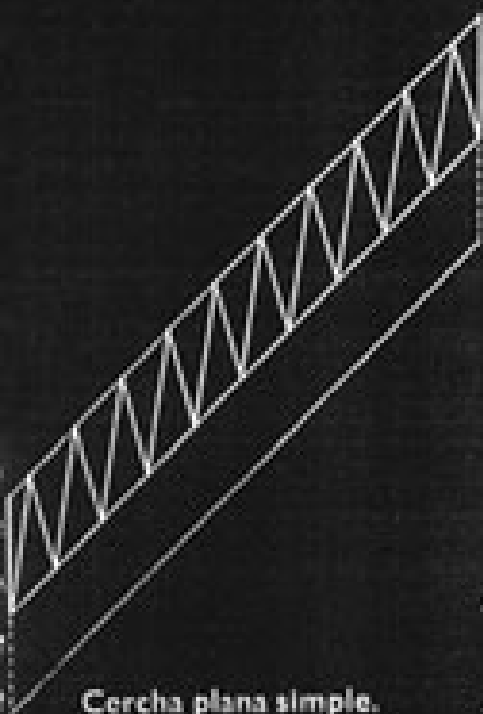


***ESTRUCTURAS DE BIELAS
O
RETICULADOS***

SEGUNDA FAMILIA ESTRUCTURAS DE BIELAS

**SON ESTRUCTURAS EN QUE LA FORMA ES
INDEPENDIENTE DEL SISTEMA DE
CARGAS.**

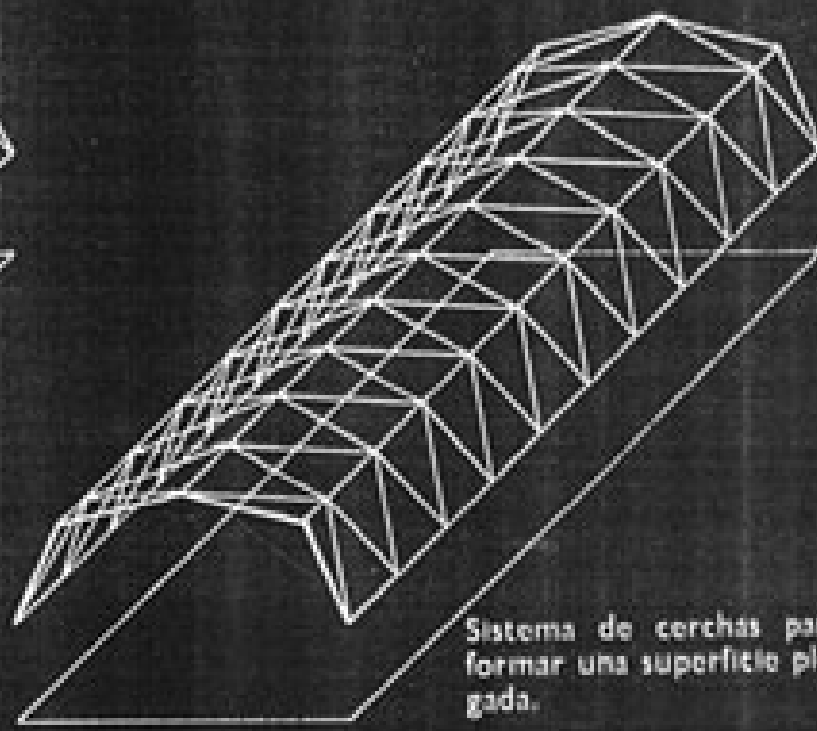
**LOS ESFUERZOS INTERNOS SIGUEN LOS
EJES DE LOS ELEMENTOS QUE LA
COMPONEN.**



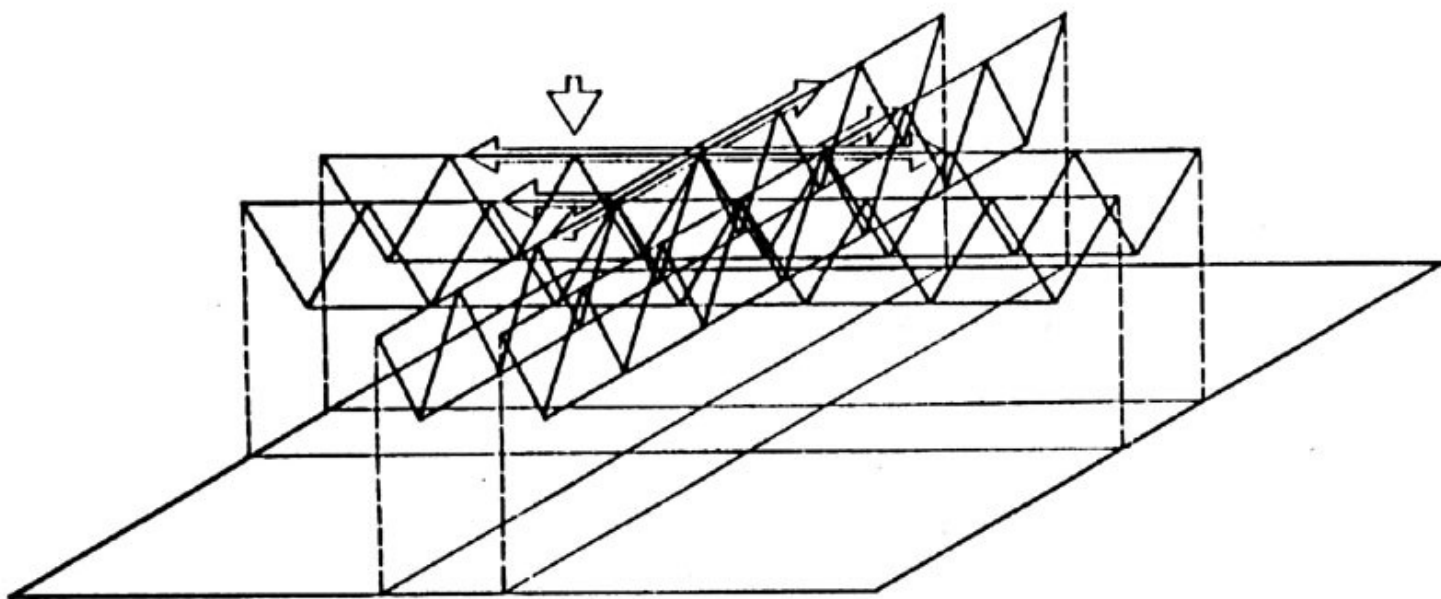
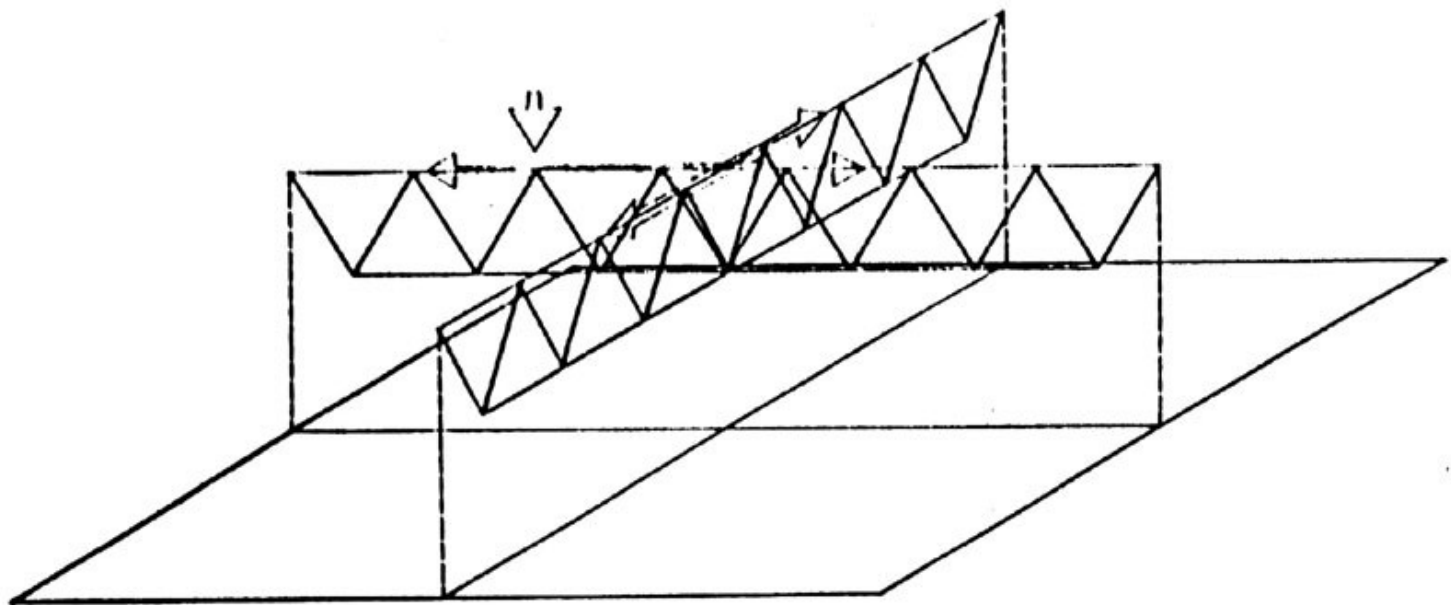
Cercha plana simple.

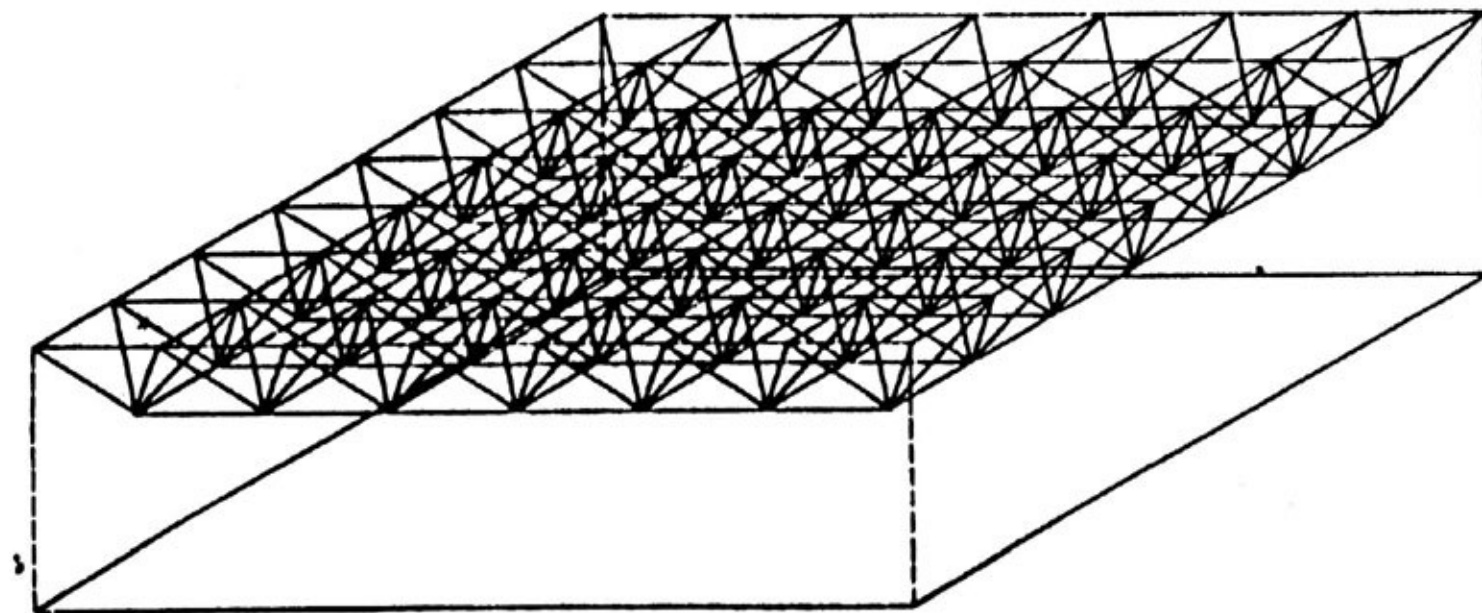
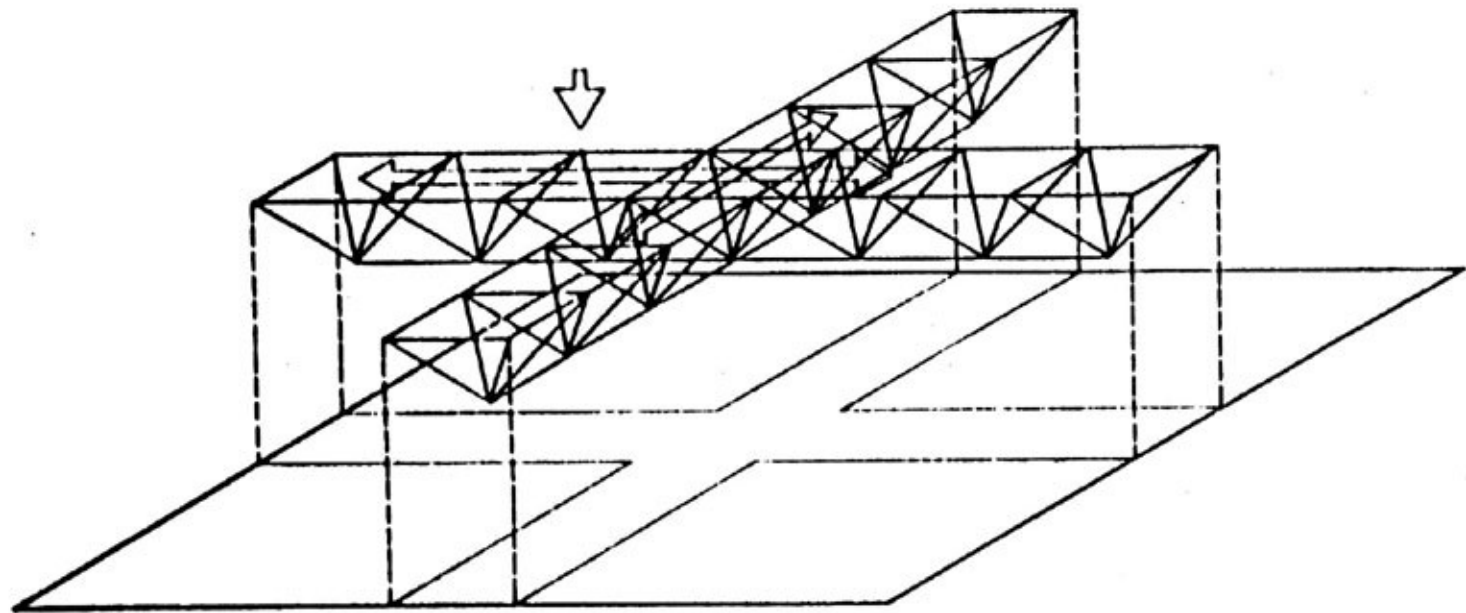


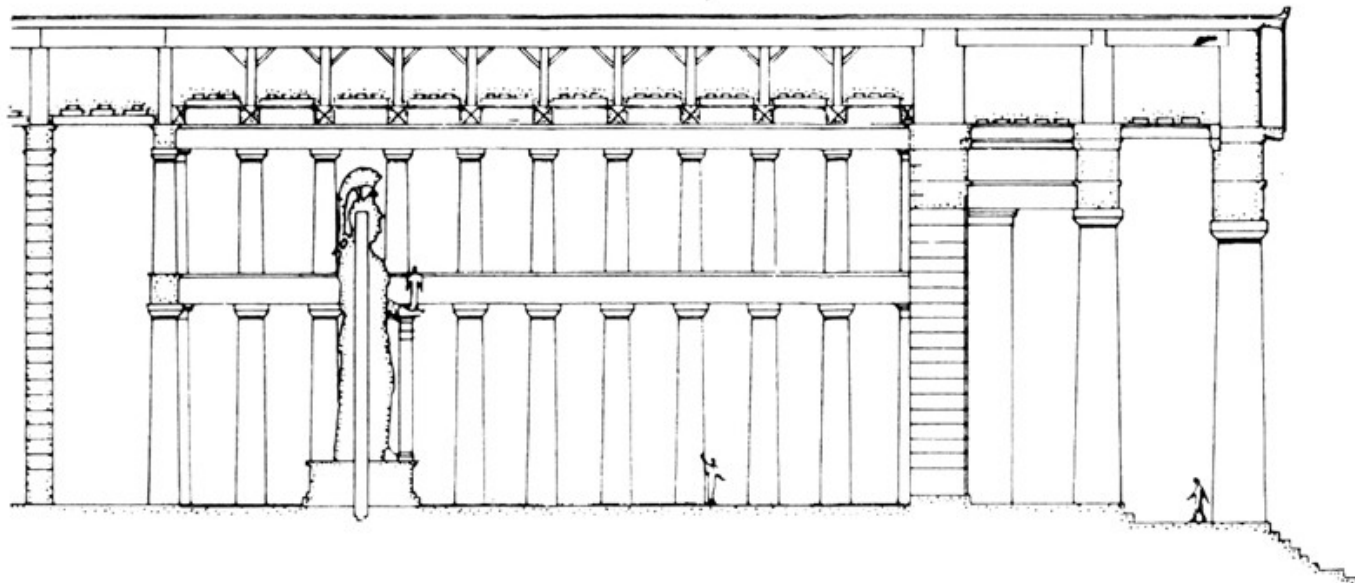
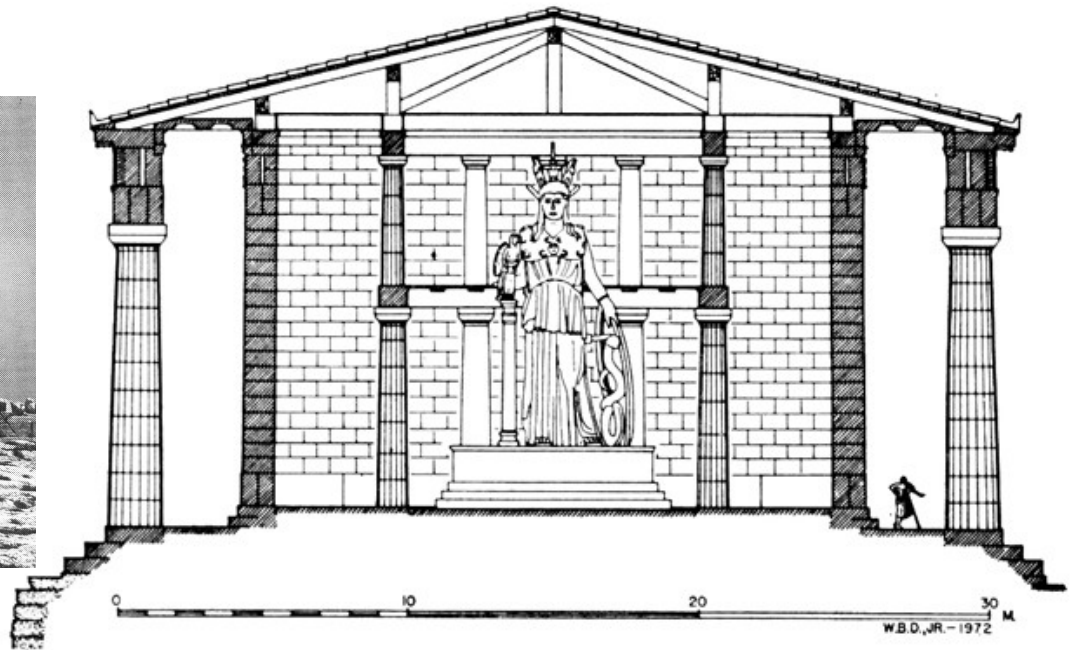
Dos cerchas unidas
superiormente.



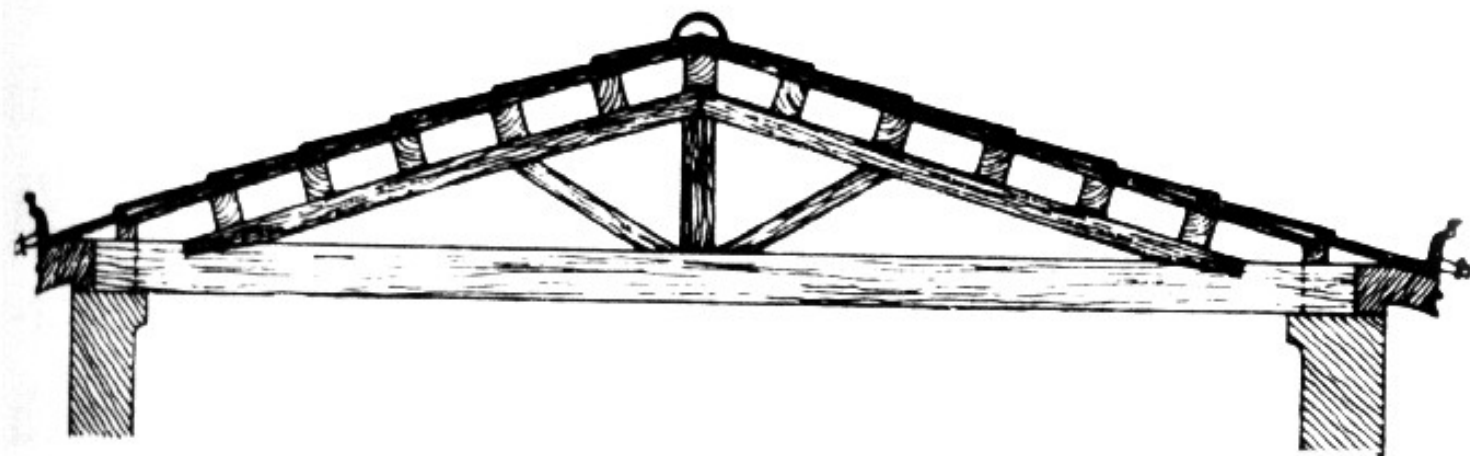
Sistema de cerchas para
formar una superficie plu-
gada.







Partenón





Torre Eiffel - 1889



Puente en Lisboa - G. Eiffel



Bolsa de Amsterdam 1902 - Berlage





Vivienda Bianchi, 1973 - Mario Botta

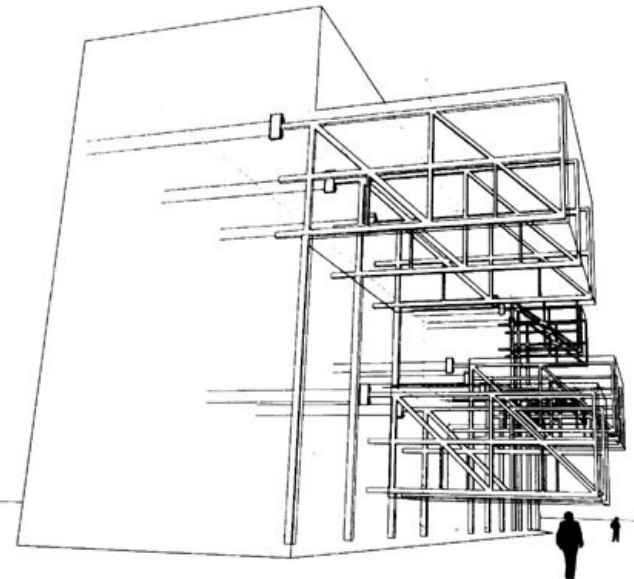
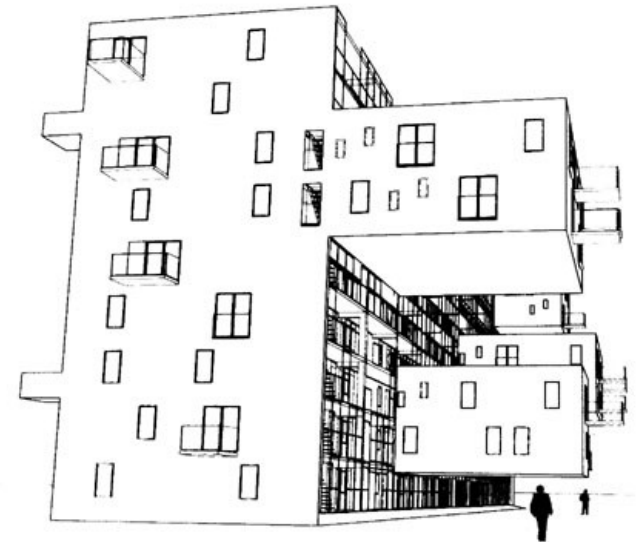


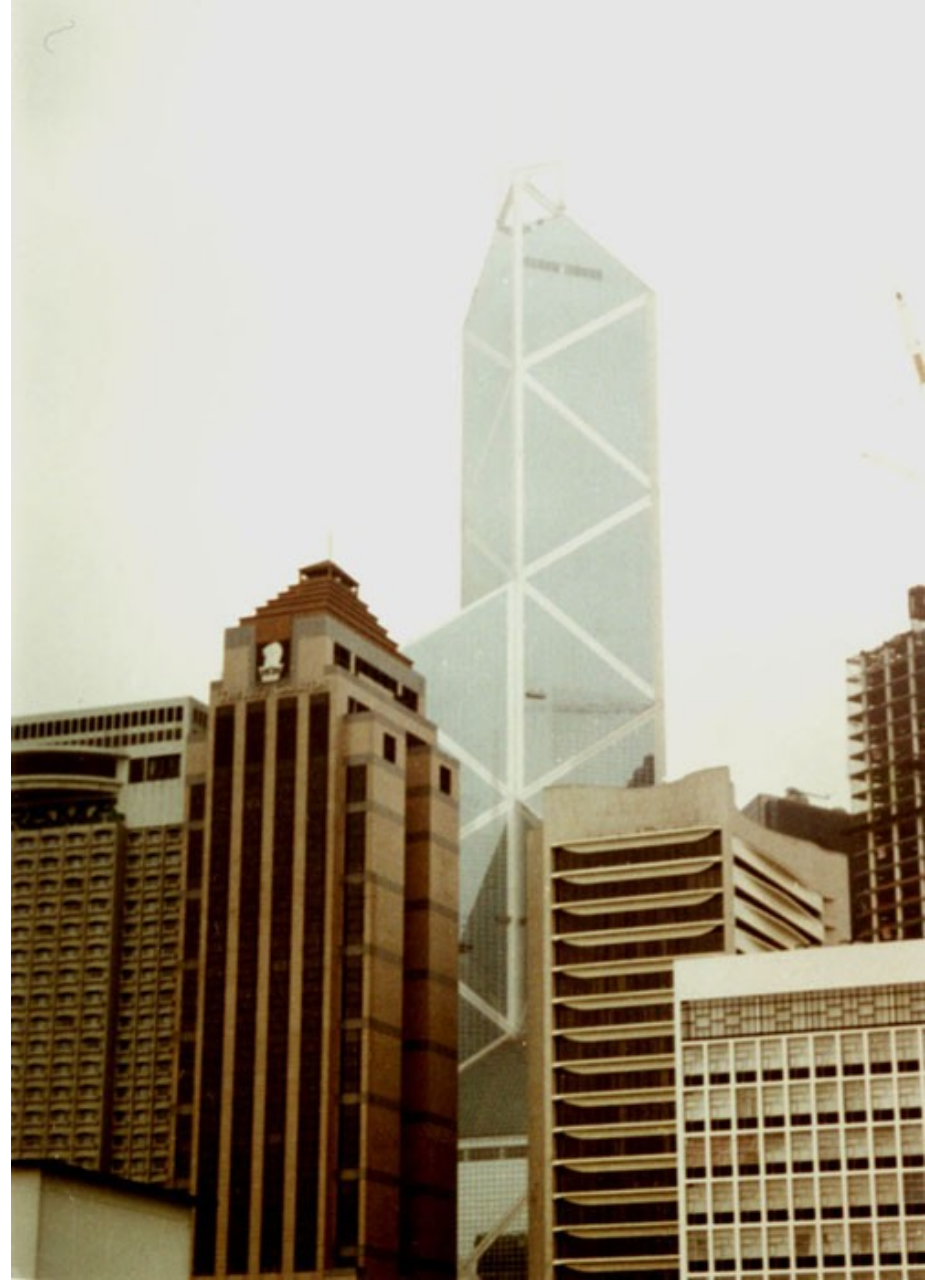
Estudio Eames - Frank Israel



Edificio Wozoco's - Amsterdam 1997 - MVRDV







Banco de China en Hong Kong 1997 - I. M. Pei



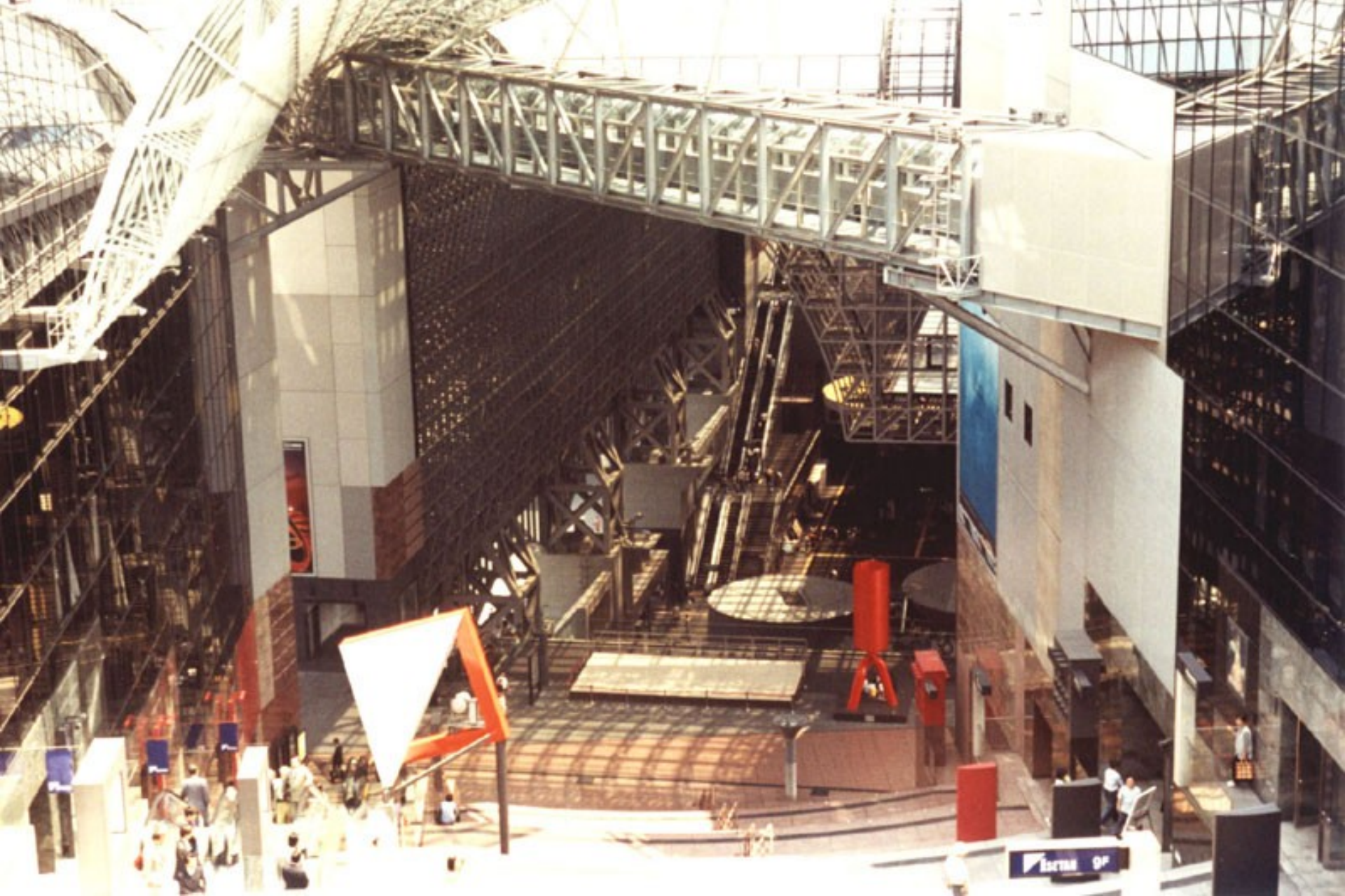




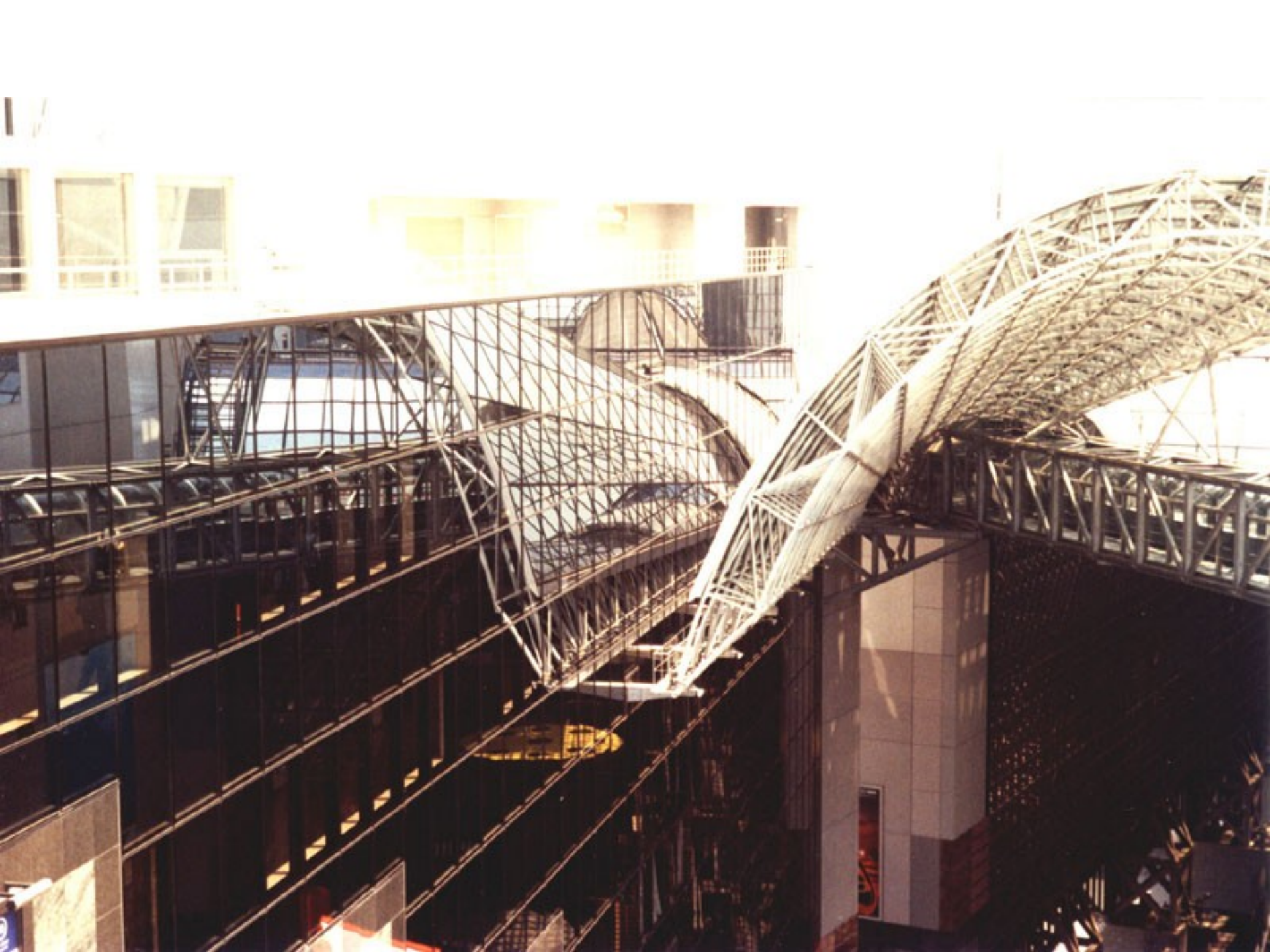
Centro Pompidou, 1977 - Rogers y Piano







Estación de trenes de Kyoto - Hiroshi Hara





Estación de trenes de Tokyo





Gimnasio de Alicante - Miralles - Pinós





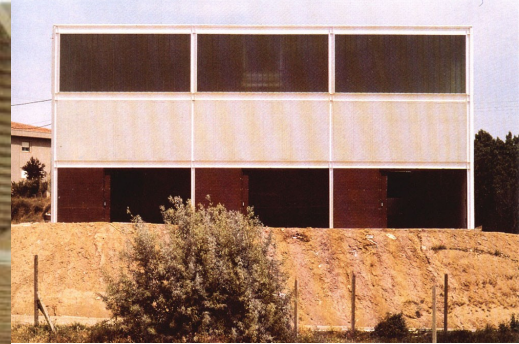


Parque La Villette - B. Tschumi

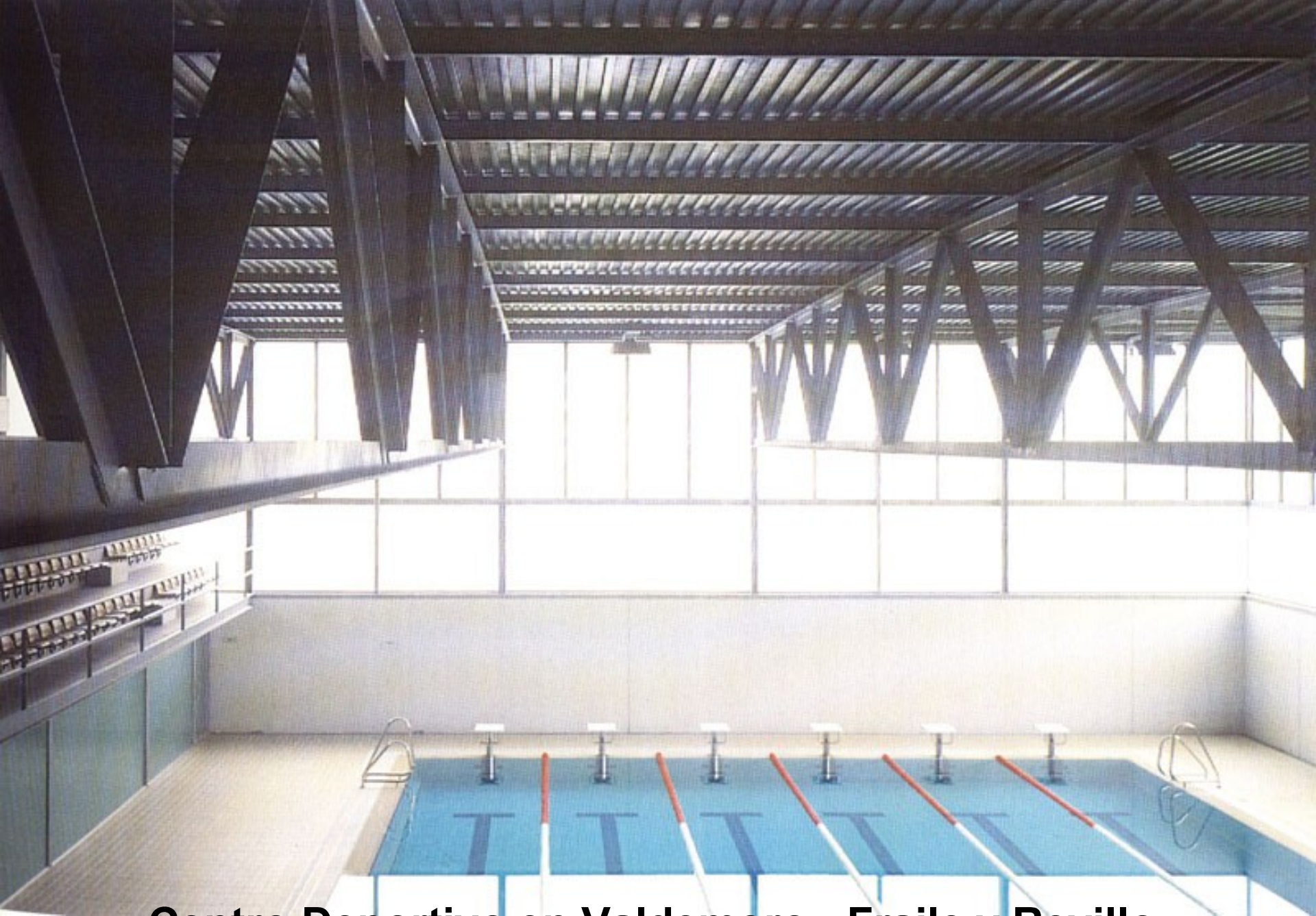


Velódromo de Berlín 1998 - D. Perrault





**Polideportivo en Valladolid, 1990 - Abalos y
Herreros**



Centro Deportivo en Valdemoro - Fraile y Revillo





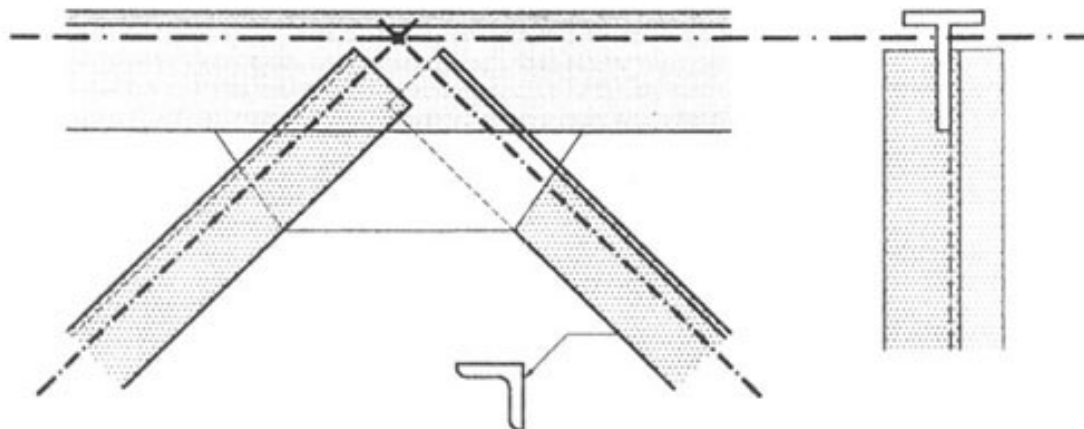


CARACTERÍSTICAS

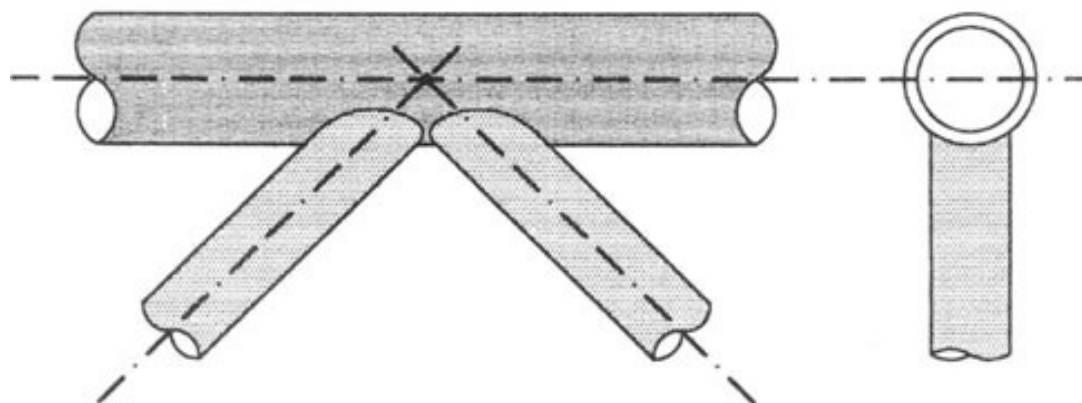
PIEZAS: BARRAS DE LONGITUD PREDOMINANTE EN RELACIÓN A LAS DIMENSIONES DE LAS SECCIONES.

NUDOS: ARTICULACIÓN DONDE CONCURREN VARIAS BARRAS, Y DONDE SE EJERCEN ACCIONES Y REACCIONES.

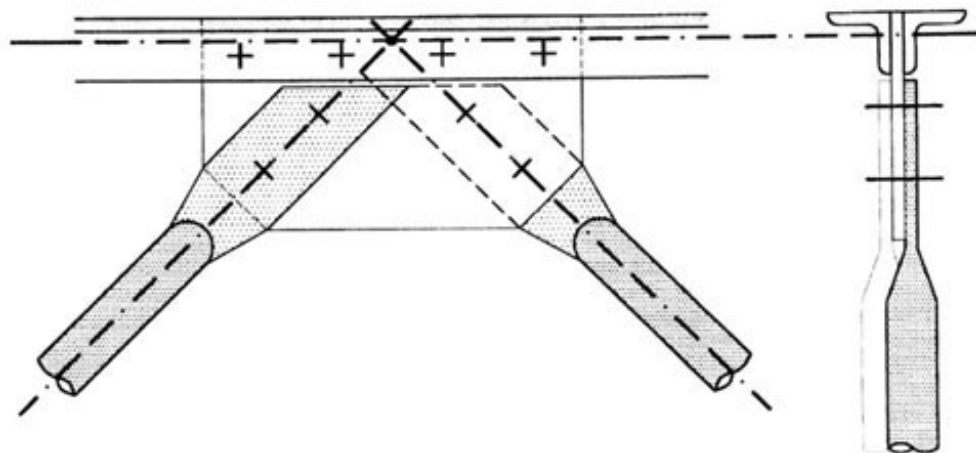
APOYOS: NUDO COMPLETADO CON UN DISPOSITIVO DE UNIÓN CON EL RESTO DE LA ESTRUCTURA.



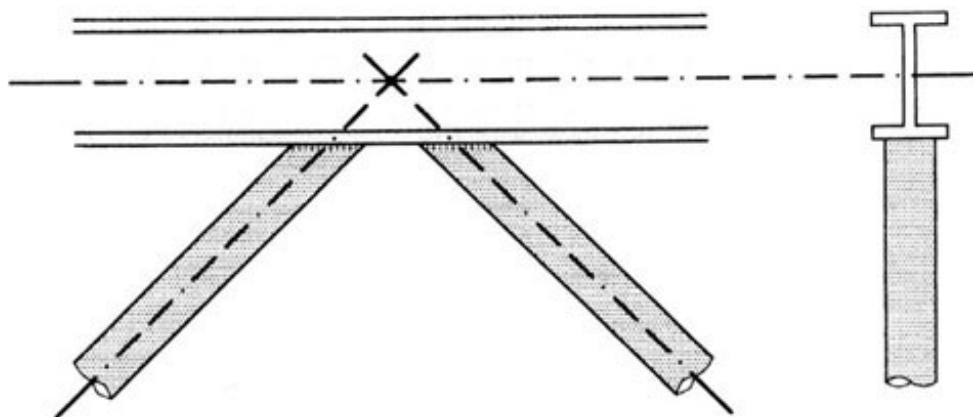
- NUDO: UNION DE PERFIL T CON PERFILES L MEDIANTE PLANCHUELA SOLDADA



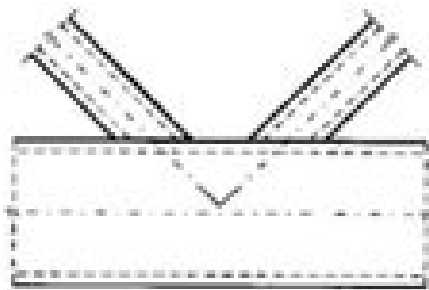
- NUDO: UNION SOLDADA DE TUBOS DE SECCION CIRCULAR



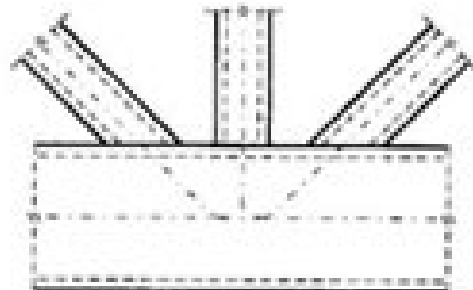
- NUDO: UNION DE TUBOS DE SECCION CIRCULAR DE EXTREMOS ACHATADOS CON DOS PERFILES L MEDIANTE PLANCHUELA CON REMACHES O ABULONAD



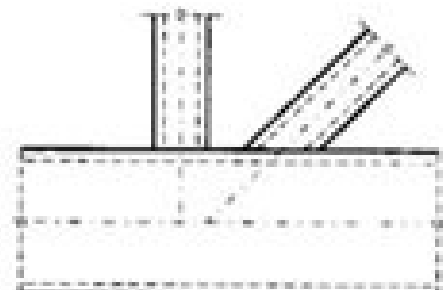
- NUDO: UNION SOLDADA DE PERFIL DOBLE T CON TUBO DE SECCION CIRCULAR



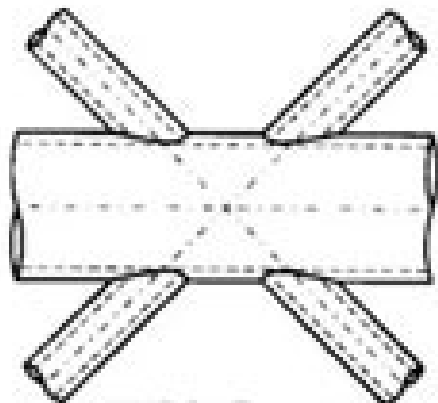
NUDO EN K



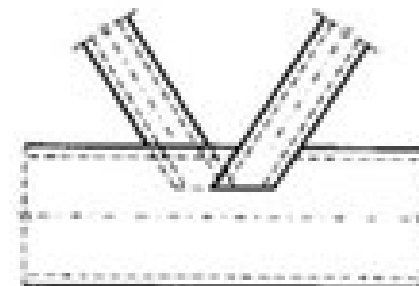
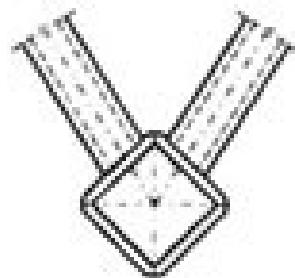
NUDO EN KT



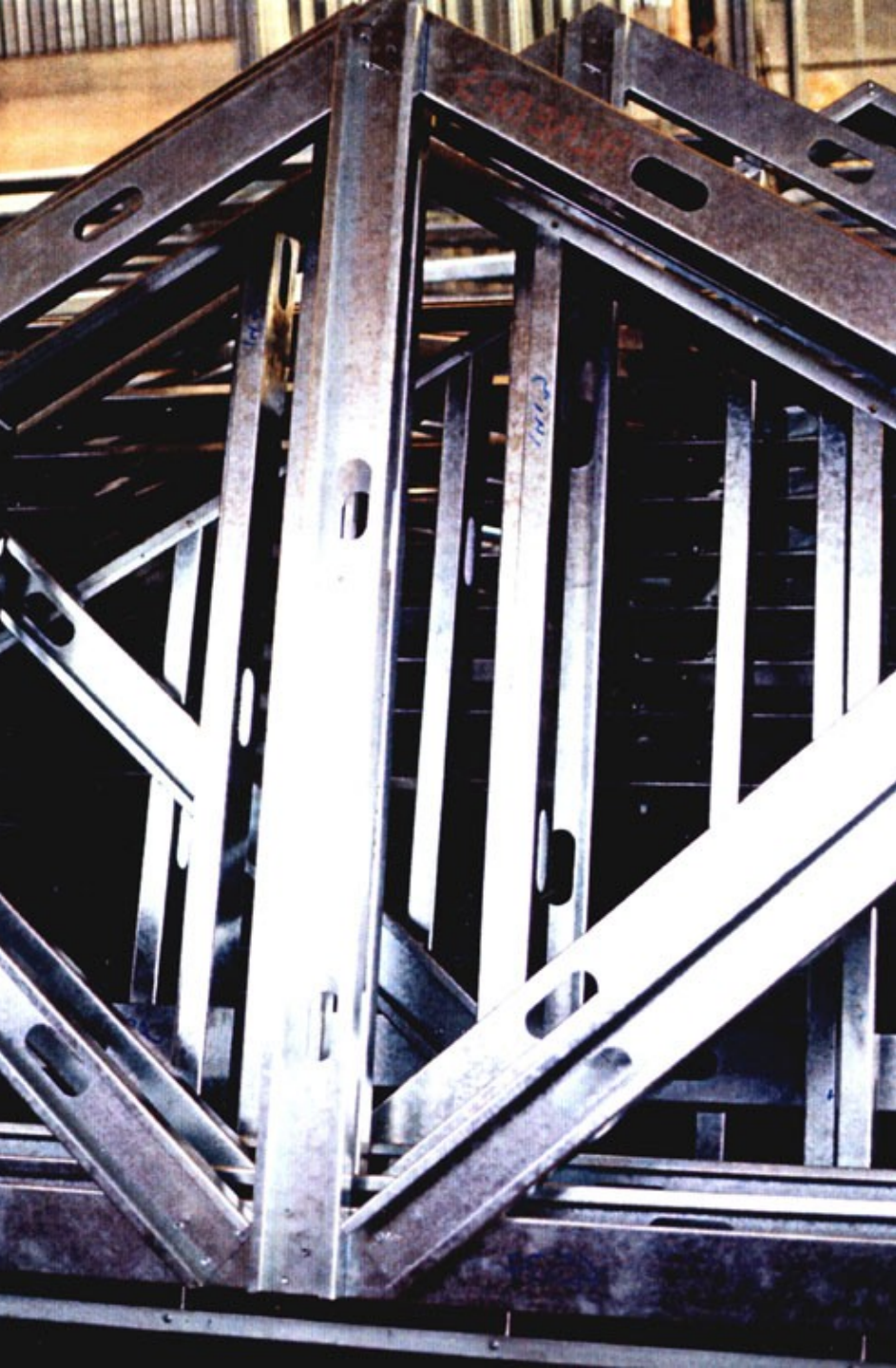
NUDO EN N

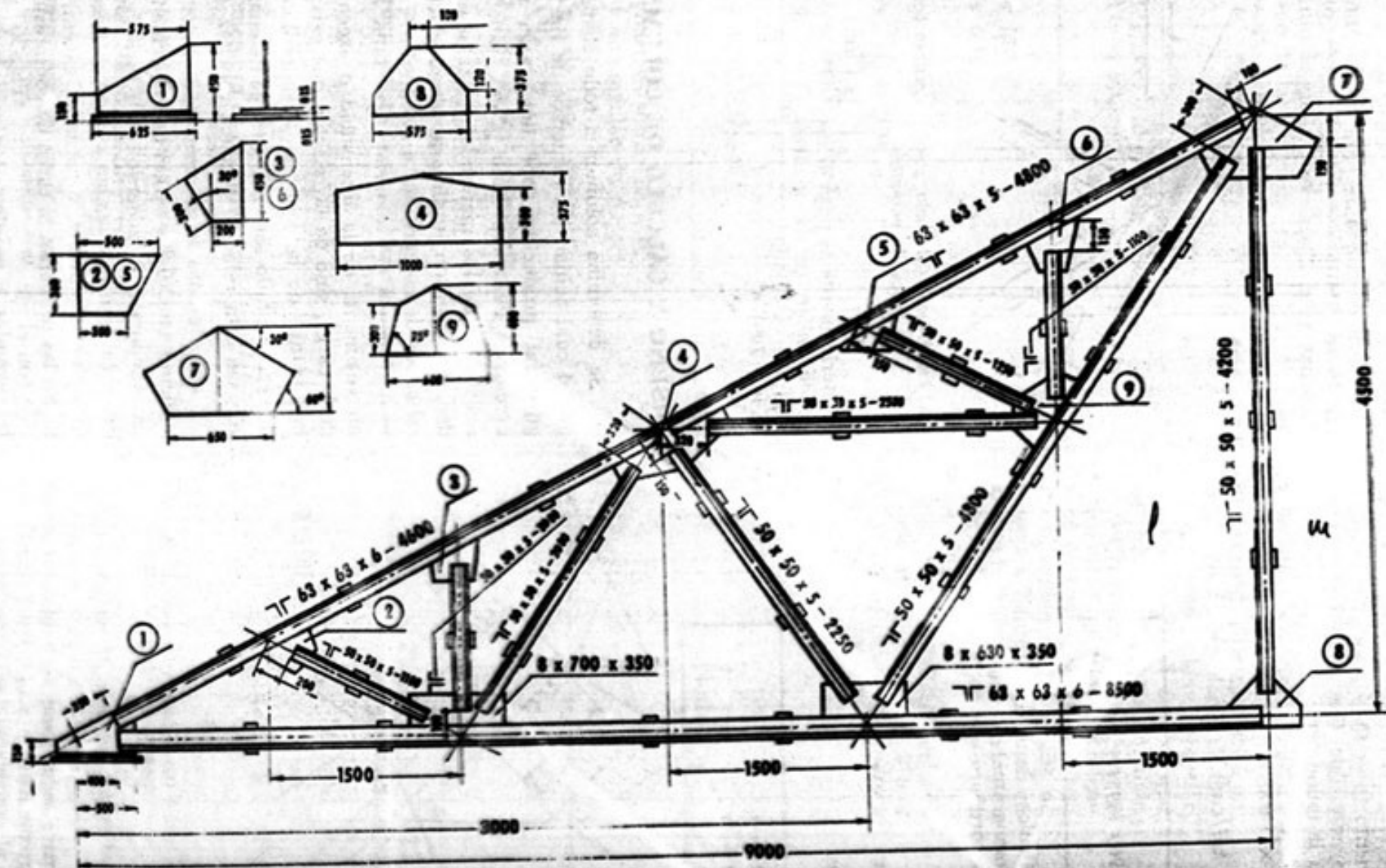


NUDO EN DK



NUDO EN KK



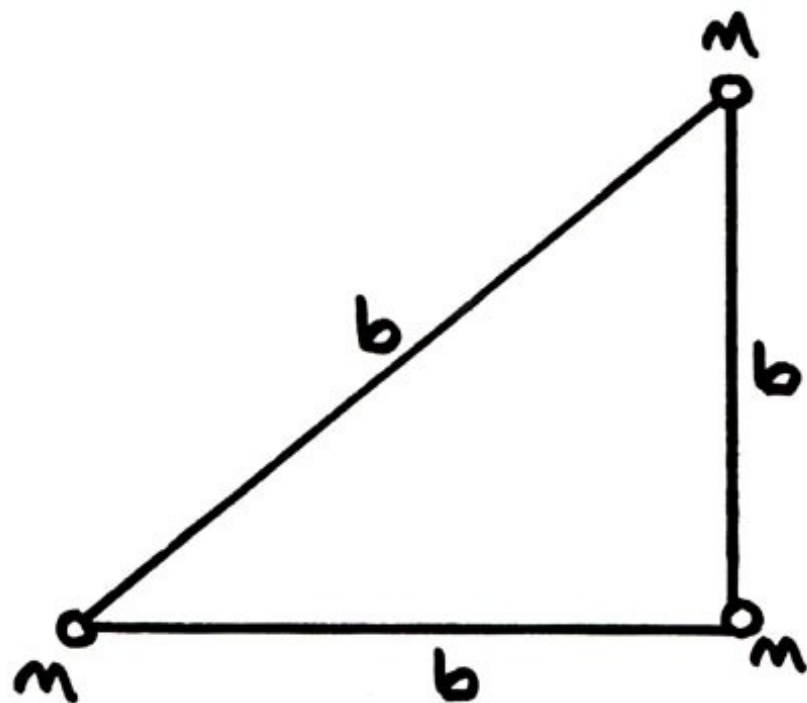


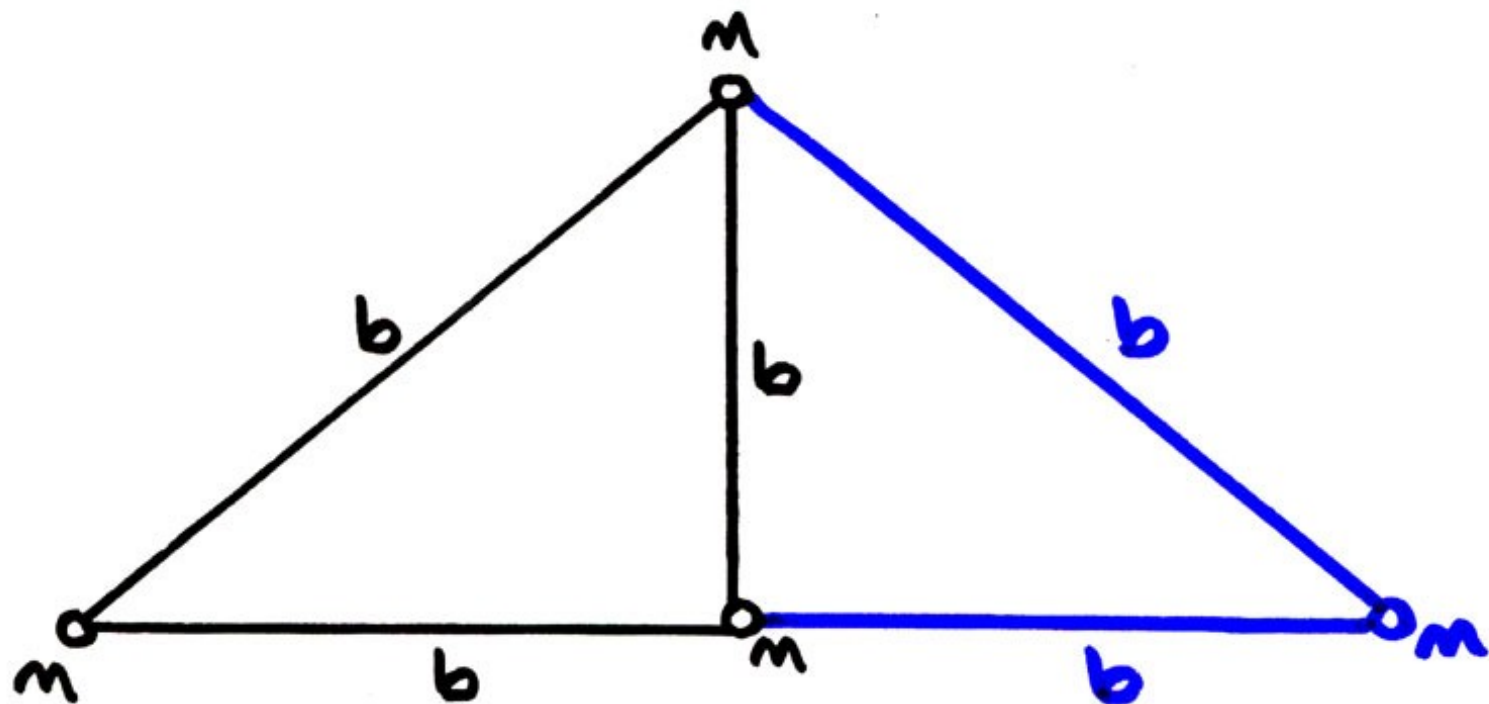


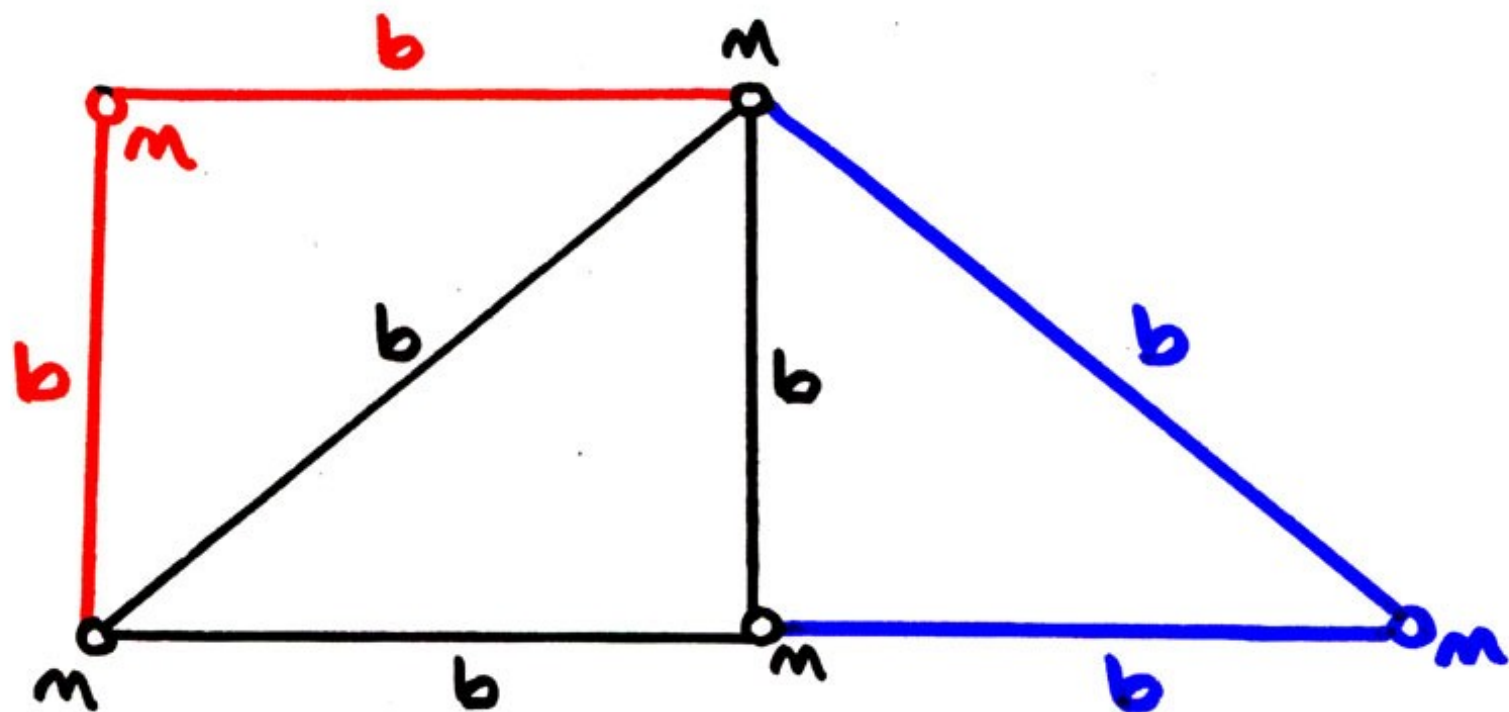


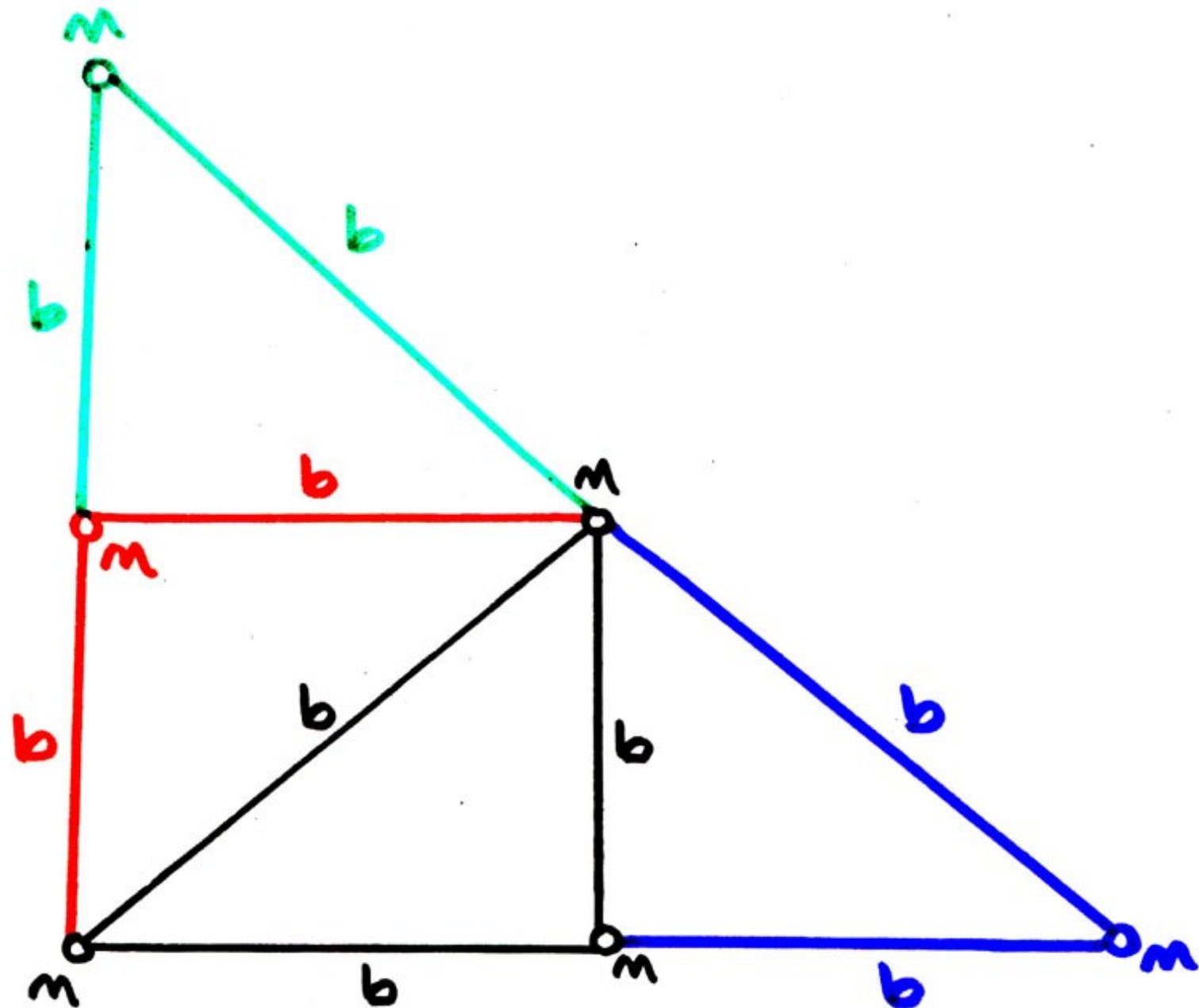
CONFIGURACIÓN GEOMÉTRICA

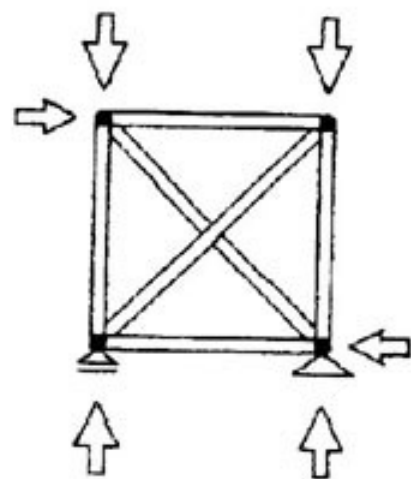
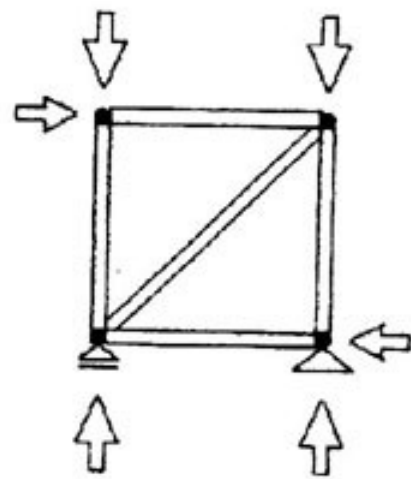
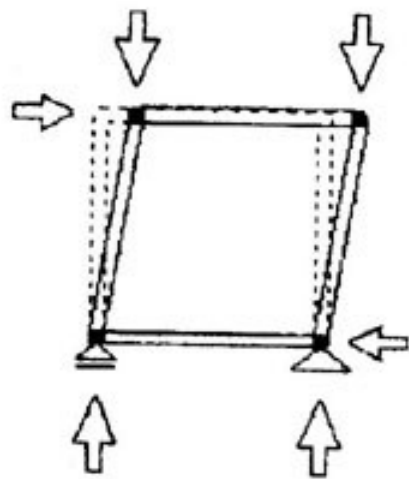
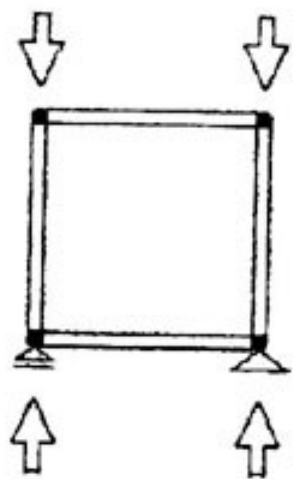
TRABAJANDO CON RETICULADOS
ANALIZABLES EN UN PLANO, LA UNIDAD
GEOMÉTRICA BÁSICA SERÁ EL
TRIÁNGULO.





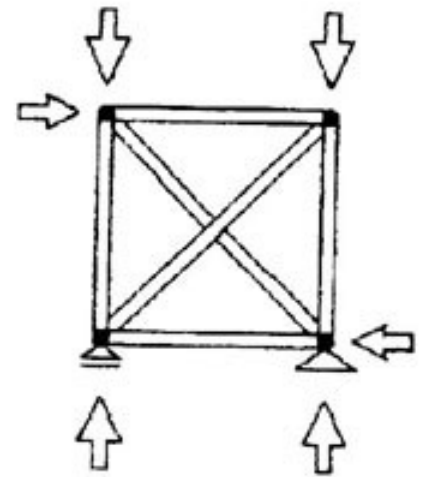
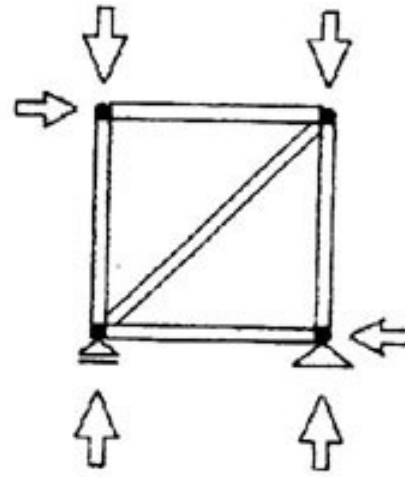
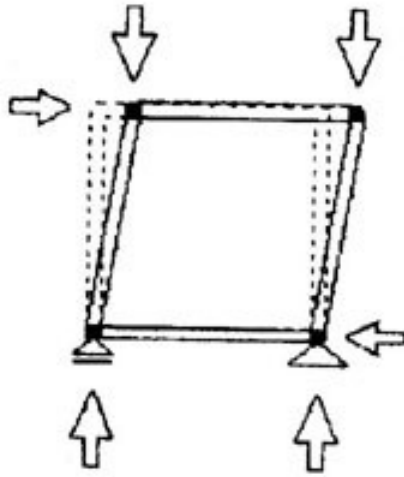
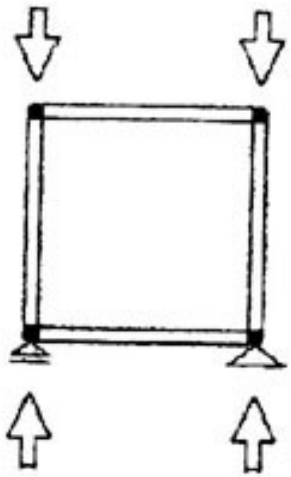






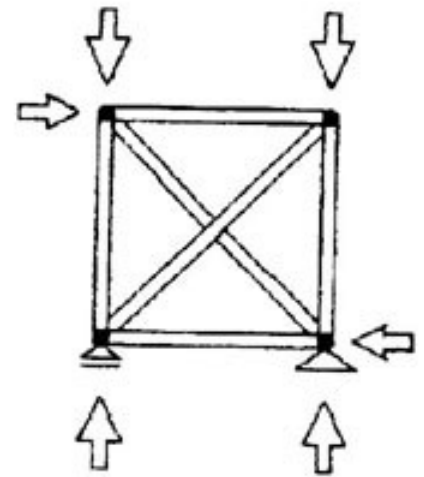
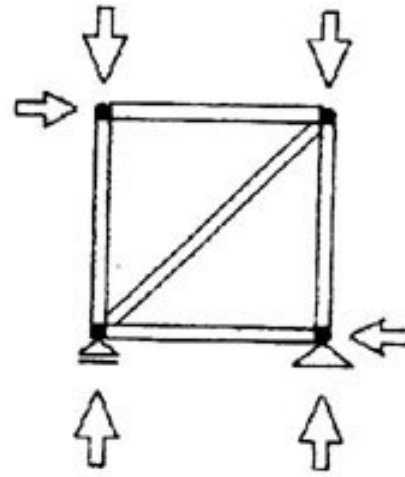
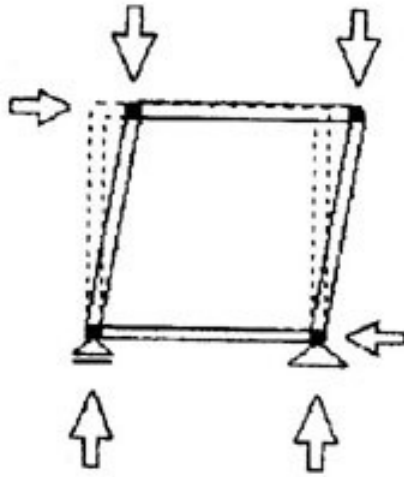
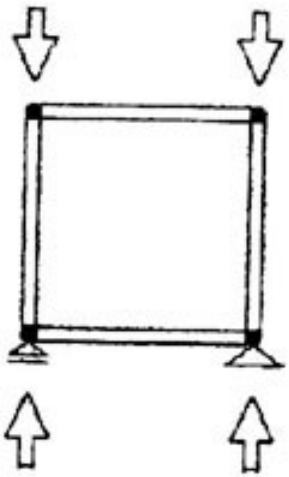
$$2n - b = 3$$

b - nº de barras
 n - nº de nodos



$$2n - b = 3$$

b - nº de barras
 n - nº de nodos

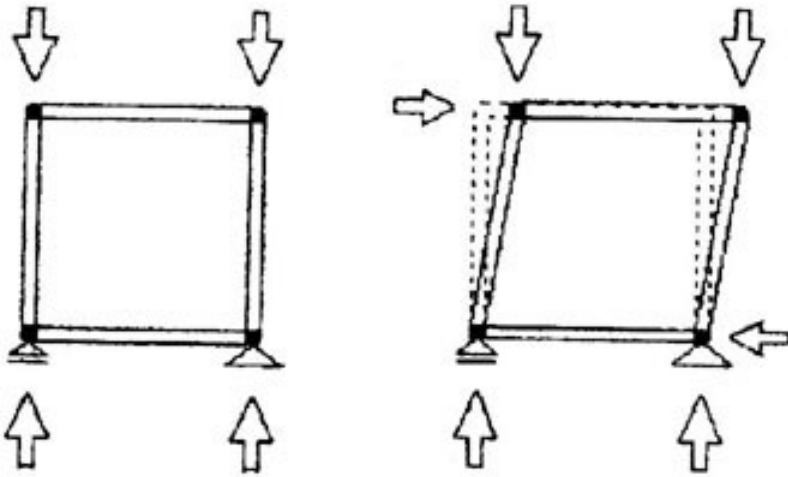


$$8 - 4 = 4 > 3$$

hipostática

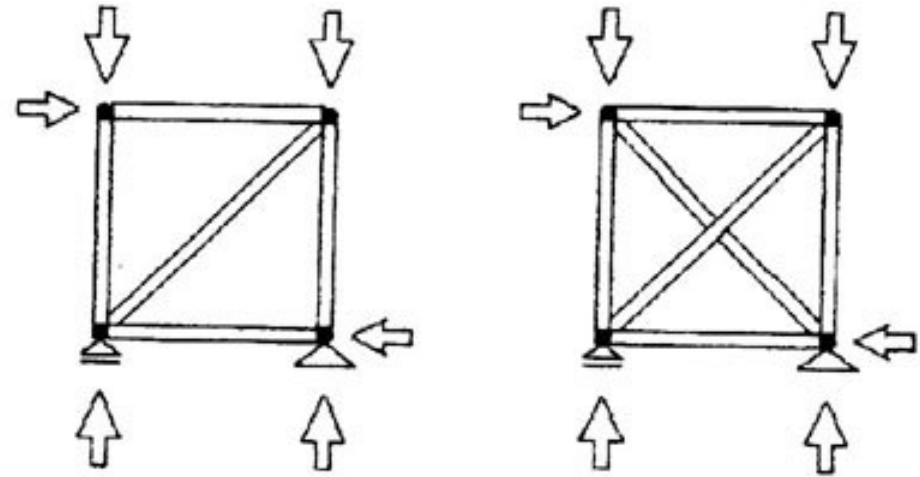
$$2n - b = 3$$

b - nº de barras
 n - nº de nodos



$$8 - 4 = 4 > 3$$

hipostática

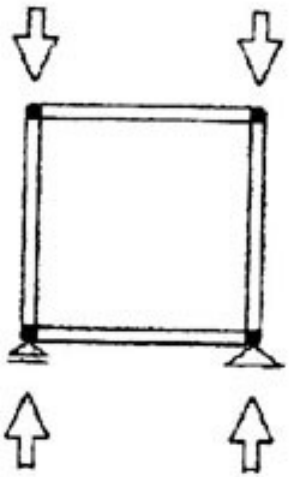


$$8 - 5 = 3$$

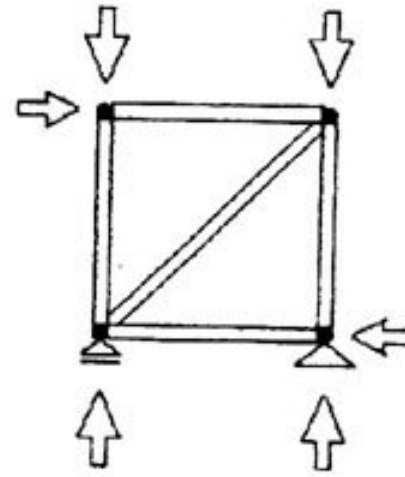
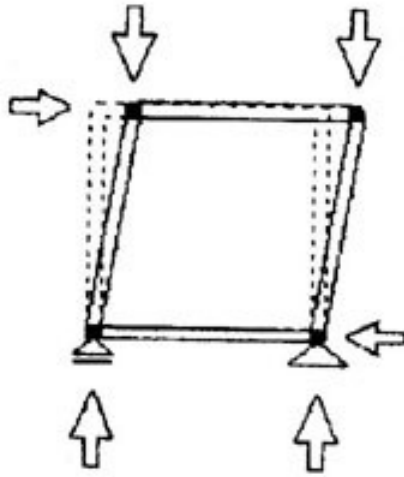
isostática

$$2n - b = 3$$

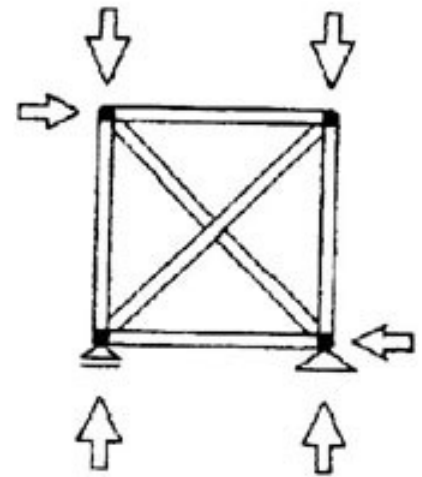
b - nº de barras
 n - nº de nodos



$8 - 4 = 4 > 3$
 hipostática



$8 - 5 = 3$
 isostática



$8 - 6 = 2 < 3$
 hiperestática

MODELOS

MODELO FUNCIONAL: LOS EJES DE LAS BARRAS CONCURREN EN UN PUNTO (NUDO IDEAL) ASIMILABLE A UNA ARTICULACIÓN. LAS ACCIONES EXTERNAS, ASIMILADAS A FUERZAS CONCENTRADAS, ESTÁN APLICADAS EN LOS NUDOS.

MODELO DE COMPORTAMIENTO:

LAS BARRAS ESTÁN SOLICITADAS POR FUERZAS AXILES DE TRACCIÓN O COMPRESIÓN.

MODELO DE MATERIAL: HOMOGÉNEO Y CONTÍNUO.