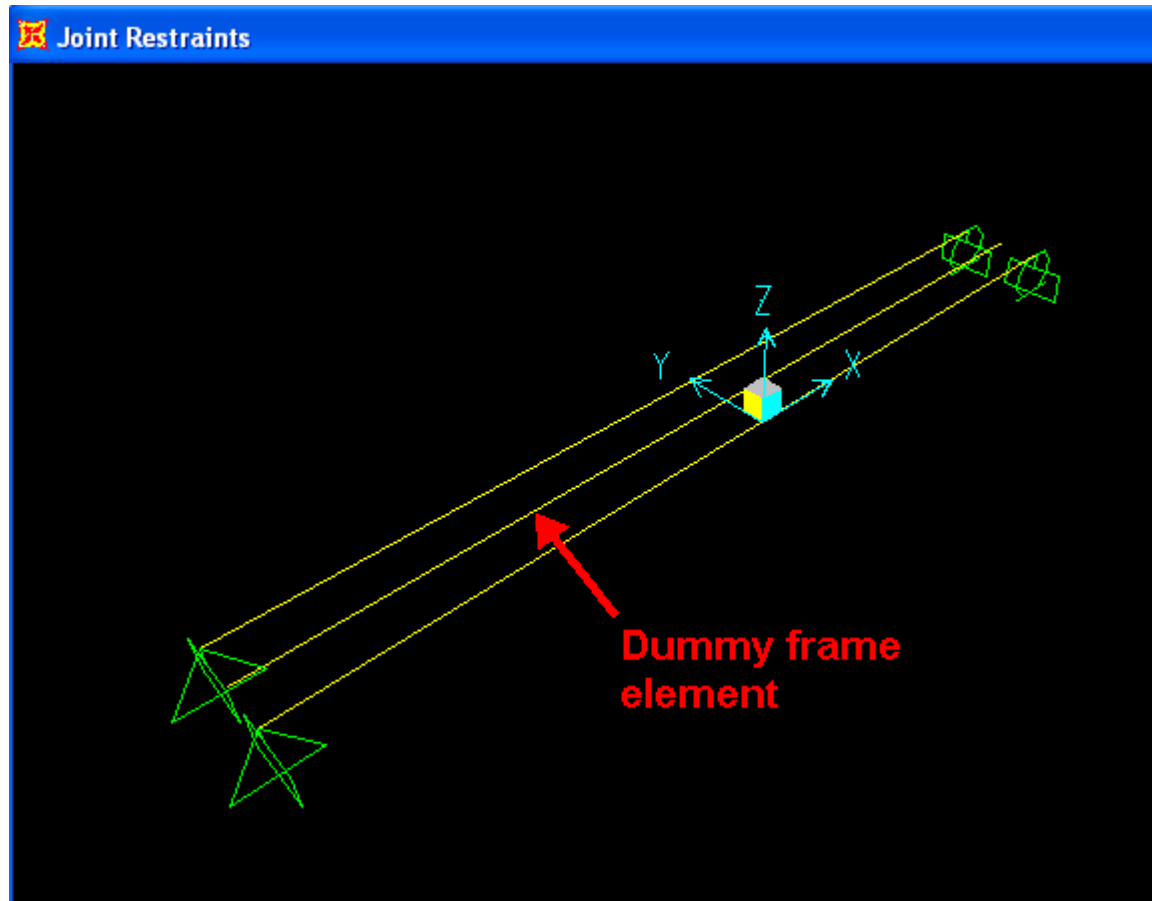
List of Lane Definitions	Selected Lane Definitions
	LANE1

Check Maximum Moment

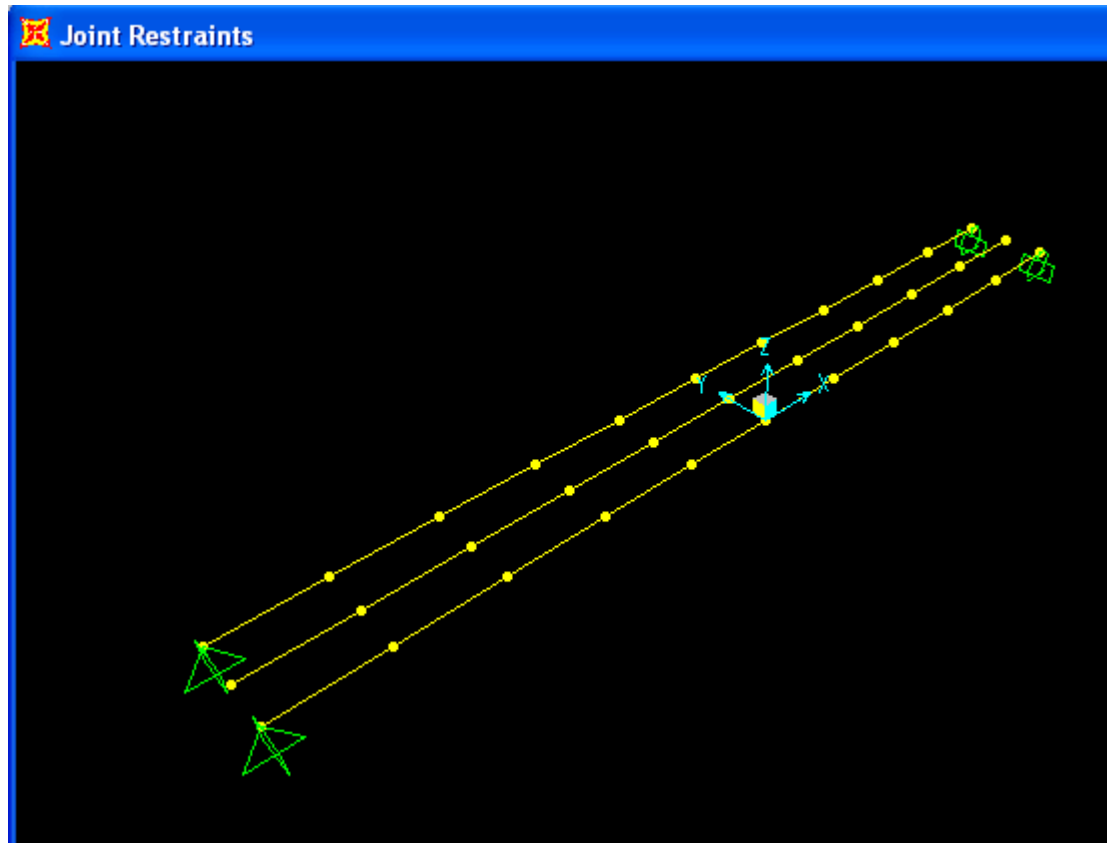


Define Lane from Frames

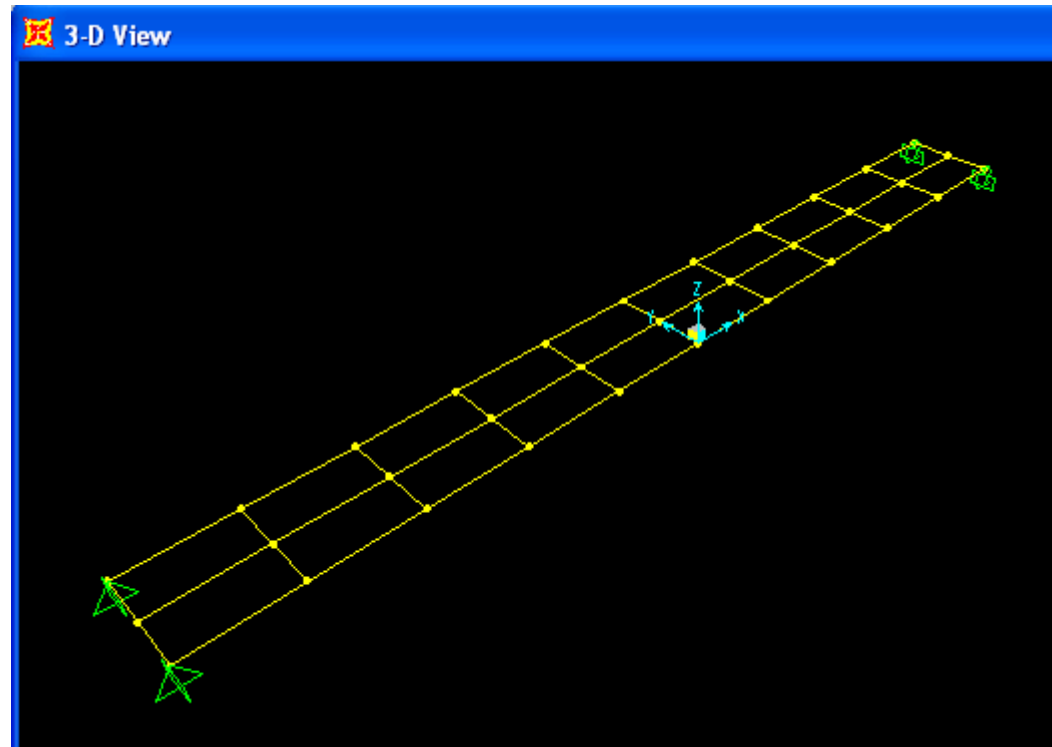
Define Dummy Frame Element to Represent the Lane



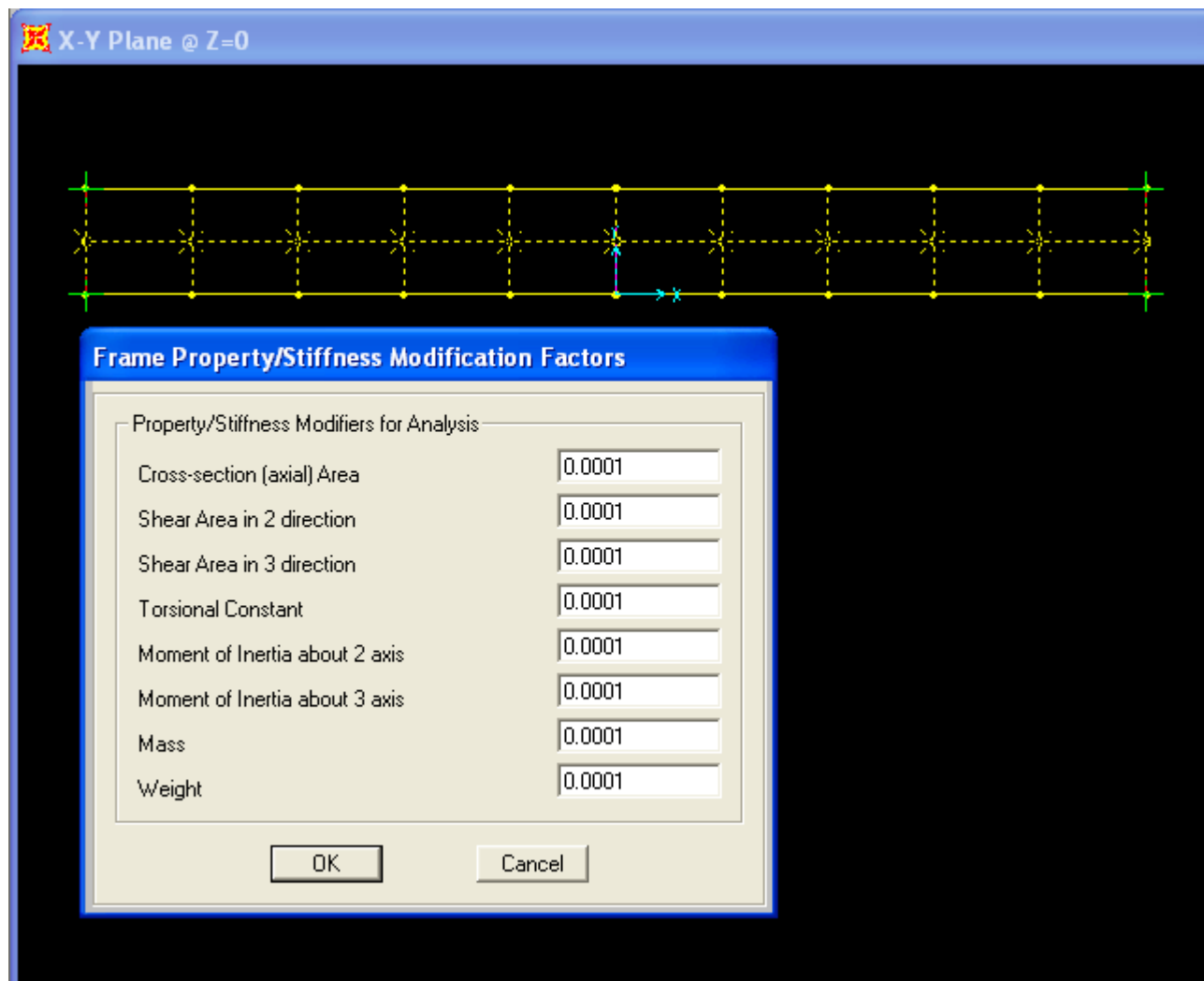
Divide Frames so that Connections Can Be Established



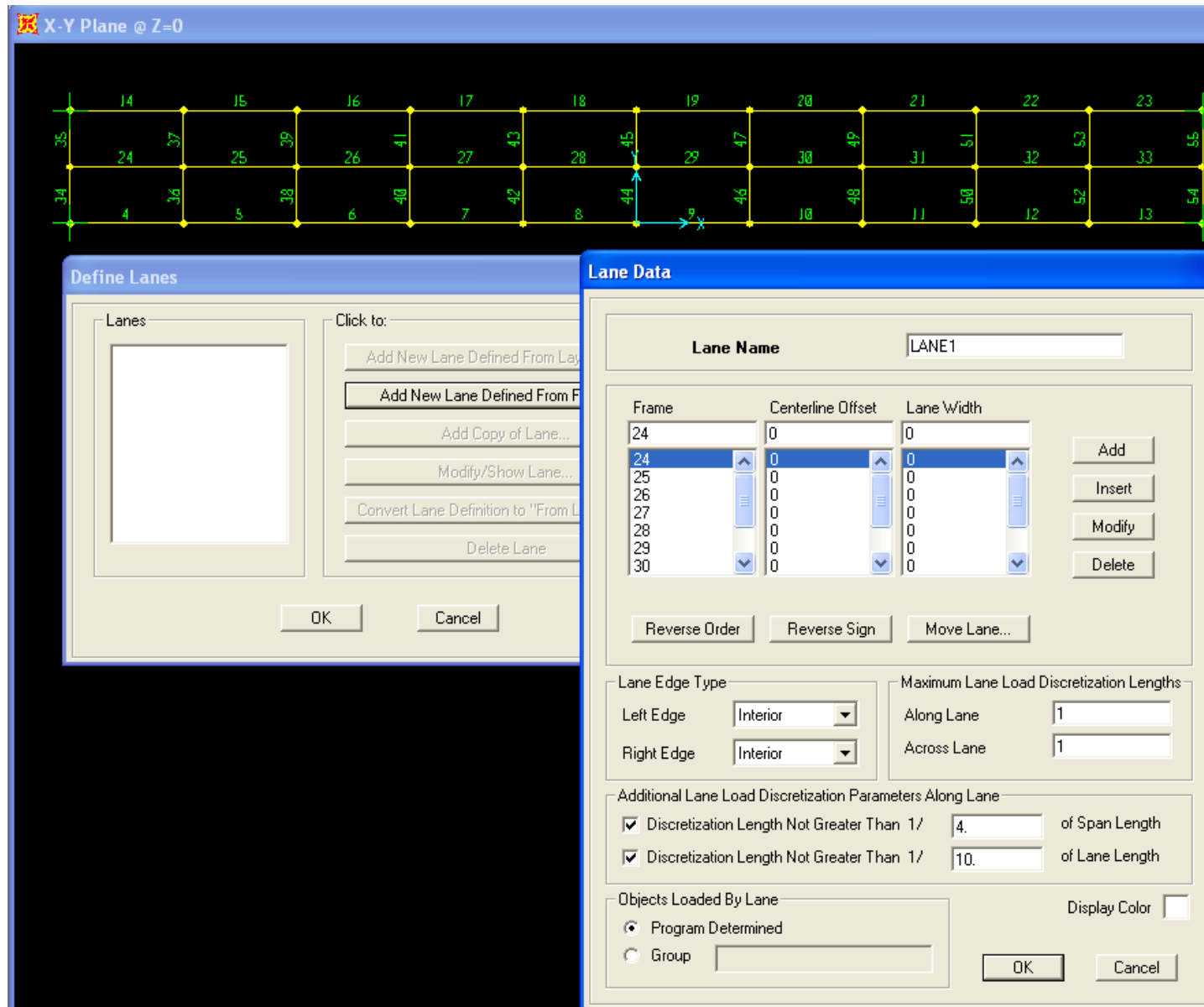
Connect the Dummy Frame Element to the Girders



Assign Small Property Modifiers to ALL Dummy Frame Elements to Disregard Their Stiffness



Define the Lane from Dummy Frame Elements



Define Moving Load Case

Load Case Data - Moving Load

Load Case Name: Notes:

Load Case Type:

Stiffness to Use:
☒ Zero Initial Conditions - Unstressed State
☐ Stiffness at End of Nonlinear Case
Important Note: Loads from the Nonlinear Case are NOT included in the current case

MultiLane Scale Factors

Number of Lanes Loaded	Reduction Scale Factor
1	1
1	1.

Loads Applied

Assign Number	Vehicle Class	Scale Factor	Min Loaded Lanes	Max Loaded Lanes	Lanes Loaded
1	UNIT	1.	0	0	All

Lanes Loaded for Assignment 1

List of Lane Definitions	Selected Lane Definitions
	LANE1

Check Midspan Moment

