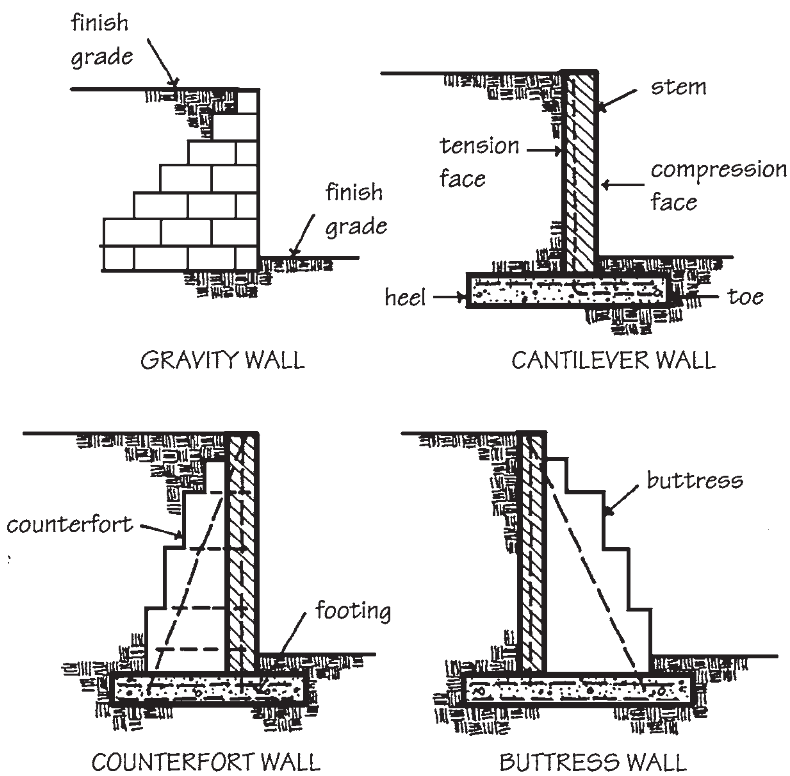
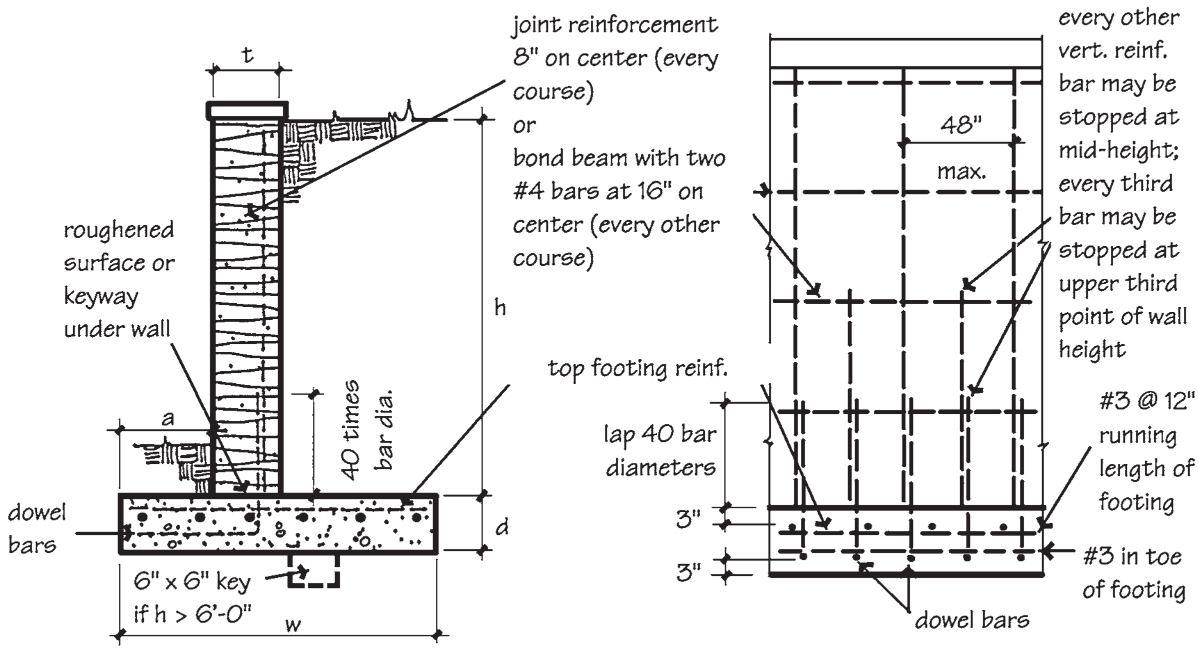


Figure 13-16 Four types of retaining walls. (*From NCMA* TEK Bulletin 4A.)

weight and batter of the SRW units (*see Fig. 13-21*). Conventional SRWs may be either single or multiple unit depths. *Soil-reinforced SRWs* are composite systems consisting of SRW units in combination with a mass of retained soil stabilized by horizontal layers of geosynthetic reinforcement materials (*see Fig. 13-22*). Some systems can be laid in either straight or curved lines, but others are limited to straight lines and 90° corners. No mortar is required for SRW systems, but the units must be restrained against sliding by either a physical interlocking shape or shear connectors such as rods, pins, or clips (*see Fig. 13-23*).

Because they are dry-stacked, segmental retaining walls are relatively flexible, and can tolerate movement and settlement without distress. Typically supported on flexible aggregate leveling-bed foundations, SRWs also permit water to drain directly through the face of the wall, so hydrostatic pressure is eliminated and weep holes are not necessary. Drainage through the face of the wall, however, can cause staining, efflorescence, and possible freeze-thaw damage if the units remain saturated from wet soil. Primary drainage is provided by gravel backfill and, in very wet areas, collection pipes at the base of the wall. The maximum height that can be constructed with a single-unit-depth conventional SRW is directly proportional to its weight, width, and vertical batter for any given soil type and site geometry conditions (*see Fig. 13-24*). The height can be increased by using multiple unit depths. Soil-reinforced SRWs use geosynthetic reinforcement to enlarge the effective width and weight of the gravity mass. The reinforce-



Dimensions and Reinforcement for CMU Cantilever Retaining Wall*						
Nominal Wall Thickness, *t* (in.)	**Wall Stem Height, *h* (ft.-in.)**	**Toe Length, *a* (in.)**	**Footing Width, *w* (ft.-in.)**	**Footing Depth, *d* (in.)**	**Dowels and Vertical Reinforcement**	**Top Footing Reinforcement**
8	3'-4"	12	2'-8"	9	#3 @ 32" o.c.	#3 @ 27" o.c.
	4'-0"	12	3'-0"	9	#4 @ 32" o.c.	#3 @ 27" o.c.
	4'-8"	12	3'-3"	10	#5 @ 32" o.c.	#3 @ 27" o.c.
	5'-4"	14	3'-8"	10	#4 @ 16" o.c.	#4 @ 27" o.c.
	6'-0"	15	4'-2"	12	#6 @ 24" o.c.	#4 @ 27" o.c.
12	3'-4"	12	2'-8"	9	#3 @ 32" o.c.	#3 @ 27" o.c.
	4'-0"	12	3'-0"	9	#3 @ 32" o.c.	#3 @ 27" o.c.
	4'-8"	12	3'-3"	10	#4 @ 32" o.c.	#3 @ 27" o.c.
	5'-4"	14	3'-8"	10	#4 @ 24" o.c.	#3 @ 25" o.c.
	6'-0"	15	4'-2"	12	#4 @ 16" o.c.	#4 @ 30" o.c.
	6'-8"	16	4'-6"	12	#6 @ 24" o.c.	#4 @ 22" o.c.
	7'-4"	18	4'-10"	12	#7 @ 32" o.c.	#5 @ 26" o.c.
	8'-0"	20	5'-4"	12	#7 @ 24" o.c.	#5 @ 21" o.c.
	8'-8"	22	5'-10"	14	#7 @ 16" o.c.	#6 @ 26" o.c.
	9'-4"	24	6'-4"	14	#8 @ 8" o.c.	#6 @ 21" o.c.

* Design based on zero slope soil backfill weighing 100 pcf with an equivalent fluid pressure of 45 pcf and a soil bearing pressure 1,500 psf, with no surcharge load. Reinforcing steel is deformed bars with a yield strength of 40,000 psi.

Figure 13-17 Concrete masonry retaining walls. (*Adapted from Randall and Panarese,* Concrete Masonry Handbook, *Portland Cement Association.*)

ment (either geogrids or geotextiles) extends through the interface between the SRW units and into the soil to create a composite gravity mass structure. This composite structure offers increased resistance for taller walls, surcharged structures, or more difficult soil conditions. As an alternative to a single high wall in steeply sloped areas, two shorter walls can be stepped against the slope (*see Fig. 13-25*).