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LOS CUERPOS GEOMÉTRICOS  
EN LA  
ARQUITECTURA DE GAUDÍ

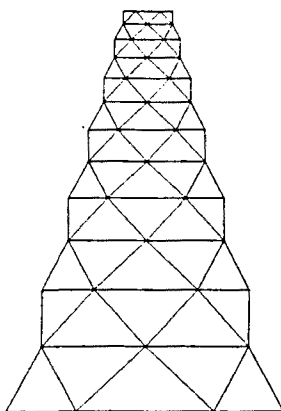
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amb el núm. 244

Tesis doctoral

**LOS CUERPOS GEOMÉTRICOS  
EN LA  
ARQUITECTURA DE GAUDÍ**

*Las chimeneas del Palau Güell.  
Construcción y geometría práctica en un ejemplo*

**TOMO II**



**UPC**  
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## APÉNDICE A. PLANOS

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## CÓDIGOS GRÁFICOS EMPLEADOS EN LOS PLANOS

A fin de facilitar la lectura de las distintas series de planos, se ha preferido utilizar un código gráfico muy preciso que permita una rápida identificación de los elementos que caracterizan al modelo en sus diferentes etapas de análisis. En este sentido, resulta importante hacer algunas advertencias respecto a los aspectos más relevantes de este código.

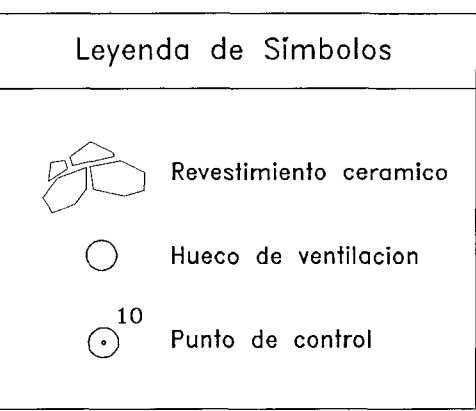
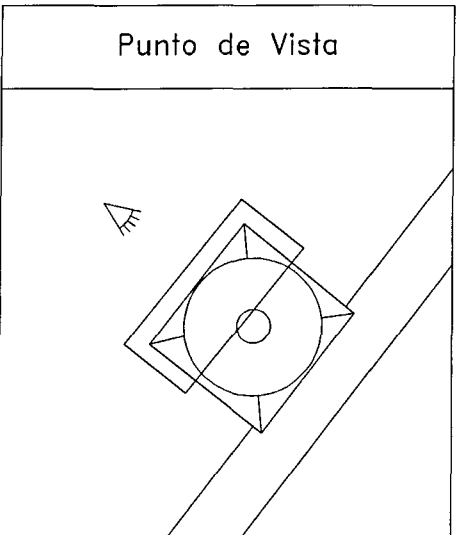
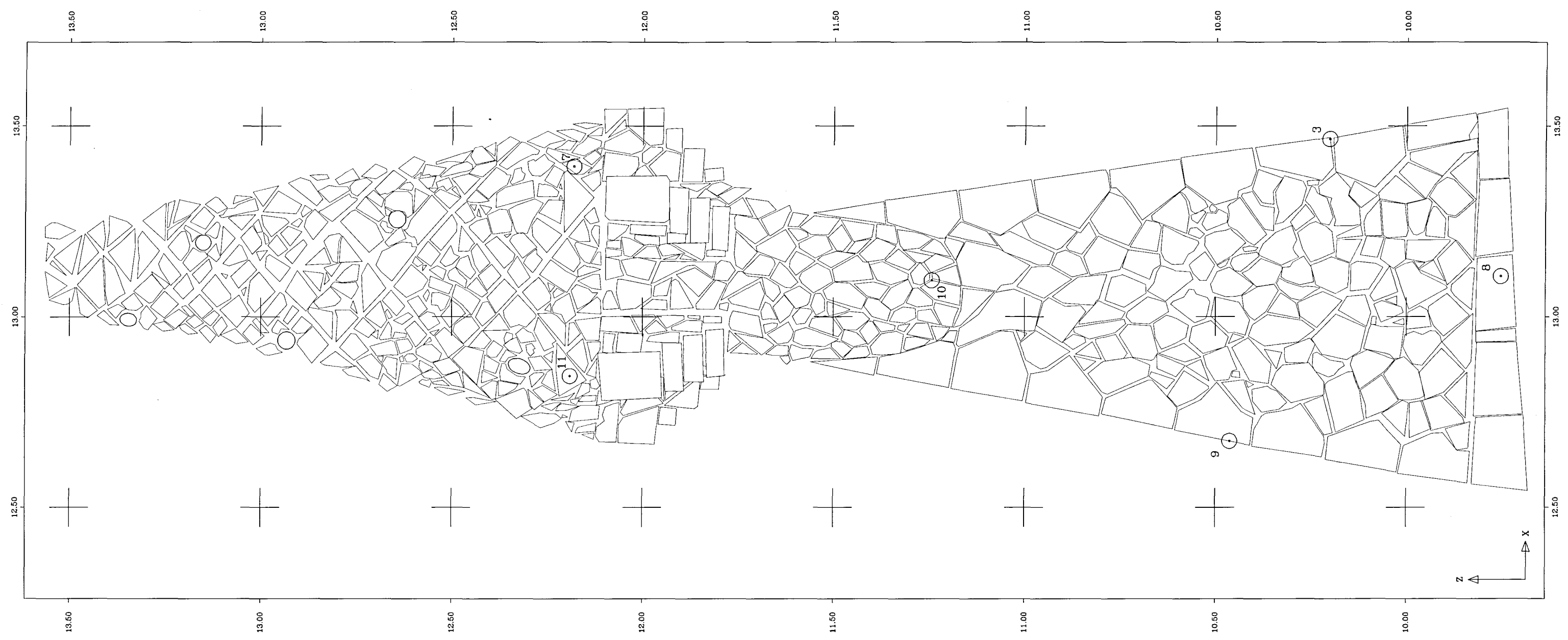
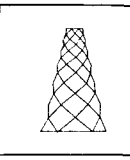
En relación al tratamiento puramente lineal, se ha preferido utilizar el valor de línea para expresar aspectos expresivos muy concretos como la diferenciación entre vistos y ocultos en las diferentes proyecciones del modelo o la enfatización de determinados elementos teóricos del análisis.

La línea de trazos ha sido reducida a dos modalidades básicas. En una de estas versiones sirve para definir ciertos elementos secundarios del modelo, como el dibujo de líneas auxiliares o determinadas referencias expresivas muy concretas. La otra modalidad es empleada exclusivamente para el trazado de los ejes teóricos del sistema. Estos ejes constituyen la *estructura gráfica* de referencia común a los dos modelos de estudio y se pueden ver en los planos de la serie restituida MR6, MR9 y MR16, los del modelo teórico MT1, MT3, MT5 y MT7 y los comparativos C3, C4, C6 y C7.

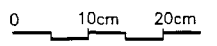
El empleo del color, cuando adopta la configuración lineal, sirve para identificar las escalas de altura de los valores promediados en el modelo restituido, tal como se puede ver en los planos MR6, MR9, MR16 y MR17. De igual manera, en toda la serie de planos del estudio comparativo el modelo teórico es identificado íntegramente con un color característico para ser diferenciado del modelo restituido. Una utilización puntual de la línea en color también puede verse en el plano MR4 para señalar un área específica del modelo.

Bajo la forma de tramas o planos, el color sirve en algunos casos para destacar determinadas superficies de interés -como en el ejemplo de los planos MR11 y MR13- o para expresar desviaciones o ciertos entornos de fluctuación, como es el caso de la mayoría de los planos de la serie C.

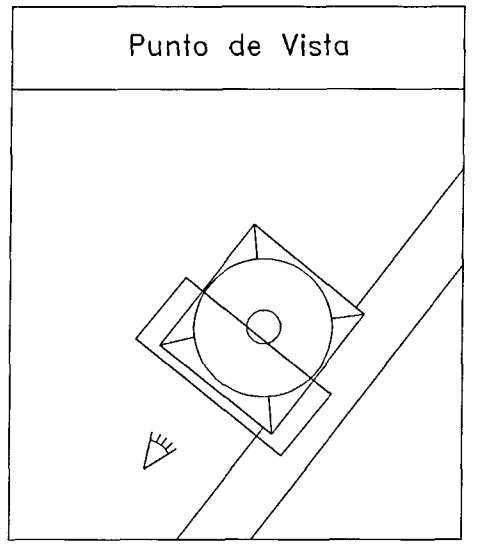
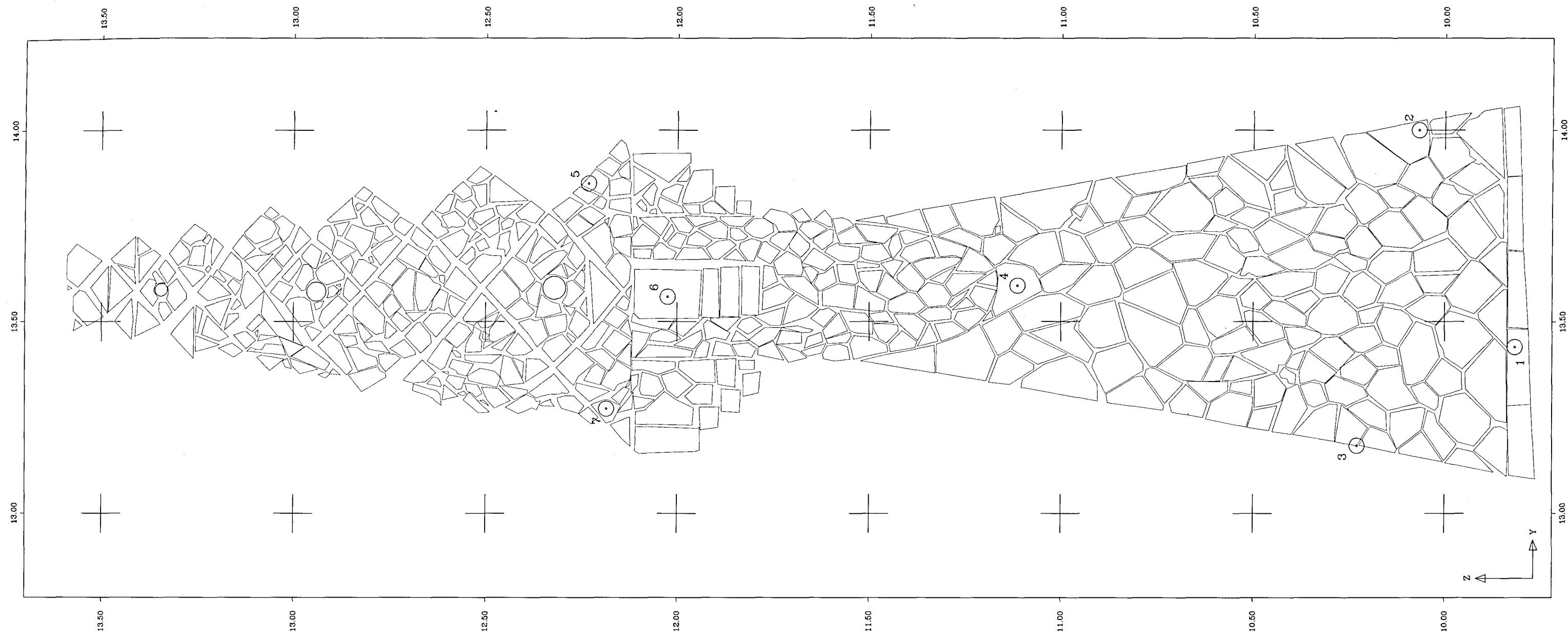
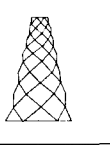
Finalmente, los datos numéricos que aparecen en el lado derecho del plano, se pueden agrupar en tres tipos básicos: los que representan los valores de las alturas calculadas por promedio (MR6, MR9 y MR16), la escala altura de los valores teóricos (MT1, MT3, MT5 y MT7) y las coordenadas espaciales de los puntos del modelo restituido (MR7, MR12, MR14, MR15 y MR17).



**MODELO RESTITUIDO**  
**RESTITUCION / CARA 1**  
 Escala 1:10



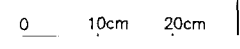
**MR1**



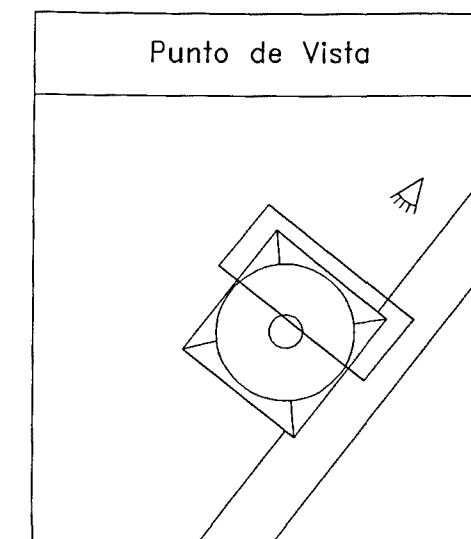
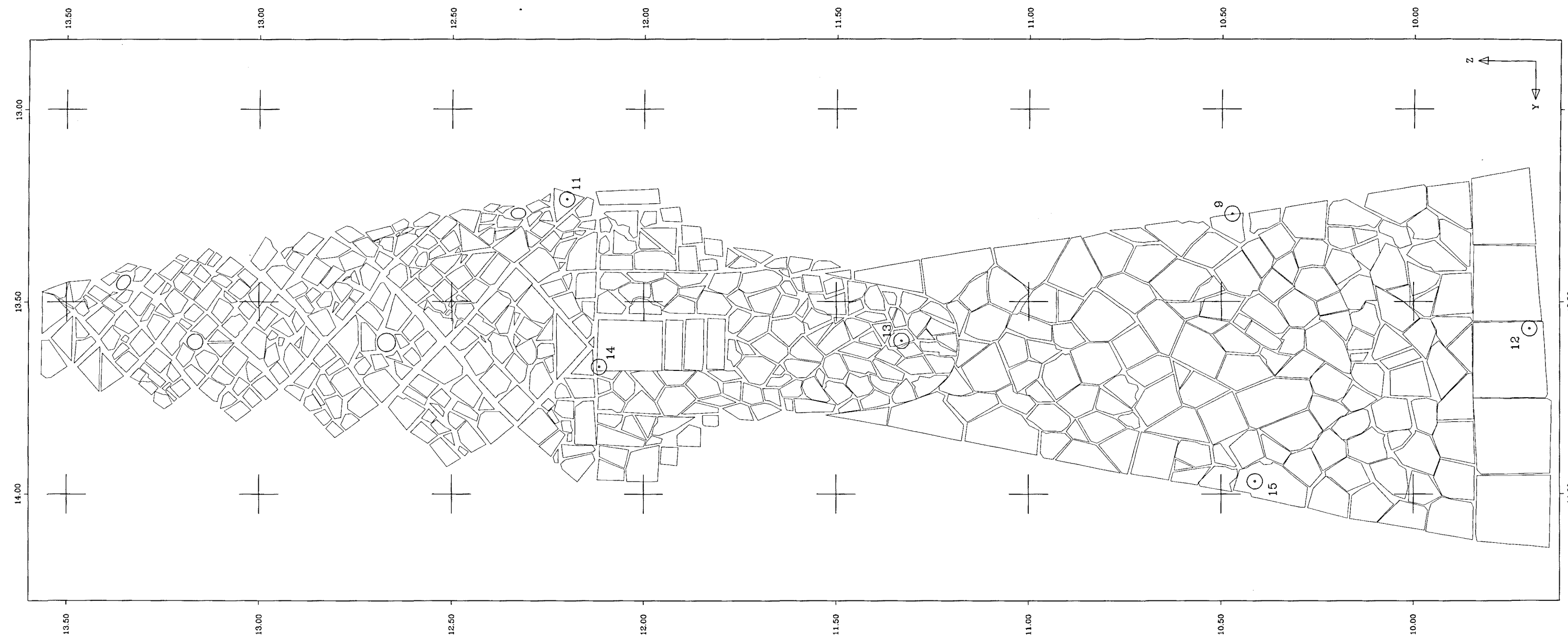
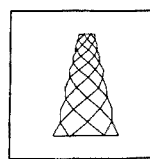
Leyenda de Símbolos

	Revestimiento ceramico
	Hueco de ventilacion
	Punto de control

MODELO RESTITUIDO  
RESTITUCION / CARA 2  
Escala 1:10



MR2

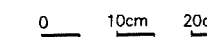


Leyenda de Símbolos

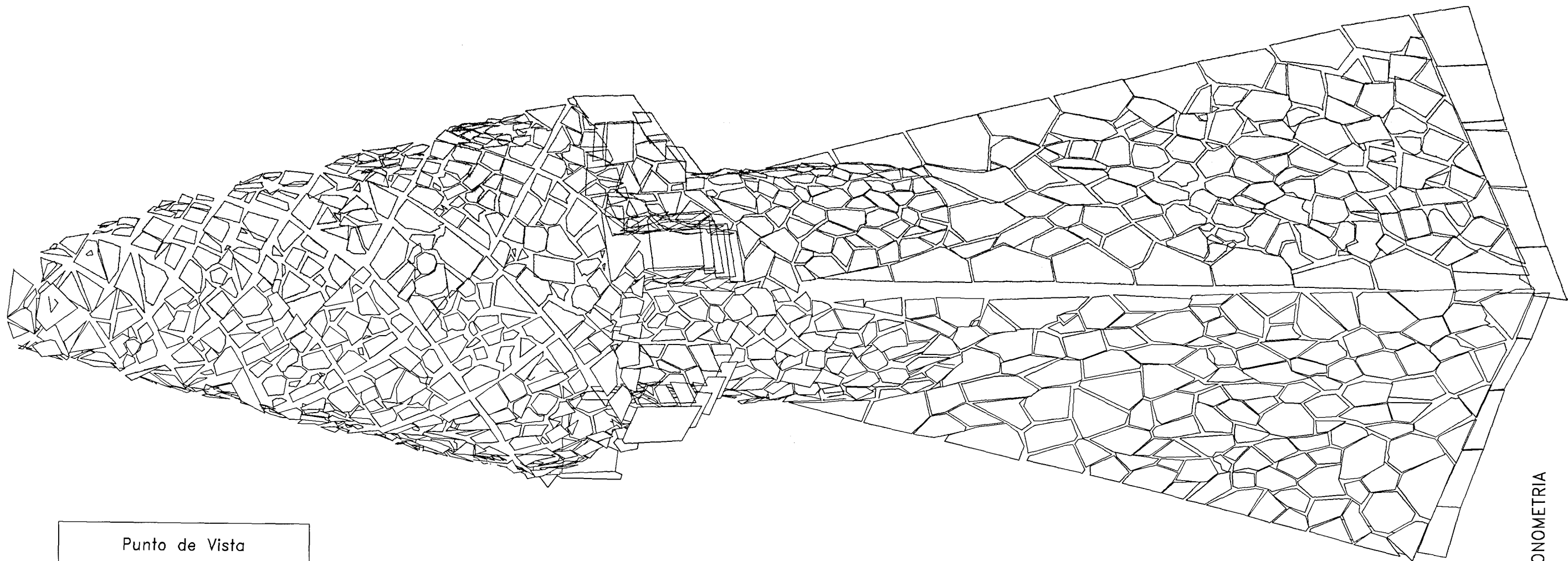
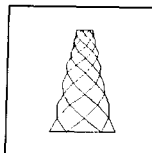
	Revestimiento ceramico
	Hueco de ventilacion
	Punto de control

MODELO RESTITUIDO  
RESTITUCION / CARA 3

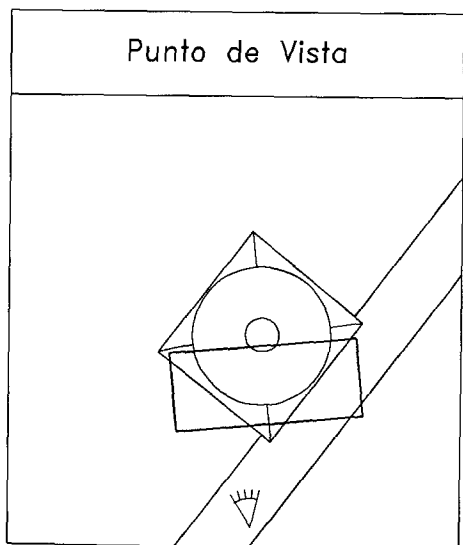
Escala 1:10



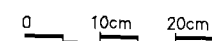
MR3



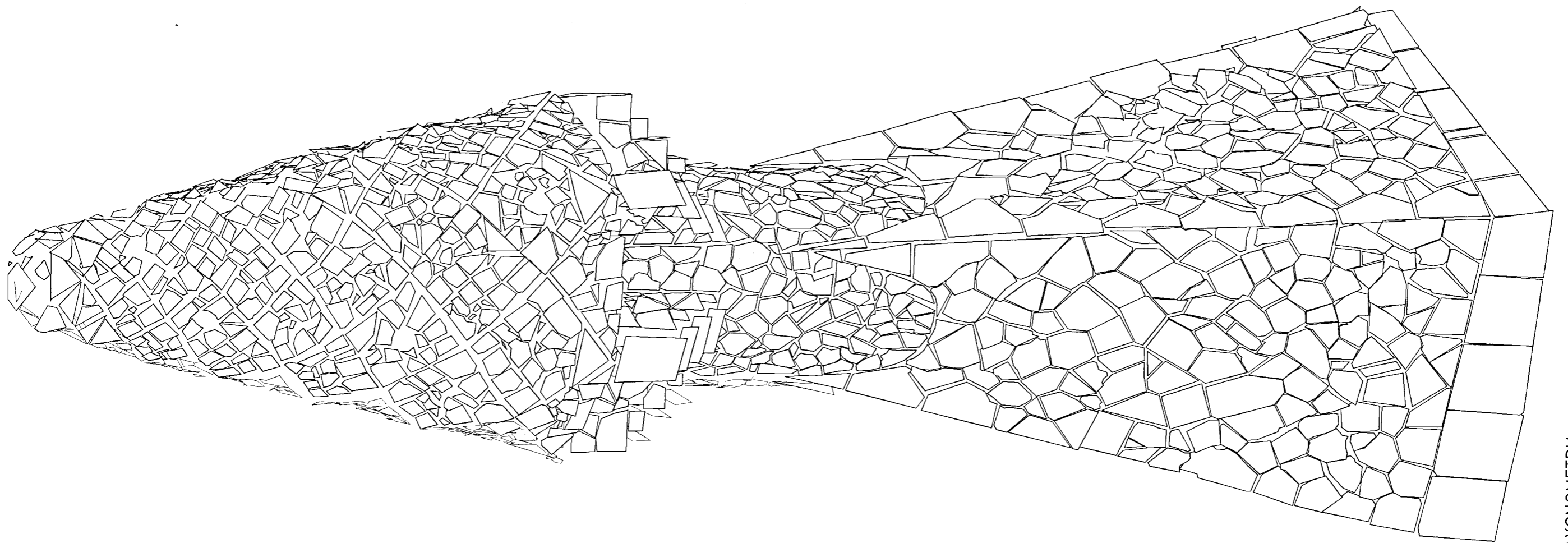
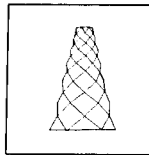
AXONOMETRIA



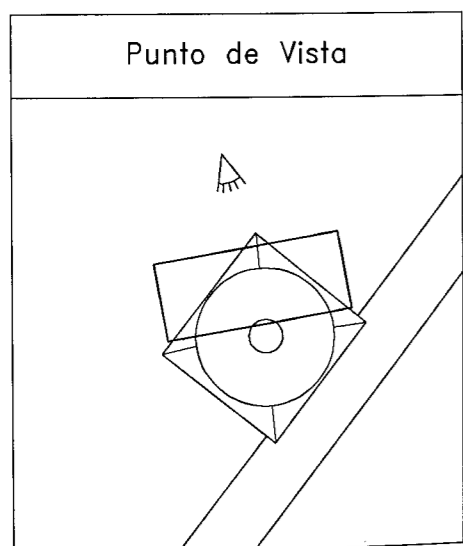
**MODELO RESTITUIDO**  
**MODELO 3D**  
Escala 1:10



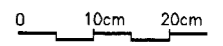
**MR-4**



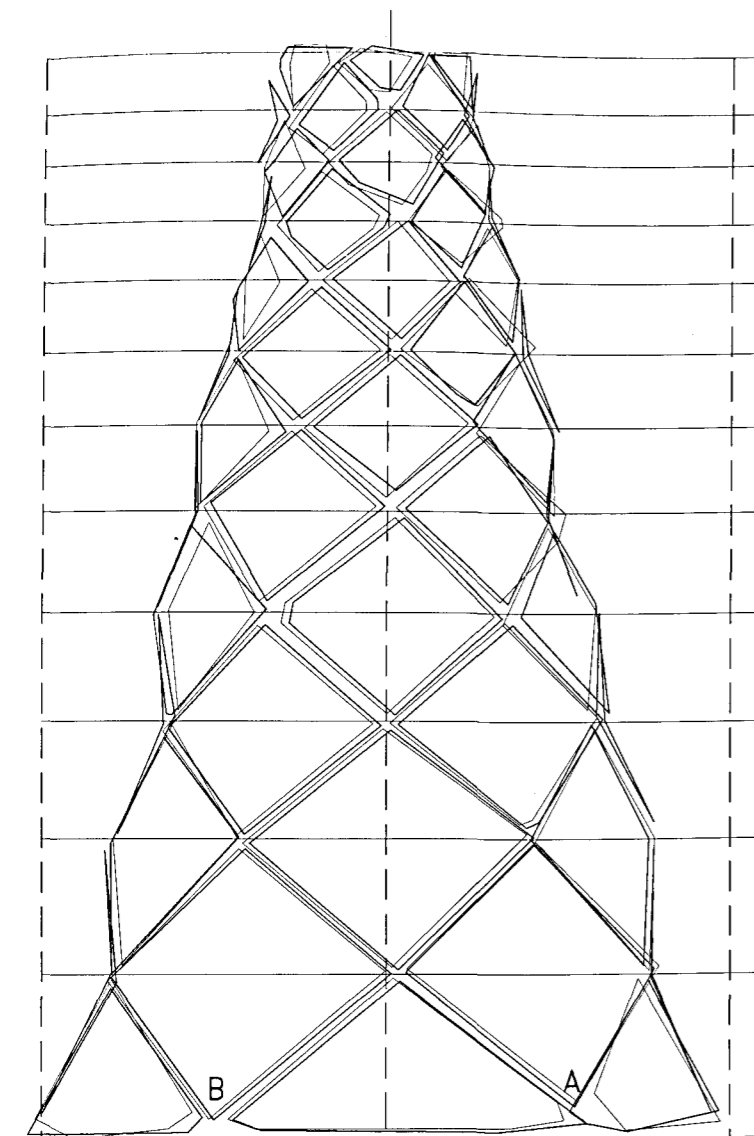
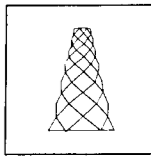
AXONOMETRIA



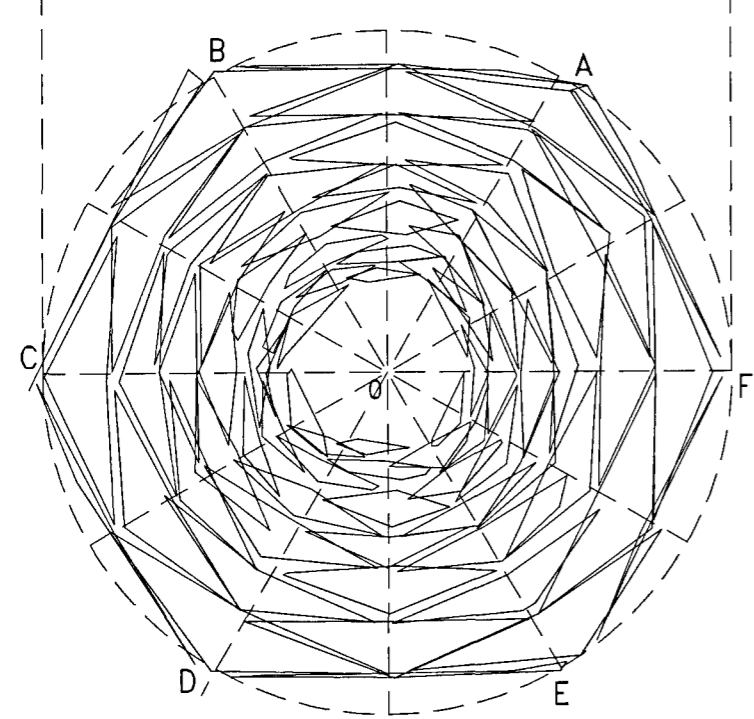
**MODELO RESTITUIDO**  
**MODELO 3D**  
Escala 1:10



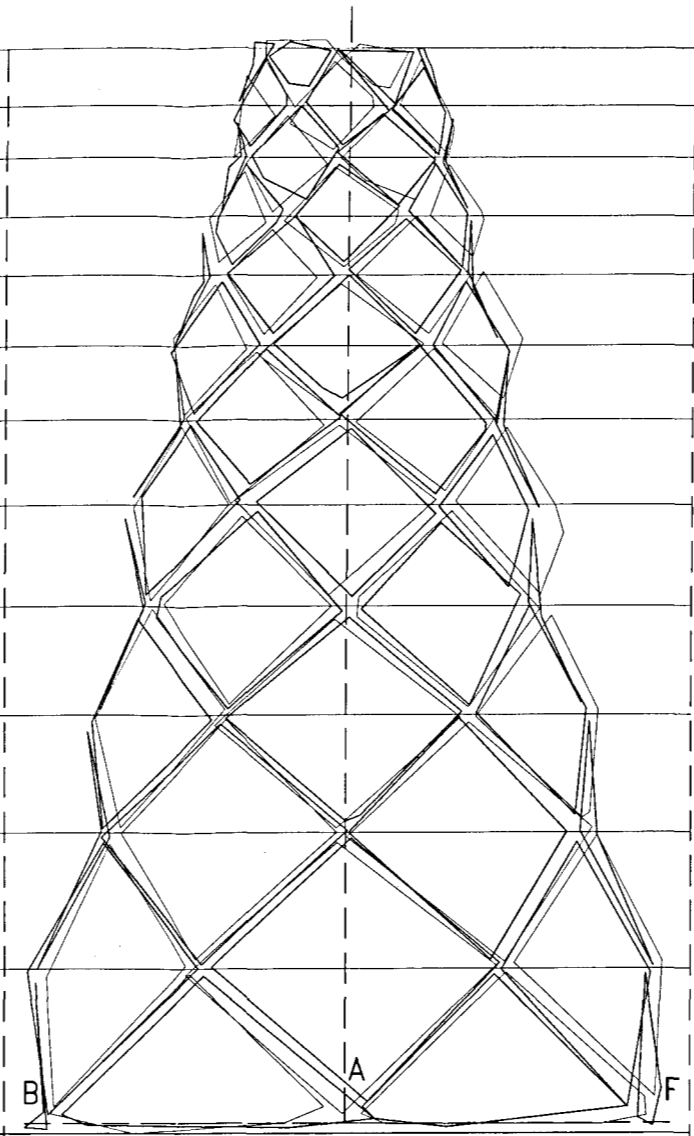
**MR-5**



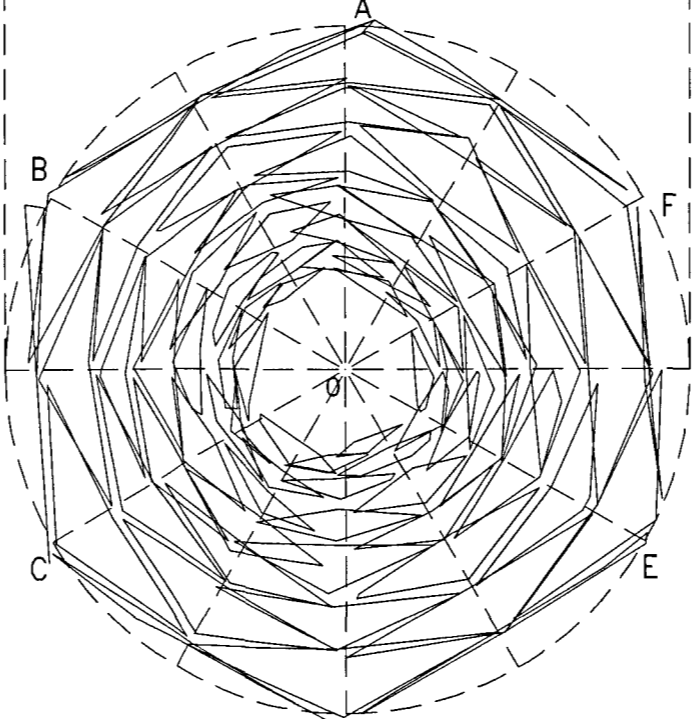
ALZADO



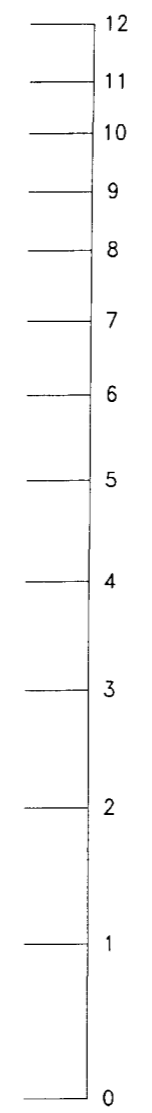
PLANTA  
POSICION I



ALZADO



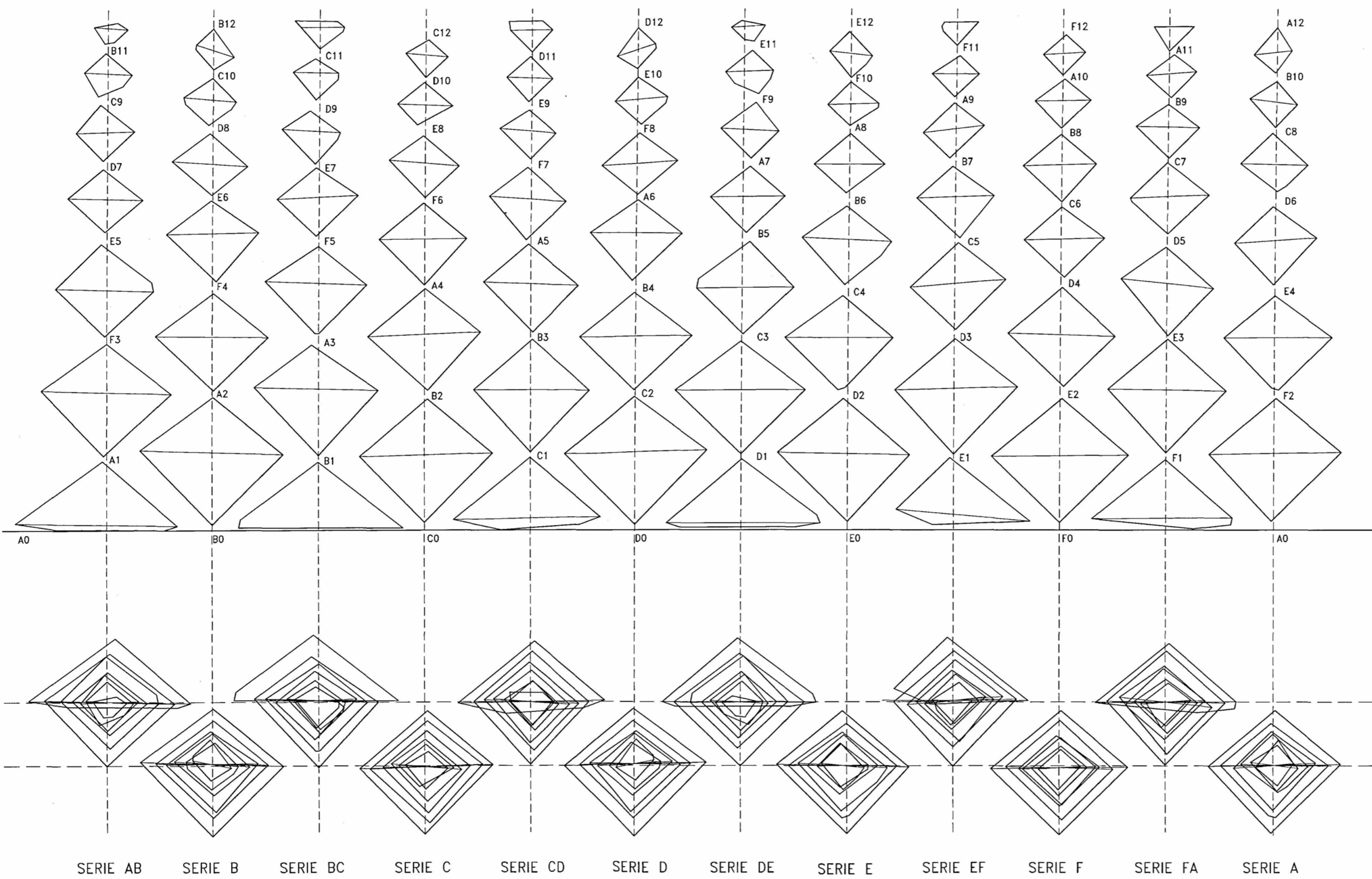
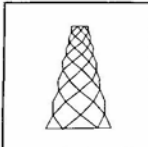
PLANTA  
POSICION II



ESCALA DE ALTURAS  
VALORES PROMEDIO

	Z	Alt. MEDIA		Z	Alt. MEDIA
A0	0.0151	0.0092	A6	0.9413	0.9421
B0	0.0000		B6	0.9446	
C0	0.0127		C6	0.9376	
D0	0.0008		D6	0.9445	
E0	0.0115		E6	0.9434	
F0	0.0151		F6	0.9418	
A1	0.2052	0.2066	A7	1.0451	1.0414
B1	0.1981		B7	1.0363	
C1	0.2118		C7	1.0421	
D1	0.2091		D7	1.0474	
E1	0.2015		E7	1.0361	
F1	0.2143		F7	1.0418	
A2	0.3855	0.3891	A8	1.1390	1.1362
B2	0.3846		B8	1.1366	
C2	0.3861		C8	1.1410	
D2	0.3924		D8	1.1360	
E2	0.3959		E8	1.1297	
F2	0.3902		F8	1.1352	
A3	0.5397	0.5466	A9	1.2169	1.2148
B3	0.5536		B9	1.2182	
C3	0.5437		C9	1.2227	
D3	0.5499		D9	1.2123	
E3	0.5514		E9	1.2005	
F3	0.5415		F9	1.2183	
A4	0.6940	0.6920	A10	1.2907	1.2935
B4	0.6872		B10	1.3052	
C4	0.6890		C10	1.2960	
D4	0.7054		D10	1.2829	
E4	0.6865		E10	1.2926	
F4	0.6902		F10	1.2936	
A5	0.8232	0.8274	A11	1.3604	1.3626
B5	0.8337		B11	1.3723	
C5	0.8162		C11	1.3532	
D5	0.8227		D11	1.3541	
E5	0.8372		E11	1.3733	
F5	0.8317		F11	1.3627	
A12	1.4422	1.4400	B12	1.4428	1.4400
B12	1.4428		C12	1.4382	
C12	1.4382		D12	1.4421	
D12	1.4421		E12	1.4364	
E12	1.4364		F12	1.4387	
F12	1.4387				

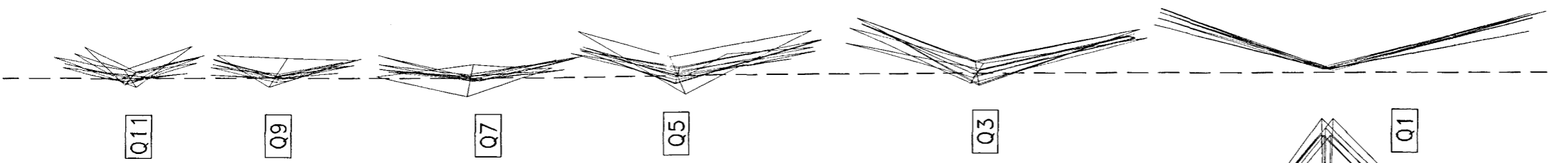
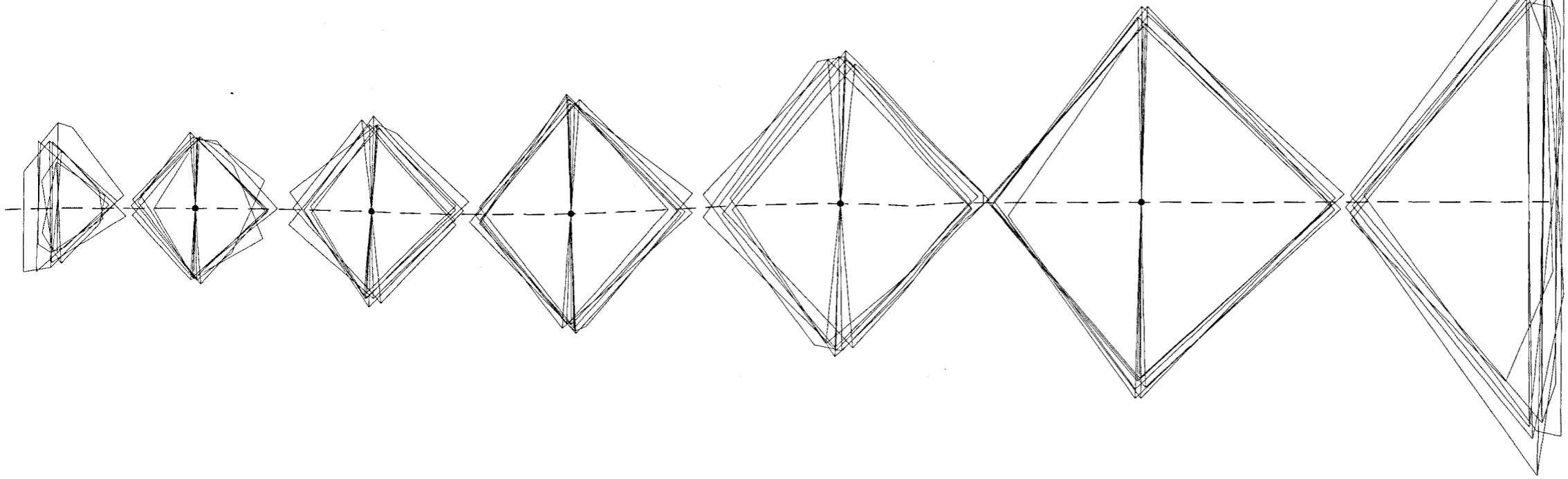
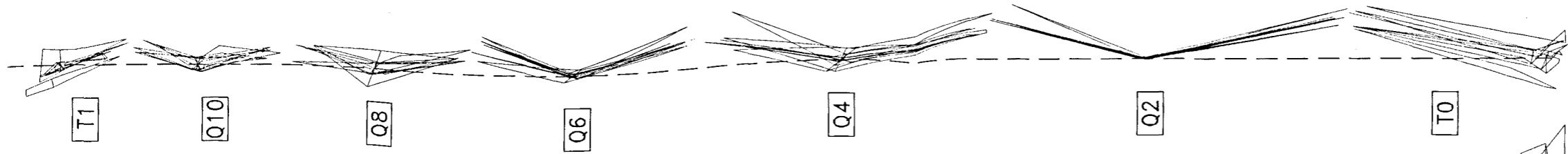
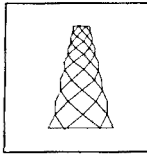
**MODELO RESTITUIDO**  
**CUADRILATEROS/POSICIONES I Y II**  
 Escala 1:10



COORDENADAS DE PUNTOS

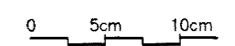
	X	Y	Z		X	Y	Z
A0	0.2560	0.3817	0.0151	A6	-0.1269	-0.1945	0.9413
B0	-0.2295	0.4059	0.0000	B6	0.1225	-0.2087	0.9446
C0	-0.4681	-0.0075	0.0127	C6	0.2256	-0.0054	0.9376
D0	-0.2410	-0.4060	0.0008	D6	0.1137	0.2167	0.9445
E0	0.2495	-0.3759	0.0115	E6	-0.1147	0.2178	0.9434
F0	0.4463	0.0057	0.0151	F6	-0.2527	0.0055	0.9418
A1	0.0174	0.4146	0.2052	A7	0.0034	-0.2161	1.0451
B1	-0.3671	0.1988	0.1981	B7	0.1710	-0.1222	1.0363
C1	-0.3619	-0.2111	0.2118	C7	0.1715	0.1040	1.0421
D1	0.0086	-0.4103	0.2091	D7	0.0173	0.2398	1.0474
E1	0.3458	-0.2076	0.2015	E7	-0.1989	0.1242	1.0361
F1	0.3586	0.2096	0.2143	F7	-0.1982	-0.1058	1.0418
A2	-0.1883	0.3308	0.3855	A8	0.0954	-0.1720	1.1390
B2	-0.3669	-0.0101	0.3846	B8	0.1750	-0.0047	1.1366
C2	-0.1949	-0.3262	0.3861	C8	0.0992	0.1825	1.1410
D2	0.1935	-0.3241	0.3924	D8	-0.0899	0.1921	1.1360
E2	0.3581	0.0066	0.3959	E8	-0.1972	0.0135	1.1297
F2	0.1953	0.3321	0.3902	F8	-0.0980	-0.1514	1.1352
A3	-0.2940	0.1731	0.5397	A9	0.1304	-0.0930	1.2169
B3	-0.2835	-0.1684	0.5536	B9	0.1350	0.0897	1.2182
C3	-0.0026	-0.3312	0.5437	C9	0.0160	0.1789	1.2227
D3	0.2742	-0.1631	0.5499	D9	-0.1470	0.1038	1.2123
E3	0.2861	0.1800	0.5514	E9	-0.1642	-0.0882	1.2005
F3	0.0047	0.3485	0.5415	F9	0.0128	-0.1560	1.2183
A4	-0.3043	0.0008	0.6940	A10	0.1342	0.0005	1.2907
B4	-0.1639	-0.2669	0.6872	B10	0.0678	0.1321	1.3052
C4	0.1560	-0.2668	0.6890	C10	-0.0749	0.1427	1.2960
D4	0.2695	0.0059	0.7054	D10	-0.1657	0.0073	1.2829
E4	0.1676	0.2759	0.6865	E10	-0.0890	-0.1125	1.2926
F4	-0.1494	0.2755	0.6902	F10	0.0777	-0.1296	1.2936
A5	-0.2415	-0.1274	0.8232	A11	0.1079	0.0768	1.3604
B5	-0.0016	-0.2654	0.8337	B11	0.0003	0.1456	1.3723
C5	0.2193	-0.1223	0.8162	C11	-0.1274	0.0792	1.3532
D5	0.2203	0.1285	0.8227	D11	-0.1350	-0.0337	1.3541
E5	0.0170	0.2790	0.8372	E11	0.0016	-0.1127	1.3733
F5	-0.2456	0.1413	0.8317	F11	0.1037	-0.0678	1.3627
A12	0.0457	0.1228	1.4422	A12	0.0457	0.1228	1.4422
B12	-0.0467	0.1206	1.4428	B12	-0.0467	0.1206	1.4428
C12	-0.1290	0.0172	1.4382	C12	-0.1290	0.0172	1.4382
D12	-0.0549	-0.0908	1.4421	D12	-0.0549	-0.0908	1.4421
E12	0.0452	-0.0905	1.4364	E12	0.0452	-0.0905	1.4364
F12	0.1022	-0.0003	1.4387	F12	0.1022	-0.0003	1.4387

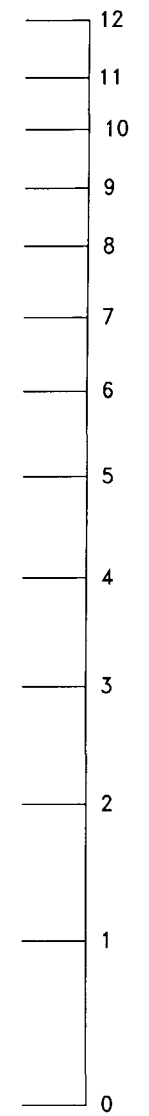
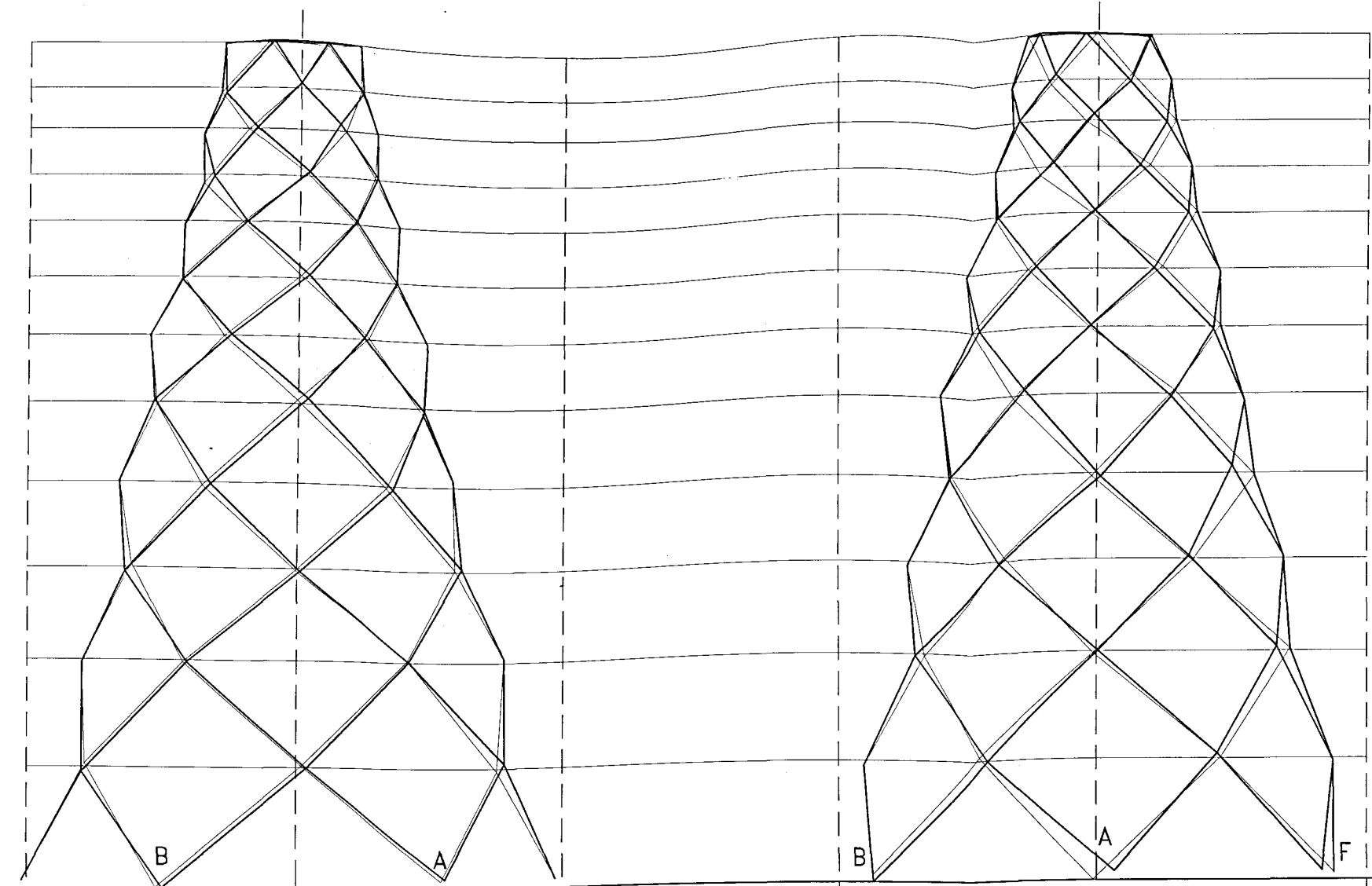
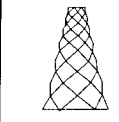




SERIES DOBLES  
 SERIES AB,BC,CD,DE,EF,FA

SERIES SIMPLES  
 SERIES A,B,C,D,E,F



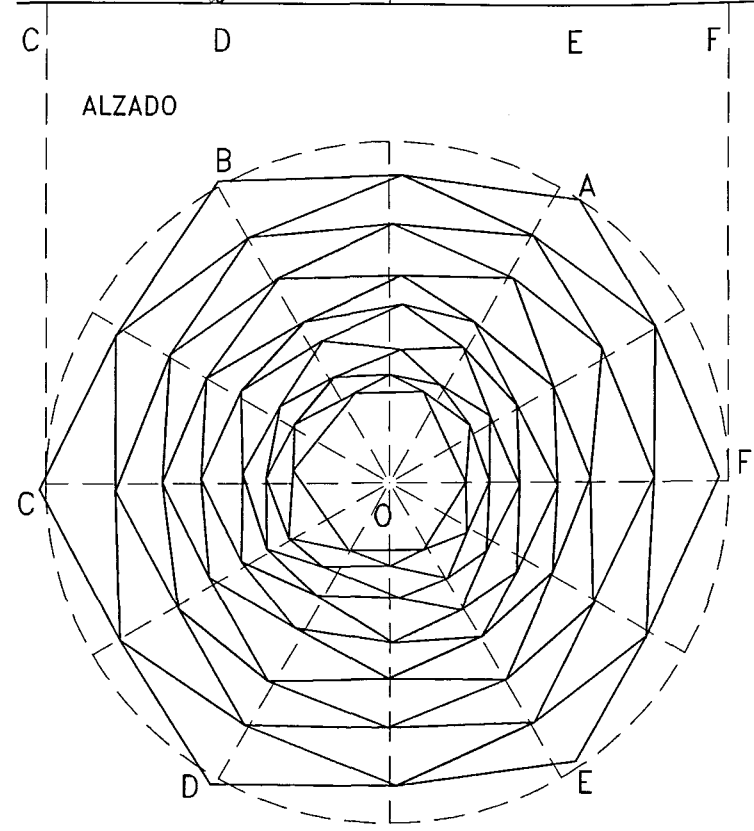


ESCALA DE ALTURAS  
VALORES PROMEDIO

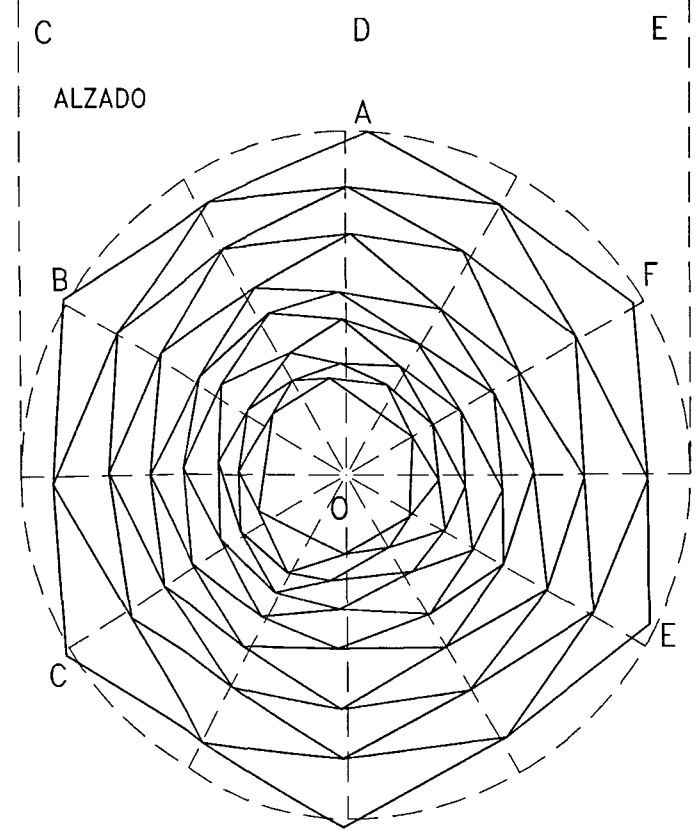
	Z	Ait. MEDIA
A0	0.0151	0.0092
B0	0.0000	
C0	0.0127	
D0	0.0008	
E0	0.0115	
F0	0.0151	
A1	0.2052	0.2066
B1	0.1981	
C1	0.2118	
D1	0.2091	
E1	0.2015	
F1	0.2143	
A2	0.3855	0.3891
B2	0.3846	
C2	0.3861	
D2	0.3924	
E2	0.3959	
F2	0.3902	
A3	0.5397	0.5466
B3	0.5536	
C3	0.5437	
D3	0.5499	
E3	0.5514	
F3	0.5415	
A4	0.6940	0.6920
B4	0.6872	
C4	0.6890	
D4	0.7054	
E4	0.6865	
F4	0.6902	
A5	0.8232	0.8274
B5	0.8337	
C5	0.8162	
D5	0.8227	
E5	0.8372	
F5	0.8317	

	Z	Ait. MEDIA
A6	0.9413	0.9421
B6	0.9446	
C6	0.9376	
D6	0.9445	
E6	0.9434	
F6	0.9418	
A7	1.0451	1.0414
B7	1.0363	
C7	1.0421	
D7	1.0474	
E7	1.0361	
F7	1.0418	
A8	1.1390	1.1362
B8	1.1366	
C8	1.1410	
D8	1.1360	
E8	1.1297	
F8	1.1352	
A9	1.2169	1.2148
B9	1.2182	
C9	1.2227	
D9	1.2123	
E9	1.2005	
F9	1.2183	
A10	1.2907	1.2935
B10	1.3052	
C10	1.2960	
D10	1.2829	
E10	1.2926	
F10	1.2936	
A11	1.3604	1.3626
B11	1.3723	
C11	1.3532	
D11	1.3541	
E11	1.3733	
F11	1.3627	
A12	1.4422	1.4400
B12	1.4428	
C12	1.4382	
D12	1.4421	
E12	1.4364	
F12	1.4387	

VALOR PROMEDIO

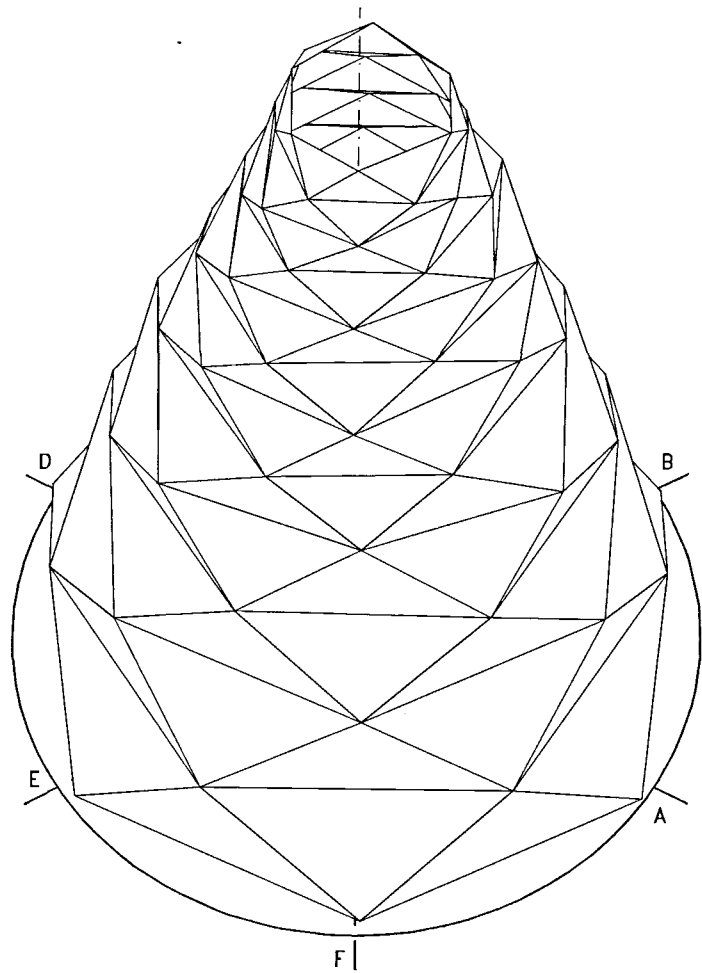
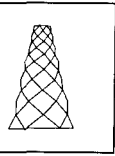


PLANTA  
POSICION I

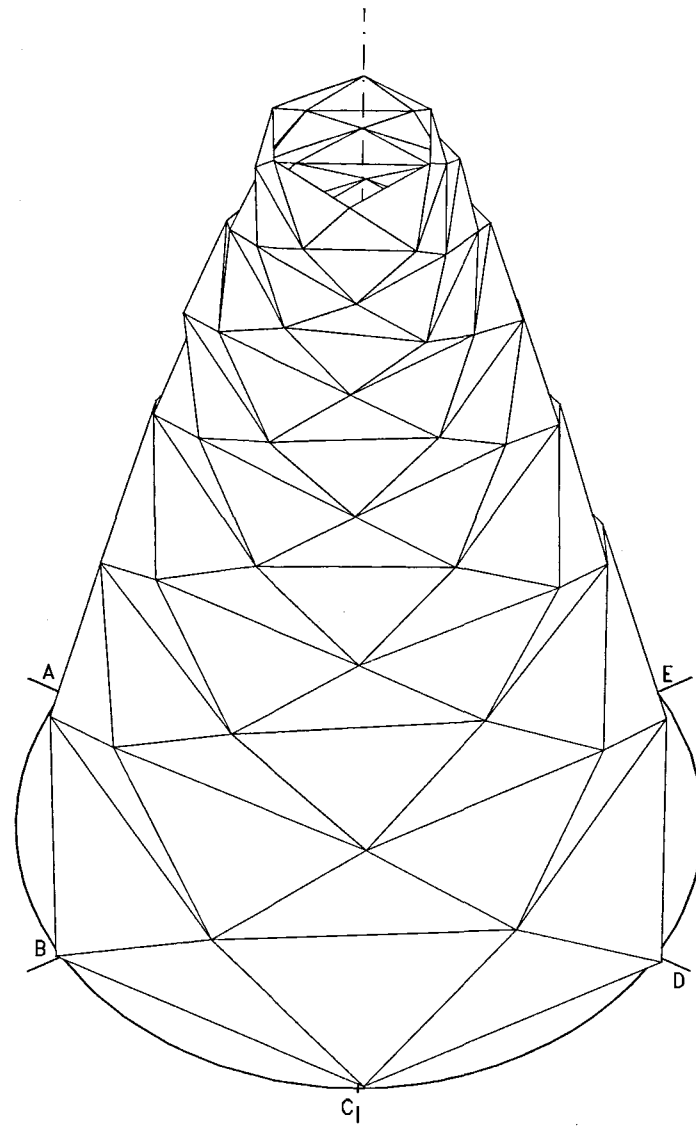


PLANTA  
POSICION II

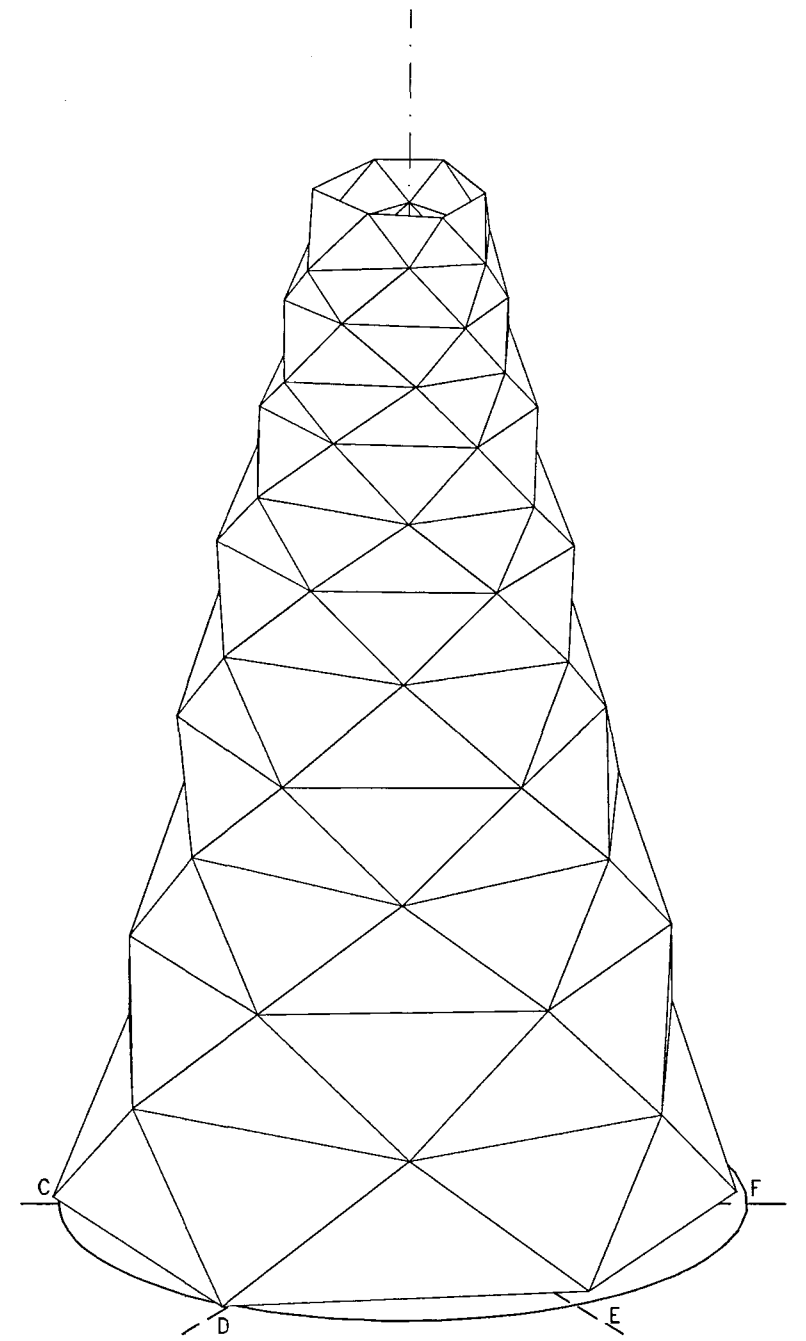
**MODELO RESTITUIDO**  
**POLIGONALES / POSICIONES I Y II**  
 Escala 1:10



AXONOMETRIA I



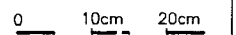
AXONOMETRIA II



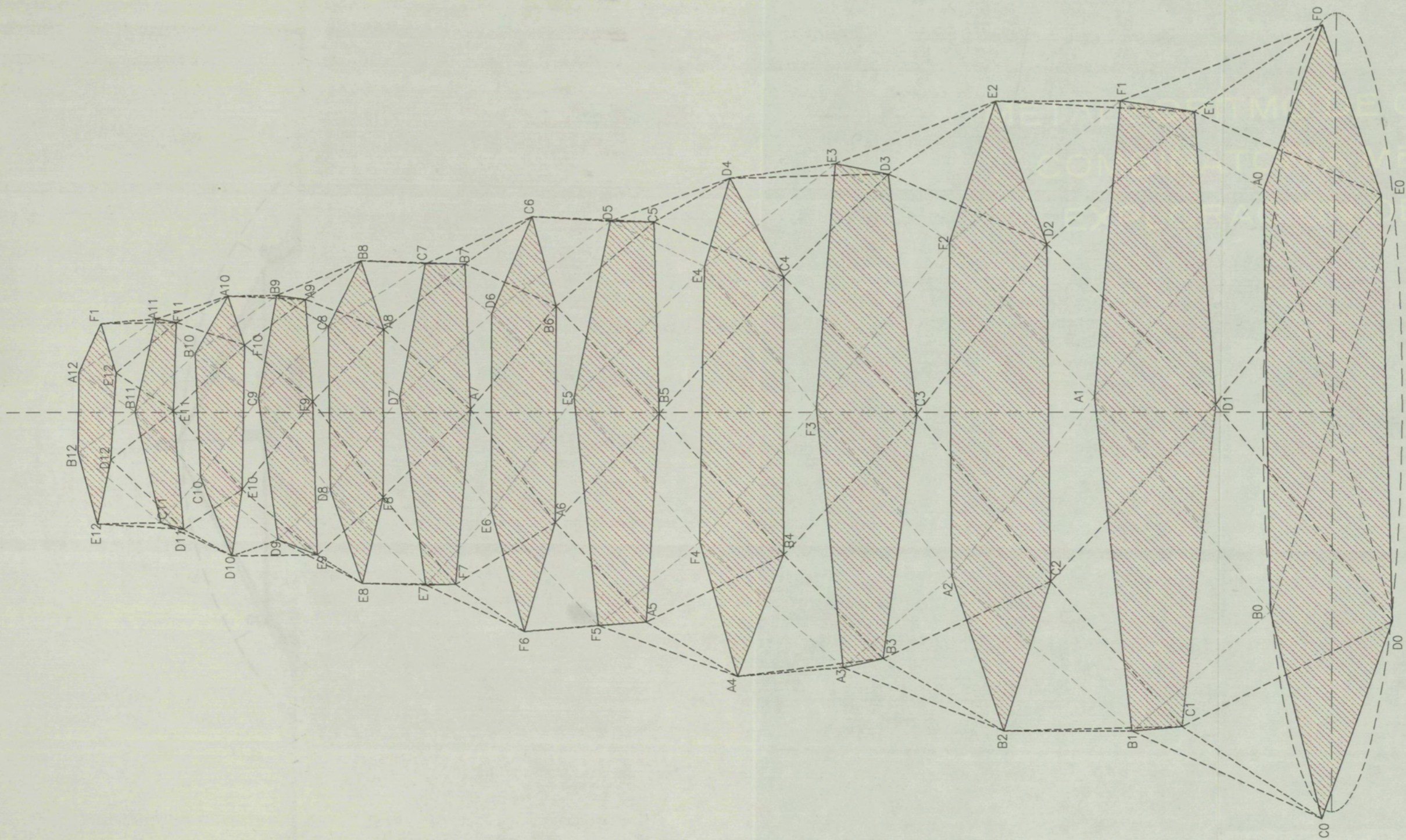
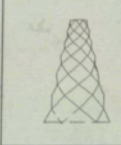
AXONOMETRIA III

**MODELO RESTITUIDO**  
**POLIGONALES / DIEDROS**

Escala 1:10



**MR-10**



AXONOMETRIA

MODELO RESTITUIDO  
POLIGONALES / HEXAGONOS

Escala 1:5

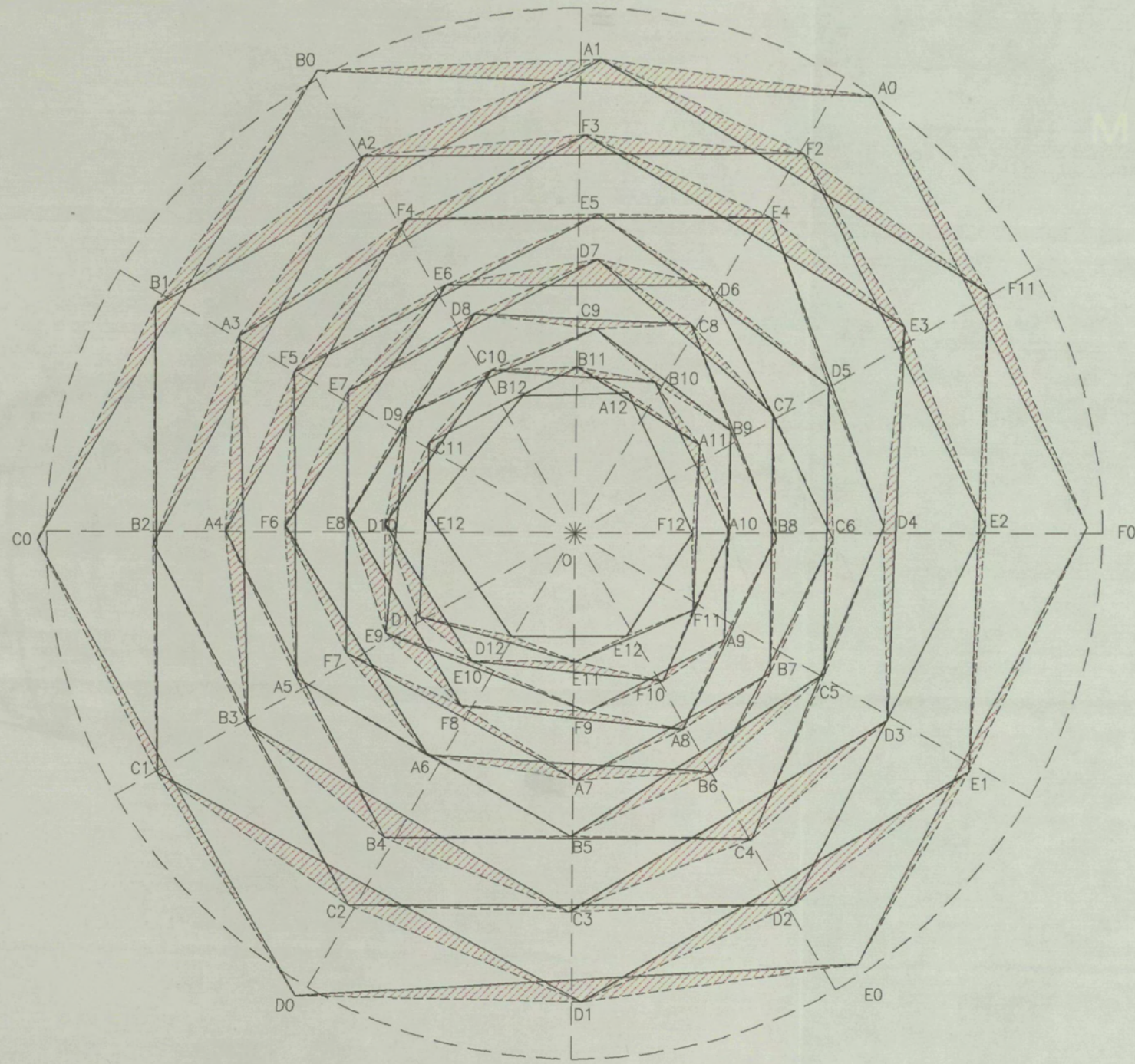
0 5cm 10cm

MR-11



COORDENADAS DE PUNTOS

	X	Y	Z		X	Y	Z
A0	0.2560	0.3817	0.0151	A6	-0.1269	-0.1945	0.9413
B0	-0.2295	0.4059	0.0000	B6	0.1225	-0.2087	0.9446
C0	-0.4681	-0.0075	0.0127	C6	0.2256	-0.0054	0.9376
D0	-0.2410	-0.4060	0.0008	D6	0.1137	0.2167	0.9445
E0	0.2495	-0.3759	0.0115	E6	-0.1147	0.2178	0.9434
F0	0.4463	0.0057	0.0151	F6	-0.2527	0.0055	0.9418
A1	0.0174	0.4146	0.2052	A7	0.0034	-0.2161	1.0451
B1	-0.3671	0.1988	0.1981	B7	0.1710	-0.1222	1.0363
C1	-0.3619	-0.2111	0.2118	C7	0.1715	0.1040	1.0421
D1	0.0086	-0.4103	0.2091	D7	0.0173	0.2398	1.0474
E1	0.3458	-0.2076	0.2015	E7	-0.1989	0.1242	1.0361
F1	0.3586	0.2096	0.2143	F7	-0.1982	-0.1058	1.0418
A2	-0.1883	0.3308	0.3855	A8	0.0954	-0.1720	1.1390
B2	-0.3669	-0.0101	0.3846	B8	0.1750	-0.0047	1.1366
C2	-0.1949	-0.3262	0.3861	C8	0.0992	0.1825	1.1410
D2	0.1935	-0.3241	0.3924	D8	-0.0899	0.1921	1.1360
E2	0.3581	0.0066	0.3959	E8	-0.1972	0.0135	1.1297
F2	0.1953	0.3321	0.3902	F8	-0.0980	-0.1514	1.1352
A3	-0.2940	0.1731	0.5397	A9	0.1304	-0.0930	1.2169
B3	-0.2835	-0.1684	0.5536	B9	0.1350	0.0897	1.2182
C3	-0.0026	-0.3312	0.5437	C9	0.0160	0.1789	1.2227
D3	0.2742	-0.1631	0.5499	D9	-0.1470	0.1038	1.2123
E3	0.2861	0.1800	0.5514	E9	-0.1642	-0.0882	1.2005
F3	0.0047	0.3485	0.5415	F9	0.0128	-0.1560	1.2183
A4	-0.3043	0.0008	0.6940	A10	0.1342	0.0005	1.2907
B4	-0.1639	-0.2669	0.6872	B10	0.0678	0.1321	1.3052
C4	0.1560	-0.2668	0.6890	C10	-0.0749	0.1427	1.2960
D4	0.2695	0.0059	0.7054	D10	-0.1657	0.0073	1.2829
E4	0.1676	0.2759	0.6865	E10	-0.0890	-0.1125	1.2926
F4	-0.1494	0.2755	0.6902	F10	0.0777	-0.1296	1.2936
A5	-0.2415	-0.1274	0.8232	A11	0.1079	0.0768	1.3604
B5	-0.0016	-0.2654	0.8337	B11	0.0003	0.1456	1.3723
C5	0.2193	-0.1223	0.8162	C11	-0.1274	0.0792	1.3532
D5	0.2203	0.1285	0.8227	D11	-0.1350	-0.0337	1.3541
E5	0.0170	0.2790	0.8372	E11	0.0016	-0.1127	1.3733
F5	-0.2456	0.1413	0.8317	F11	0.1037	-0.0678	1.3627
A12	0.0457	0.1228	1.4422				
B12	-0.0467	0.1206	1.4428				
C12	-0.1290	0.0172	1.4382				
D12	-0.0549	-0.0908	1.4421				
E12	0.0452	-0.0905	1.4364				
F12	0.1022	-0.0003	1.4387				

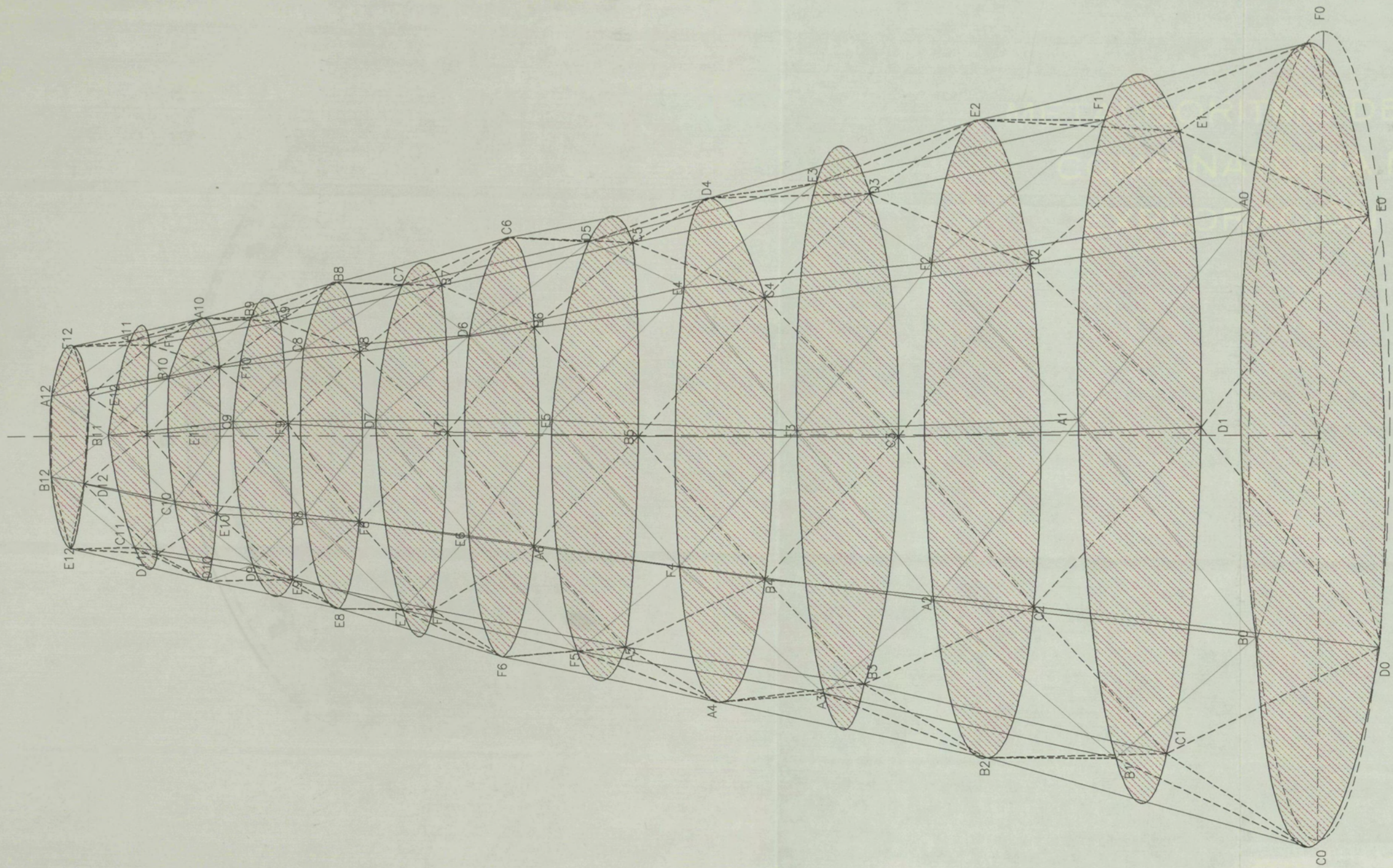
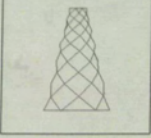


PLANTA

**MODELO RESTITUIDO**  
**POLIGONALES / HEXAGONOS**

Escala 1:5

**MR-12**



AXONOMETRIA

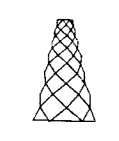
MODELO RESTITUIDO

CONO EXTERIOR

Escala 1:5

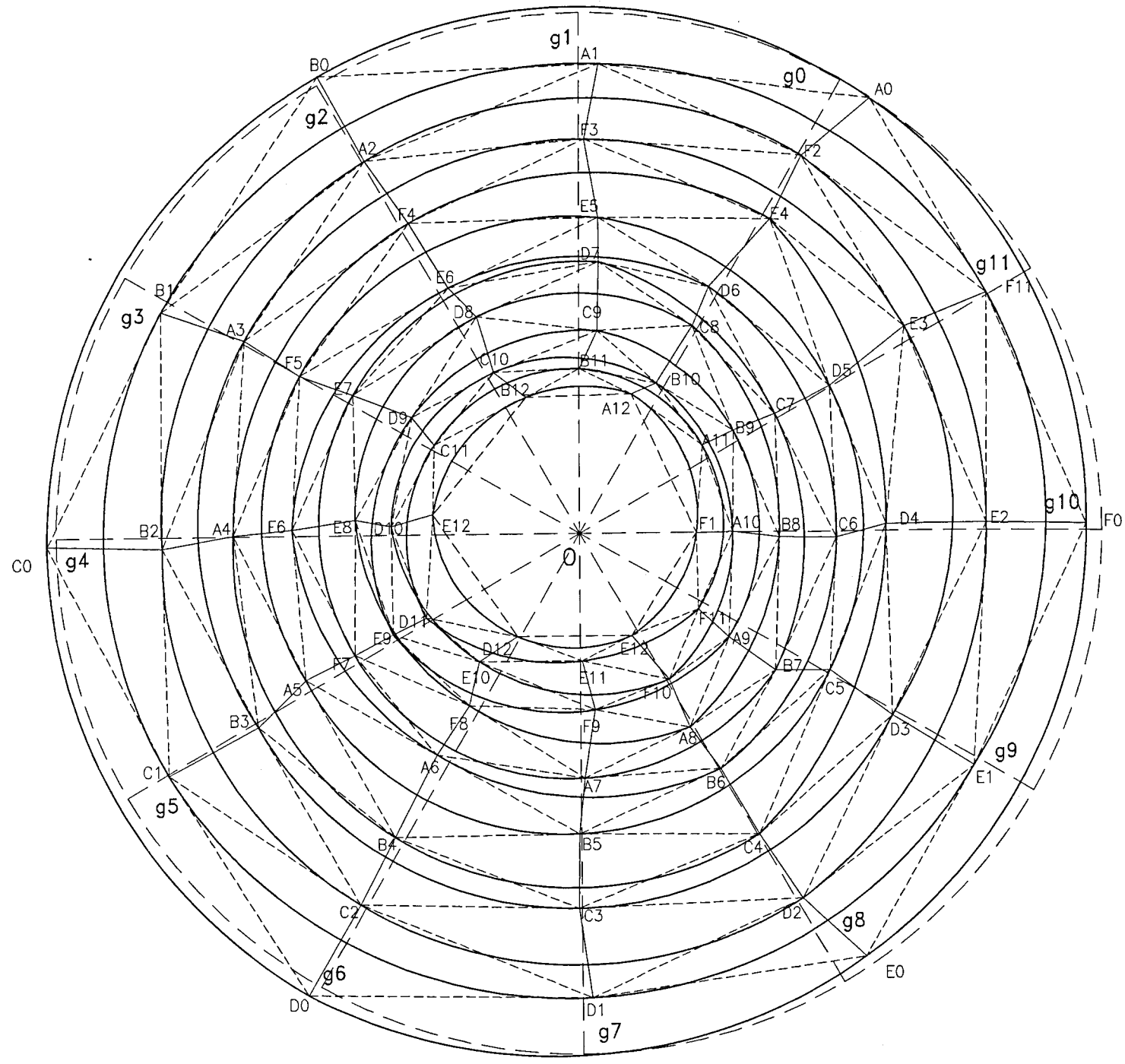
0 5cm 10cm

MR-13



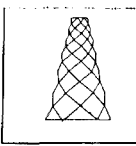
COORDENADAS DE PUNTOS

	X	Y	Z
A0	0.2560	0.3817	0.0151
B0	-0.2295	0.4059	0.0000
C0	-0.4681	-0.0075	0.0127
D0	-0.2410	-0.4060	0.0008
E0	0.2495	-0.3759	0.0115
F0	0.4463	0.0057	0.0151
A1	0.0174	0.4146	0.2052
B1	-0.3671	0.1988	0.1981
C1	-0.3619	-0.2111	0.2118
D1	0.0086	-0.4103	0.2091
E1	0.3458	-0.2076	0.2015
F1	0.3586	0.2096	0.2143
A2	-0.1883	0.3308	0.3855
B2	-0.3669	-0.0101	0.3846
C2	-0.1949	-0.3262	0.3861
D2	0.1935	-0.3241	0.3924
E2	0.3581	0.0066	0.3959
F2	0.1953	0.3321	0.3902
A3	-0.2940	0.1731	0.5397
B3	-0.2835	-0.1684	0.5536
C3	-0.0026	-0.3312	0.5437
D3	0.2742	-0.1631	0.5499
E3	0.2861	0.1800	0.5514
F3	0.0047	0.3485	0.5415
A4	-0.3043	0.0008	0.6940
B4	-0.1639	-0.2669	0.6872
C4	0.1560	-0.2668	0.6890
D4	0.2695	0.0059	0.7054
E4	0.1676	0.2759	0.6865
F4	-0.1494	0.2755	0.6902
A5	-0.2415	-0.1274	0.8232
B5	-0.0016	-0.2654	0.8337
C5	0.2193	-0.1223	0.8162
D5	0.2203	0.1285	0.8227
E5	0.0170	0.2790	0.8372
F5	-0.2456	0.1413	0.8317
A6	-0.1269	-0.1945	0.9413
B6	0.1225	-0.2087	0.9446
C6	0.2256	-0.0054	0.9376
D6	0.1137	0.2167	0.9445
E6	-0.1147	0.2178	0.9434
F6	-0.2527	0.0055	0.9418
A7	0.0034	-0.2161	1.0451
B7	0.1710	-0.1222	1.0363
C7	0.1715	0.1040	1.0421
D7	0.0173	0.2398	1.0474
E7	-0.1989	0.1242	1.0361
F7	-0.1982	-0.1058	1.0418
A8	0.0954	-0.1720	1.1390
B8	0.1750	-0.0047	1.1366
C8	0.0992	0.1825	1.1410
D8	-0.0899	0.1921	1.1360
E8	-0.1972	0.0135	1.1297
F8	-0.0980	-0.1514	1.1352
A9	0.1304	-0.0930	1.2169
B9	0.1350	0.0897	1.2182
C9	0.0160	0.1789	1.2227
D9	-0.1470	0.1038	1.2123
E9	-0.1642	-0.0882	1.2005
F9	0.0128	-0.1560	1.2183
A10	0.1342	0.0005	1.2907
B10	0.0678	0.1321	1.3052
C10	-0.0749	0.1427	1.2960
D10	-0.1657	0.0073	1.2829
E10	-0.0890	-0.1125	1.2926
F10	0.0777	-0.1296	1.2936
A11	0.1079	0.0768	1.3604
B11	0.0003	0.1456	1.3723
C11	-0.1274	0.0792	1.3532
D11	-0.1350	-0.0337	1.3541
E11	0.0016	-0.1127	1.3733
F11	0.1037	-0.0678	1.3627
A12	0.0457	0.1228	1.4422
B12	-0.0467	0.1206	1.4428
C12	-0.1290	0.0172	1.4382
D12	-0.0549	-0.0908	1.4421
E12	0.0452	-0.0905	1.4364
F12	0.1022	-0.0003	1.4387

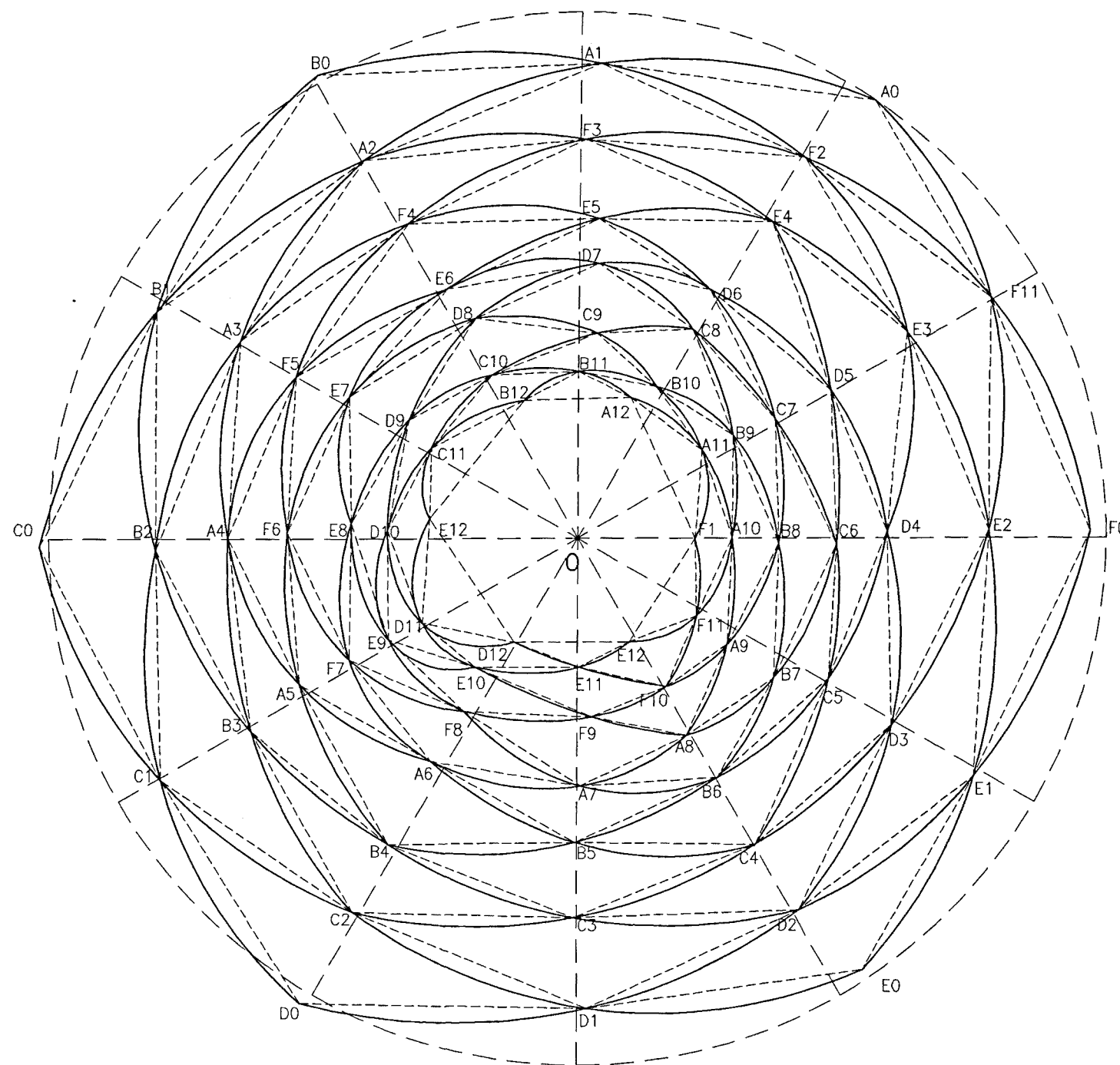


PLANTA

**MODELO RESTITUIDO**  
**CONO EXTERIOR**  
 Escala 1:5



COORDENADAS DE PUNTOS



PLANTA

	X	Y	Z
A0	0.2560	0.3817	0.0151
B0	-0.2295	0.4059	0.0000
C0	-0.4681	-0.0075	0.0127
D0	-0.2410	-0.4060	0.0008
E0	0.2495	-0.3759	0.0115
F0	0.4463	0.0057	0.0151

	X	Y	Z
A6	-0.1269	-0.1945	0.9413
B6	0.1225	-0.2087	0.9446
C6	0.2256	-0.0054	0.9376
D6	0.1137	0.2167	0.9445
E6	-0.1147	0.2178	0.9434
F6	-0.2527	0.0055	0.9418

A1	0.0174	0.4146	0.2052
B1	-0.3671	0.1988	0.1981
C1	-0.3619	-0.2111	0.2118
D1	0.0086	-0.4103	0.2091
E1	0.3458	-0.2076	0.2015
F1	0.3586	0.2096	0.2143

A7	0.0034	-0.2161	1.0451
B7	0.1710	-0.1222	1.0363
C7	0.1715	0.1040	1.0421
D7	0.0173	0.2398	1.0474
E7	-0.1989	0.1242	1.0361
F7	-0.1982	-0.1058	1.0418

A2	-0.1883	0.3308	0.3855
B2	-0.3669	-0.0101	0.3846
C2	-0.1949	-0.3262	0.3861
D2	0.1935	-0.3241	0.3924
E2	0.3581	0.0066	0.3959
F2	0.1953	0.3321	0.3902

A8	0.0954	-0.1720	1.1390
B8	0.1750	-0.0047	1.1366
C8	0.0992	0.1825	1.1410
D8	-0.0899	0.1921	1.1360
E8	-0.1972	0.0135	1.1297
F8	-0.0980	-0.1514	1.1352

A3	-0.2940	0.1731	0.5397
B3	-0.2835	-0.1684	0.5536
C3	-0.0026	-0.3312	0.5437
D3	0.2742	-0.1631	0.5499
E3	0.2861	0.1800	0.5514
F3	0.0047	0.3485	0.5415

A9	0.1304	-0.0930	1.2169
B9	0.1350	0.0897	1.2182
C9	0.0160	0.1789	1.2227
D9	-0.1470	0.1038	1.2123
E9	-0.1642	-0.0882	1.2005
F9	0.0128	-0.1560	1.2183

A4	-0.3043	0.0008	0.6940
B4	-0.1639	-0.2669	0.6872
C4	0.1560	-0.2668	0.6890
D4	0.2695	0.0059	0.7054
E4	0.1676	0.2759	0.6865
F4	-0.1494	0.2755	0.6902

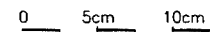
A10	0.1342	0.0005	1.2907
B10	0.0678	0.1321	1.3052
C10	-0.0749	0.1427	1.2960
D10	-0.1657	0.0073	1.2829
E10	-0.0890	-0.1125	1.2926
F10	0.0777	-0.1296	1.2936

A5	-0.2415	-0.1274	0.8232
B5	-0.0016	-0.2654	0.8337
C5	0.2193	-0.1223	0.8162
D5	0.2203	0.1285	0.8227
E5	0.0170	0.2790	0.8372
F5	-0.2456	0.1413	0.8317

A11	0.1079	0.0768	1.3604
B11	0.0003	0.1456	1.3723
C11	-0.1274	0.0792	1.3532
D11	-0.1350	-0.0337	1.3541
E11	0.0016	-0.1127	1.3733
F11	0.1037	-0.0678	1.3627

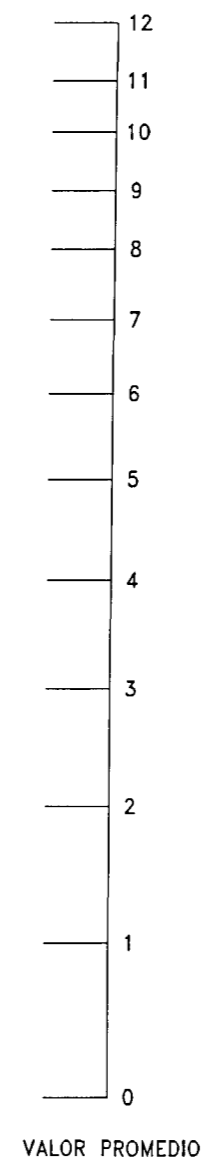
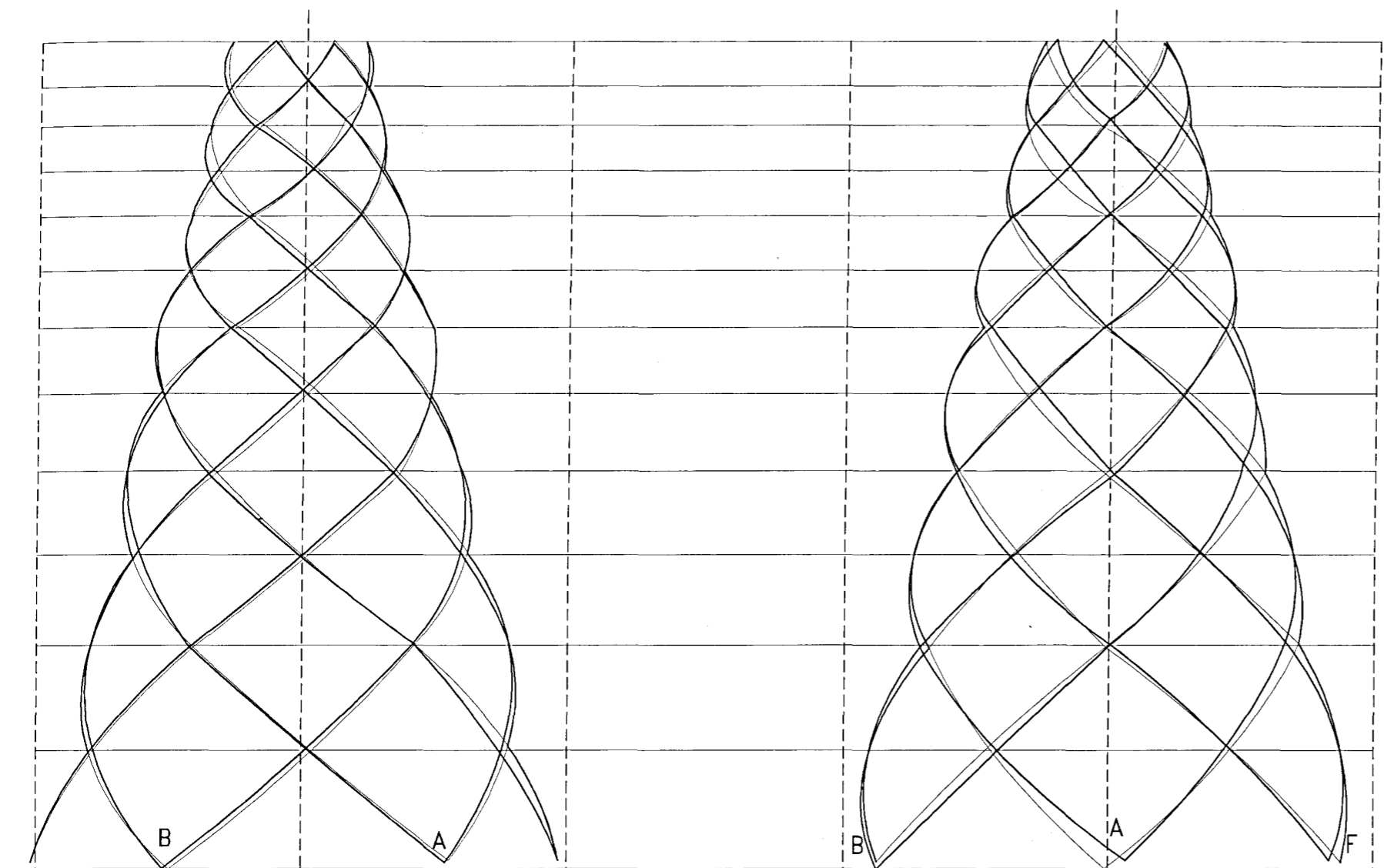
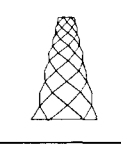
A12	0.0457	0.1228	1.4422
B12	-0.0467	0.1206	1.4428
C12	-0.1290	0.0172	1.4382
D12	-0.0549	-0.0908	1.4421
E12	0.0452	-0.0905	1.4364
F12	0.1022	-0.0003	1.4387

**MODELO RESTITUIDO**  
**ESPIRALES Y POLIGONAL**  
 Escala 1:5



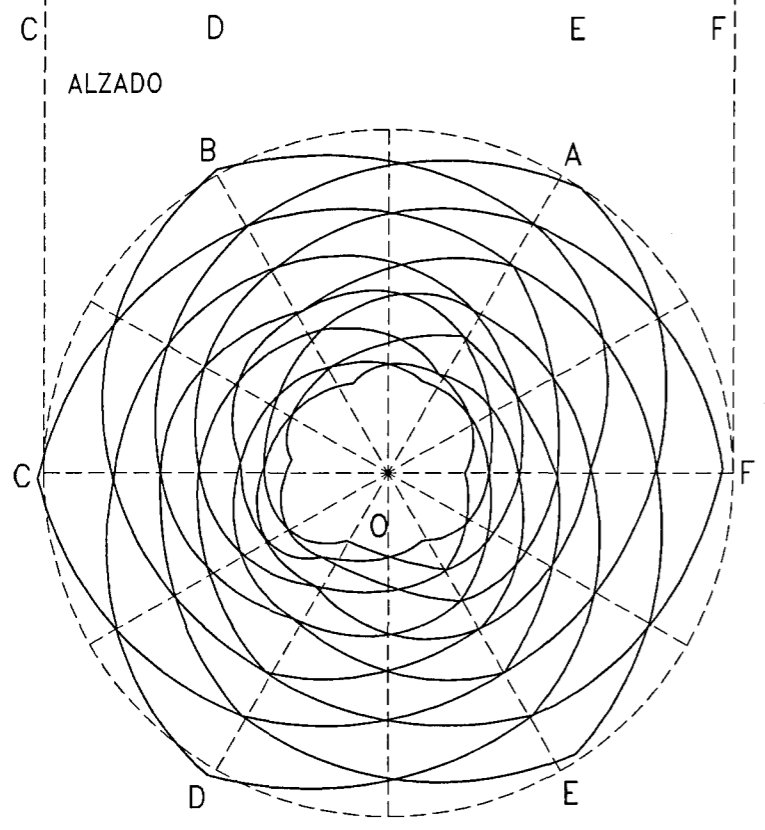
**MR-15**



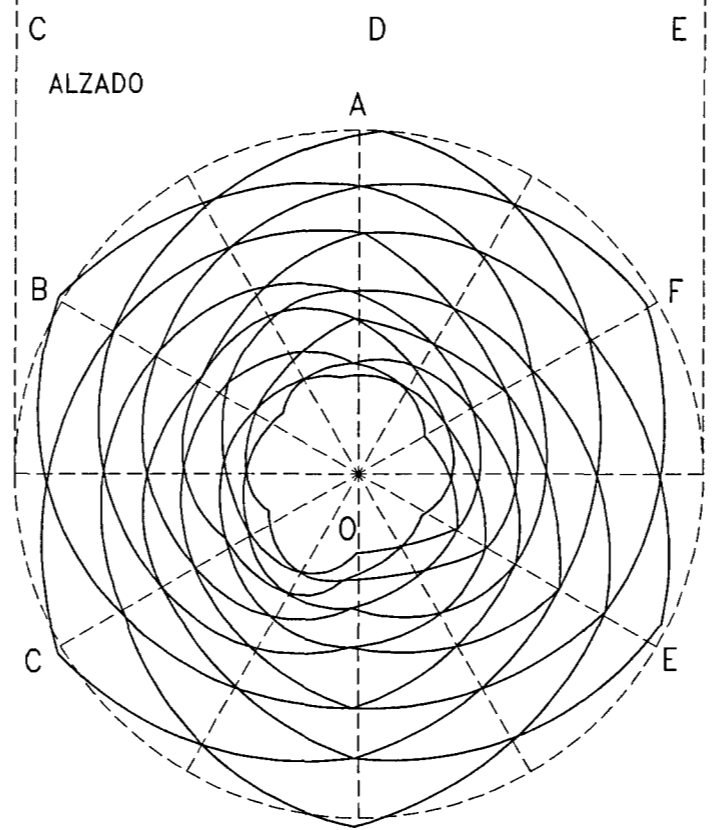


ESCALA DE ALTURAS  
VALORES PROMEDIO

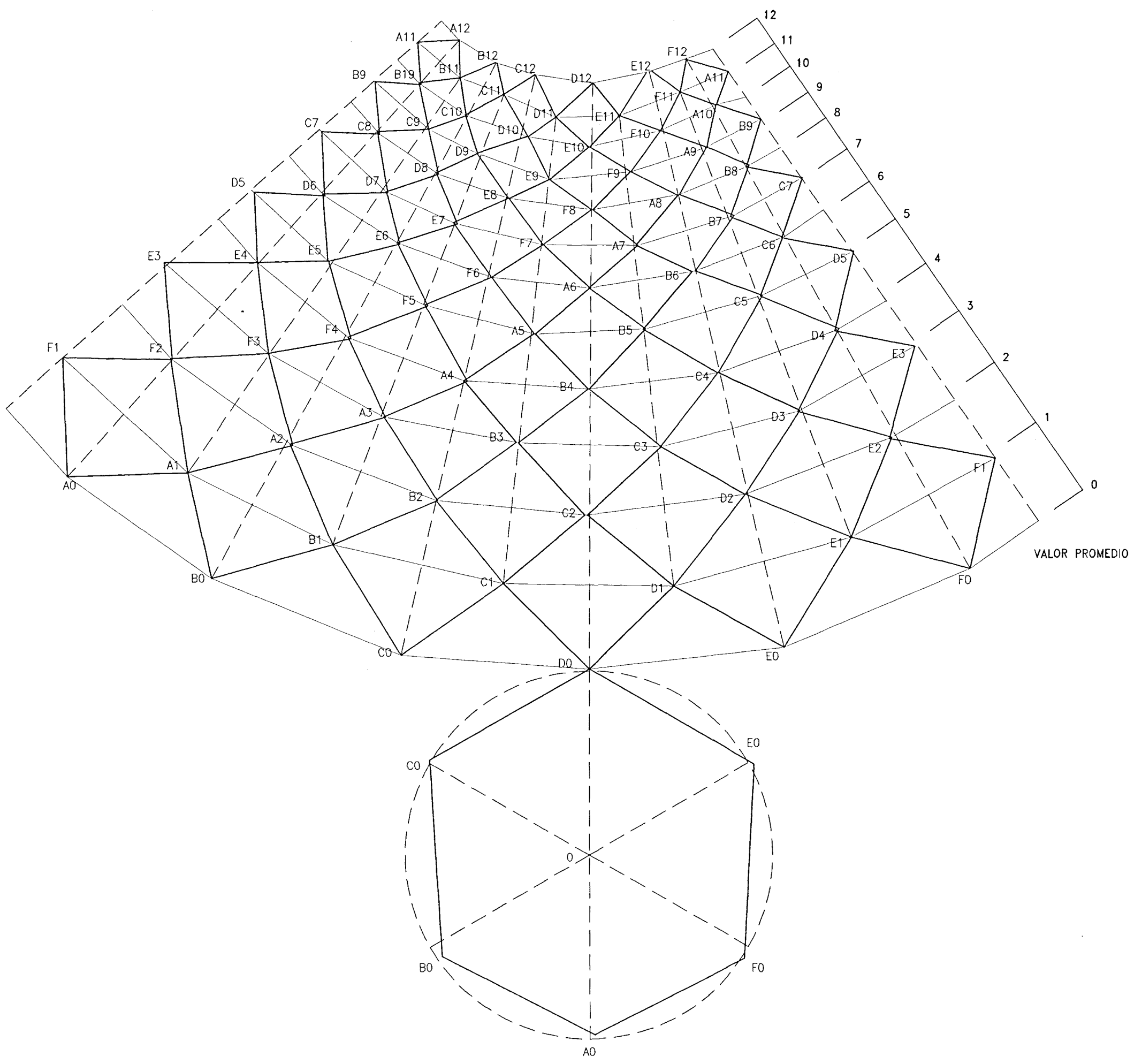
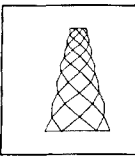
	Z	Ait. MEDIA		Z	Ait. MEDIA
A0	0.0151	0.0092	A6	0.9413	0.9421
B0	0.0000		B6	0.9446	
C0	0.0127		C6	0.9376	
D0	0.0008		D6	0.9445	
E0	0.0115		E6	0.9434	
F0	0.0151		F6	0.9418	
A1	0.2052	0.2066	A7	1.0451	1.0414
B1	0.1981		B7	1.0363	
C1	0.2118		C7	1.0421	
D1	0.2091		D7	1.0474	
E1	0.2015		E7	1.0361	
F1	0.2143		F7	1.0418	
A2	0.3855	0.3891	A8	1.1390	1.1362
B2	0.3846		B8	1.1366	
C2	0.3861		C8	1.1410	
D2	0.3924		D8	1.1360	
E2	0.3959		E8	1.1297	
F2	0.3902		F8	1.1352	
A3	0.5397	0.5466	A9	1.2169	1.2148
B3	0.5536		B9	1.2182	
C3	0.5437		C9	1.2227	
D3	0.5499		D9	1.2123	
E3	0.5514		E9	1.2005	
F3	0.5415		F9	1.2183	
A4	0.6940	0.6920	A10	1.2907	1.2935
B4	0.6872		B10	1.3052	
C4	0.6890		C10	1.2960	
D4	0.7054		D10	1.2829	
E4	0.6865		E10	1.2926	
F4	0.6902		F10	1.2936	
A5	0.8232	0.8274	A11	1.3604	1.3626
B5	0.8337		B11	1.3723	
C5	0.8162		C11	1.3532	
D5	0.8227		D11	1.3541	
E5	0.8372		E11	1.3733	
F5	0.8317		F11	1.3627	
			A12	1.4422	1.4400
			B12	1.4428	
			C12	1.4382	
			D12	1.4421	
			E12	1.4364	
			F12	1.4387	



PLANTA  
POSICION I



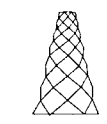
PLANTA  
POSICION II



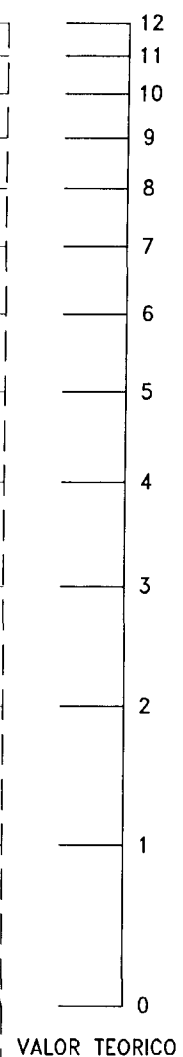
COORDENADAS DE PUNTOS

	X	Y	Z		X	Y	Z
A0	0.2560	0.3817	0.0151	A6	-0.1269	-0.1945	0.9413
B0	-0.2295	0.4059	0.0000	B6	0.1225	-0.2087	0.9446
C0	-0.4681	-0.0075	0.0127	C6	0.2256	-0.0054	0.9376
D0	-0.2410	-0.4060	0.0008	D6	0.1137	0.2167	0.9445
E0	0.2495	-0.3759	0.0115	E6	-0.1147	0.2178	0.9434
F0	0.4463	0.0057	0.0151	F6	-0.2527	0.0055	0.9418
A1	0.0174	0.4146	0.2052	A7	0.0034	-0.2161	1.0451
B1	-0.3671	0.1988	0.1981	B7	0.1710	-0.1222	1.0363
C1	-0.3619	-0.2111	0.2118	C7	0.1715	0.1040	1.0421
D1	0.0086	-0.4103	0.2091	D7	0.0173	0.2398	1.0474
E1	0.3458	-0.2076	0.2015	E7	-0.1989	0.1242	1.0361
F1	0.3586	0.2096	0.2143	F7	-0.1982	-0.1058	1.0418
A2	-0.1883	0.3308	0.3855	A8	0.0954	-0.1720	1.1390
B2	-0.3669	-0.0101	0.3846	B8	0.1750	-0.0047	1.1366
C2	-0.1949	-0.3262	0.3861	C8	0.0992	0.1825	1.1410
D2	0.1935	-0.3241	0.3924	D8	-0.0899	0.1921	1.1360
E2	0.3581	0.0066	0.3959	E8	-0.1972	0.0135	1.1297
F2	0.1953	0.3321	0.3902	F8	-0.0980	-0.1514	1.1352
A3	-0.2940	0.1731	0.5397	A9	0.1304	-0.0930	1.2169
B3	-0.2835	-0.1684	0.5536	B9	0.1350	0.0897	1.2182
C3	-0.0026	-0.3312	0.5437	C9	0.0160	0.1789	1.2227
D3	0.2742	-0.1631	0.5499	D9	-0.1470	0.1038	1.2123
E3	0.2861	0.1800	0.5514	E9	-0.1642	-0.0882	1.2005
F3	0.0047	0.3485	0.5415	F9	0.0128	-0.1560	1.2183
A4	-0.3043	0.0008	0.6940	A10	0.1342	0.0005	1.2907
B4	-0.1639	-0.2669	0.6872	B10	0.0678	0.1321	1.3052
C4	0.1560	-0.2668	0.6890	C10	-0.0749	0.1427	1.2960
D4	0.2695	0.0059	0.7054	D10	-0.1657	0.0073	1.2829
E4	0.1676	0.2759	0.6865	E10	-0.0890	-0.1125	1.2926
F4	-0.1494	0.2755	0.6902	F10	0.0777	-0.1296	1.2936
A5	-0.2415	-0.1274	0.8232	A11	0.1079	0.0768	1.3604
B5	-0.0016	-0.2654	0.8337	B11	0.0003	0.1456	1.3723
C5	0.2193	-0.1223	0.8162	C11	-0.1274	0.0792	1.3532
D5	0.2203	0.1285	0.8227	D11	-0.1350	-0.0337	1.3541
E5	0.0170	0.2790	0.8372	E11	0.0016	-0.1127	1.3733
F5	-0.2456	0.1413	0.8317	F11	0.1037	-0.0678	1.3627
A12	0.0457	0.1228	1.4422	A12	0.0457	0.1228	1.4422
B12	-0.0467	0.1206	1.4428	B12	-0.0467	0.1206	1.4428
C12	-0.1290	0.0172	1.4382	C12	-0.1290	0.0172	1.4382
D12	-0.0549	-0.0908	1.4421	D12	-0.0549	-0.0908	1.4421
E12	0.0452	-0.0905	1.4364	E12	0.0452	-0.0905	1.4364
F12	0.1022	-0.0003	1.4387	F12	0.1022	-0.0003	1.4387

**MODELO RESTITUIDO**  
**DESARROLLO DE LAS POLIGONALES**  
 Escala 1:10

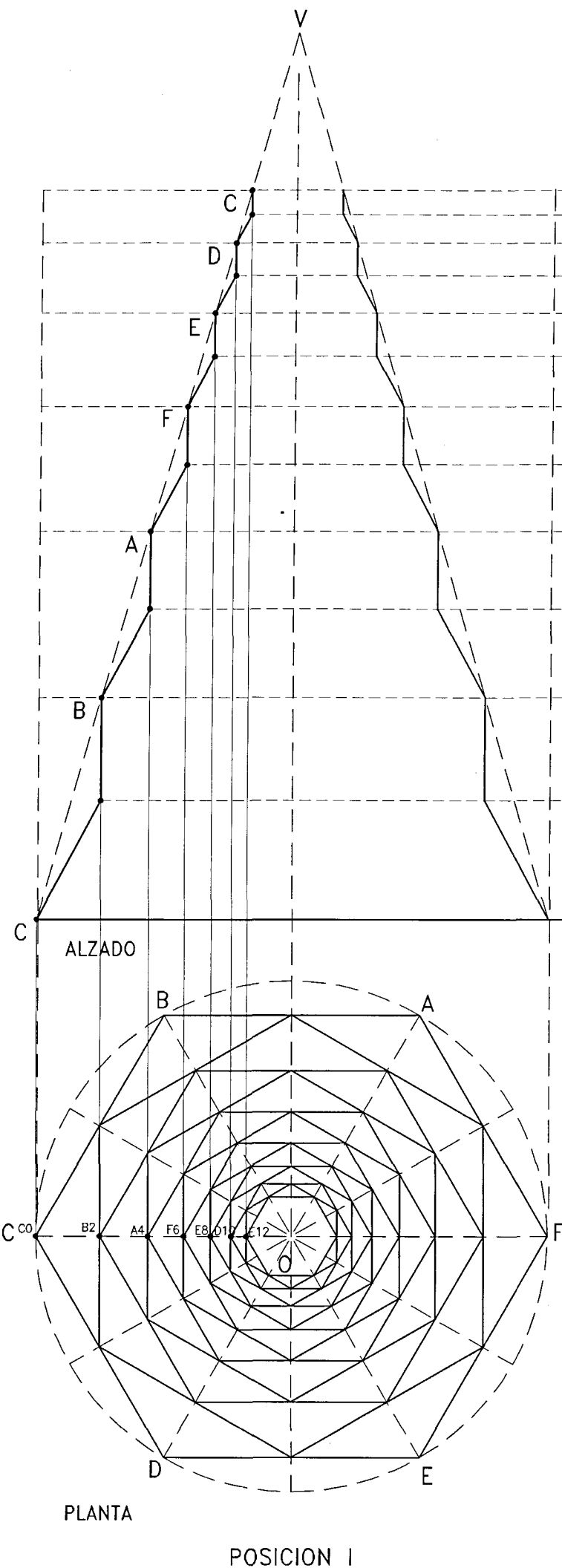


ESCALA DE ALTURAS  
VALORES TEORICOS

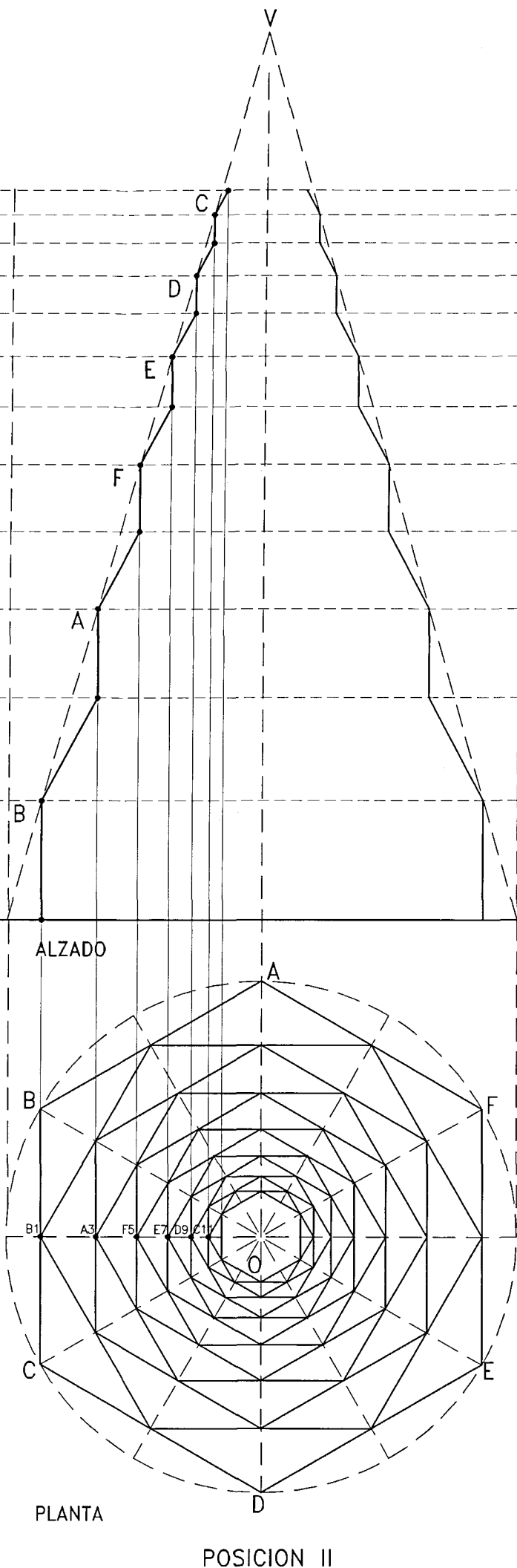


	Ait. PUNTOS
A0	0.0000
B0	
C0	
D0	
E0	
F0	
A1	0.2144
B1	
C1	
D1	
E1	
F1	
A2	0.4000
B2	
C2	
D2	
E2	
F2	
A3	0.5608
B3	
C3	
D3	
E3	
F3	
A4	0.7000
B4	
C4	
D4	
E4	
F4	
A5	0.8206
B5	
C5	
D5	
E5	
F5	

	Ait. PUNTOS
A6	0.9250
B6	
C6	
D6	
E6	
F6	
A7	1.0154
B7	
C7	
D7	
E7	
F7	
A8	1.0937
B8	
C8	
D8	
E8	
F8	
A9	1.1616
B9	
C9	
D9	
E9	
F9	
A10	1.2203
B10	
C10	
D10	
E10	
F10	
A11	1.2712
B11	
C11	
D11	
E11	
F11	
A12	1.3152
B12	
C12	
D12	
E12	
F12	

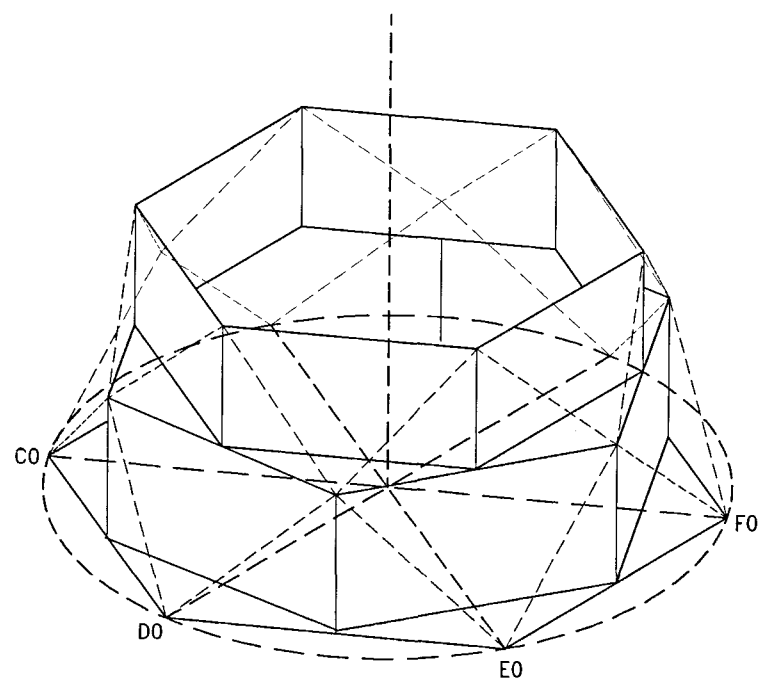
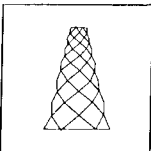


POSICION I

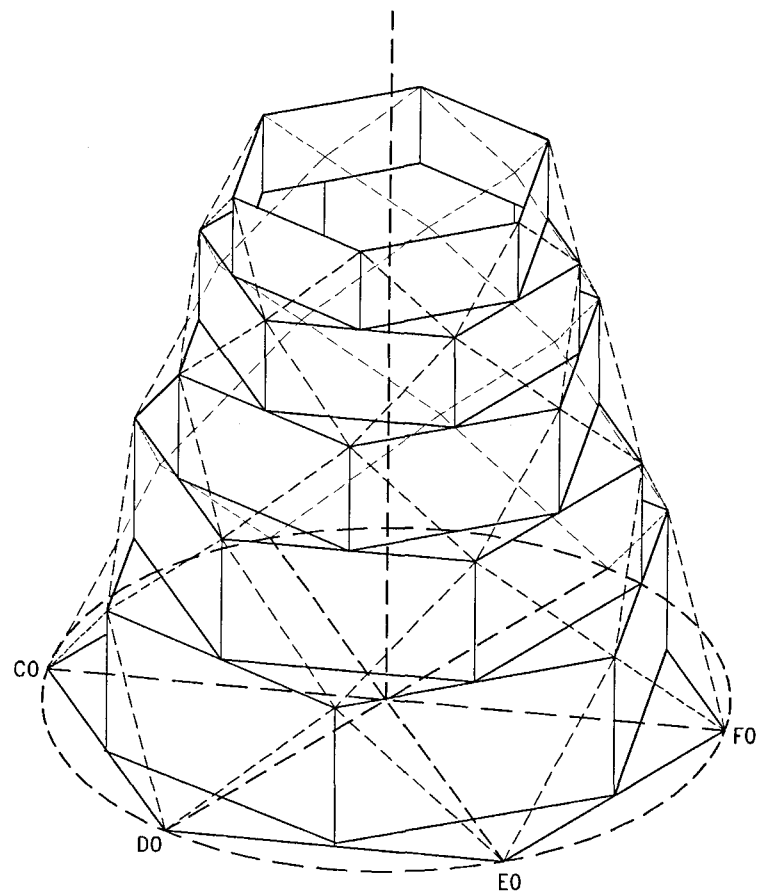


POSICION II

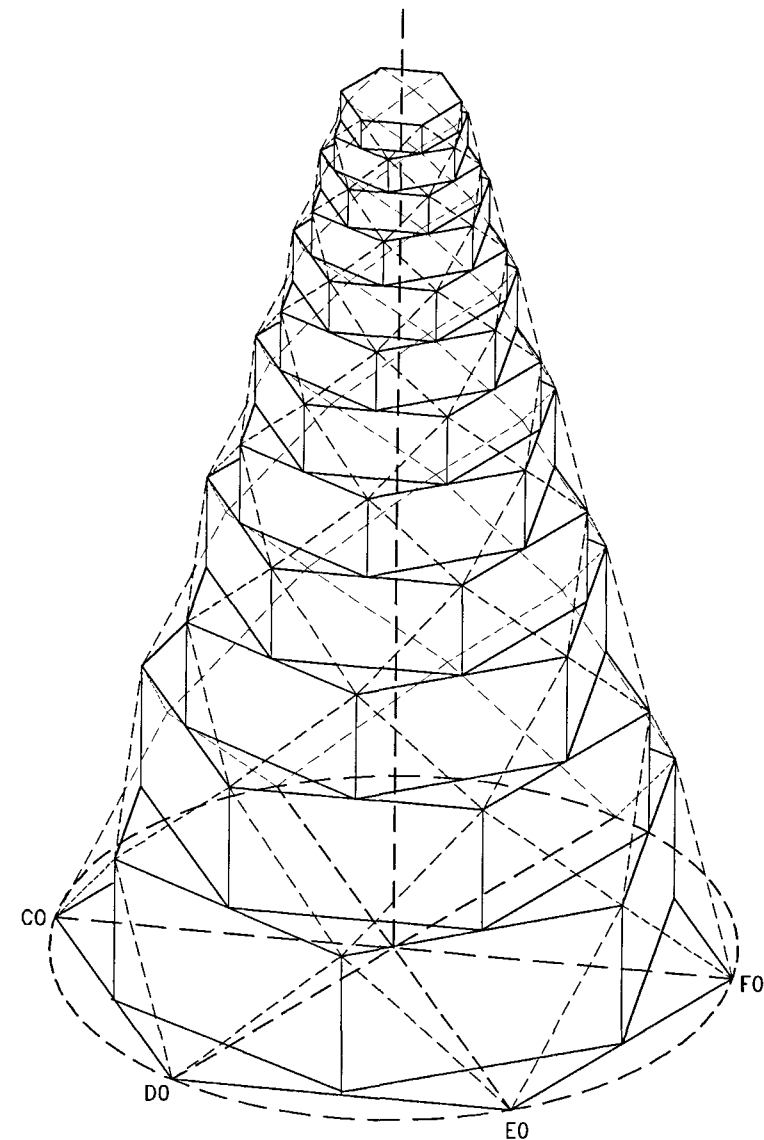
**MODELO TEORICO**  
**TRAZADO / POSICIONES I Y II**  
 Escala 1:10 0 10cm 20cm



ETAPA I

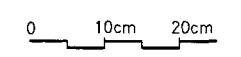


ETAPA II

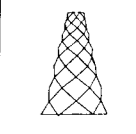


ETAPA III

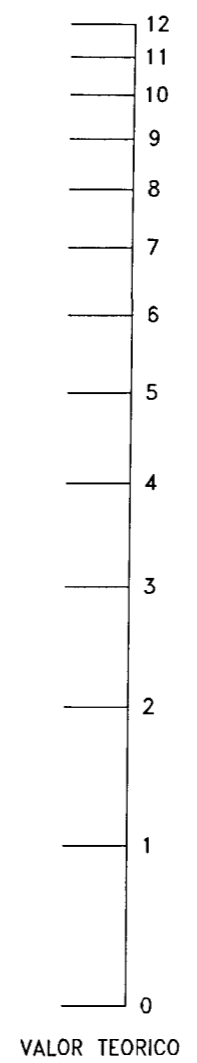
**MODELO TEORICO**  
**CONSTRUCCION / ETAPAS**  
Escala 1:10



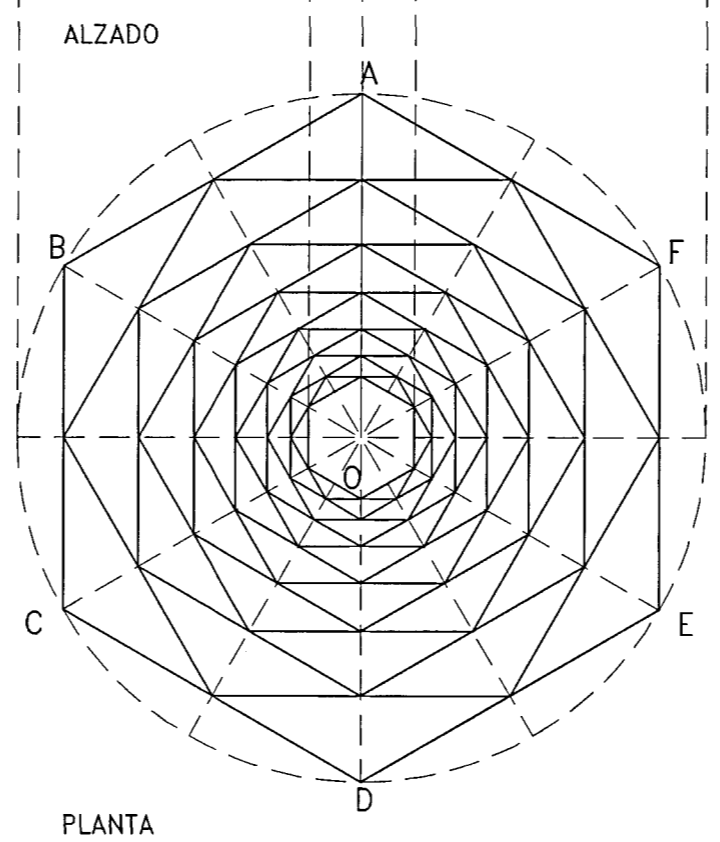
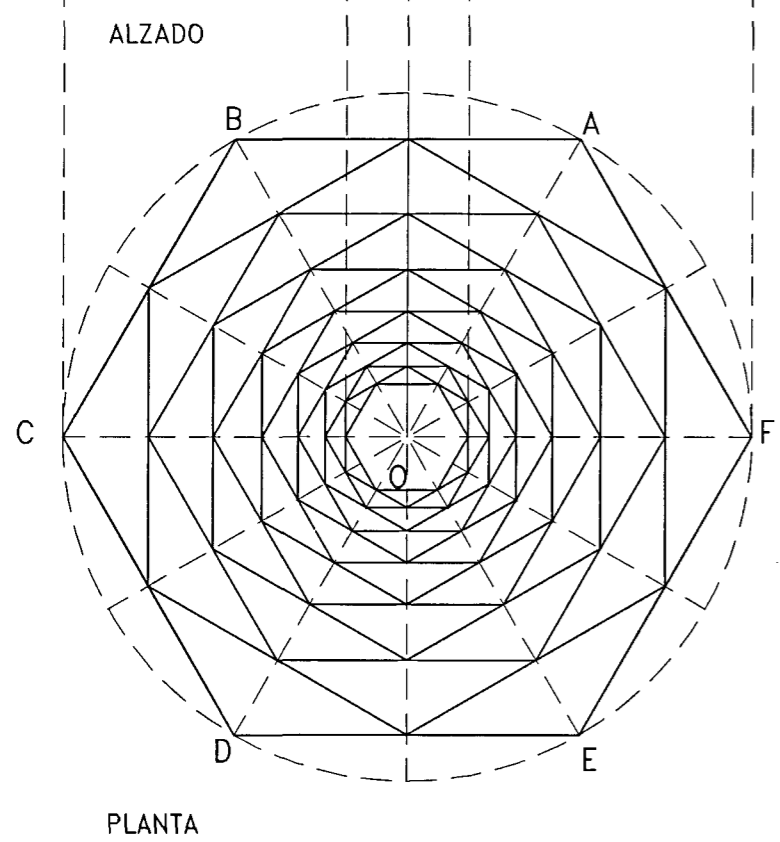
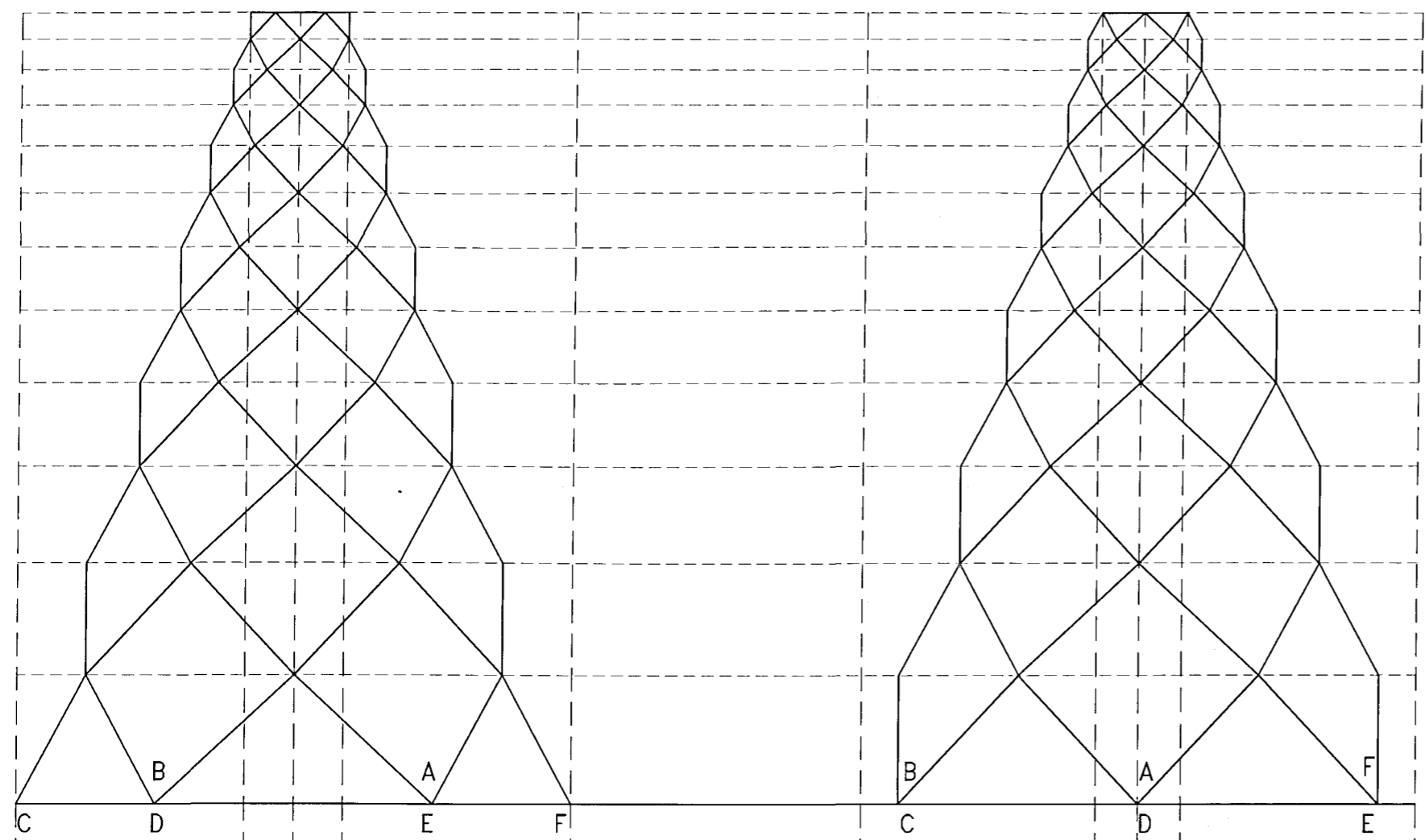
**MT-2**



ESCALA DE ALTURAS  
VALORES TEORICOS



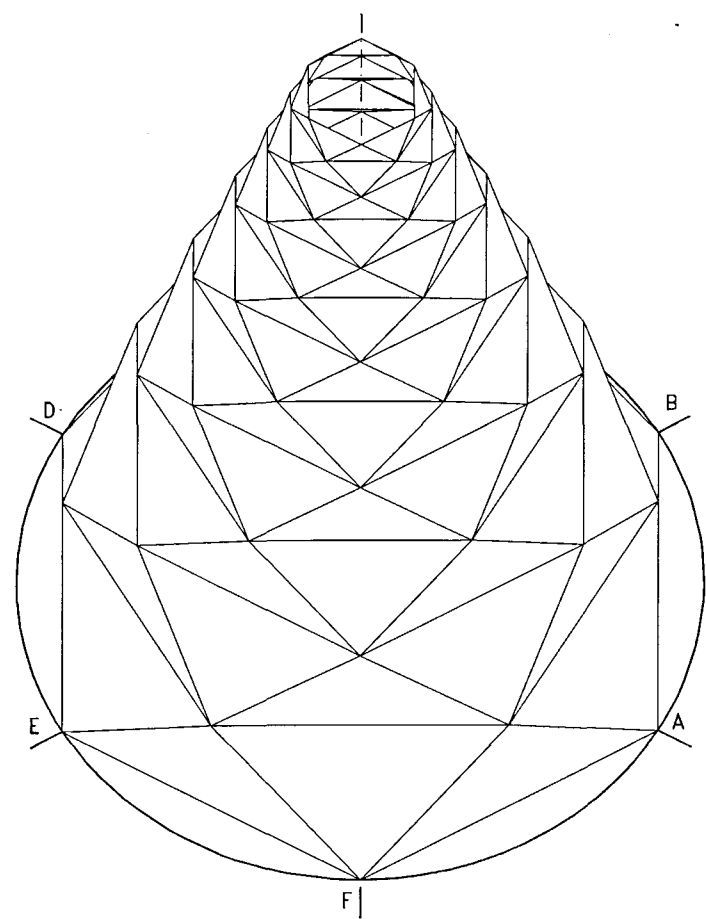
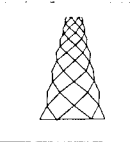
Alt. PUNTOS		Alt. PUNTOS	
A0	0.0000	A6	0.9250
B0		B6	
C0		C6	
D0		D6	
E0		E6	
F0		F6	
A1	0.2144	A7	1.0154
B1		B7	
C1		C7	
D1		D7	
E1		E7	
F1		F7	
A2	0.4000	A8	1.0937
B2		B8	
C2		C8	
D2		D8	
E2		E8	
F2		F8	
A3	0.5608	A9	1.1616
B3		B9	
C3		C9	
D3		D9	
E3		E9	
F3		F9	
A4	0.7000	A10	1.2203
B4		B10	
C4		C10	
D4		D10	
E4		E10	
F4		F10	
A5	0.8206	A11	1.2712
B5		B11	
C5		C11	
D5		D11	
E5		E11	
F5		F11	
		A12	1.3152
		B12	
		C12	
		D12	
		E12	
		F12	



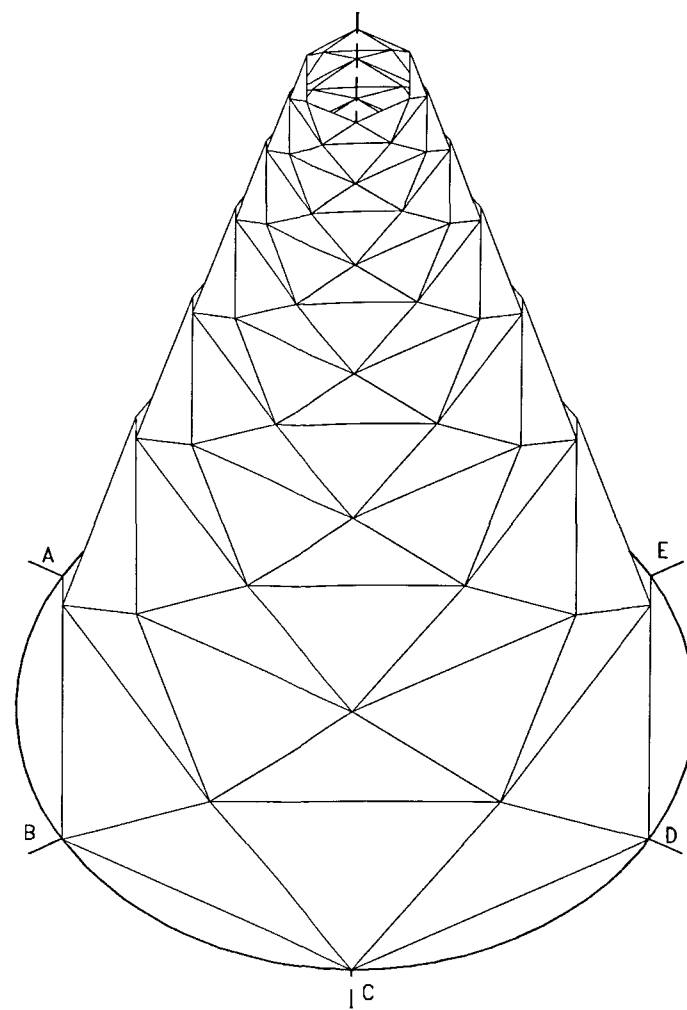
POSICION I

POSICION II

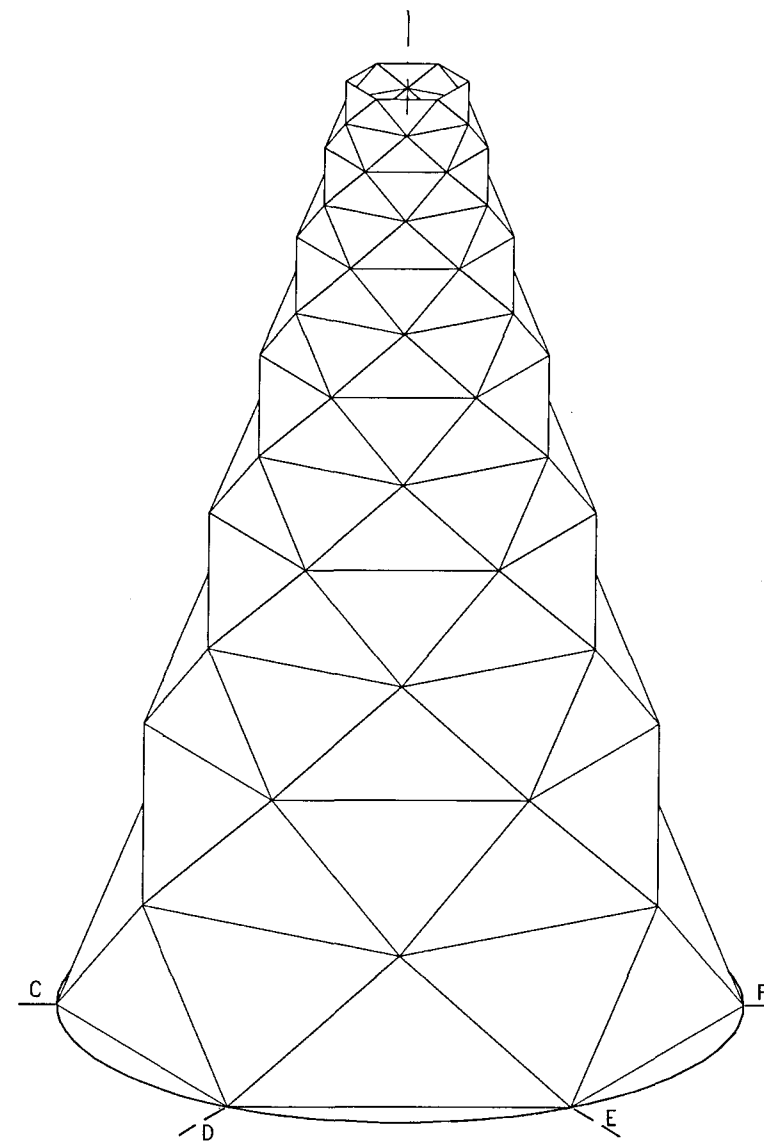
**MODELO TEORICO**  
**POLIGONALES / POSICIONES I Y II**  
 Escala 1:10



AXONOMETRIA I



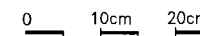
AXONOMETRIA II



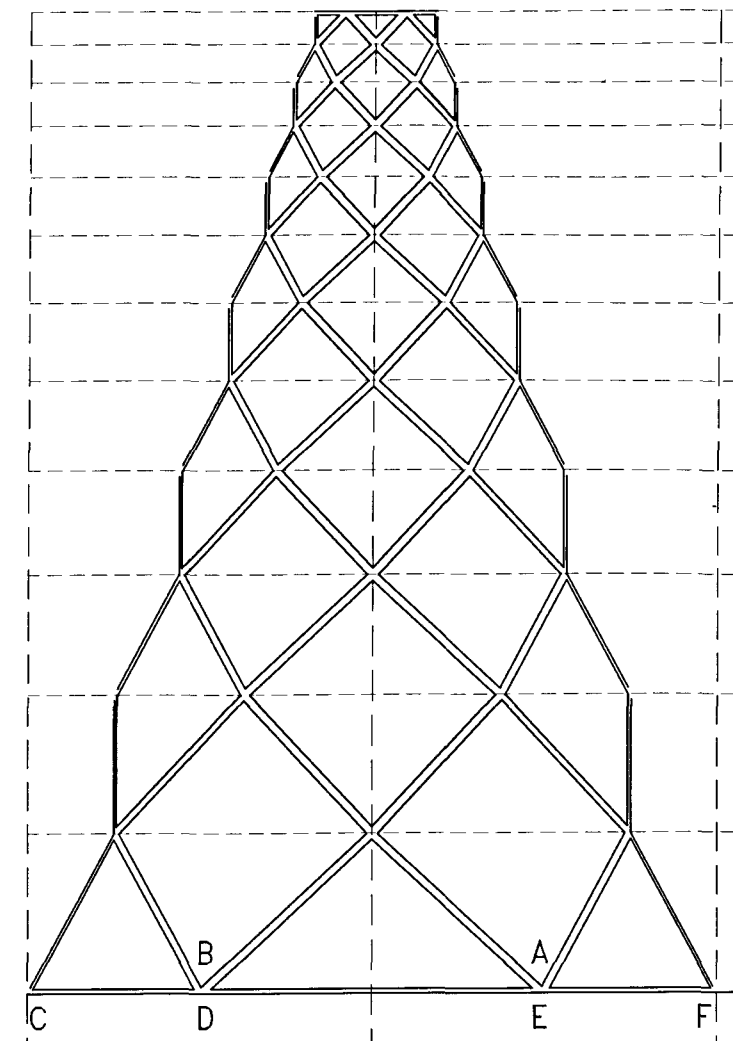
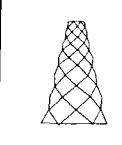
AXONOMETRIA III

**MODELO TEORICO**  
**POLIGONALES / DIEDROS**

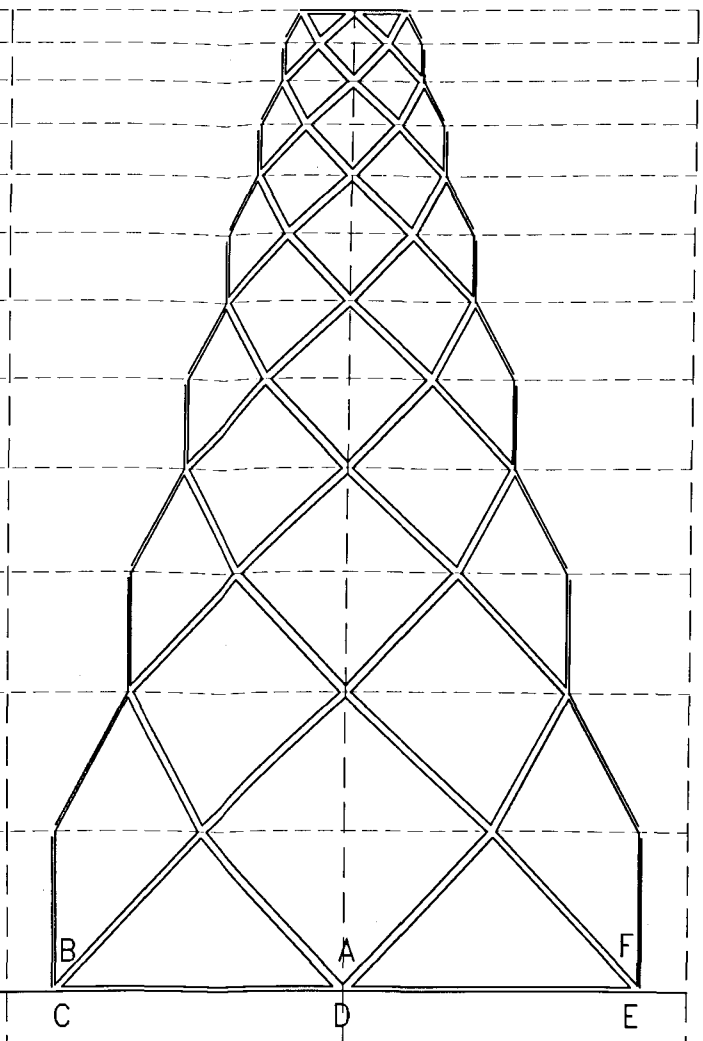
Escala 1:10



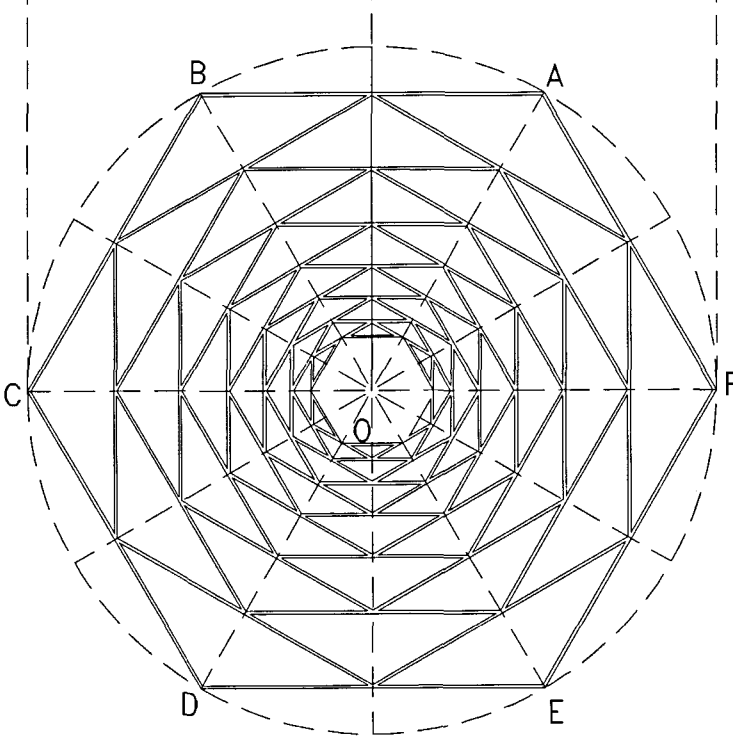
**MT-4**



ALZADO

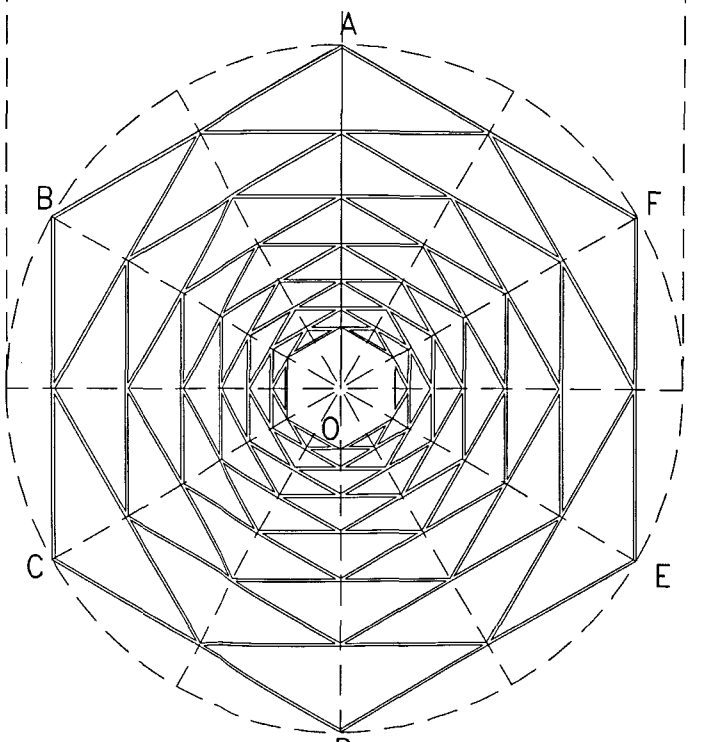


ALZADO



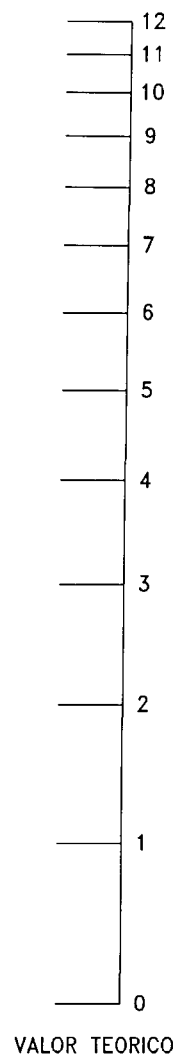
PLANTA

POSICION I



PLANTA

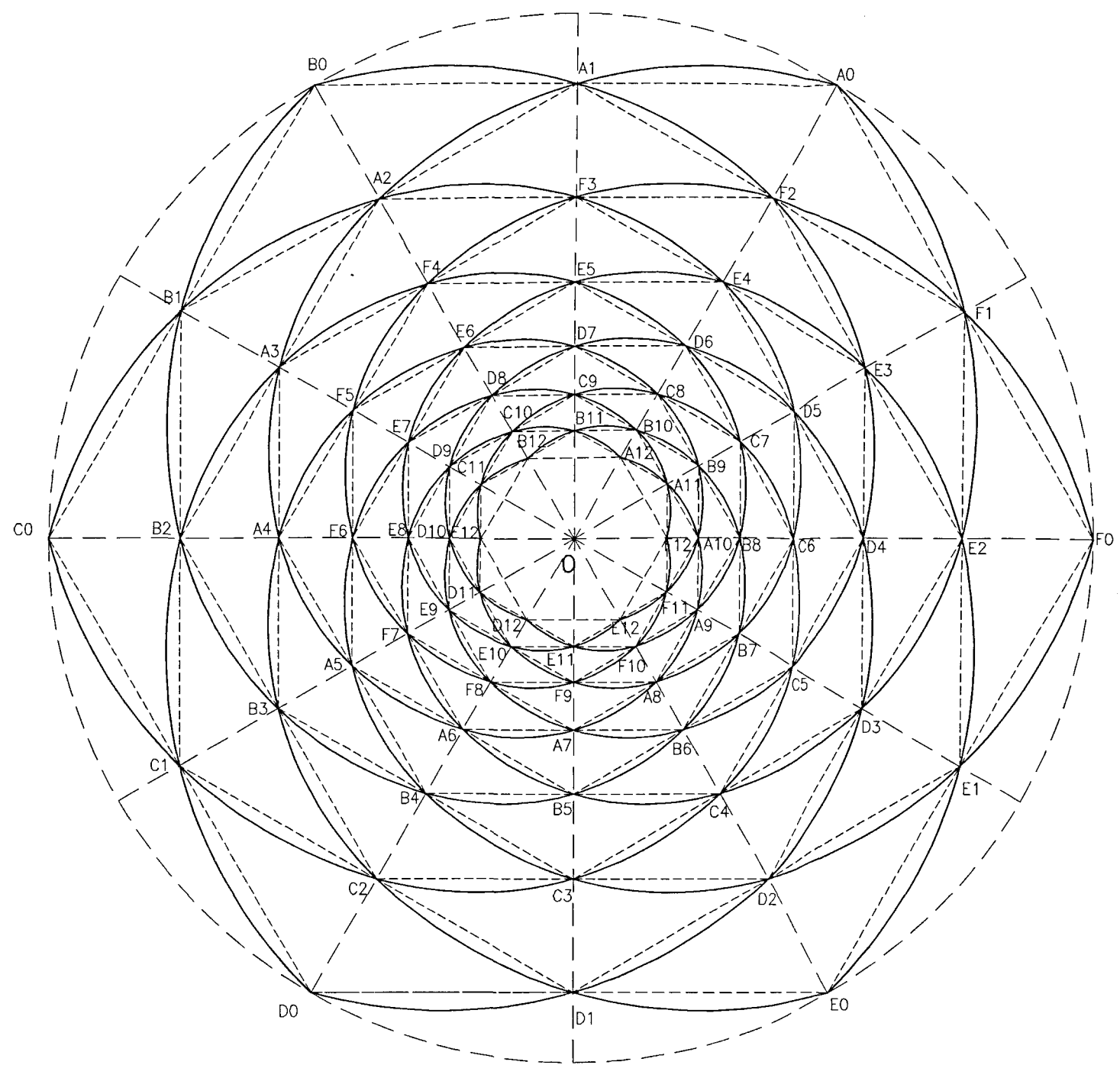
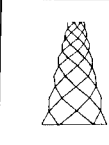
POSICION II



ESCALA DE ALTURAS  
VALORES TEORICOS

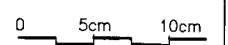
Alt. PUNTOS		Alt. PUNTOS	
A0	0.0000	A6	0.9250
B0		B6	
C0		C6	
D0		D6	
E0		E6	
F0		F6	
A1	0.2144	A7	1.0154
B1		B7	
C1		C7	
D1		D7	
E1		E7	
F1		F7	
A2	0.4000	A8	1.0937
B2		B8	
C2		C8	
D2		D8	
E2		E8	
F2		F8	
A3	0.5608	A9	1.1616
B3		B9	
C3		C9	
D3		D9	
E3		E9	
F3		F9	
A4	0.7000	A10	1.2203
B4		B10	
C4		C10	
D4		D10	
E4		E10	
F4		F10	
A5	0.8206	A11	1.2712
B5		B11	
C5		C11	
D5		D11	
E5		E11	
F5		F11	
		A12	1.3152
		B12	
		C12	
		D12	
		E12	
		F12	

**MODELO TEORICO**  
**CUADRILATEROS / POSICIONES I Y II**  
 Escala 1:10



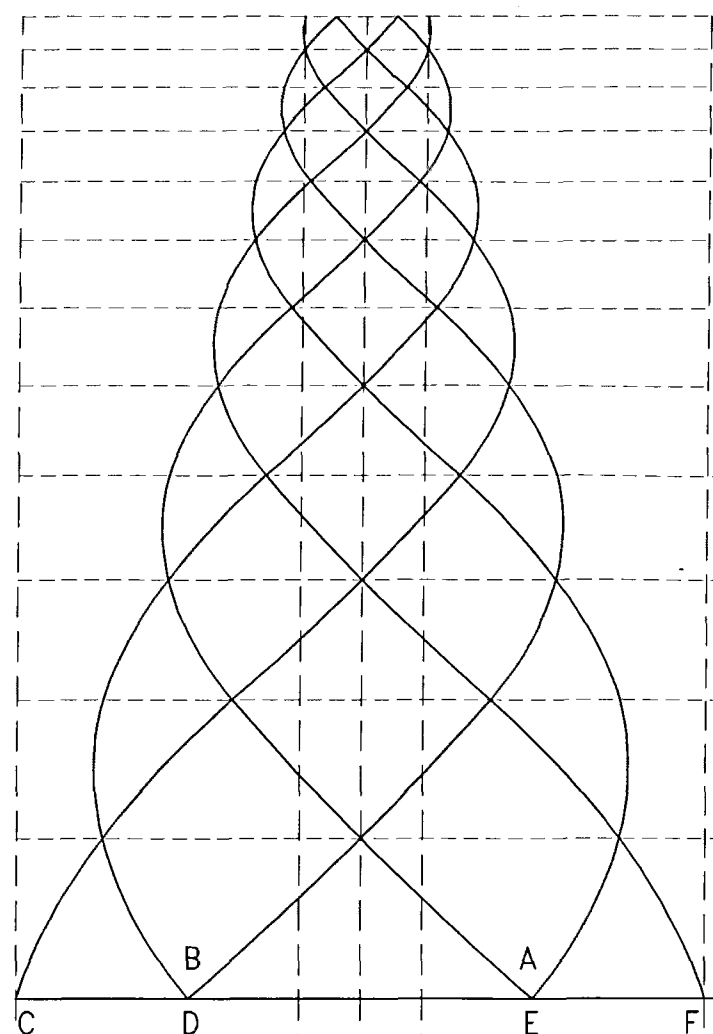
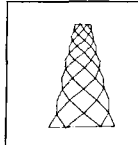
PLANTA

**MODELO TEORICO**  
**ESPIRALES Y POLIGONAL**  
Escala 1:5

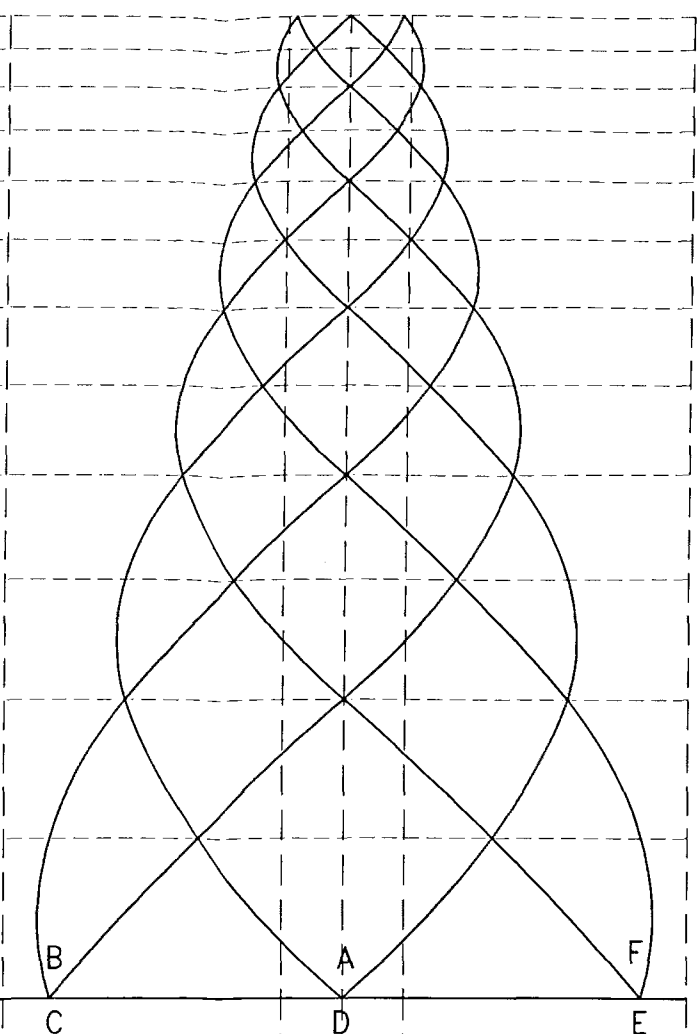


**MT-6**

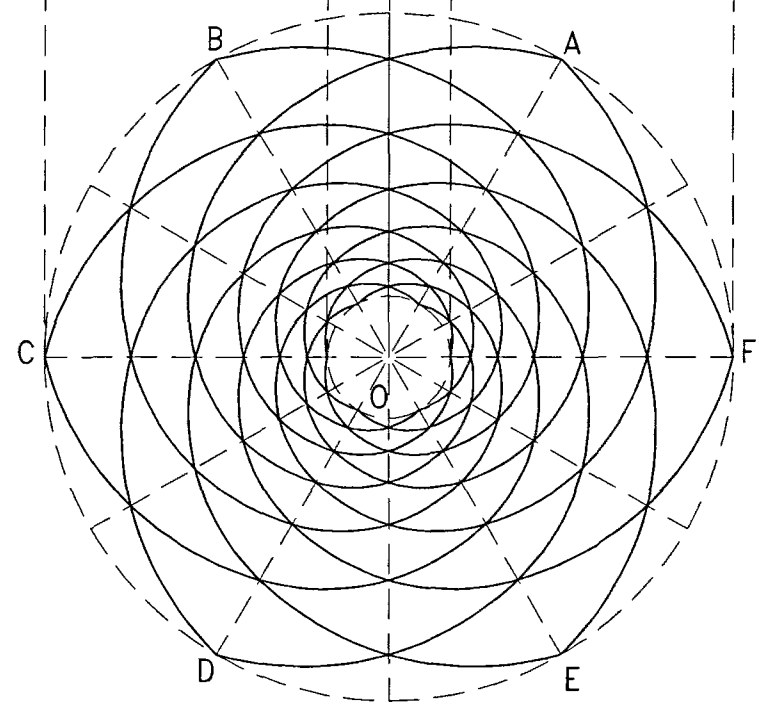




ALZADO

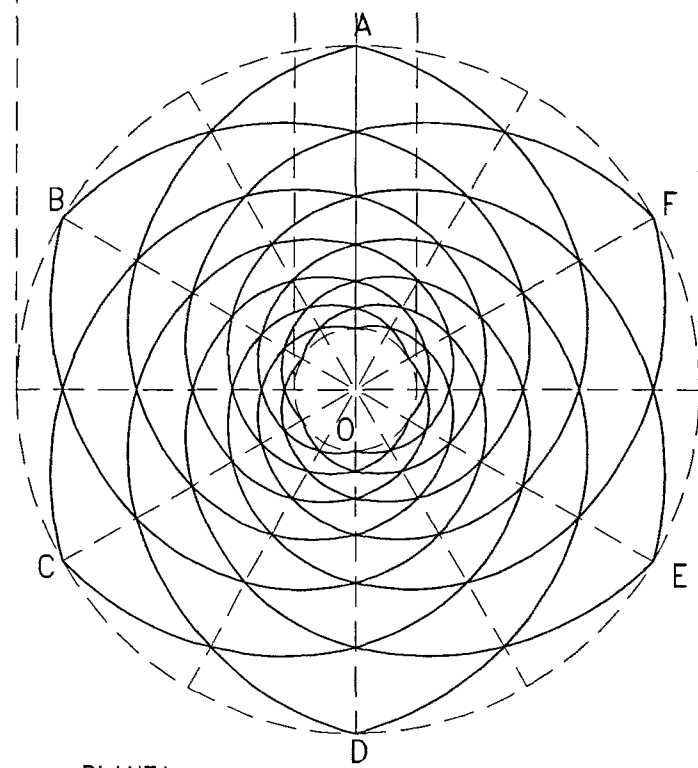


ALZADO



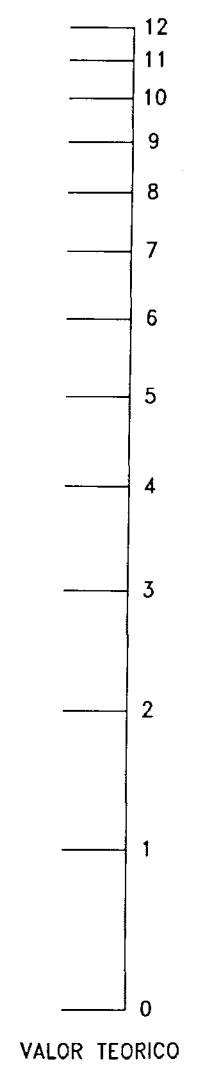
PLANTA

POSICION I



PLANTA

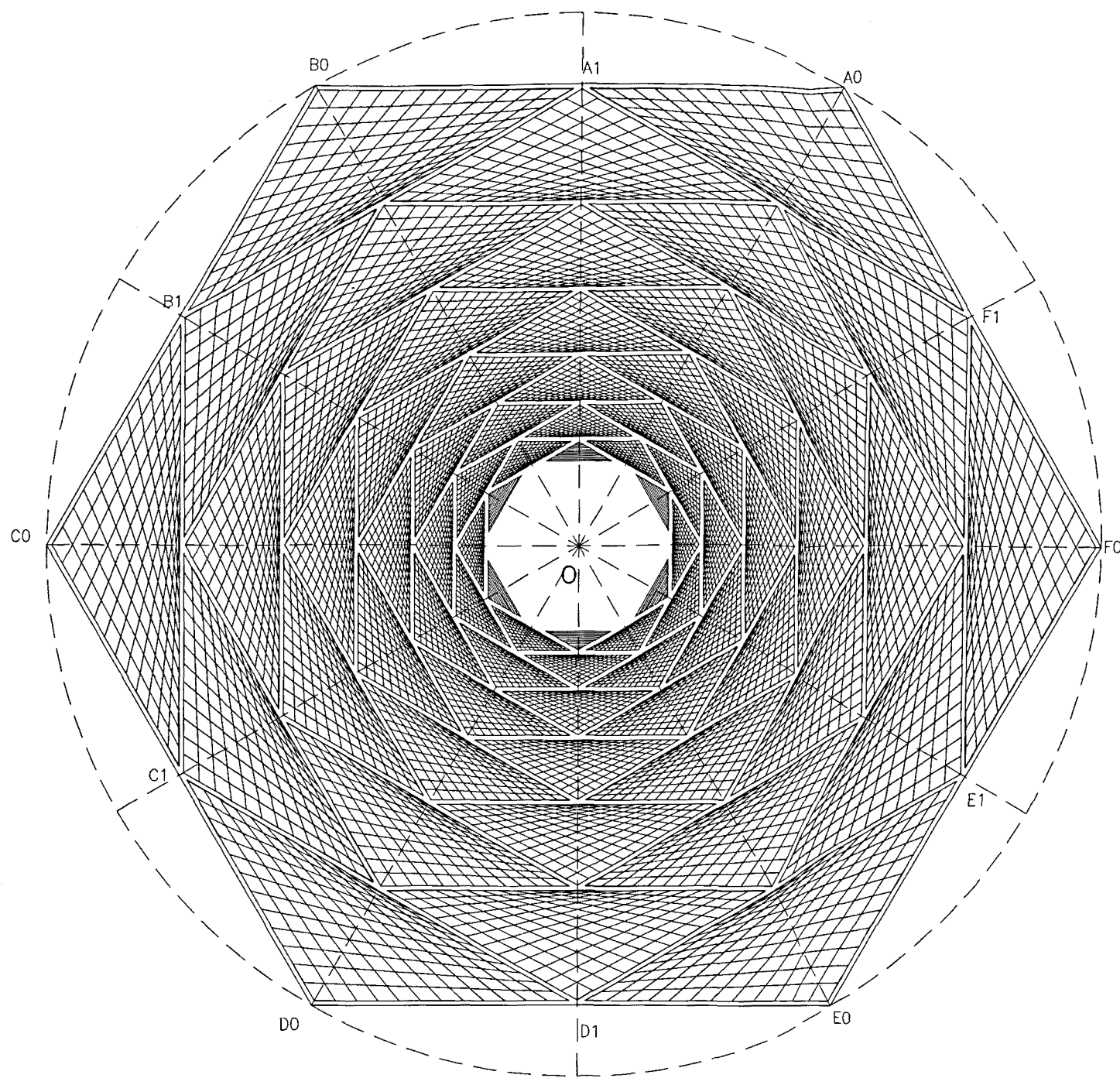
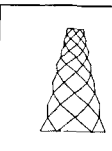
POSICION II



ESCALA DE ALTURAS  
VALORES TEORICOS

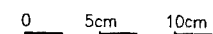
Alt. PUNTOS		Alt. PUNTOS	
A0	0.0000	A6	0.9250
B0		B6	
C0		C6	
D0		D6	
E0		E6	
F0		F6	
A1	0.2144	A7	1.0154
B1		B7	
C1		C7	
D1		D7	
E1		E7	
F1		F7	
A2	0.4000	A8	1.0937
B2		B8	
C2		C8	
D2		D8	
E2		E8	
F2		F8	
A3	0.5608	A9	1.1616
B3		B9	
C3		C9	
D3		D9	
E3		E9	
F3		F9	
A4	0.7000	A10	1.2203
B4		B10	
C4		C10	
D4		D10	
E4		E10	
F4		F10	
A5	0.8206	A11	1.2712
B5		B11	
C5		C11	
D5		D11	
E5		E11	
F5		F11	
		A12	1.3152
		B12	
		C12	
		D12	
		E12	
		F12	

**MODELO TEORICO**  
**HELICES Y ESPIRALES / POSICIONES I Y II**  
 Escala 1:10 0 10cm 20cm

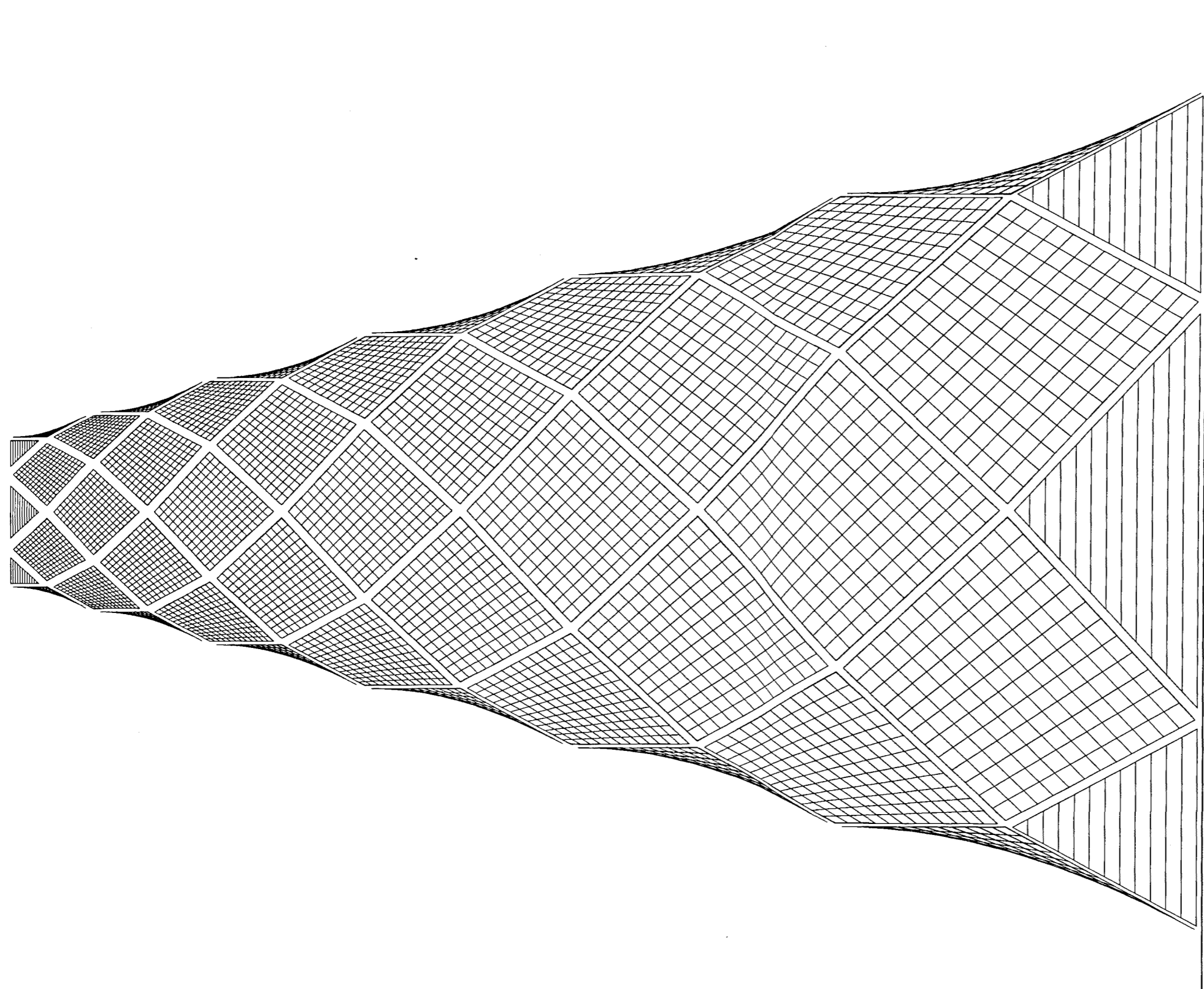
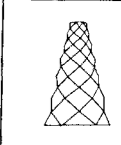


PLANTA

**MODELO TEORICO**  
**SUPERFICIES ALABEADAS**  
Escala 1:5

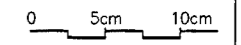


**MT-8**

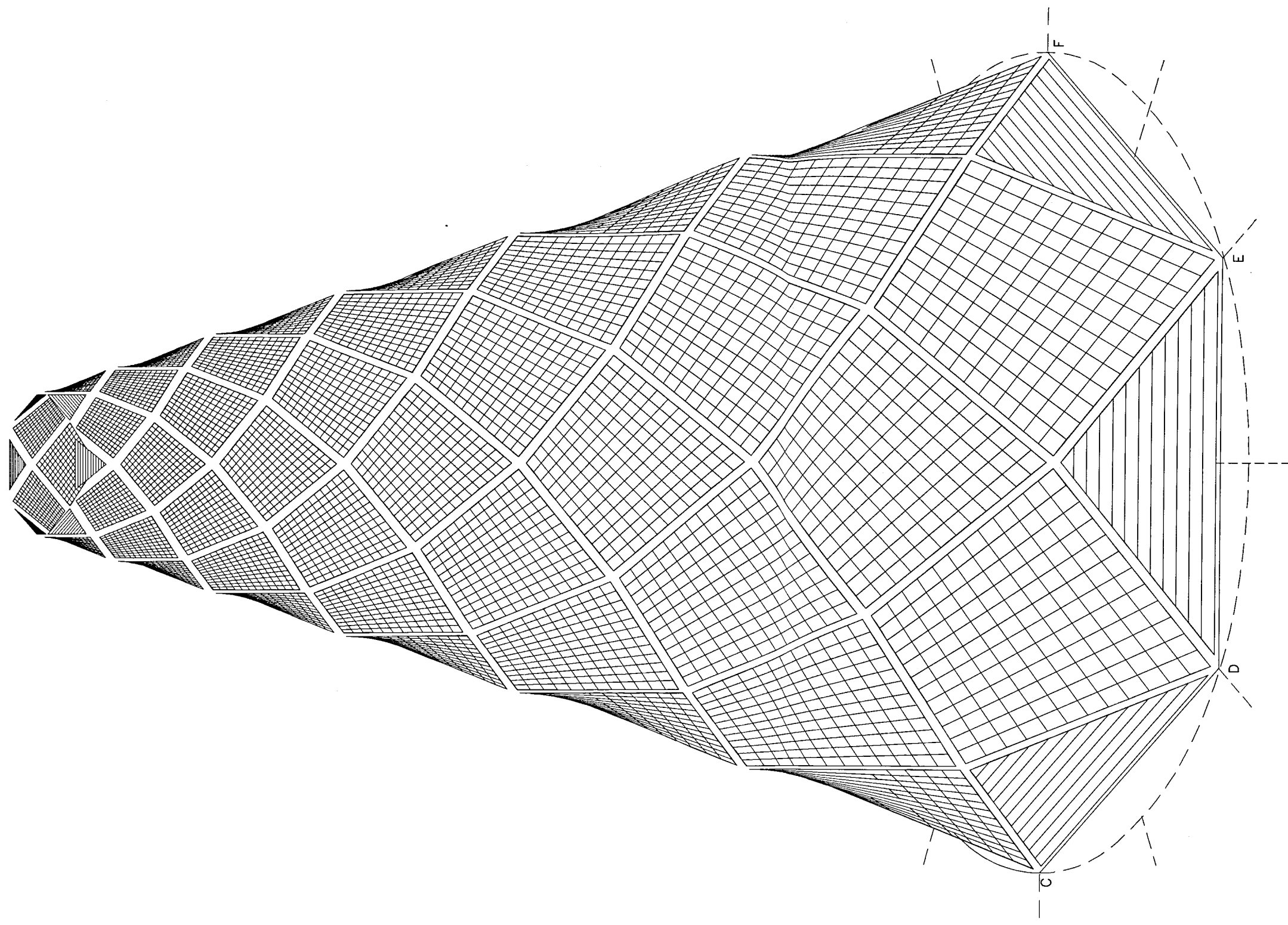
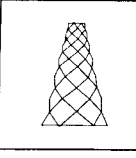


ALZADO POSICION I

**MODELO TEORICO**  
**SUPERFICIES ALABEADAS**  
Escala 1:5

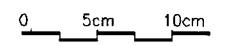


**MT-9**



AXONOMETRIA

**MODELO TEORICO**  
**SUPERFICIES ALABEADAS**  
Escala 1:5



**MT-10**