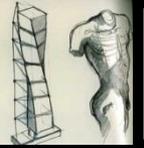


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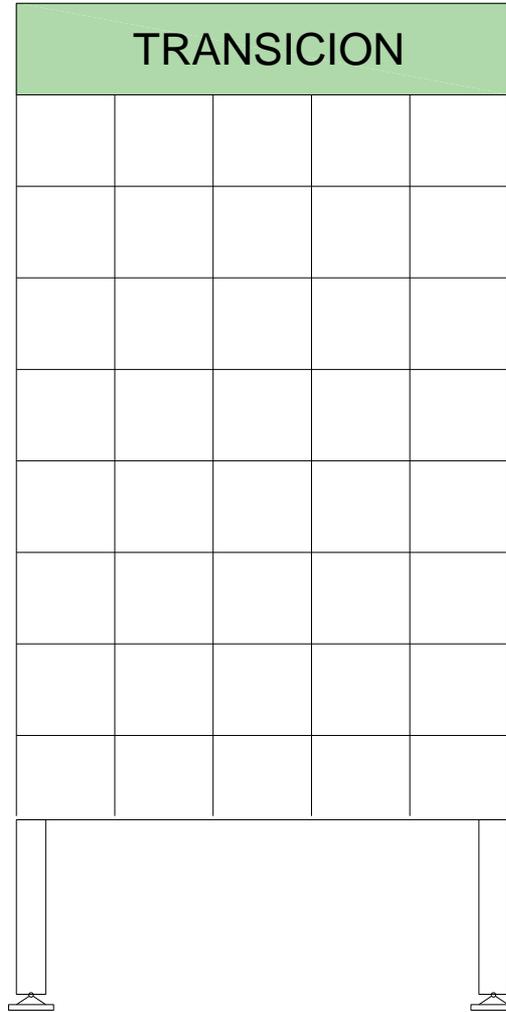
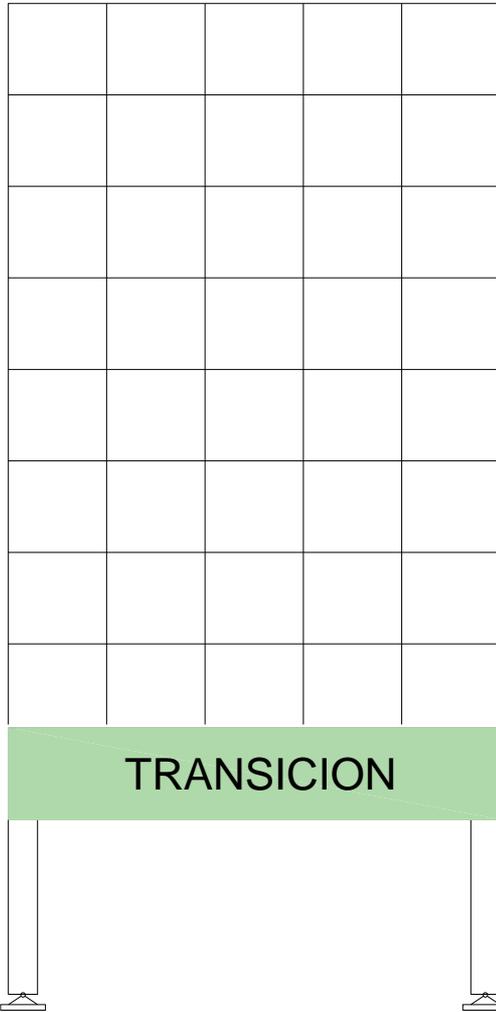
“PORTICOS”

TALLER DE ESTRUCTURAS “I” DNC  
Facultad de Arquitectura y Urbanismo  
UNLP

Estructuras - Nivel III

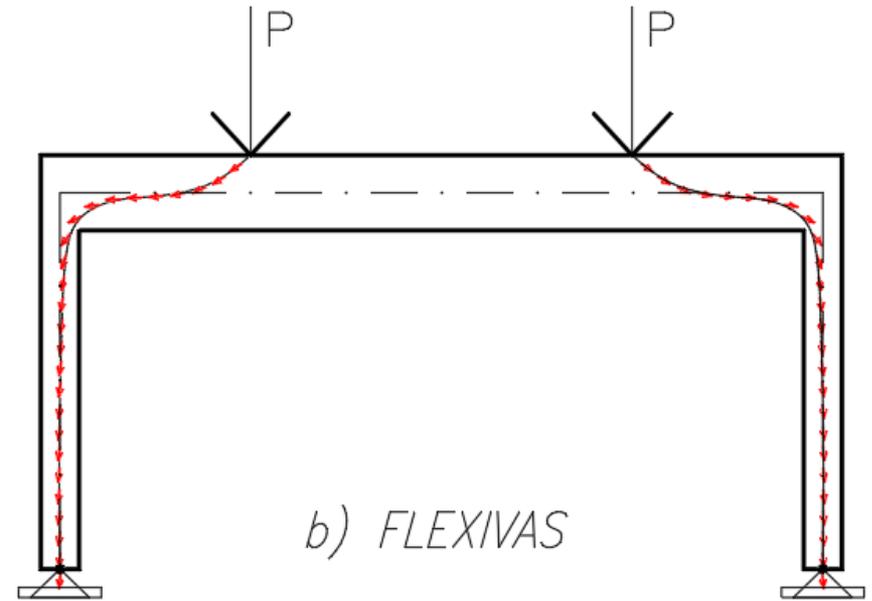
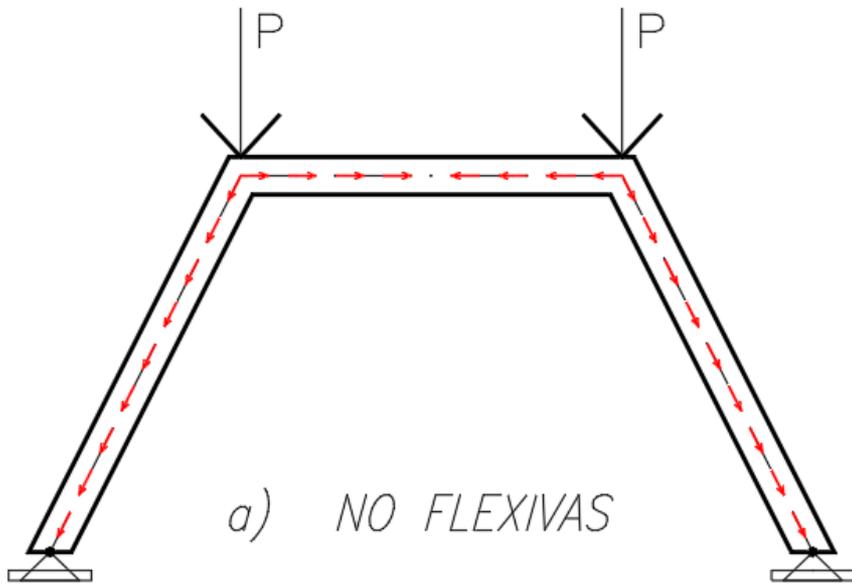


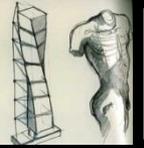
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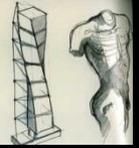
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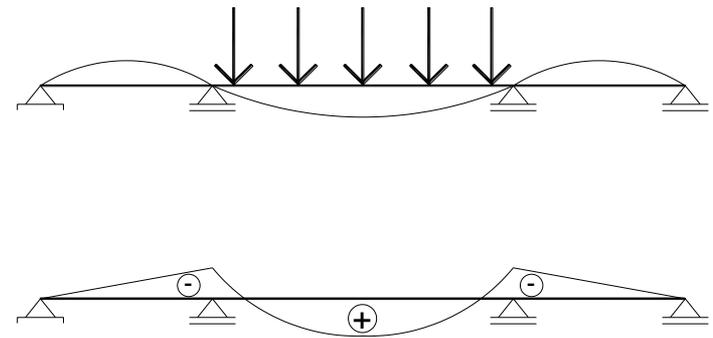
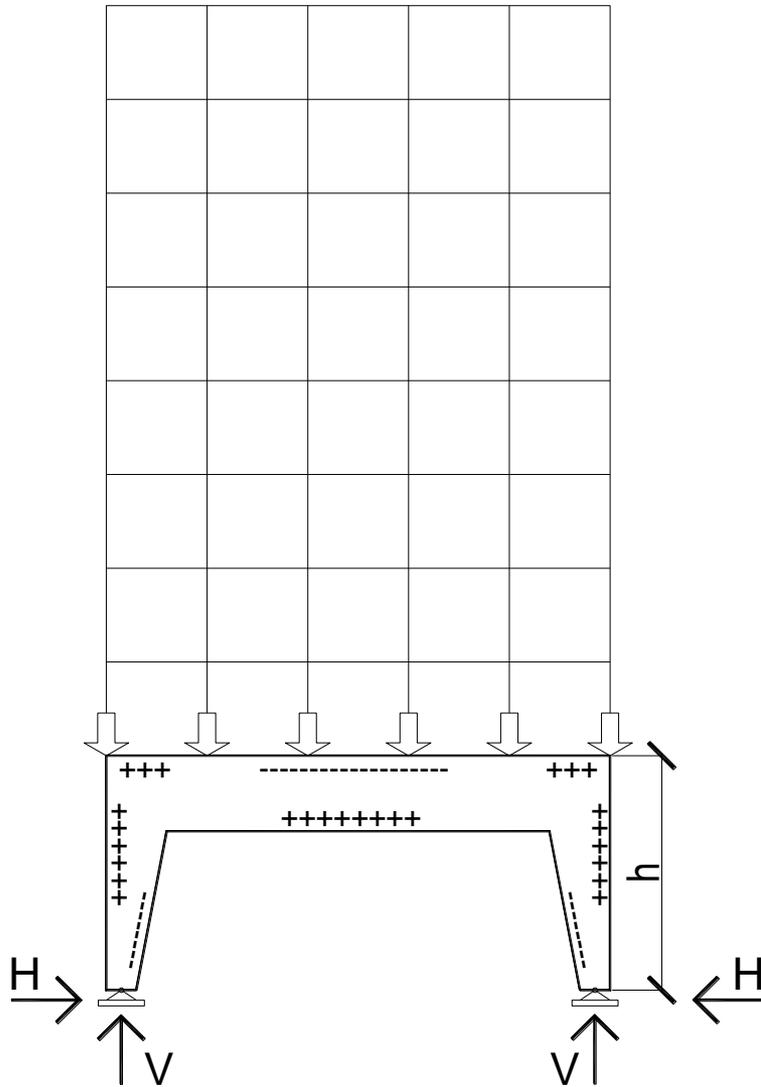


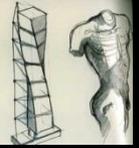
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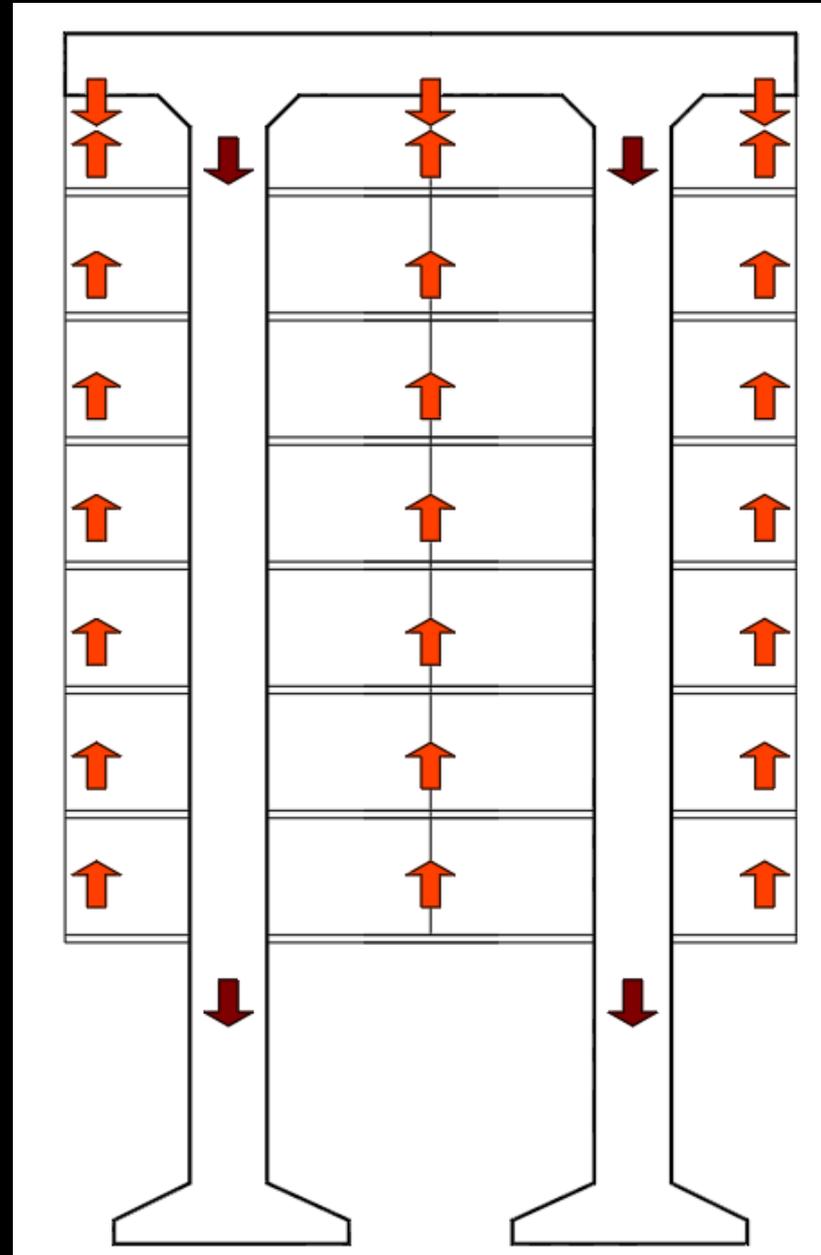


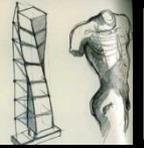
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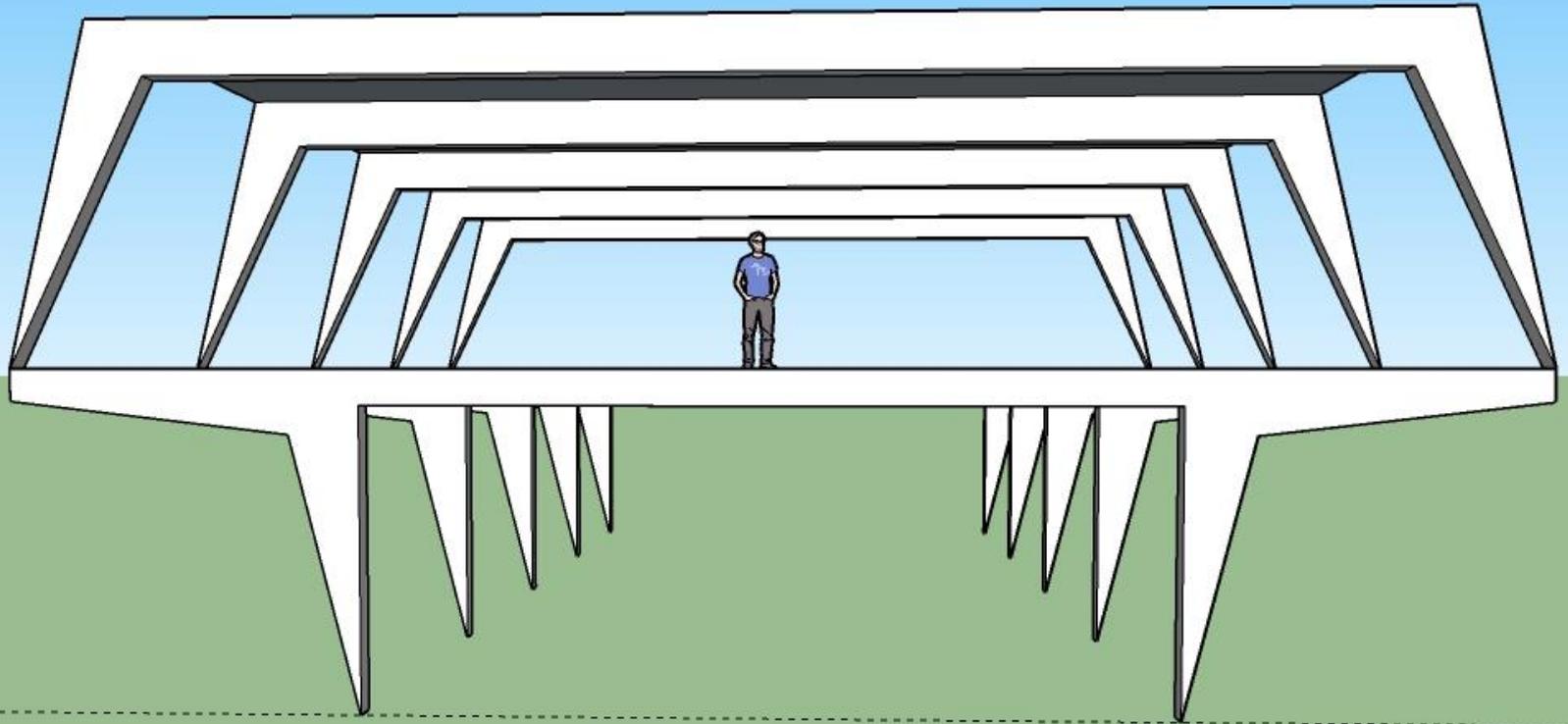
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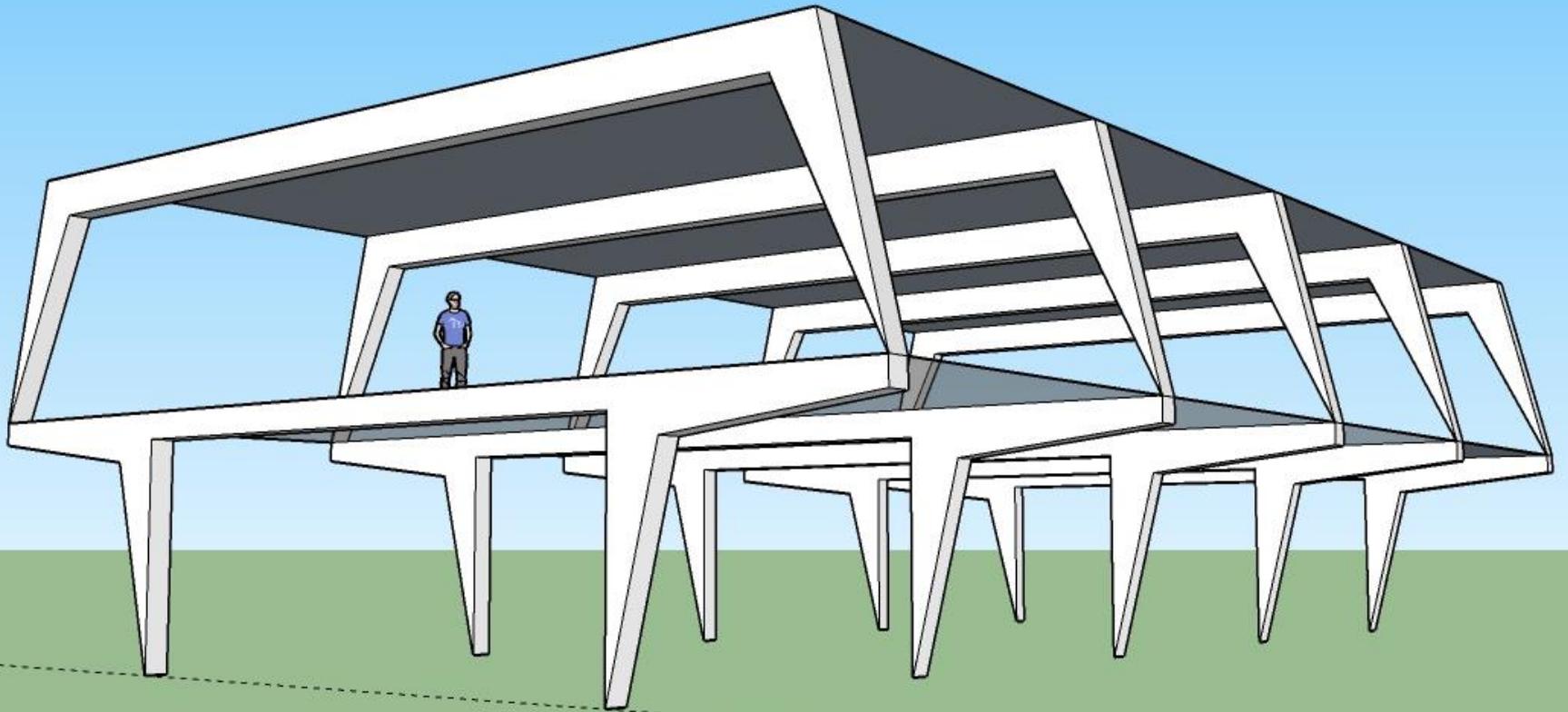
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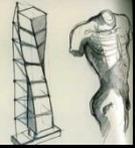




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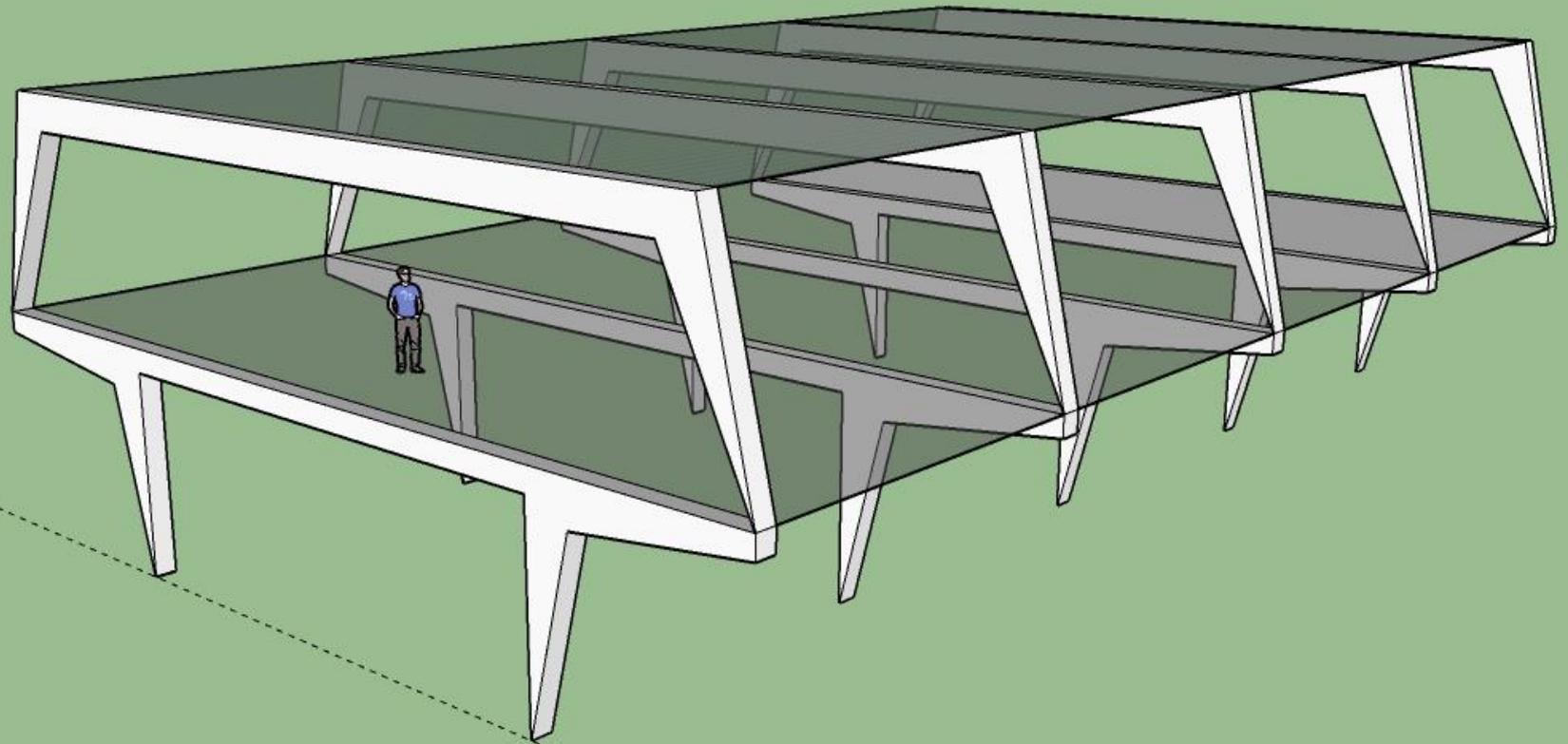
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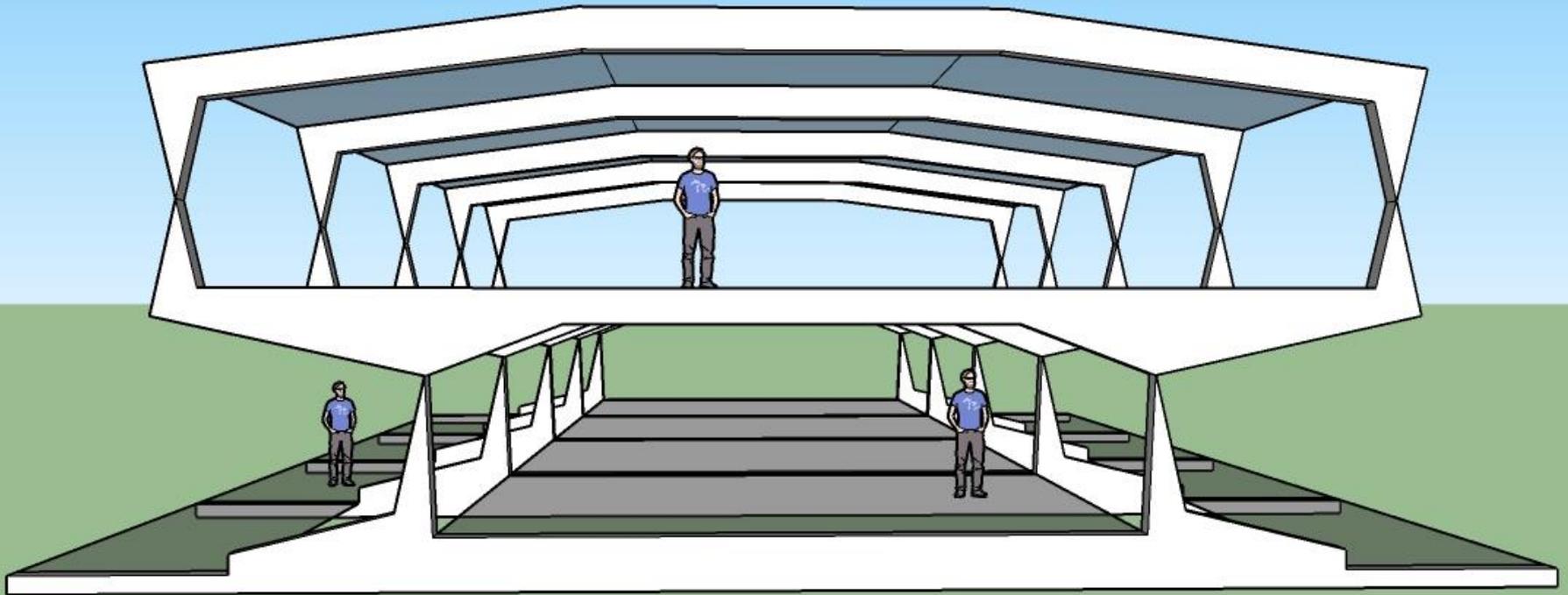
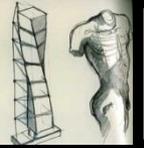


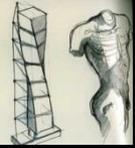


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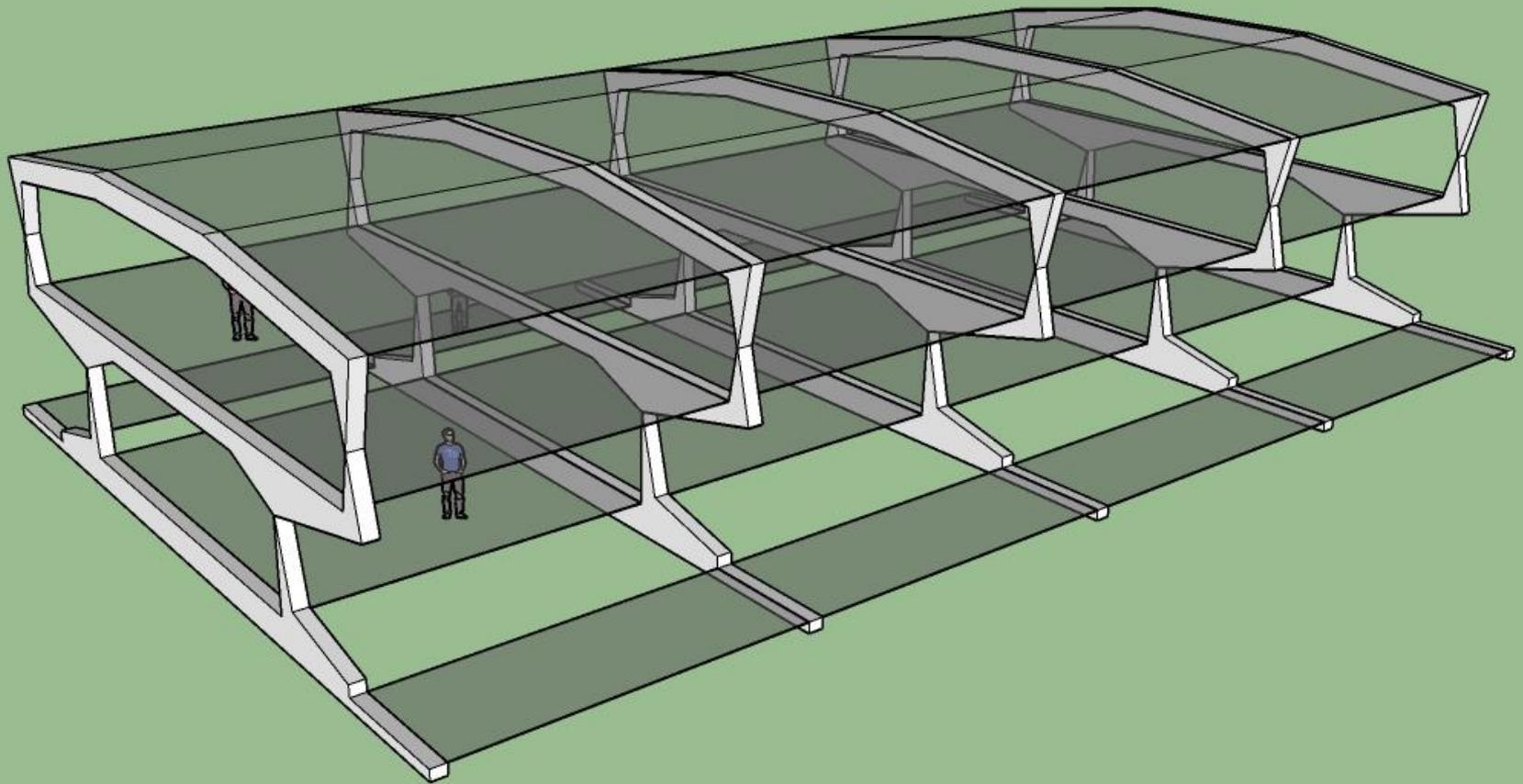


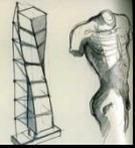




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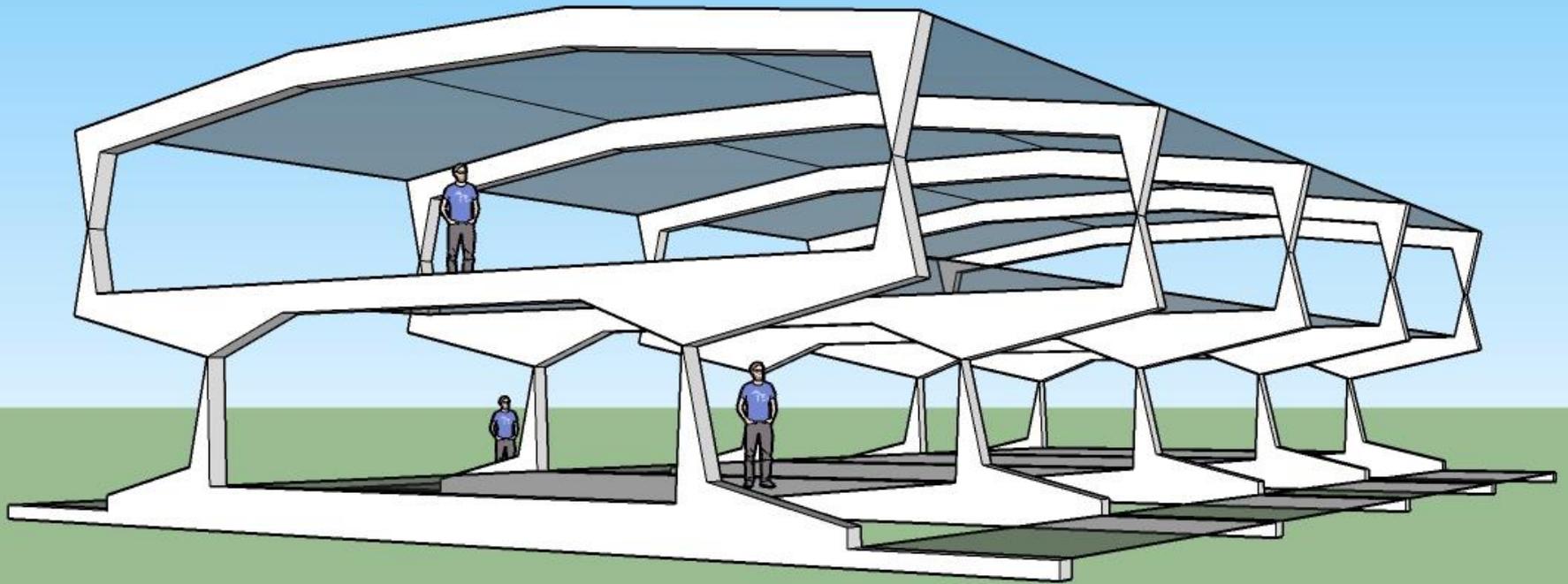
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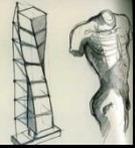




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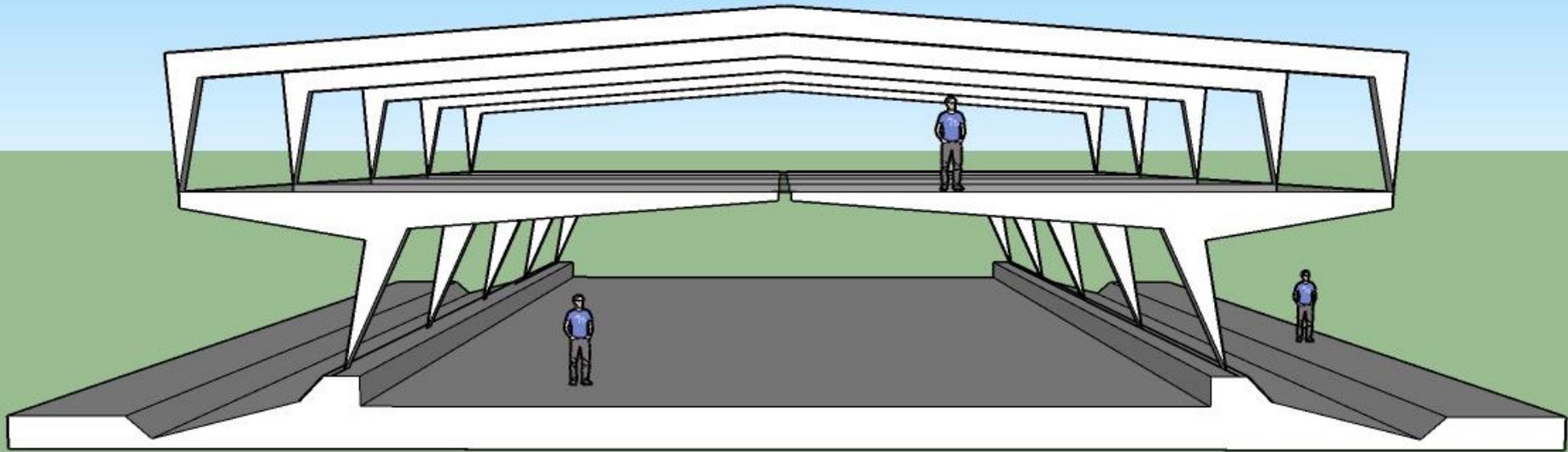
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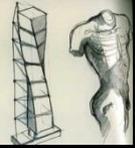




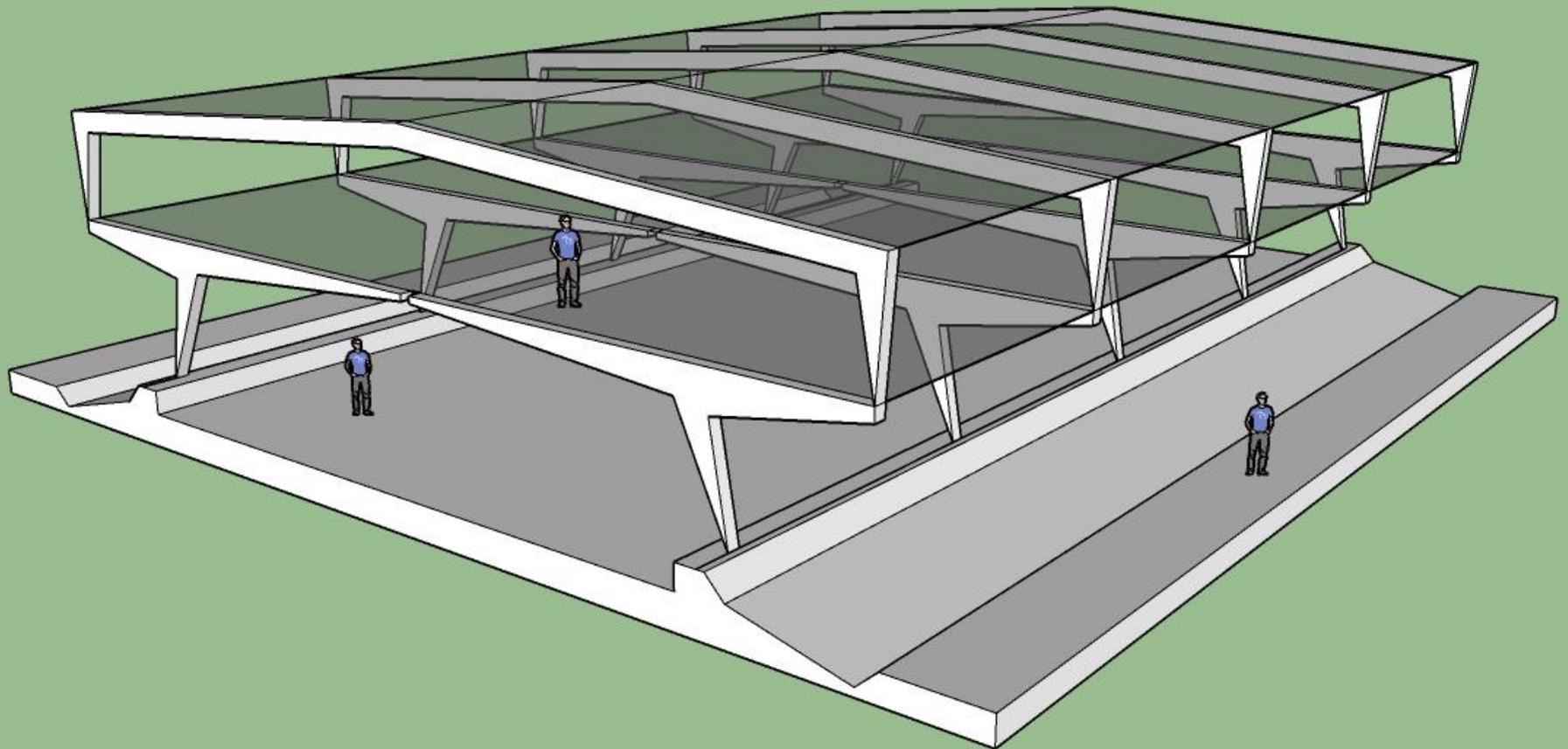
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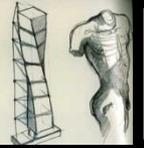
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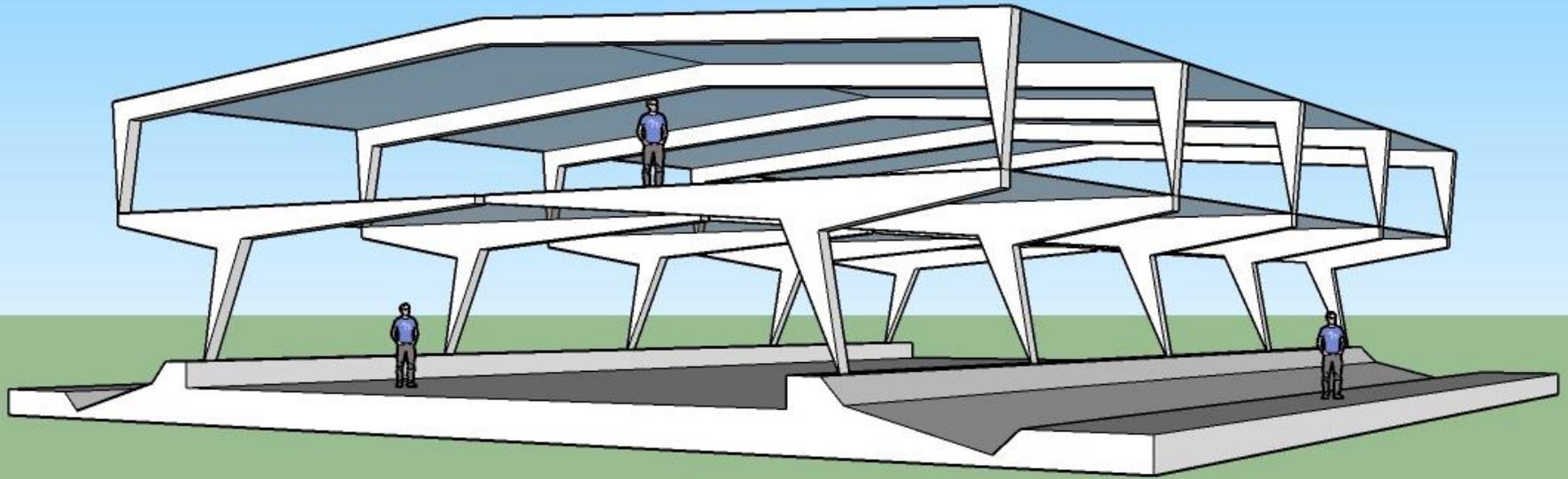
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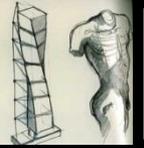




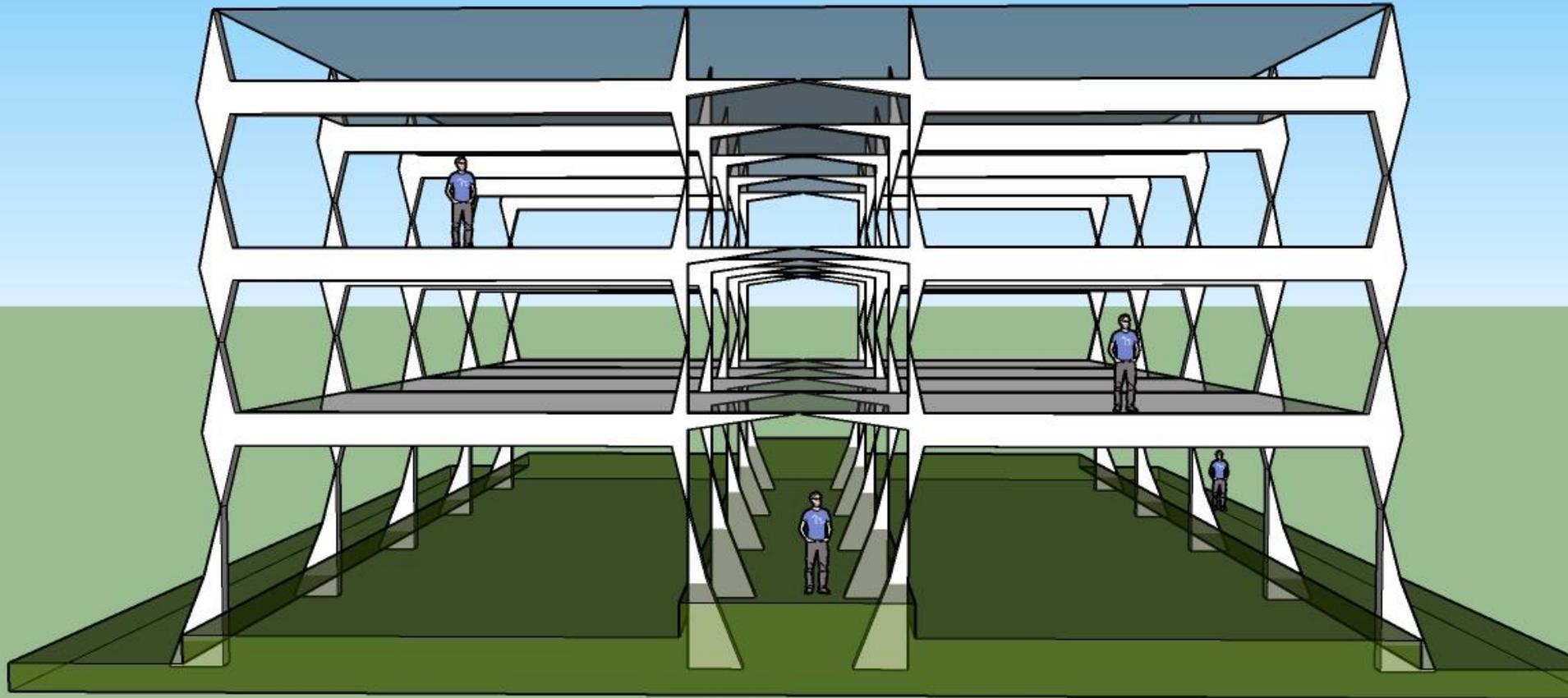
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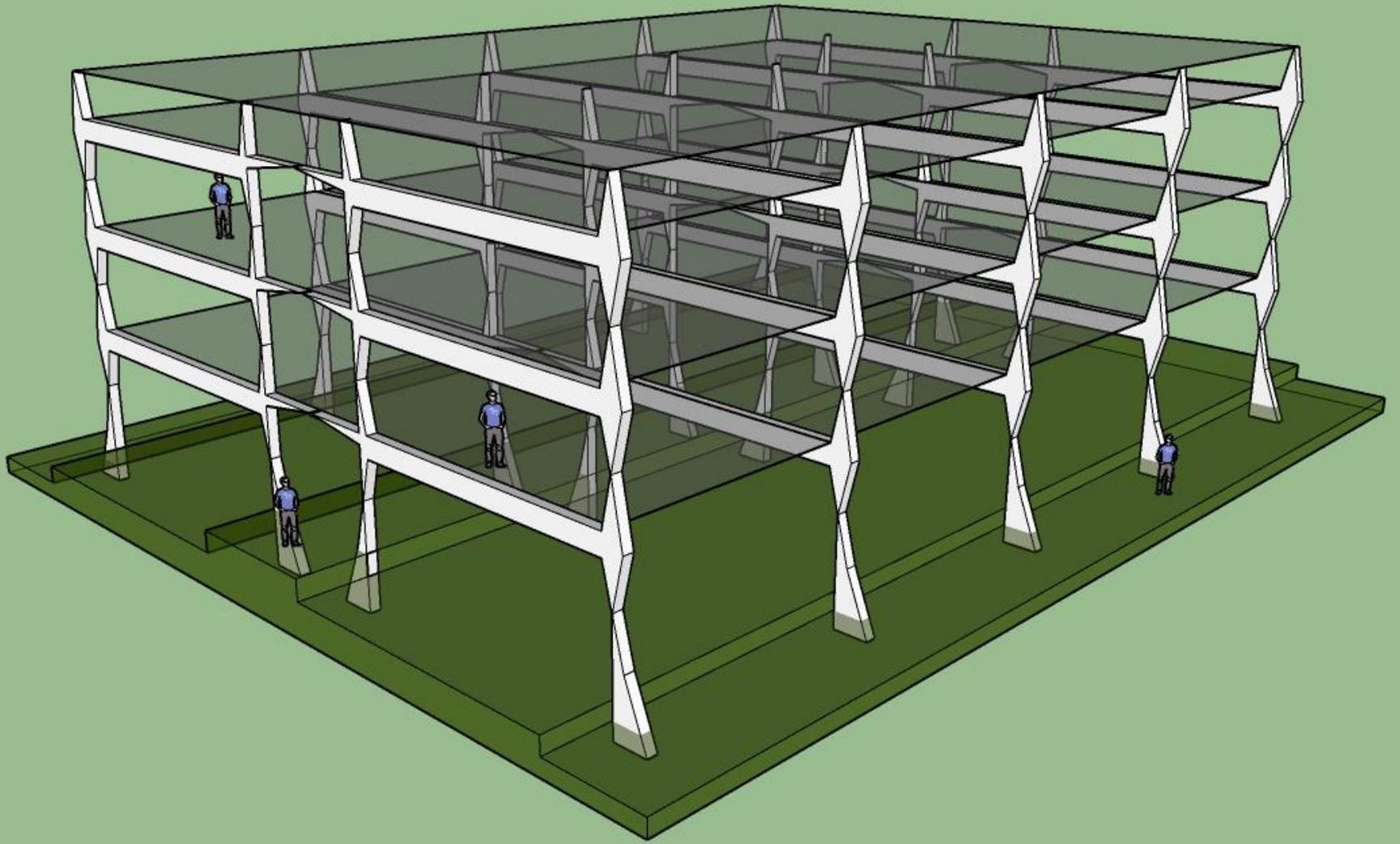


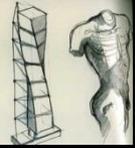
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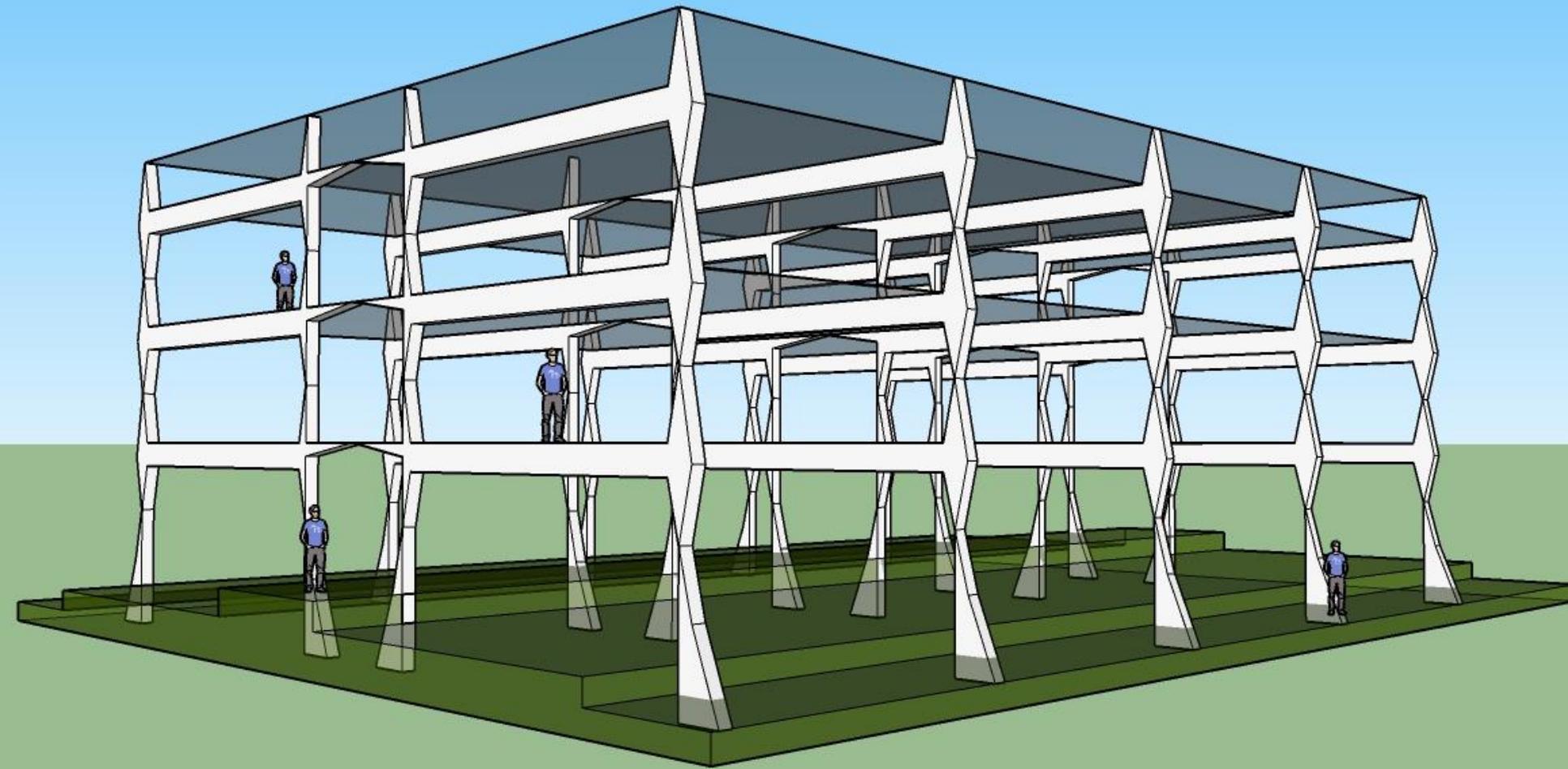
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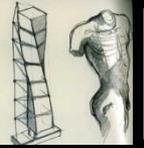




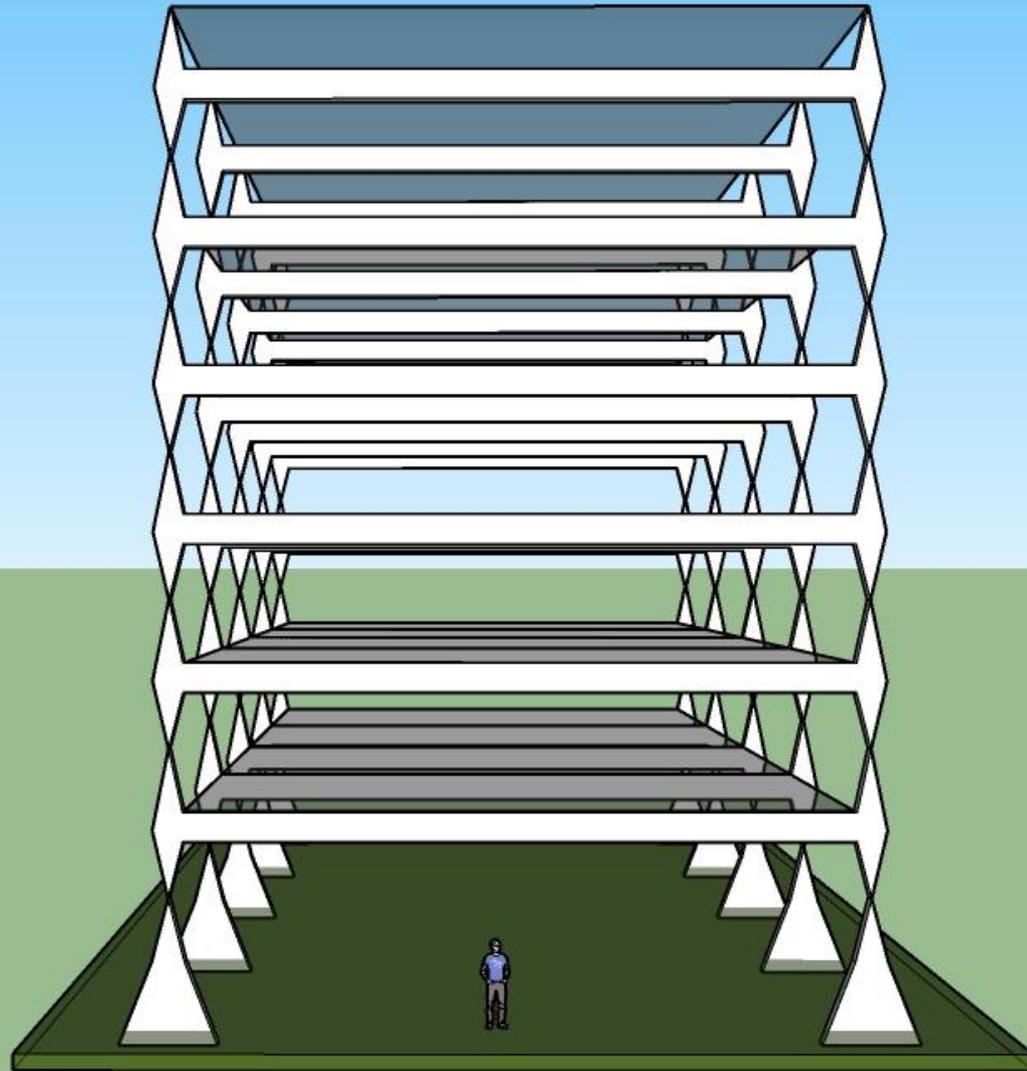
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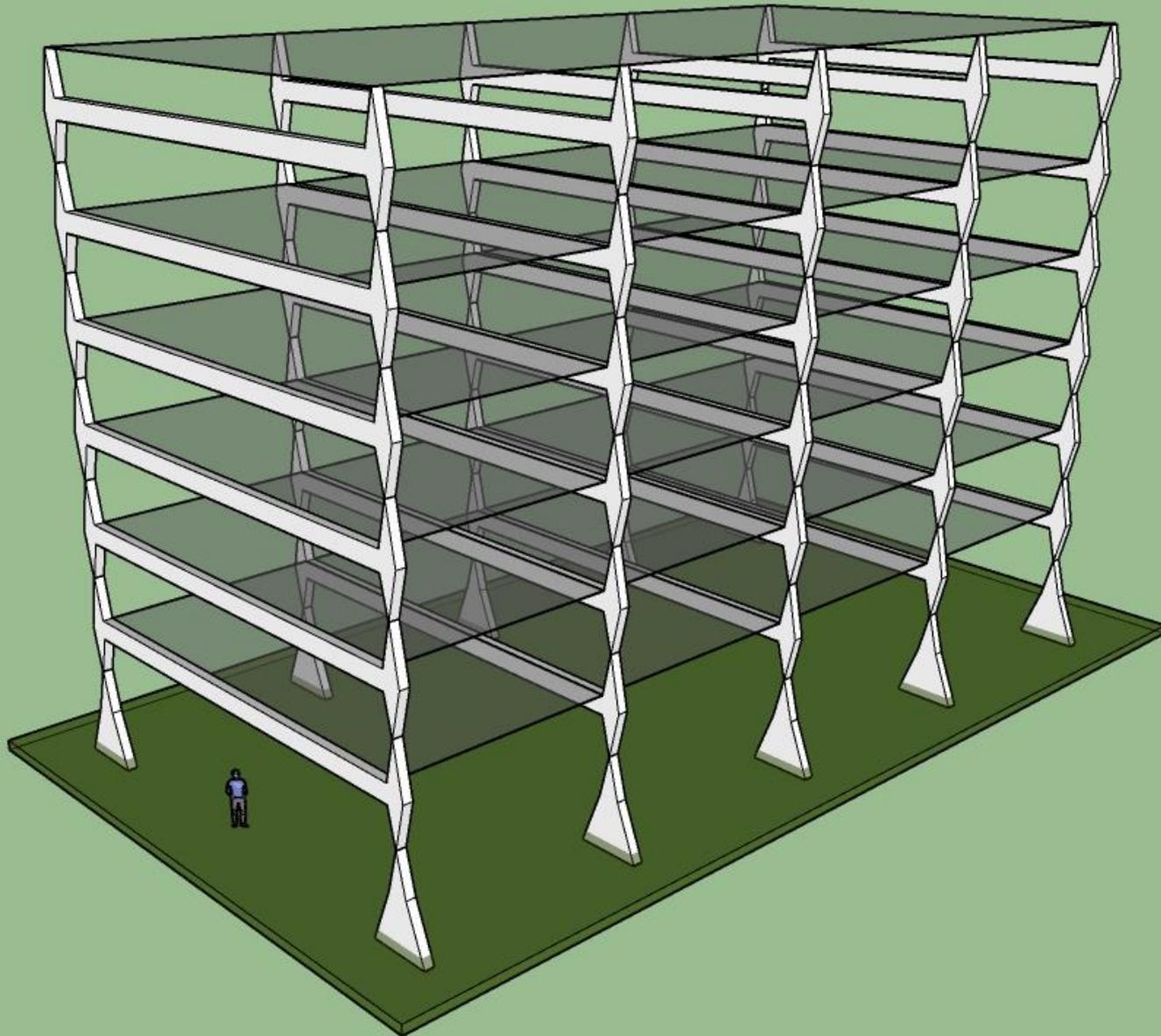
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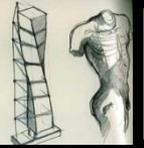




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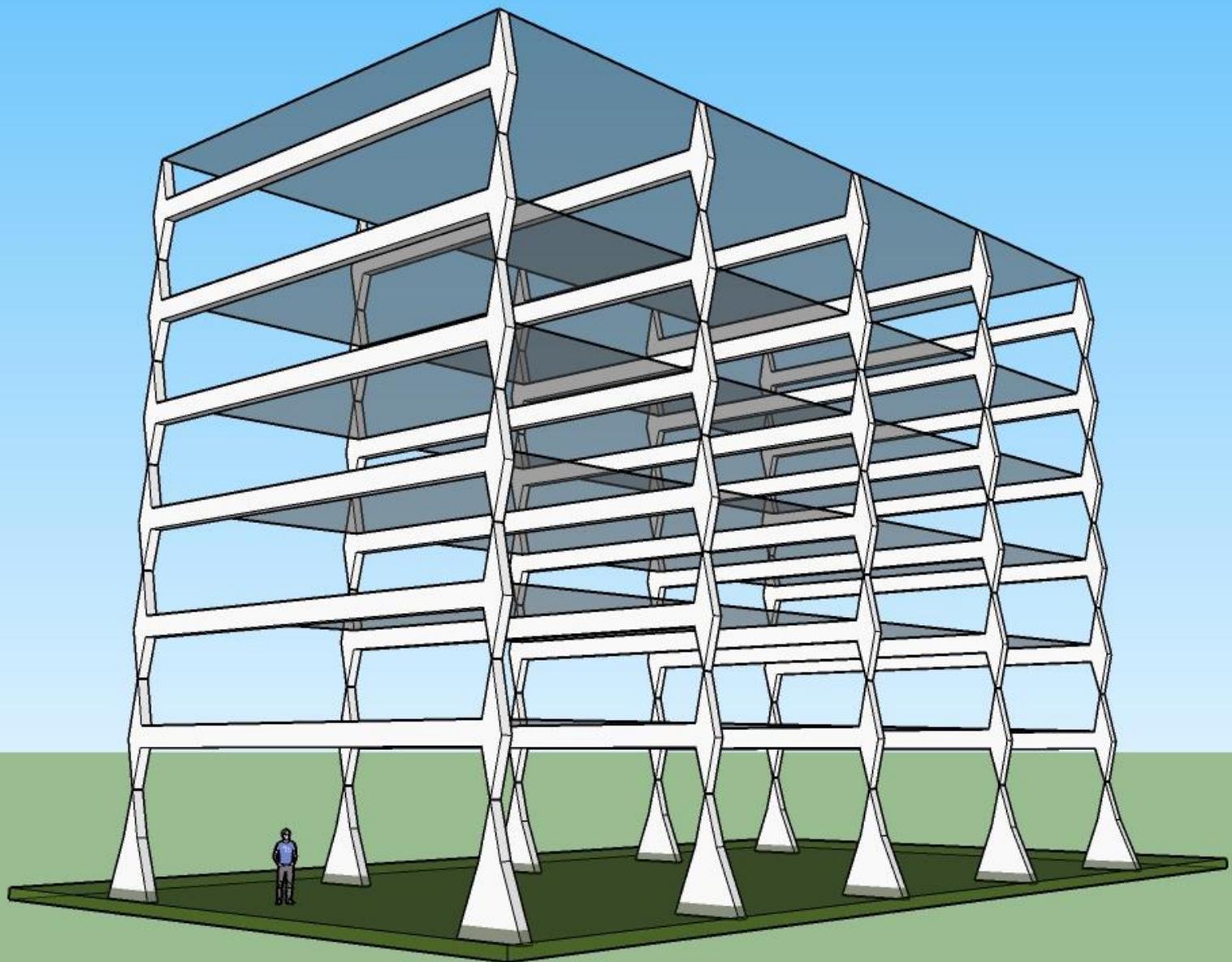
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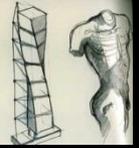




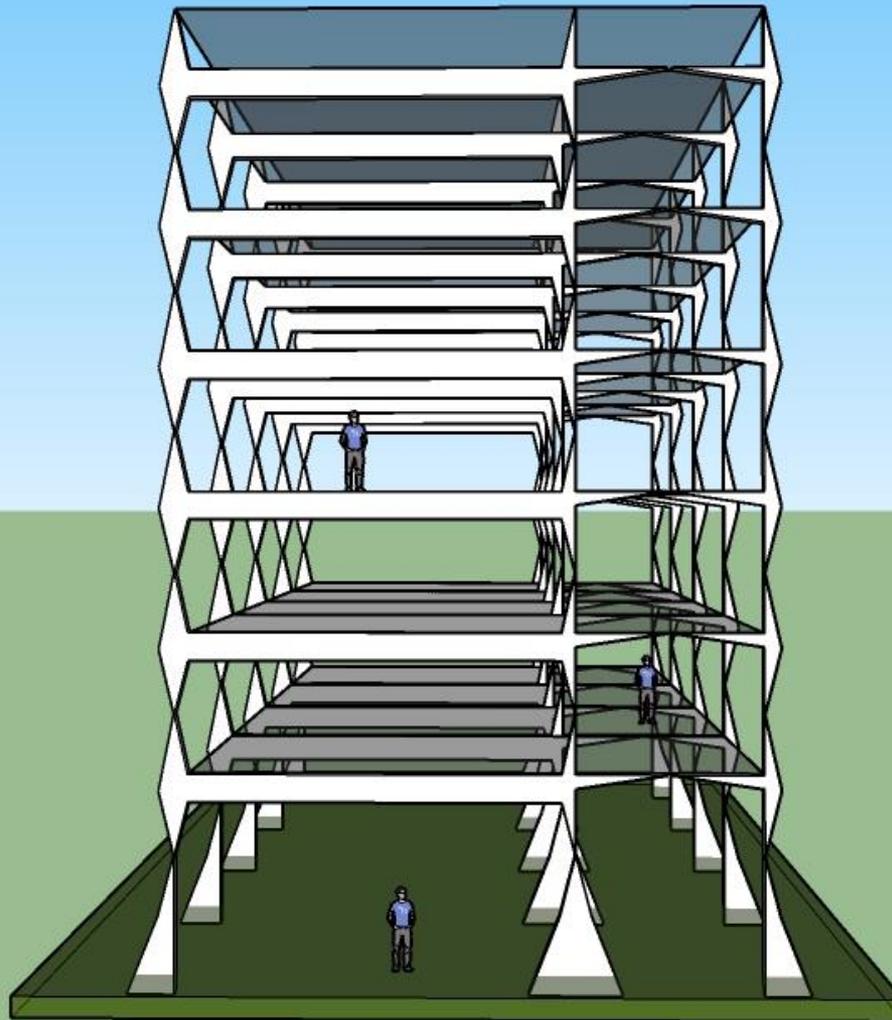
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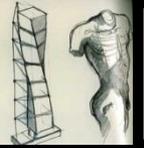
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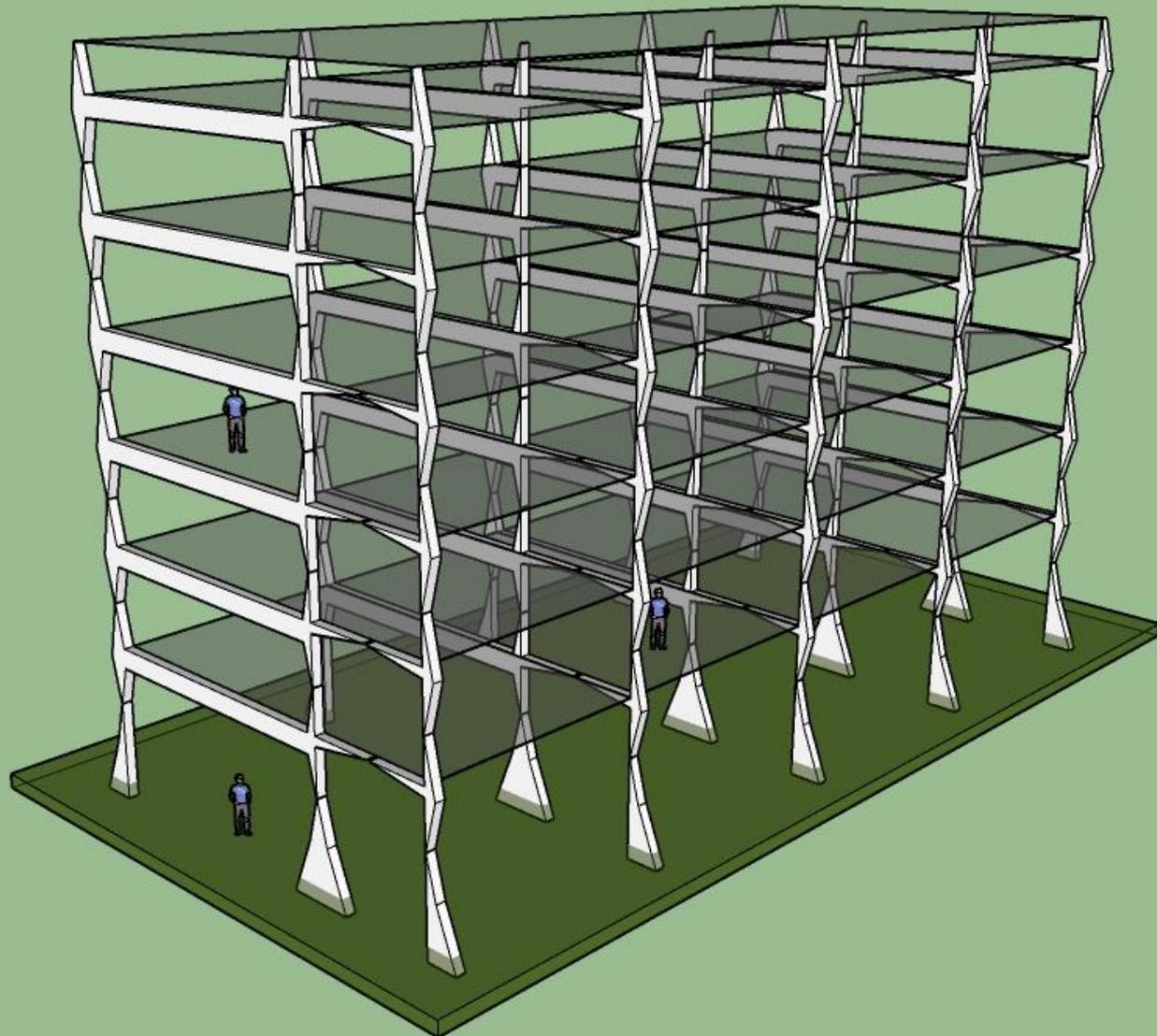
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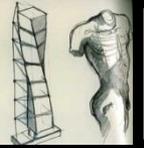




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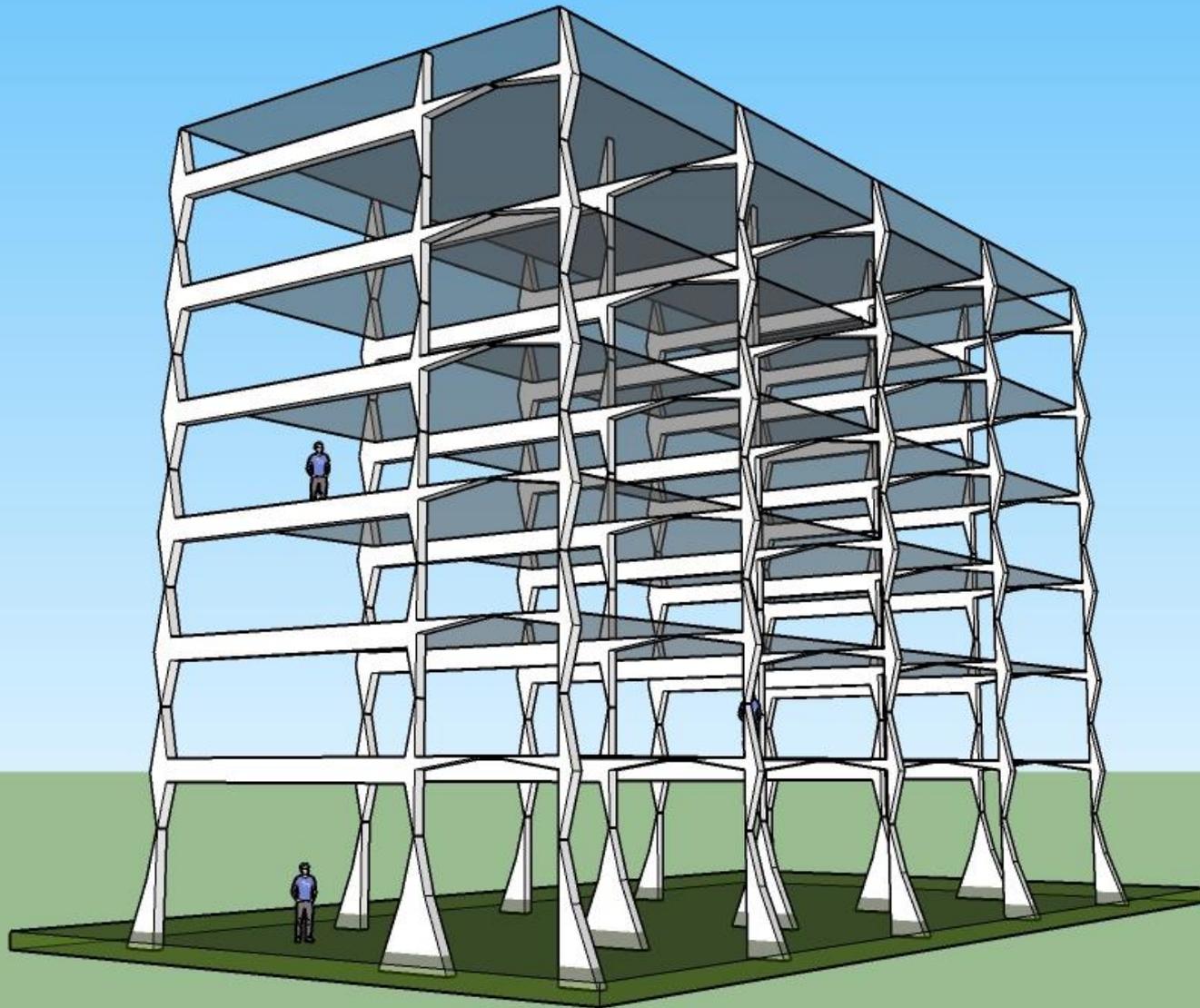
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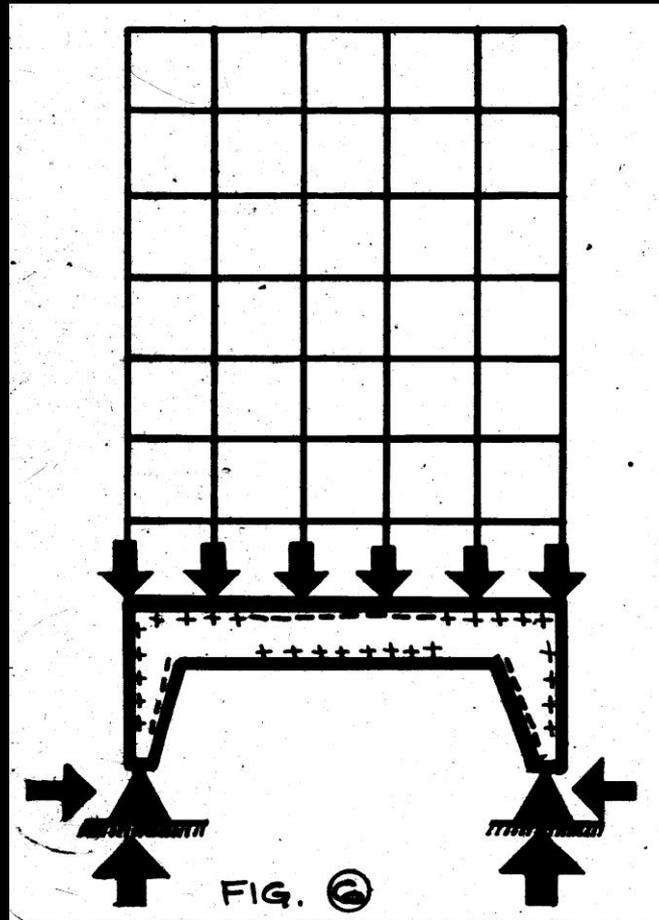
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# PORTICOS



# PORTICOS SIMPLES

## PORTICOS COMO TRANSICION



# PORTICO

## Funcionamiento como PORTICO

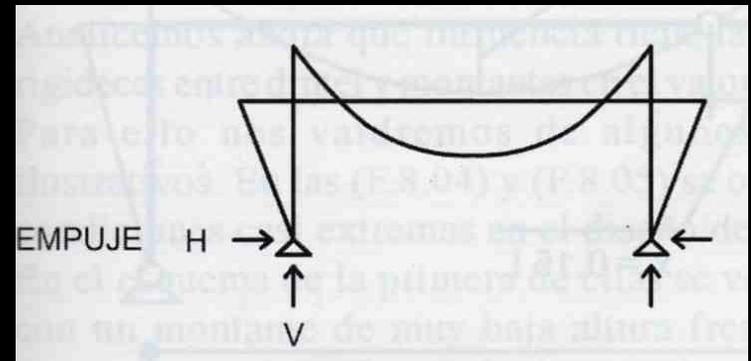
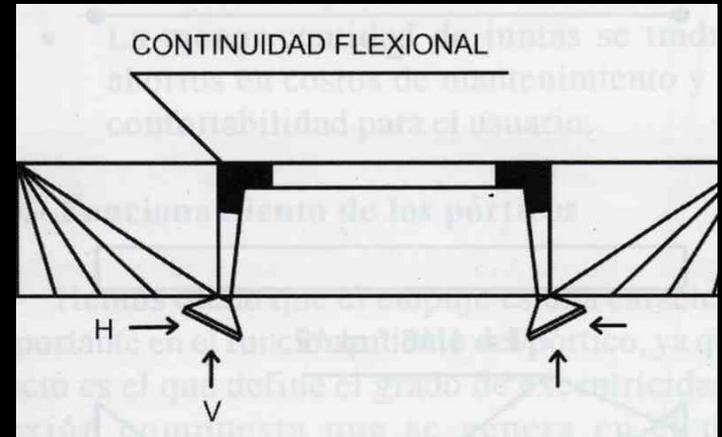
Continuidad estructural entre Montantes y Dintel

Posibilidad de tomar empujes (H)

Dintel a Flexión Compuesta

El **M total** se reparte entre tramo y apoyos

Permiten tomar cargas horizontales sin generar pares en las fundaciones.



# PORTICOS SIMPLES

## TIPOS DE PORTICOS

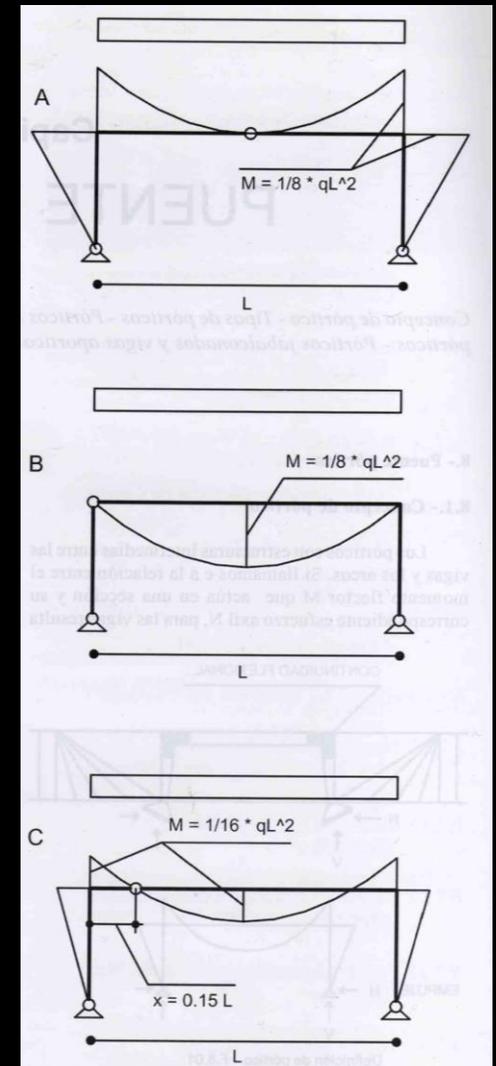
**ISOSTATICOS** → Triarticulados

- Distribución de momentos independiente de las rigideces relativas dintel parantes

Corrimientos de apoyo no generan momentos

Articulación central permite construcción por mitades

La articulación implica costos de mantenimiento e incomodidades para el tránsito



# PORTICOS SIMPLES

**HIPERESTATICOS** → H°A° y H°P°

-Utilización asociada a la morfología del cruce

-Necesitan altura para desarrollar los MONTANTES

-Suelo apto para fundar, Empujes

-CARACTERISTICAS:

-Distribución de solicitaciones depende de relación de rigideces.

-Deformaciones impuestas generan solicitaciones (temperatura, retracción, def. lenta del H°, corrimientos de apoyo) deben ser evaluados

# PORTICOS SIMPLES

- El pretensado genera reacciones de vínculo, que actúan en desmedro del efecto buscado
- Excelente monolitismo estructural, se pueden gobernar la distribución de sollicitaciones actuando sobre las rigideces, dinteles con momento de inercia variable.
- Buen comportamiento ante cargas horizontales, SISMO
- Pemiten cubrir luces de hasta 200m en H°P°
- La ausencia de juntas implica menores costos de mantenimientos.

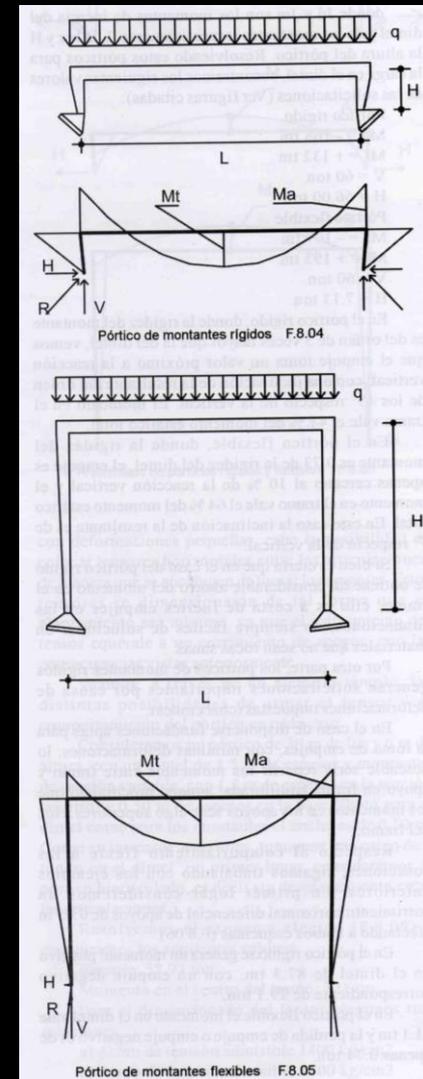
# PORTICOS SIMPLES

## FUNCIONAMIENTO

Influencia de la relación de rigideces en el funcionamiento.

Rigidez =  $J/s$

- a)  $R_{montante} = 3 R_{dintel}$   
 $H \approx V$ ,  $M_t = 0.44 M$
- Importantes empujes
  - Reacciones por def. impuestas
  - Si se dispone de roca para fundar, repartir  $M$  entre tramo y apoyos
  - Perdida de pretensado
- b)  $R_{montante} = 0.73 R_{dintel}$   
 $H \approx 10\% V$ ,  $M_t = 0.64 M$

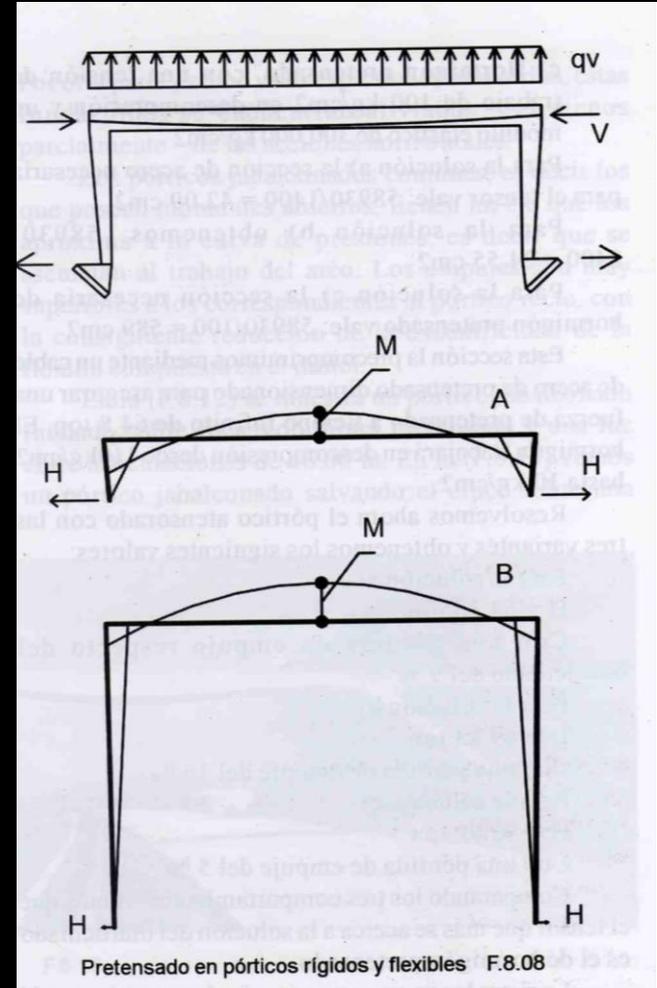


# PORTICOS SIMPLES

## PRETENSADO

-El valor de  $H$  generado por la carga equivalente  $qv$  depende de la rigidez.

- $H$  provocado por el pretensado disminuye la compresión en el dintel



# PORTICOS SIMPLES

## PORTICO ATENSORADO

-Aptos para cruces a distinto nivel cuando el suelo no tolera empujes.

-Dimensionar el tensor para un alargamiento mínimo, su estiramiento equivale a un corrimiento de apoyos

-Tensor:

-H° A°  $\sigma=1400 \text{ kg/cm}^2$  (acero común)

-H° A°  $\sigma=2400 \text{ kg/cm}^2$  (acero nervurado)

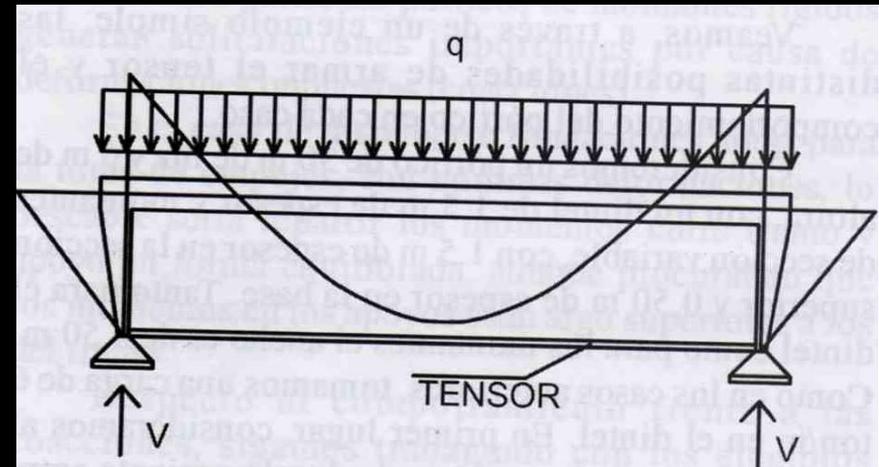
-E = 2100000

-Relación  $\sigma/E = 0.00067$  ó  $0.0011$

-H°P°  $\sigma= 100 \text{ kg/cm}^2$  en descompresión

-E = 300000

-Relación  $\sigma/E = 0.00033$



# PORTICOS SIMPLES

## PORTICO JABALCONADO

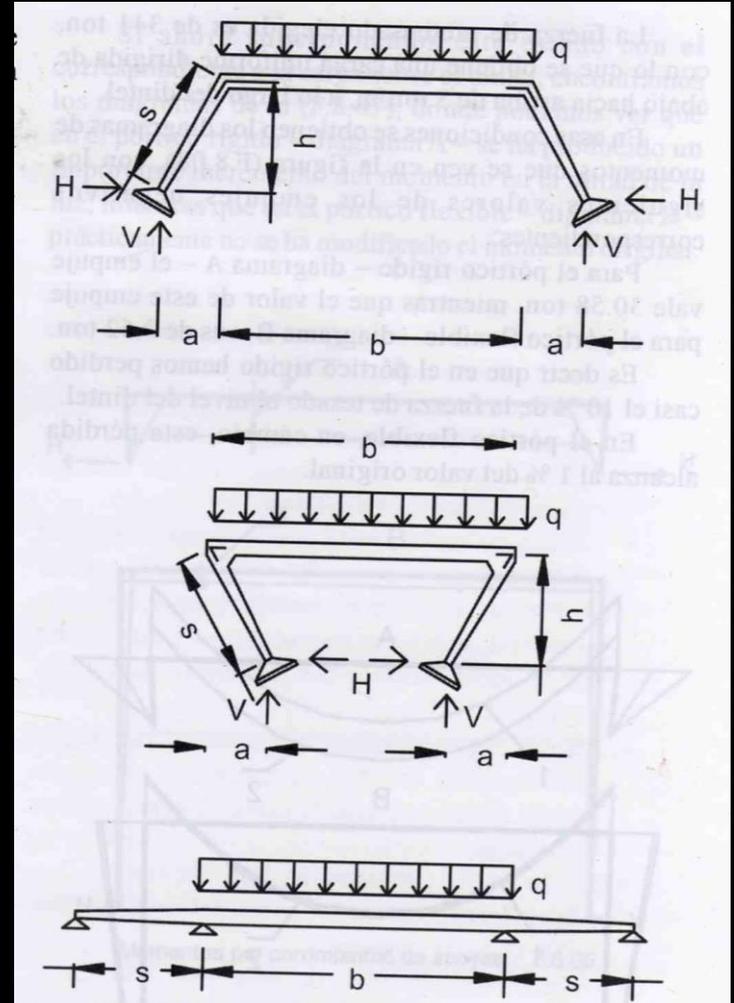
-Se dice que es jabalconado cuando los montantes no son verticales

-M nudo (Provocado por V, constante y H, variable) no cambia al girar los montantes, en el límite Viga Continua

-Al abrirse M debido a V  $\rightarrow (+)$   $\rightarrow$  M debido a H aumenta, se aproxima a la curve de presiones

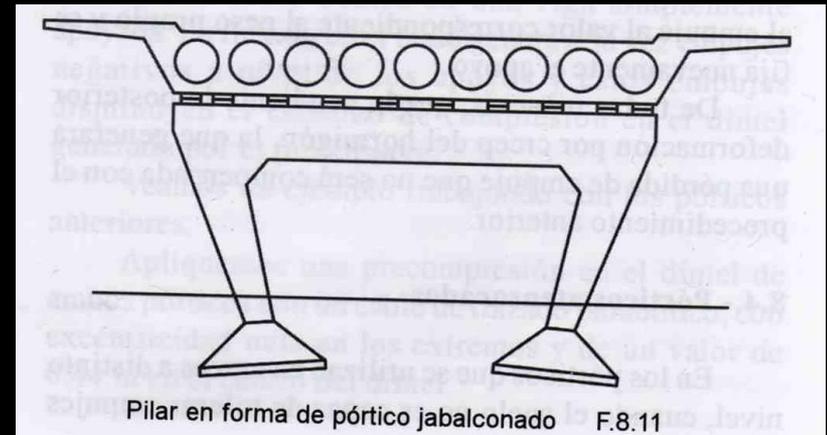
-Al cerrarse, H disminuye

-Si  $V \times a = M \rightarrow H=0$



# PORTICOS SIMPLES

-Porticos cerrados, sin empujes, se usan como pilares de puentes viga o losa

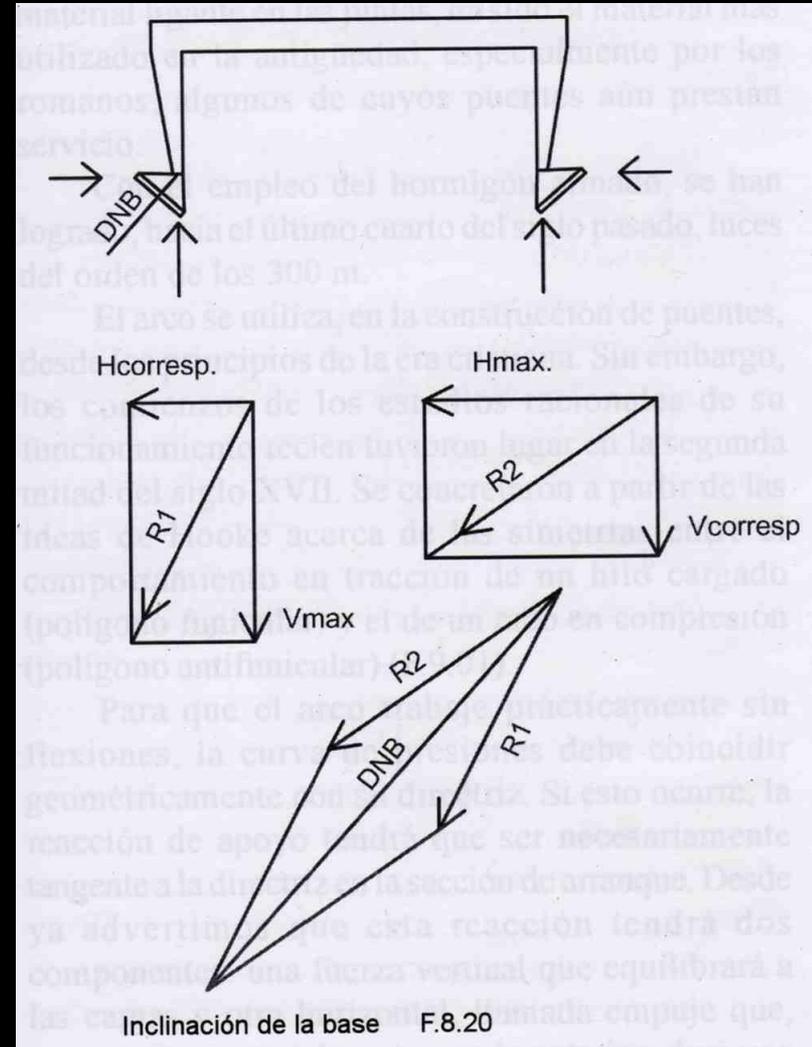
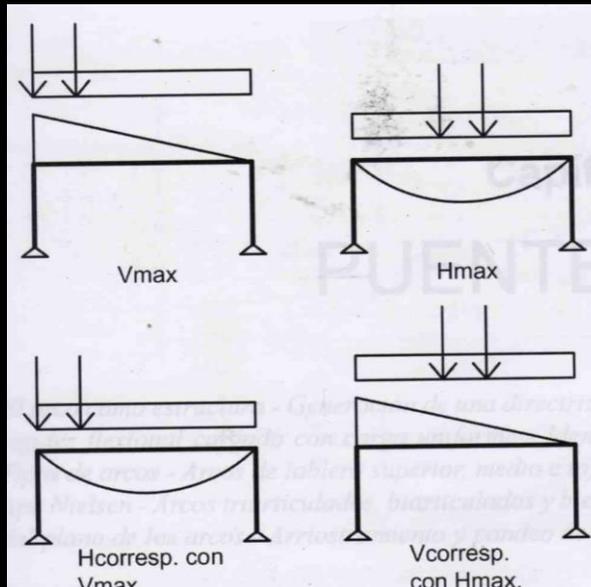


# PORTICOS SIMPLES

## FUNDACIONES DE PORTICOS

Se determinan las reacciones  $V$  y  $H$  para los estados de carga indicados (Ver líneas de influencia)

-La base se inclina en forma normal a la resultante de  $V$  y  $H$



# PORTICOS SIMPLES

## Puentes Pórtico Jabalconado

Luz entre articulaciones 46m

Dintel pretensado – fundación en Roca

