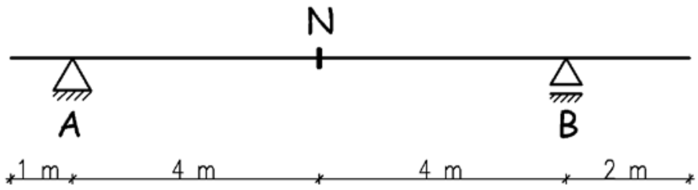
Assignment (1)

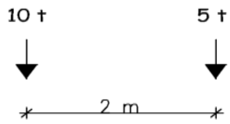
[Influence lines]

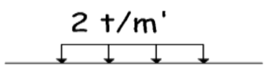
P.1



.Max. Y_B
.Min. Y_B
.Max. M_N
.Min. M_N

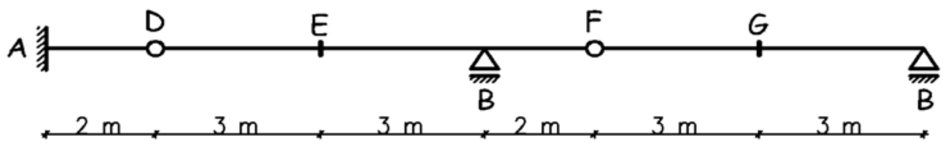
For each of the given cases of load





P.2

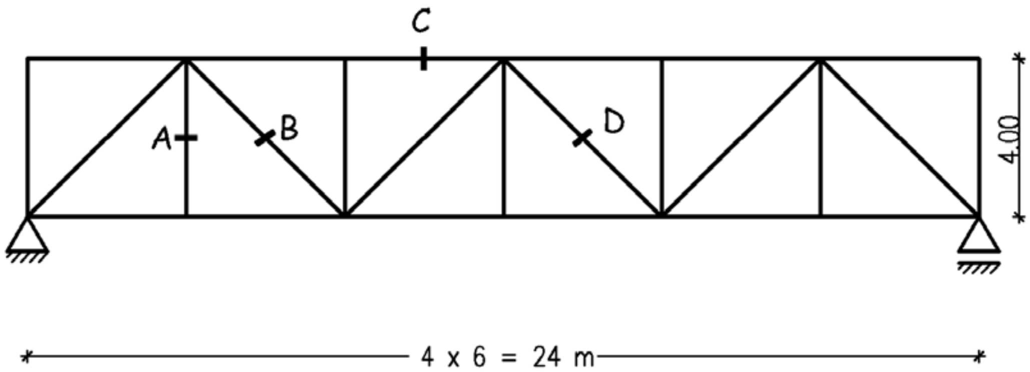
Y_B , Y_C , M_G , M_A , M_B , Q_E , Q_{Br} , Q_{BL} , Q_G



Max. M_E and Q_G

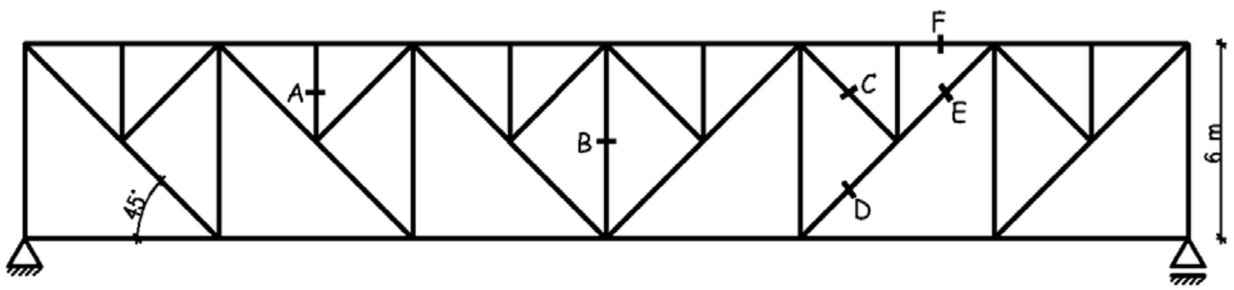
P.3

It is required to draw IL for marked members for the shown truss.



P.4

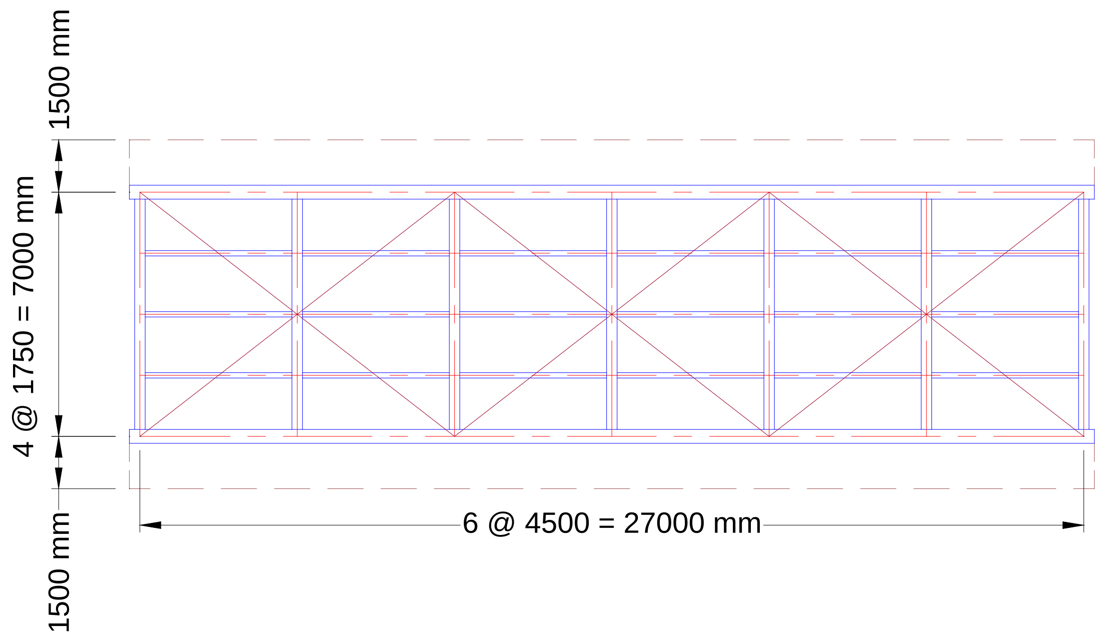
It is required to draw IL for marked members for the shown truss.

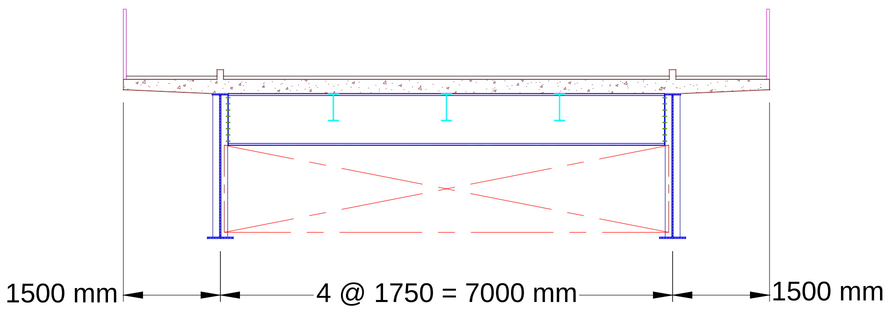


Assignment (2)

[Loads on stringer]

Consider a *one-way* bridge deck with a span of 27 m supported by two plate girders from support to support, placed 7 m apart. The deck is also supported by cross-girders @ 4.5 m intervals and 3 longitudinal stringers between the cross girders. The bridge deck slab is 22 cm thick and is covered by a 5 cm layer of asphalt. Calculate the maximum straining action in the stringer due to dead load and live load.

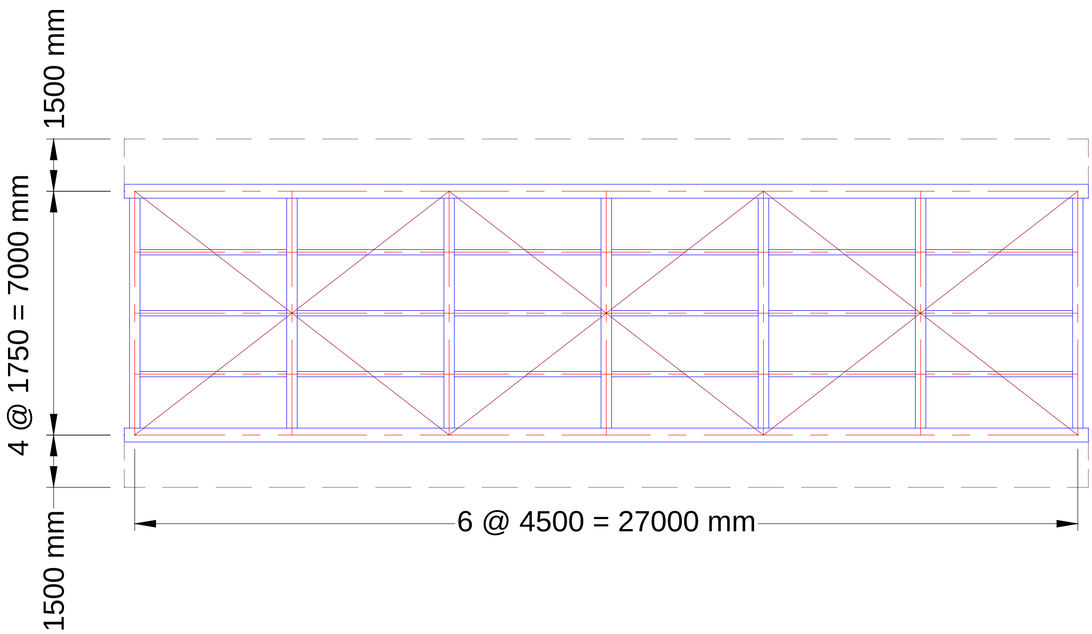


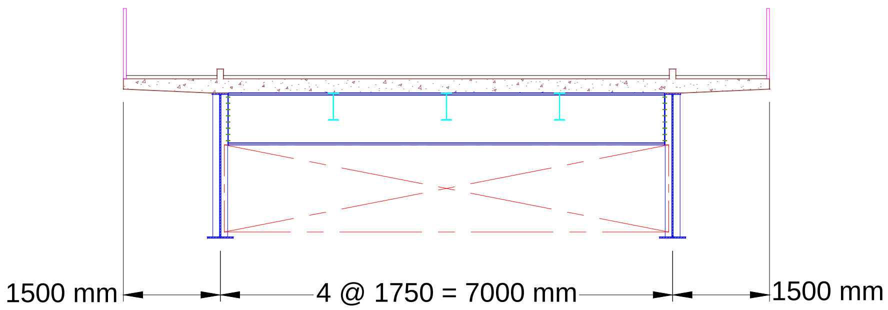


Assignment (3)

[Loads on cross girder]

Consider a *one-way* bridge deck with a span of 27 m supported by two plate girders from support to support, placed 7 m apart. The deck is also supported by cross-girders @ 4.5 m intervals and 3 longitudinal stringers between the cross girders. The bridge deck slab is 22 cm thick and is covered by a 5 cm layer of asphalt. Calculate the maximum straining action in the cross girder due to dead load and live load.



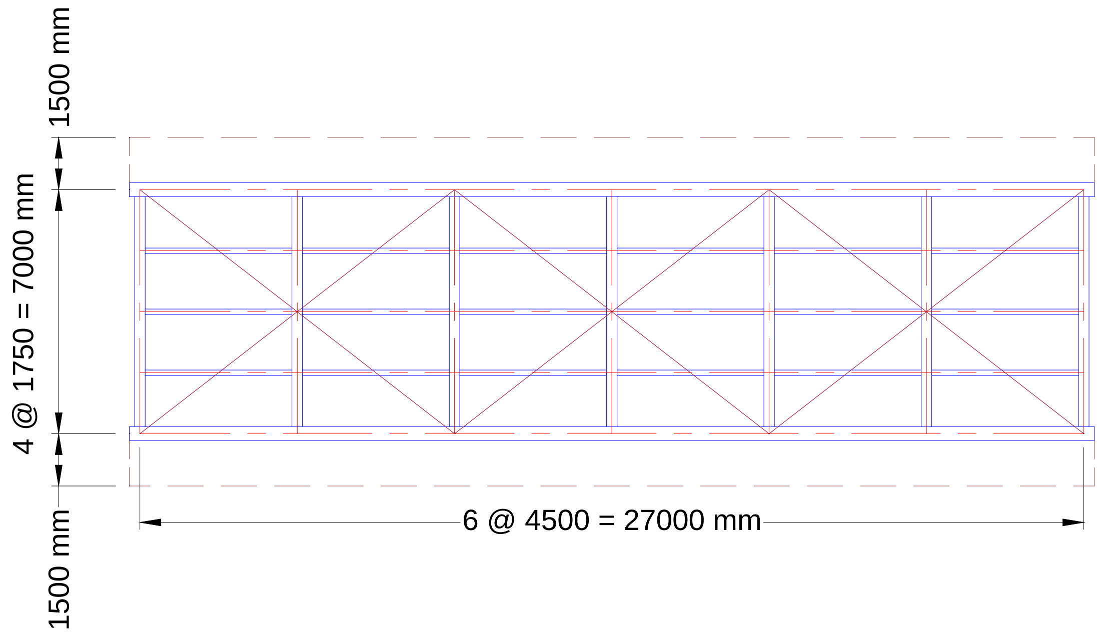


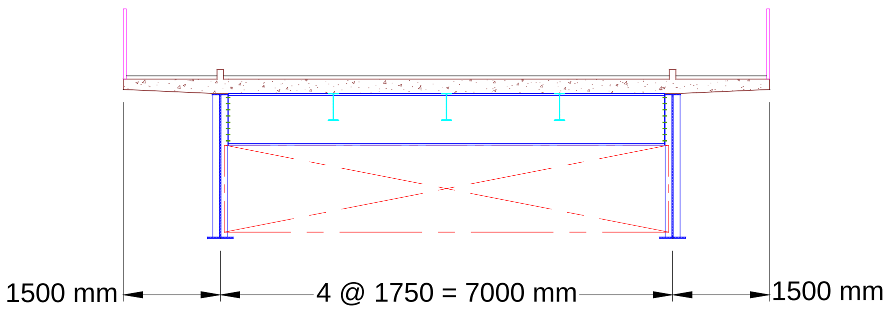
Assignment (4)

[Design of stringer]

Consider a *one-way* bridge deck with a span of 27 m supported by two plate girders from support to support, placed 7 m apart. The deck is also supported by cross-girders @ 4.5 m intervals and 3 longitudinal stringers between the cross girders. The bridge deck slab is 22 cm thick and is covered by a 5 cm layer of asphalt. Design the stringer takes the straining actions (shear and moment) from as assignment (3).

- As simple beam.
- As continuous beam.

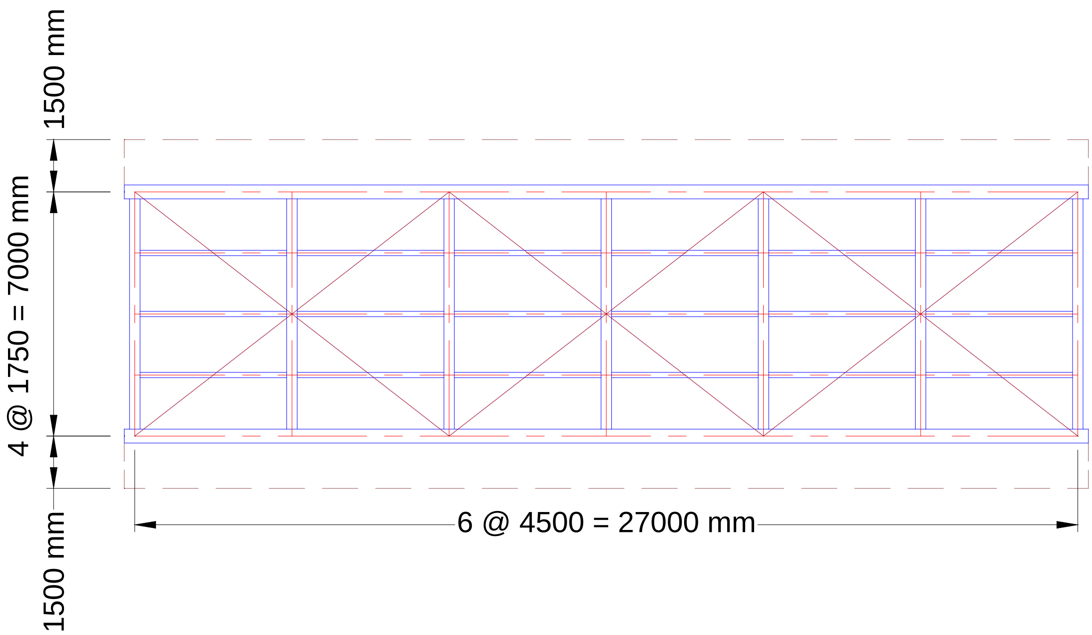


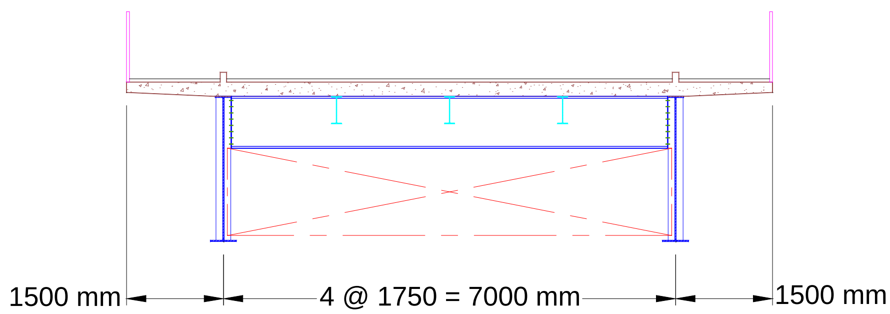


Assignment (5)

[Design of cross girder]

Consider a *one-way* bridge deck with a span of 27 m supported by two plate girders from support to support, placed 7 m apart. The deck is also supported by cross-girders @ 4.5 m intervals and 3 longitudinal stringers between the cross girders. The bridge deck slab is 22 cm thick and is covered by a 5 cm layer of asphalt. Design the stringer takes the straining actions (shear and moment) from as assignment (4), design as simple beam.





Assignment (6)

[Design of main girder]

Consider the one-way bridge deck shown below with a span of 24 m supported by two main girders placed 8.0 m apart. The deck is also supported by cross-girders @ 4.0 m intervals and 3 longitudinal stringers spanning between the cross girders spaced @ 2.0 m intervals, as shown in the figure. Assume the one-way bridge deck has two lanes, one being the main lane with a 60 t truck/distributed vehicular load of 500 kg/m2, and the other being the secondary lane with a 30 t truck/distributed vehicular load of 300 kg/m2. The bridge reinforced concrete deck slab is 25 cm thick and is covered by a 5 cm layer of asphalt. Taking dynamic effects of moving loads into consideration for the main lane only.(Steel 37, Impact class b detail , 2X106 life cycle is assumed)

If the straining action on the main girder were :

Due to D.L :	at support	M= 0	Q= 60 ton
	At mid section	M=375 mt	Q=0.0
Due to L.L+I :	at support	M= 0	Q= 75 ton
	At mid section	M=500 mt	Q=15.0 ton

Design the main girder, and calculate the longitudinal and transversal stiffeners of the main girder