Table 2.7.1
EHV LINE CHARACTERISTICS
TABULATION OF 345-kV, 500-kV, and 765-kV PARAMETERS* (continued)

345 kV>	UTILITY			
	Western Area Power Administration		Wisconsin Electric Power Co.	Wisconsin Public Service Corp.
1. Line name or no.	Hayden-Ault	Watertown-Sioux City	L2221	A-313
2. Voltage (nominal), kV; AC or DC	345; AC	345; AC	345; AC	345; AC
3. Year of construction	1976-1978	1975-1977	1972-1973	1977-1978
4. Length, miles; total miles	141;	177; 419	12; 28	28.8;
5. Altitude range, ft.	5,000-11,000	1,100-2,000	600-700	1190-1502
6. Design load district	NESC Heavy	NESC Heavy	NESC Heavy	NESC Heavy
STRUCTURES				
7. Material	S	S	S	W & S
8. Type	3L2	3L2	3P3	3H4
9. Avg. no./mile	4.6	4.6	6	6.47
10. Avg. wt./structure, lbs	18,240	13,600	25,000	14,000
11. Designed for _____ ckts; _____ config.	1; H	1; H	2; VT	1; H
CONDUCTORS				
12. Type	ACSR	ACSR	ACSR	ACSR
13. Dia., in.; stranding	1.345; 45/7	1.196; 54/7	1.762; 84/19	1.108; 26/7
14. Weight, lbs/ft.	1.434	1.229	2.512	1.094
15. No./phase; spacing, in.	2; 18	2; 18	1; -	2; 18
16. Avg. span length, ft.	1150	1150	950	816
17. Final sag, ft; @ °F	41.8@120°F	42.4@120°F	24@60°F	14.3@60°F
18. Tension, 10^3 lb; @ °F	14.2@0°F; ML	12.0@0°F; ML	10.5@60°F	6.1@60°F
19. % of ultimate	42	36	17	19.4
20. Designed for _____ amps/phase	1830	1640	1810	2000
MINIMUM CLEARANCES				
21. Phase to tower, ft.	7.5	6.83	9	9
22. Phase to ground, ft.	29.6@120°F	30@120°F	34	35
23. Phase to phase, ft.	35	29.9	24	27
SUSPENSION STRINGS				
24. Configuration	V; I	V; I	I	V; I
25. Insulator size, in.; strength, 10^3 lb.	5¾ x 10; 40	5¾ x 10; 30	5¾ x 10; 15	5¾ x 10; 15
26. No. strings/phase	2; 1	2; 1	1	2; 1
27. No. units/string	19-21	18	18	18
STRAIN STRINGS				
28. Insulator size, in.; strength, 10^3 lb.	6⅛ x 11; 50	7¾ x 12⅝; 66	5¾ x 10; 25	5¾ x 10; 30
29. No. strings/phase	2	2	2	2
30. No. units/string	19-21	19	18	20
LIGHTNING PROTECTION				
31. No. shield wires; material	2; Steel	2; EHS Steel	2; ACSR	2; EHS Steel
32. Diameter, in.	0.5	0.4375	0.576; 12/7	3/8
33. Sag, ft; @ °F	34.28@120°F	31.3@120°F	17@60°F	10.2@60°F
34. Tension, 10^3 lb; @ °F	7.0@0°F; ML	6.0@0°F; ML	2.6@60°F	2.2@60°F
35. % of ultimate	38	29	17	14.3
36. Separation at tower, ft	49	37.8	30	27
37. Shield angle, deg. @ tower; @ midspan	20°; 15°	20°; 15°	-12°;	31°;
38. Grounding method	None	None	C	C & GR
39. Tower footing resistance, ohms	5-10 (est.)	5-10 (est.)	5-50	10 max.
40. Isokeraunic level	50	40	35-40	35-40
41. Lightning faults/100 mi/yr	1; C	1; C	<1.0	1
CONDUCTOR MOTION SUPPRESSION				
42. Damper, type	Stockbridge	Stockbridge	Stockbridge	Stockbridge
43. Damper, no./cond./span	1	1	1	1
44. Damper, location, ft	2.9	2.67	5	3.5
45. Spacers, type	Rigid	Rigid	-	Preformed
46. Spacers, spacing, ft	225 max.	225 max.	-	250 max.
47. Spacer-damper, type	-	-	-	-
48. Spacer-damper, spacing, ft	-	-	-	-

*See notes on page 30.

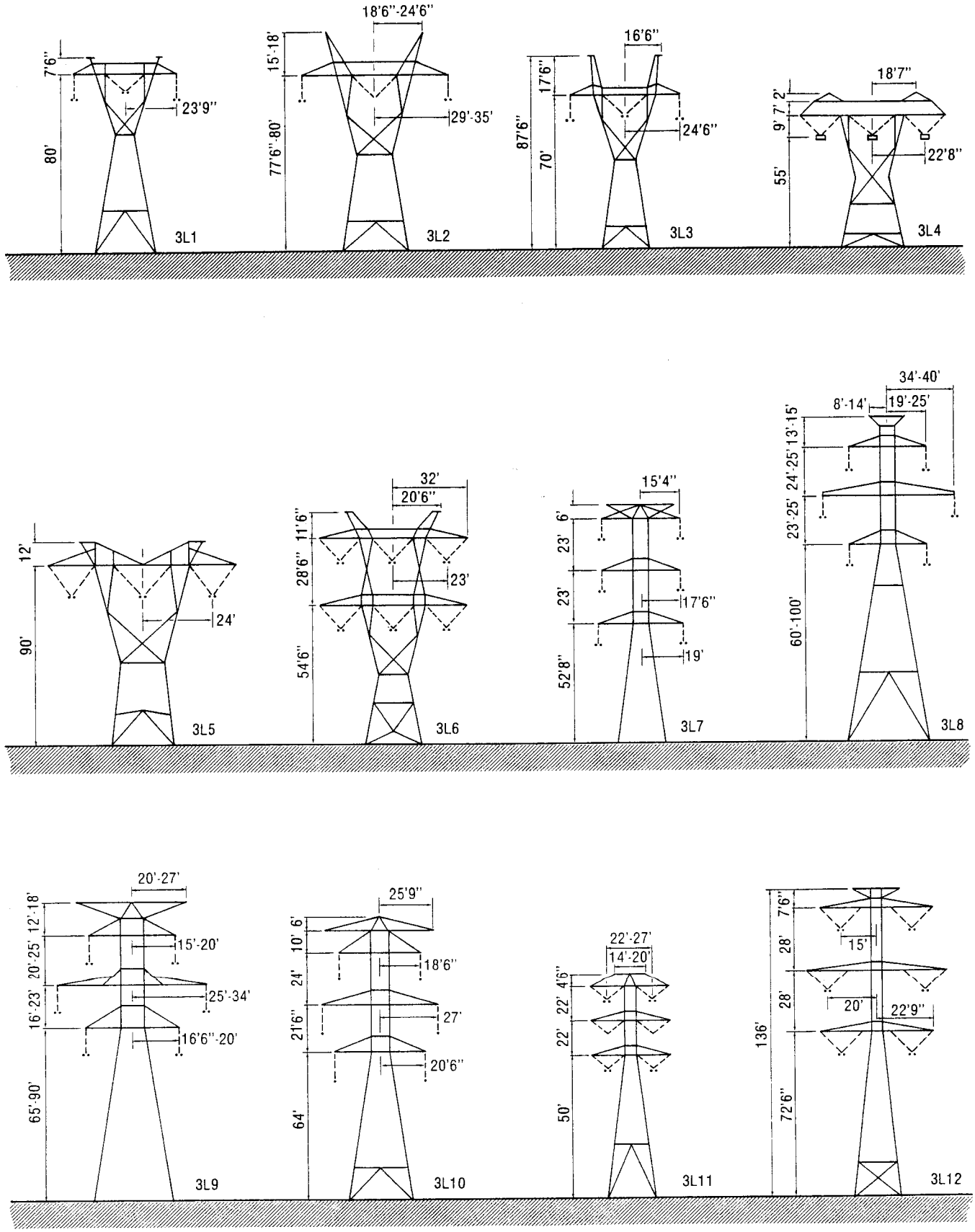


Figure 2.7.1. Typical lattice-type structures for 345-kV transmission systems.

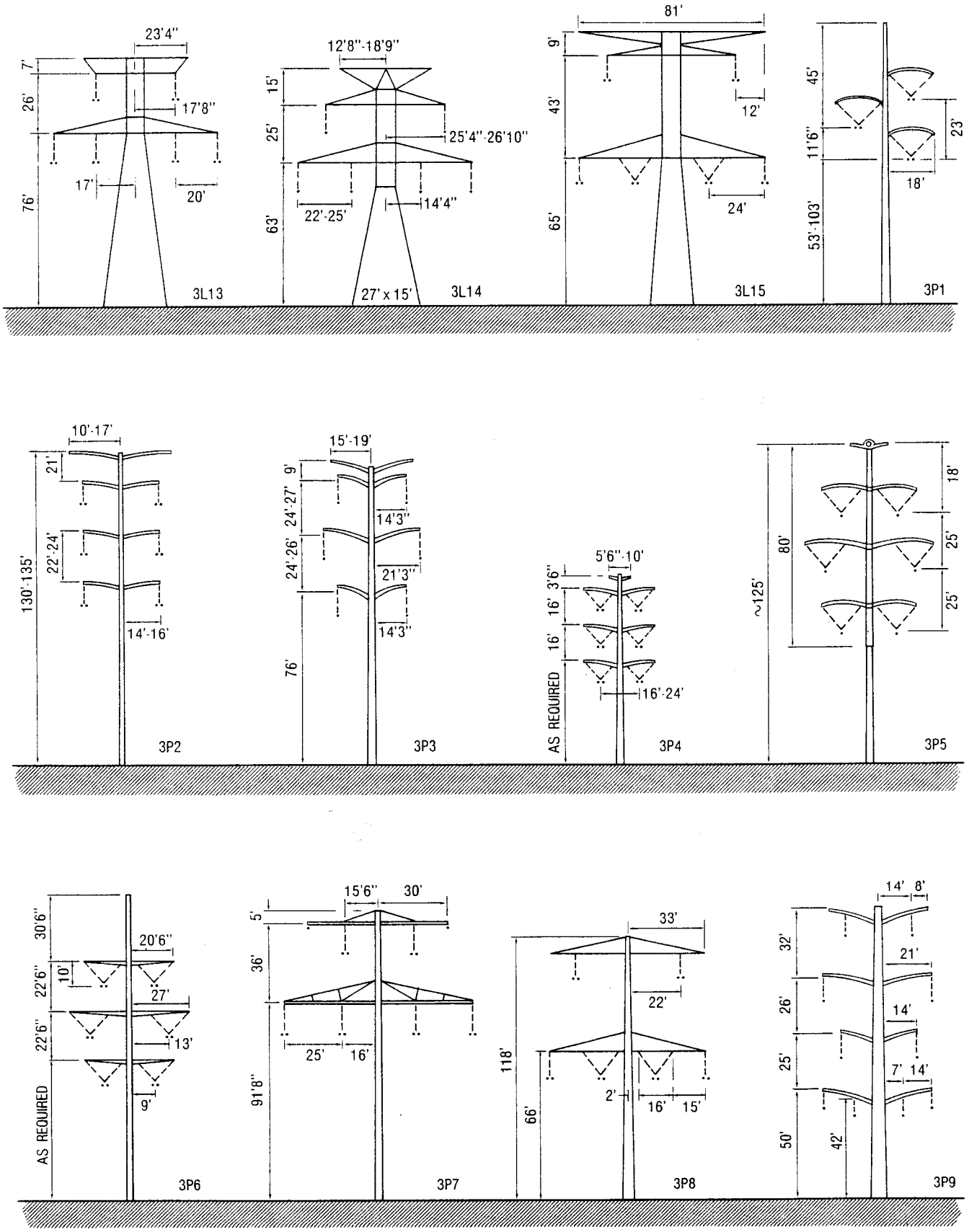


Figure 2.7.2. Typical lattice- and pole-type structures for 345-kV transmission systems.

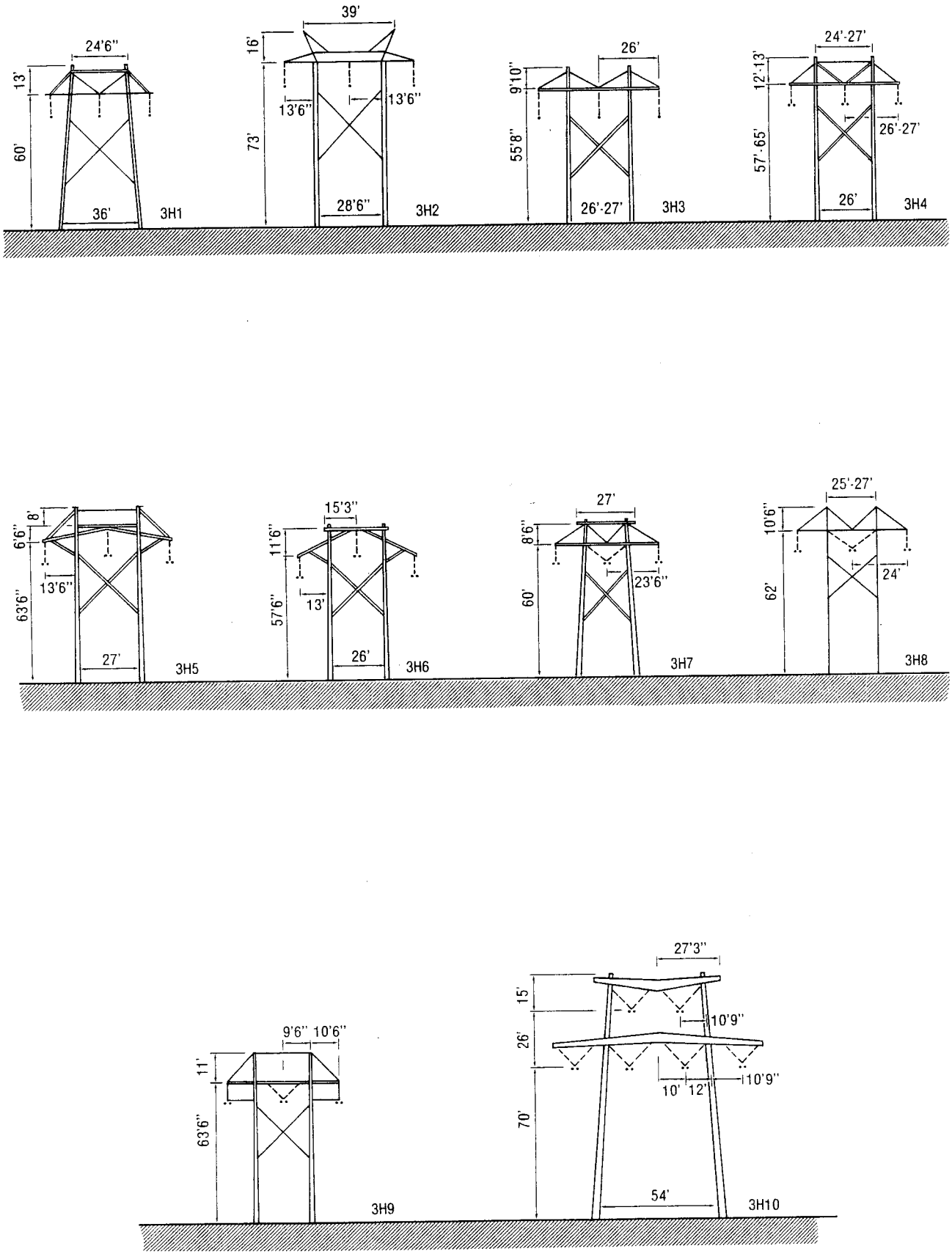
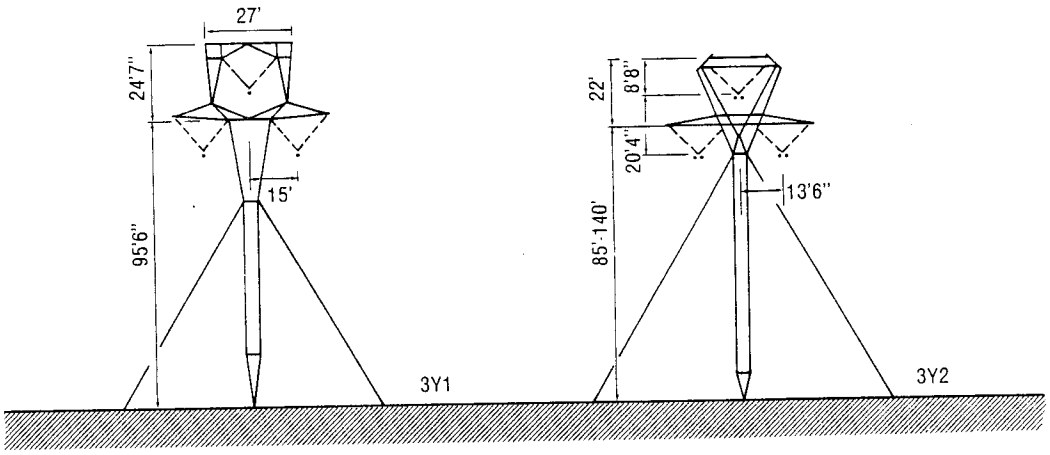


Figure 2.7.3. Typical H-frame-type structures for 345-kV transmission systems.



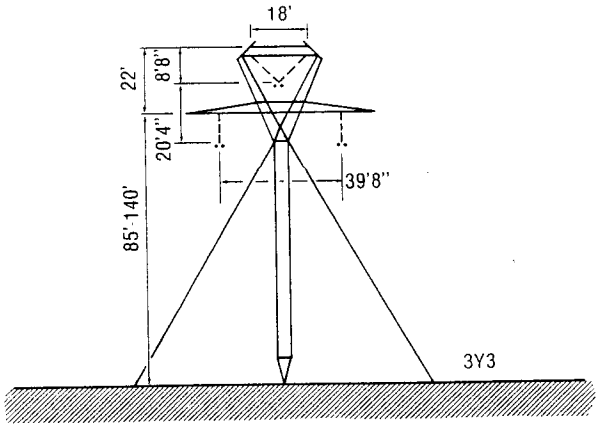


Figure 2.7.4. Typical Y-type structures for 345-kV transmission systems.

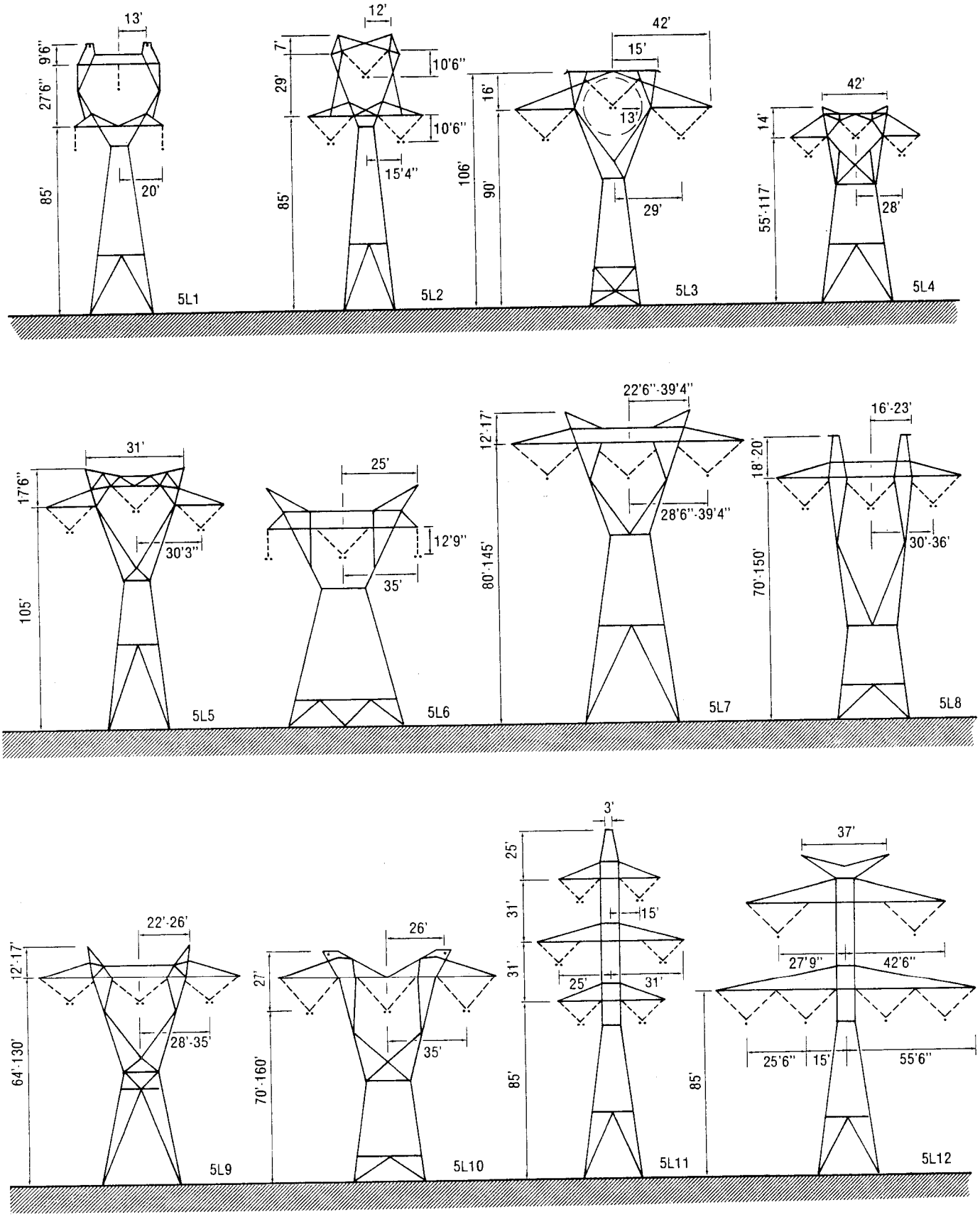


Figure 2.7.5. Typical 500-kV lattice-type structures used on present systems.

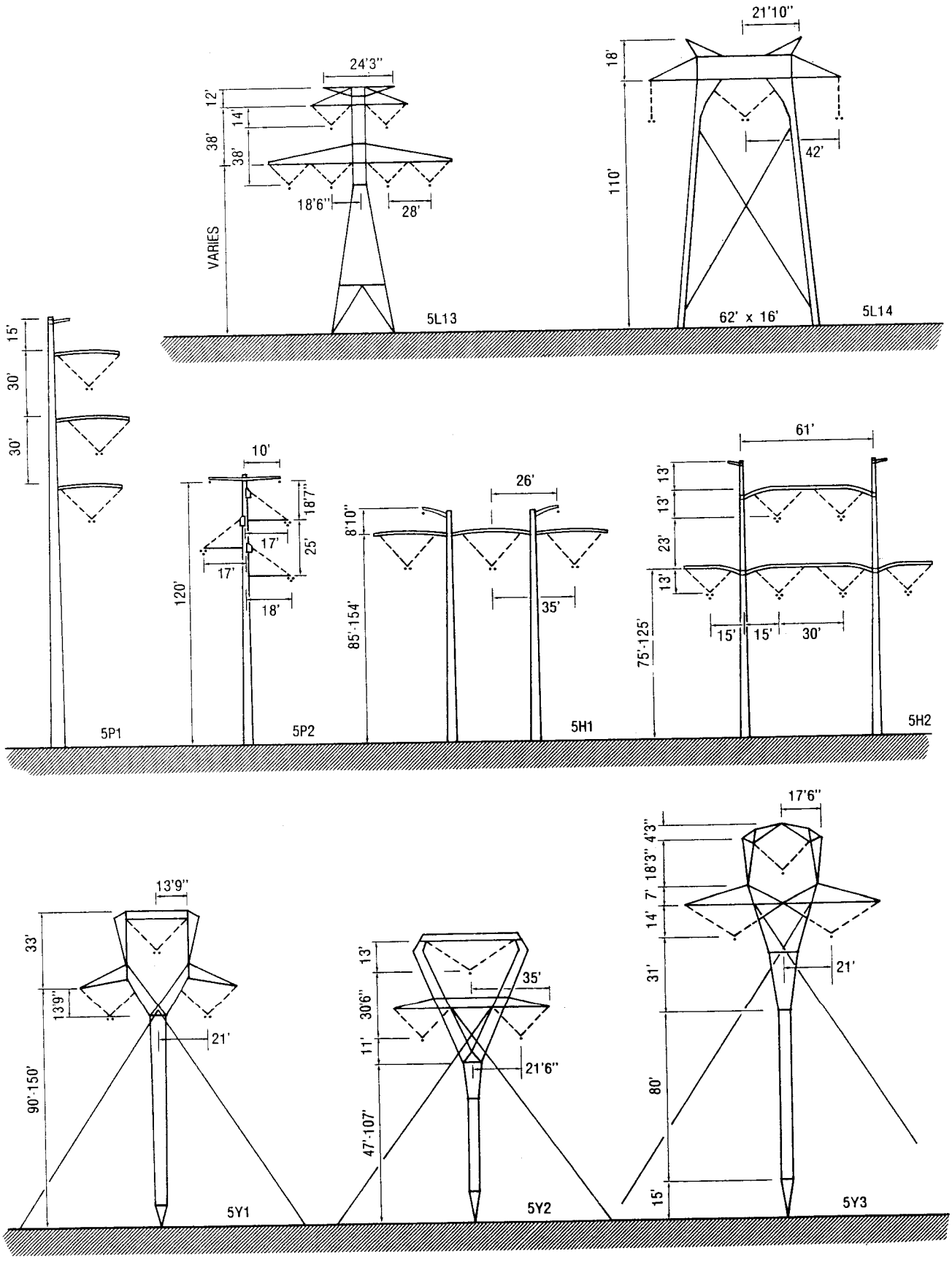


Figure 2.7.6. Typical 500-kV lattice-, pole-, H-frame-, and guyed Y-type structures used on present systems.

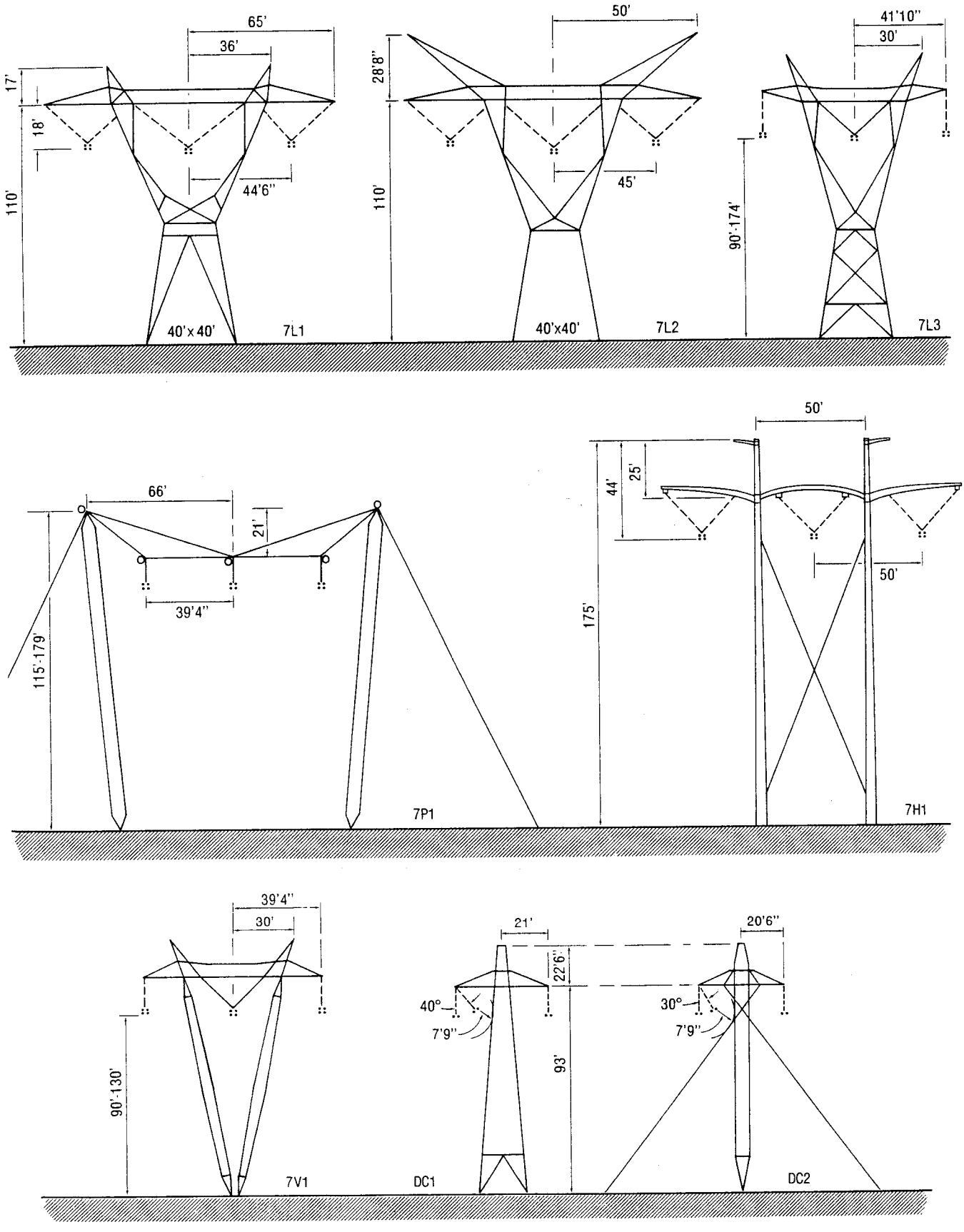


Figure 2.7.7. Typical 735- to 800-kV ac designs and dc structures used on present systems.