



RETAINING WALL

Revised:

Drawing No:

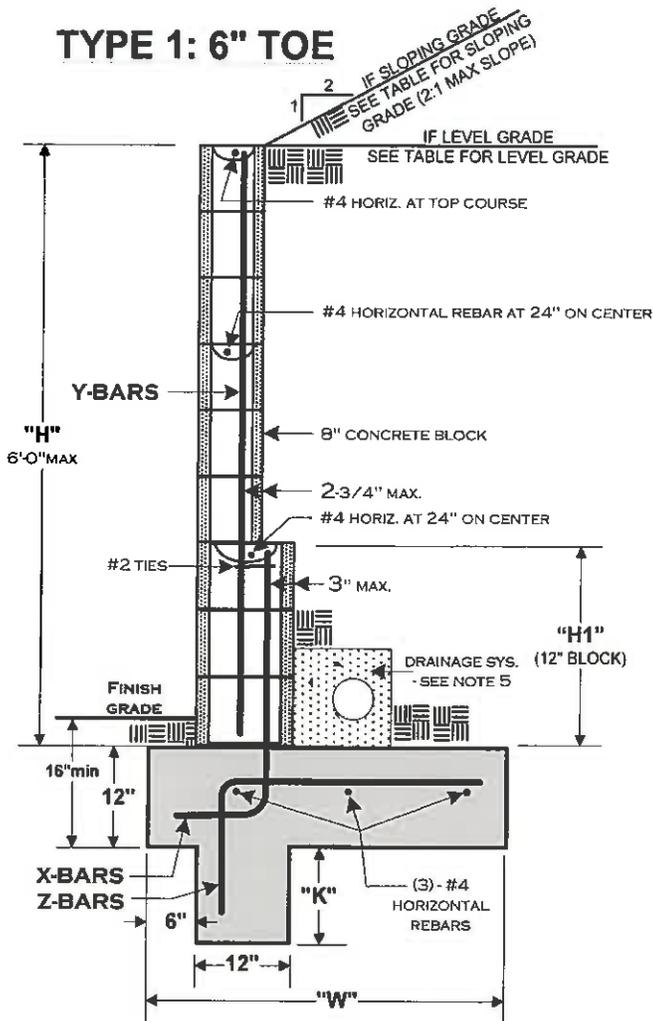
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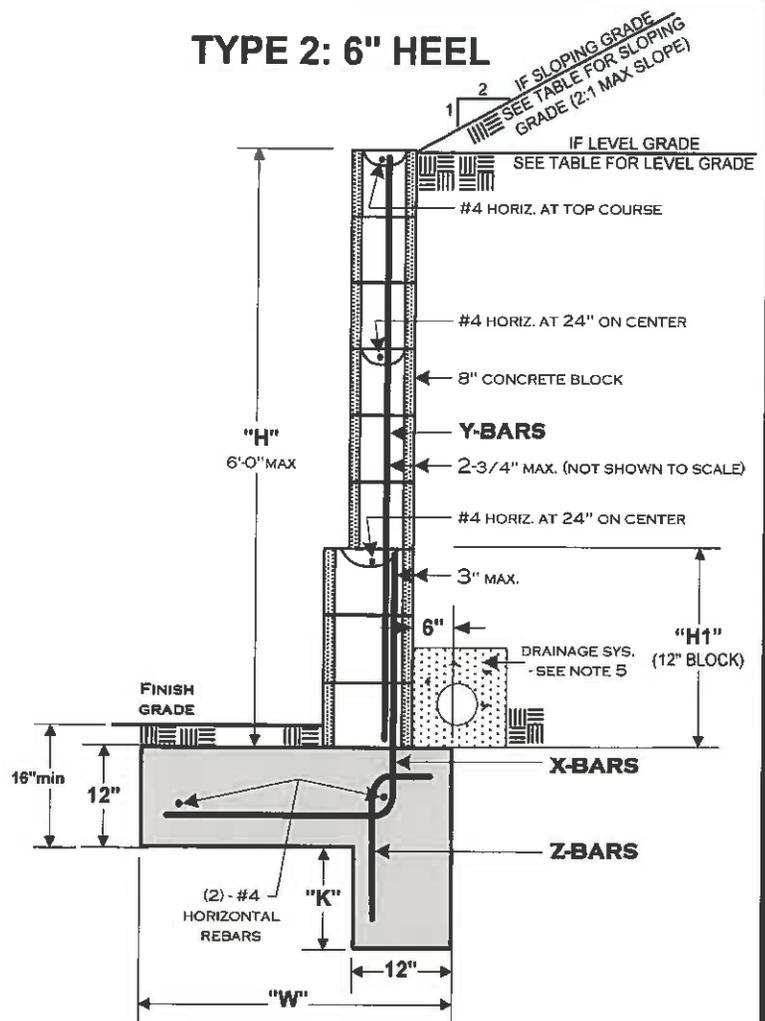
Date 3-24-14

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TYPE 1: 6" TOE



TYPE 2: 6" HEEL



TYPE 1: 6" TOE

GRADE CONDITION	"H" (WALL HEIGHT)	"H1" (12" BLOCK)	"W" (FOOTING WIDTH)	X BARS	Y BARS	ZBARS	"K" (KEY DEPTH)
SLOPING GRADE AT TOP OF WALL (2:1 MAX)	5'-1" to 6'-0"	24"	69"	#4 @ 16"	#4 @ 32"	#4 @ 11"	30"
	4'-1" to 5'-0"	N/R	48"	#4 @ 16"	#4 @ 16"	#4 @ 12"	25"
	3'-1" to 4'-0"	N/R	30"	#4 @ 32"	#4 @ 32"	#4 @ 32"	16"
	Up to 3'-0"	N/R	18"	#4 @ 32"	#4 @ 32"	#4 @ 32"	8"
LEVEL GRADE AT TOP OF WALL	5'-1" to 6'-0"	24"	45"	#4 @ 24"	#4 @ 32"	#4 @ 24"	8"
	4'-1" to 5'-0"	N/R	36"	#4 @ 24"	#4 @ 24"	#4 @ 24"	7"
	3'-1" to 4'-0"	N/R	24"	#4 @ 32"	#4 @ 32"	#4 @ 32"	5"
	Up to 3'-0"	N/R	21"	#4 @ 32"	#4 @ 32"	#4 @ 32"	N/R

TYPE 2: 6" HEEL

GRADE CONDITION	"H" (WALL HEIGHT)	"H1" (12" BLOCK)	"W" (FOOTING WIDTH)	X BARS	Y BARS	ZBARS	"K" (KEY DEPTH)
SLOPING GRADE AT TOP OF WALL (2:1 MAX)	5'-1" to 6'-0"	24"	39"	#4 @ 16"	#4 @ 32"	#4 @ 12"	28"
	4'-1" to 5'-0"	N/R	29"	#4 @ 16"	#4 @ 16"	#4 @ 12"	22"
	3'-1" to 4'-0"	N/R	24"	#4 @ 32"	#4 @ 32"	#4 @ 32"	15"
	Up to 3'-0"	N/R	18"	#4 @ 32"	#4 @ 32"	#4 @ 32"	8"
LEVEL GRADE AT TOP OF WALL	5'-1" to 6'-0"	24"	33"	#4 @ 24"	#4 @ 32"	#4 @ 24"	18"
	4'-1" to 5'-0"	N/R	26"	#4 @ 24"	#4 @ 24"	#4 @ 24"	13"
	3'-1" to 4'-0"	N/R	20"	#4 @ 32"	#4 @ 32"	#4 @ 32"	7"
	Up to 3'-0"	N/R	20"	#4 @ 32"	#4 @ 32"	#4 @ 32"	N/R

N/R = NOT REQUIRED



COMBINED GARDEN WALL - RETAINING WALL

LEVEL BACKFILL - NO SURCHARGE
WALL AT CENTER OF FOOTING

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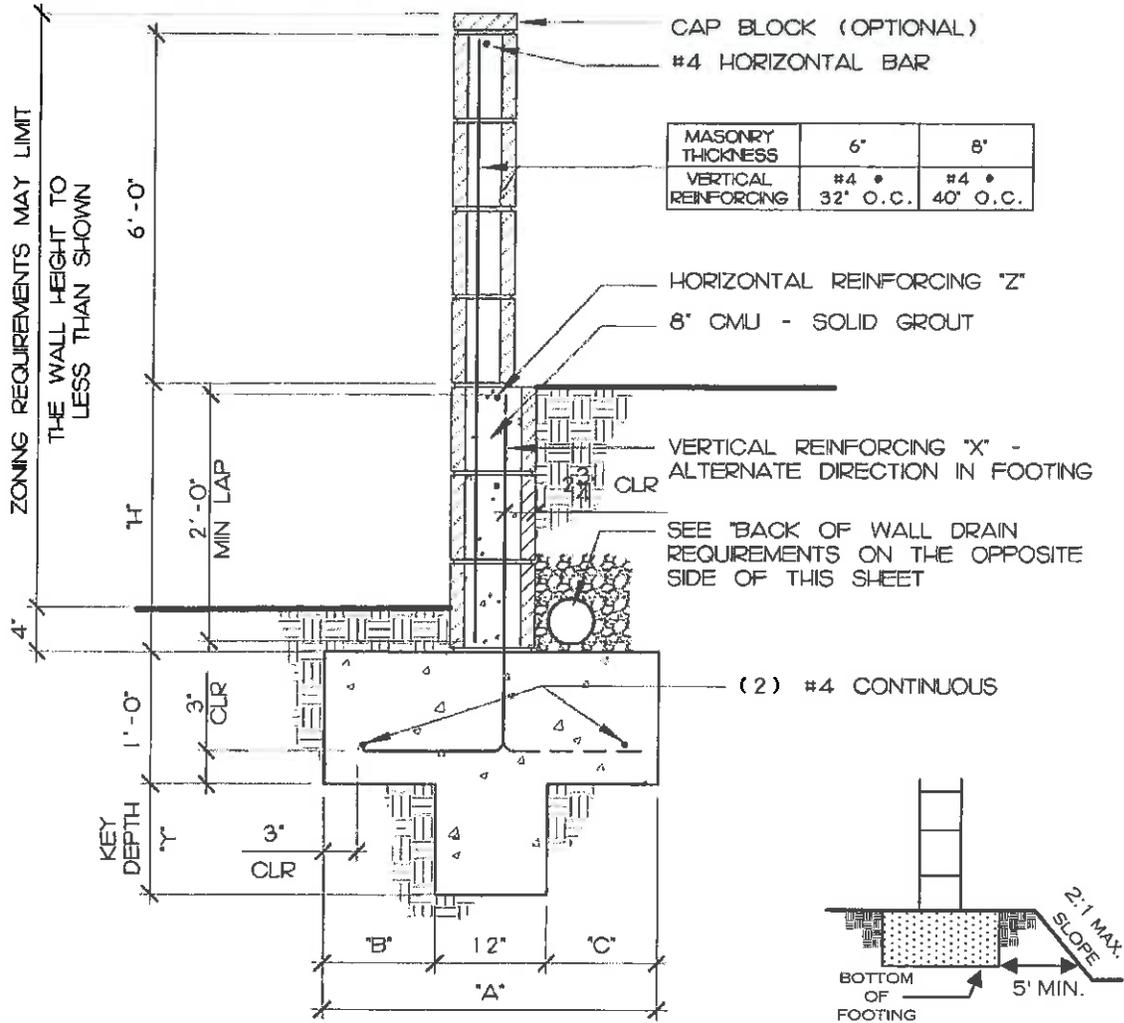
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SEE PAGE 7 FOR INSPECTION REQUIRMENTS, CONSTRUCTION REQUIREMENTS, MATERIALS, SPECIFICATIONS AND DETAILS

WALL SCHEDULE

WALL HEIGHT "H"	FOOTING WIDTH "A"	TOE WIDTH "B"	HEEL WIDTH "C"	KEY WIDTH "D"	KEY DEPTH "Y"	VERTICAL REINFORCING "X"	HORIZONTAL REINFORCING "Z"
2'-0"	2'-2"	1'-0"	1'-2"	0"	0"	#4 @ 32" O.C.	1 - #4 TOP
2'-8"	2'-5"	1'-2"	3"	12"	4"	#5 @ 32" O.C.	1 - #4 TOP
3'-4"	2'-9"	1'-3"	6"	12"	6"	#5 @ 32" O.C.	1 - #4 TOP & MD HEIGHT



COMBINED GARDEN WALL - RETAINING WALL

LEVEL BACKFILL - NO SURCHARGE
FOOTING AT EXPOSED SIDE

Revised:

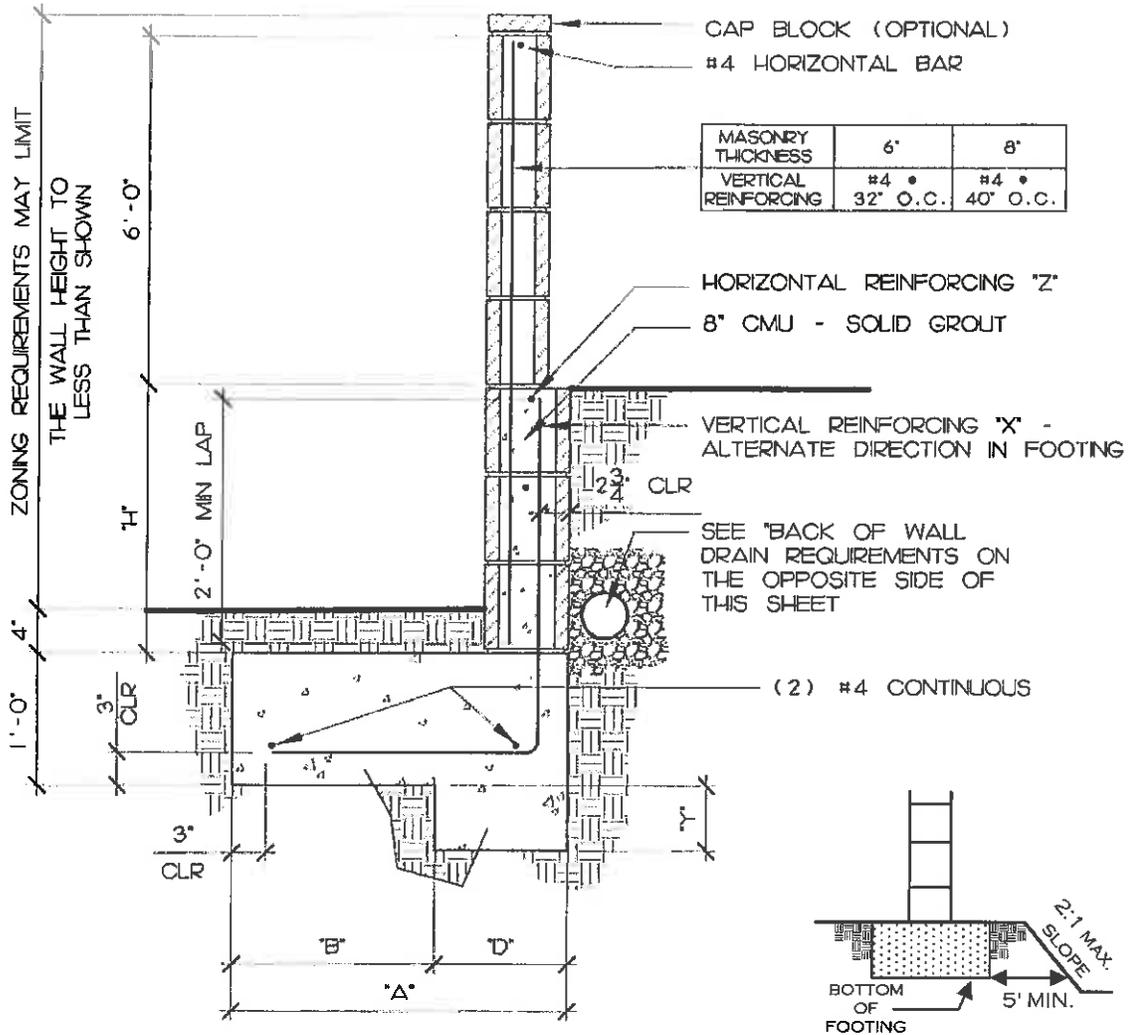
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WALL SCHEDULE

WALL HEIGHT "H"	FOOTING WIDTH "A"	TOE WIDTH "B"	KEY WIDTH "D"	KEY DEPTH "Y"	VERTICAL REINFORCING "X"	HORIZONTAL REINFORCING "Z"
2'-0"	1'-11"	11"	12"	4"	#4 @ 32" O.C.	1 - #4 TOP
2'-8"	2'-5"	1'-5"	12"	5"	#5 @ 32" O.C.	1 - #4 TOP
3'-4"	2'-8"	1'-8"	12"	8"	#5 @ 32" O.C.	1 - #4 TOP & MID HEIGHT



COMBINED GARDEN WALL - RETAINING WALL

LEVEL BACKFILL - NO SURCHARGE
FOOTING AT RETAINED SIDE

Revised:

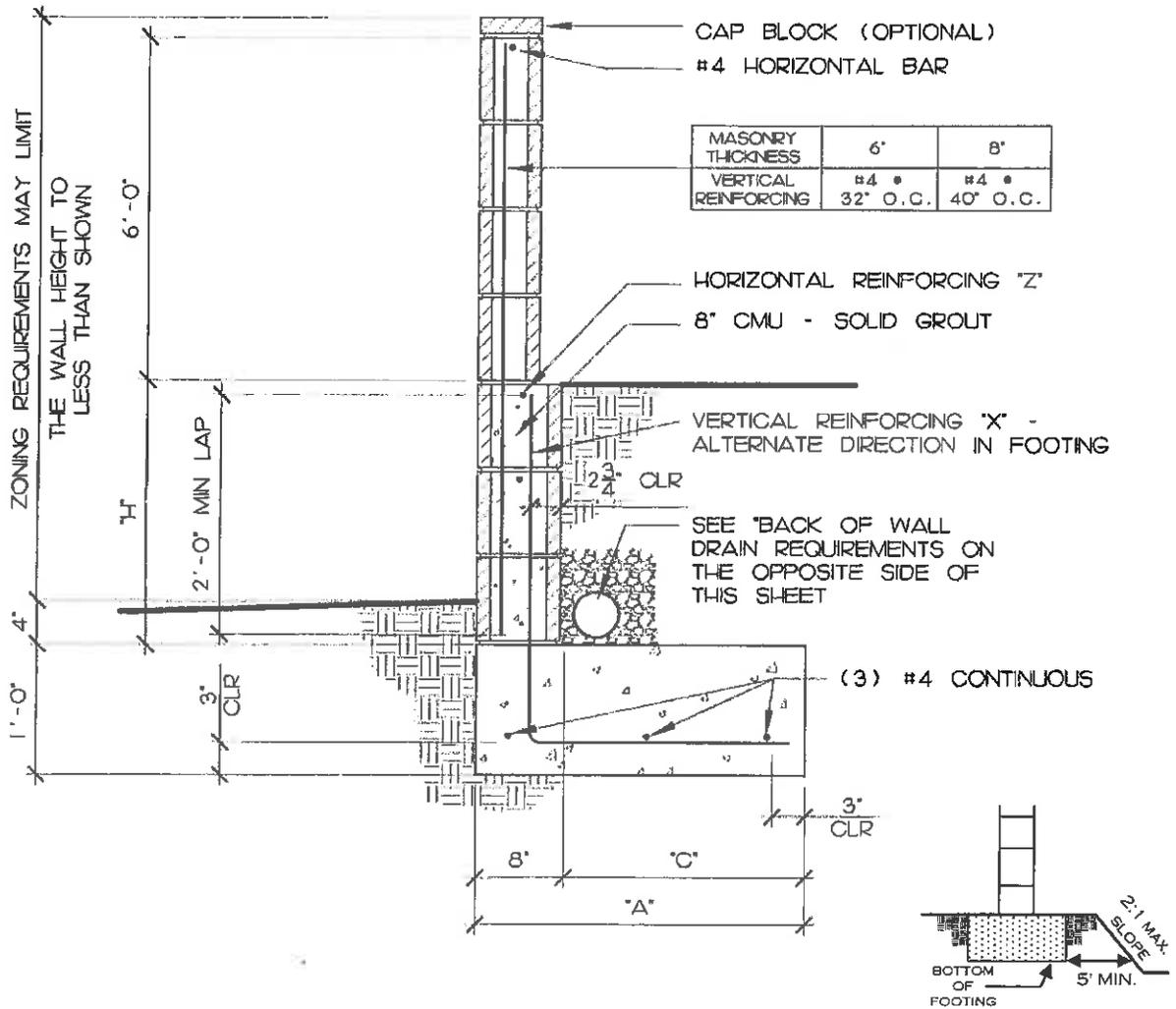
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WALL SCHEDULE

WALL HEIGHT "H"	FOOTING WIDTH "A"	HEEL WIDTH "C"	VERTICAL REINFORCING "X"	HORIZONTAL REINFORCING "Z"
2'-0"	2'-11"	2'-3"	#4 @ 32" O.C.	1 - #4 TOP
2'-8"	3'-2"	2'-6"	#5 @ 32" O.C.	1 - #4 TOP
3'-4"	3'-8"	3'-0"	#5 @ 32" O.C.	1 - #4 TOP & MID HEIGHT



**COMBINED GARDEN WALL -
RETAINING WALL
LEVEL BACKFILL - NO SURCHARGE
WALL AT CENTER OF FOOTING**

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NOTES:

CONSTRUCTION REQUIREMENTS

1. All work shall conform to the 2013 CBC.
2. Minimum reinforcing steel lap splice = 24".
3. Expansion joints required every 25-feet maximum.
4. All masonry cells shall be grouted solid at retaining wall section and all cells with steel at garden wall section
5. Minimum 3-inches of concrete cover for reinforcing in footings.

REQUIRED INSPECTIONS

1. Foundation: Footing excavated with all reinforcing steel placed and supported. Wall location verified.
2. Pre-Grout: All masonry units installed. All vertical and horizontal reinforcing installed and supported.
3. Back of wall drain: Drain rock installed. Drain pipe installed (where used). Drain pipe cleanouts installed (where used). Bottom course head joints open and clear (walls 2'-8" high or less).
4. Final inspection: Wall construction completed. Backfill behind wall installed and compacted.

BACK OF WALL DRAIN REQUIREMENTS (FOR COMBINATION WALLS ONLY)

1. Walls 2'-8" high or less:
 - a. 12" x 12" of clean gravel placed at top of footing level for the entire length of the retaining wall.
 - b. Head joints open and clear for all masonry units on the bottom course of the retaining wall.
 - c. System for walls higher than 2'-8" as shown in item 2 below.
2. Walls higher than 2'-8":
 - a. Minimum 3" diameter perforated drain pipe in 12" x 12" clean gravel placed at top of footing for entire length of the retaining wall..
 - b. Drain pipe daylighted to grade for drainage.
 - c. Drain pipe sloped minimum of 1/8" per foot to an at-grade opening.
 - d. Provide cleanouts in the drain pipe at 50' o.c. maximum.

MATERIAL SPECIFICATIONS

- Concrete Masonry Shall Conform To ASTM C90
F'm = 1,500 psi
- Mortar: Type M - 2,500 psi or Type S - 1,800 psi
- Grout Shall Conform To ASTM C476, 2,000psi
- Concrete: Minimum 2,500 psi, Type V Cement
- Steel Reinforcing: Grade 60, ASTM A615

DESIGN CRITERIA

- 2013 CBC & City of Upland Amendments
- Soil Bearing Value: 1,500 psf.
- Active Soil Pressure: 45.0 psf/ft.
- Passive Soil Pressure: 250.0 psf/ft.
- Soil Density: 115.0 psf.
- Soil Friction: 0.35.
- Wind Load: 14.84 psf.
- No Seismic Load for Walls Less Than 6' high.