



EXAMPLE WALL TYPES

Attached are wall type samples for your reference

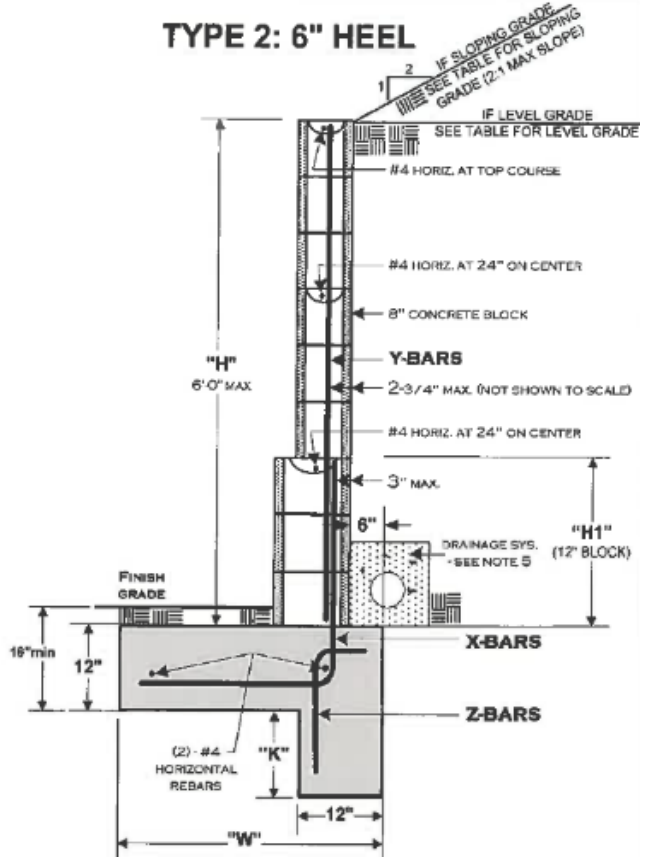
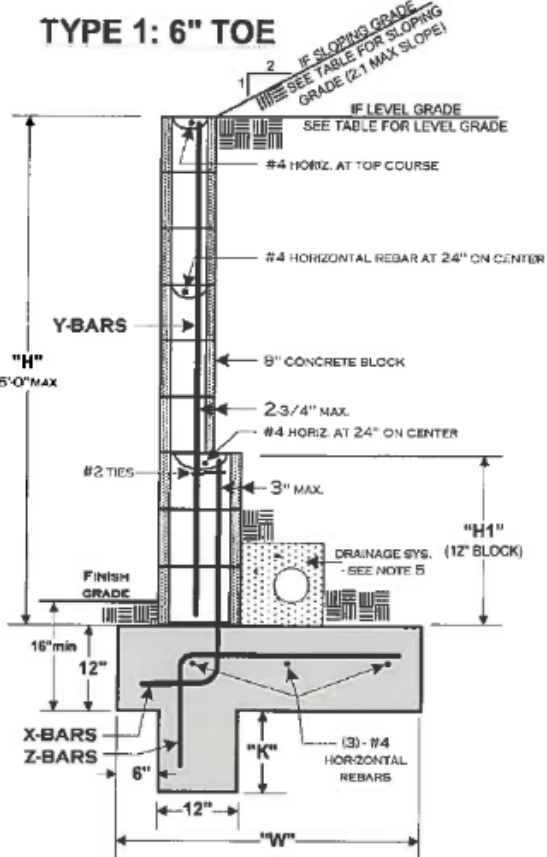
- Retaining Wall
 - With and without Surcharge
 - Freestanding L-Type

- Masonry Wall
 - Wall at the Center of Footing (Non retaining wall)
 - Pole Type Footings

- Combined - Masonry and Retaining wall
 - Wall at Center of Footing without Surcharge
 - Notes page



Retaining Wall (with and without Surcharge)



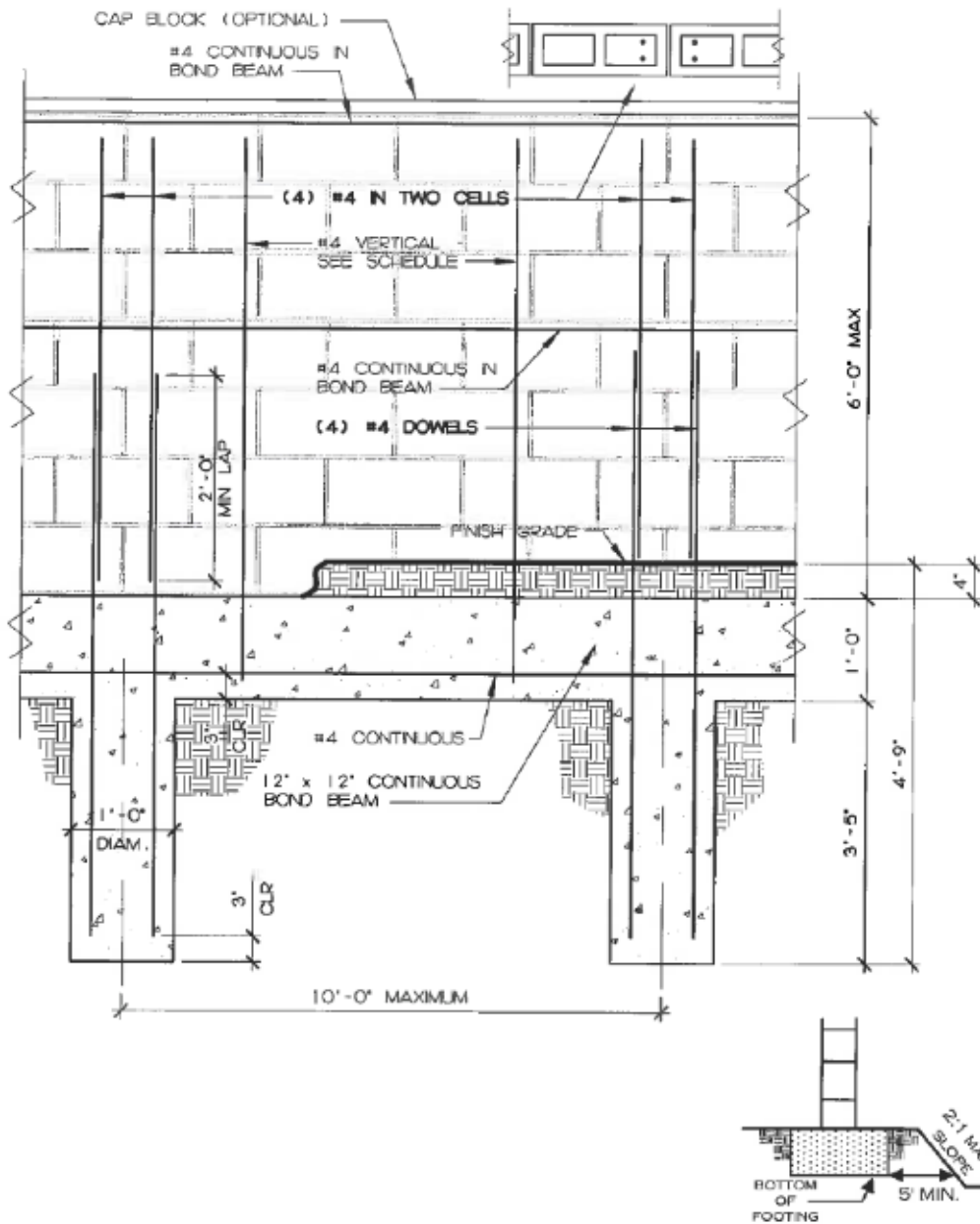
TYPE 1: 6" TOE							
GRADE CONDITION	"H" (WALL HEIGHT)	"H1" (12" BLOCK)	"W" (FOOTING WIDTH)	X BARS	Y BARS	Z BARS	"K" (KEY DEPTH)
SLOPING GRADE AT TOP OF WALL (2:1 MAX)	5'- 1" to 6"- 0"	24"	69"	#4@ 16"	#4@ 32"	#4@ 11"	30"
	4'- 1" to 5'- 0"	N/R	48"	#4@ 16"	#4@ 16"	#4@ 12"	25"
	3'- 1" to 4'- 0"	N/R	30"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

TYPE 2: 6" HEEL							
GRADE CONDITION	"H" (WALL HEIGHT)	"H1" (12" BLOCK)	"W" (FOOTING WIDTH)	X BARS	Y BARS	Z BARS	"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"	26"
	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@ 16"	#4@ 32"	#4@ 11"	18"
	4'- 1" to 5'- 0"	N/R	26"	#4@ 16"	#4@ 16"	#4@ 12"	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



Masonry Wall Pole Type Footings



WALL SCHEDULE

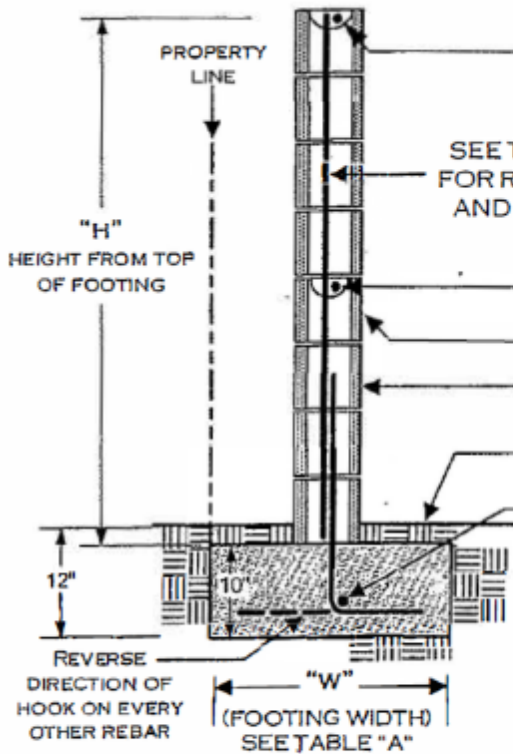
MASONRY THICKNESS	6"	8"
VERTICAL REBAR SPACING	32" O.C.	40" O.C.



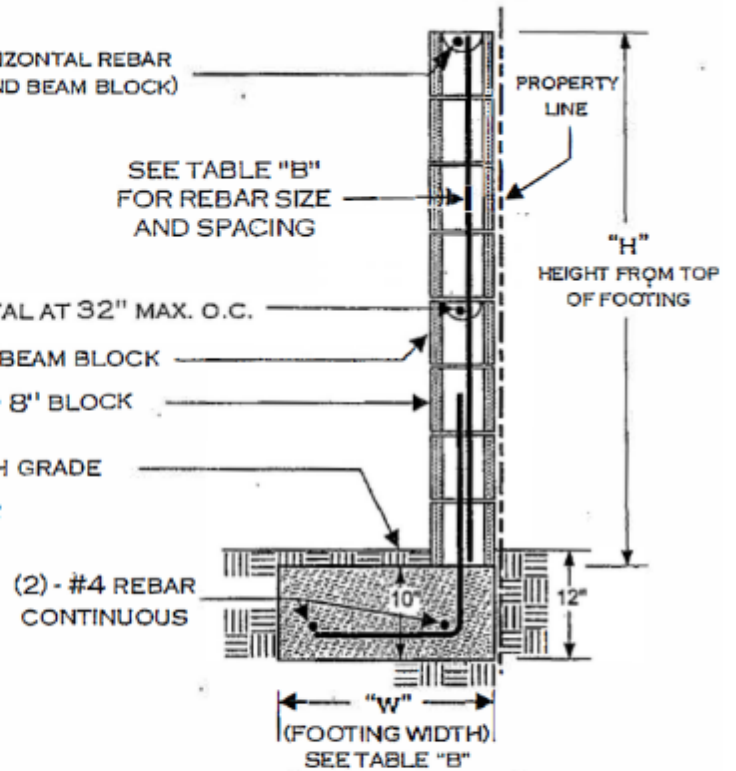
Masonry Freestanding L-Type Wall

DESIGNED FOR 80 MPH WIND SPEED

FOOTING OPTION "A"

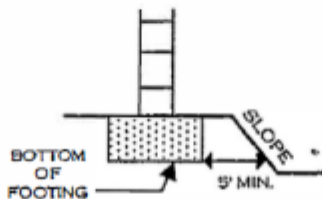


FOOTING OPTION "B"



"H"	"W"	VERTICAL REINFORCEMENT #4 REBAR
3'	18"	48" O.C.
4'	20"	48" O.C.
5'	24"	24" O.C.
6'	27"	24" O.C.

ALL FOOTINGS ADJACENT TO SLOPES TO BE AT LEAST 5' TO DAYLIGHT AS SHOWN BELOW.



"H"	"W"	VERTICAL REINFORCEMENT #4 REBAR
3'	19"	48" O.C.
4'	24"	48" O.C.
5'	32"	24" O.C.
6'	39"	24" O.C.

NOTES:

- 1) This design does **NOT** allow grade differentials of more than 6" on opposing sides of the wall. This is **NOT** a retaining wall.
- 2) Fence heights are regulated - consult with your local zoning regulations before beginning construction.
- 3) No water course or natural drainage shall be obstructed.
- 4) Grout **ONLY** the cells containing rebar. This wall is **NOT** designed for all cells to be grouted.
- 5) All rebar to be ASTM spec. A615, grade 40 minimum.
- 6) All rebar lap splices to be 24" minimum.
- 7) All masonry units to be ASTM C-90 grade N.
- 8) Rebar to be centered in masonry cells.

Check with the **BUILDING DEPARTMENT** to Verify if a **BUILDING PERMIT IS REQUIRED.**

When a permit is required, the following inspections are required:

- 1) **FOOTING**; Excavation trench clean with Steel in place and supported 3" above and away from the surrounding. The earth/dirt.
- 2) **REBAR/PRE-GROUT**; Bond beam rebar and vertical rebar in place - inspection prior to placing grout.
- 3) **FINAL**: After grout is placed prior to any Decorative cap placement.

DISCLAIMER:.

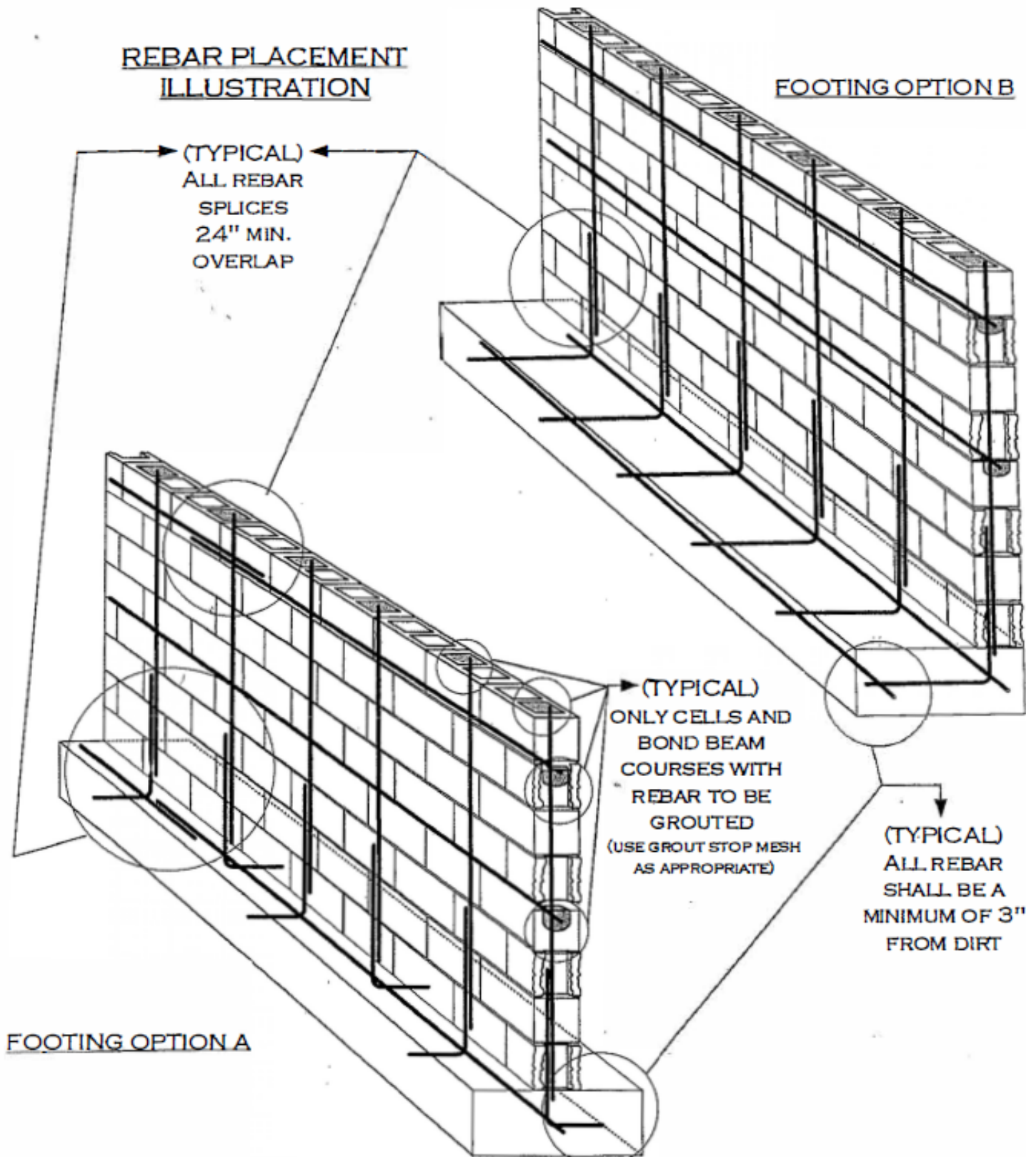
Alternate designs may be possible when provided with an engineered analysis. Use of this standard design is at the user's risk and carries no implied or inferred guarantee against failure or defects.



Masonry Freestanding L-Type Wall

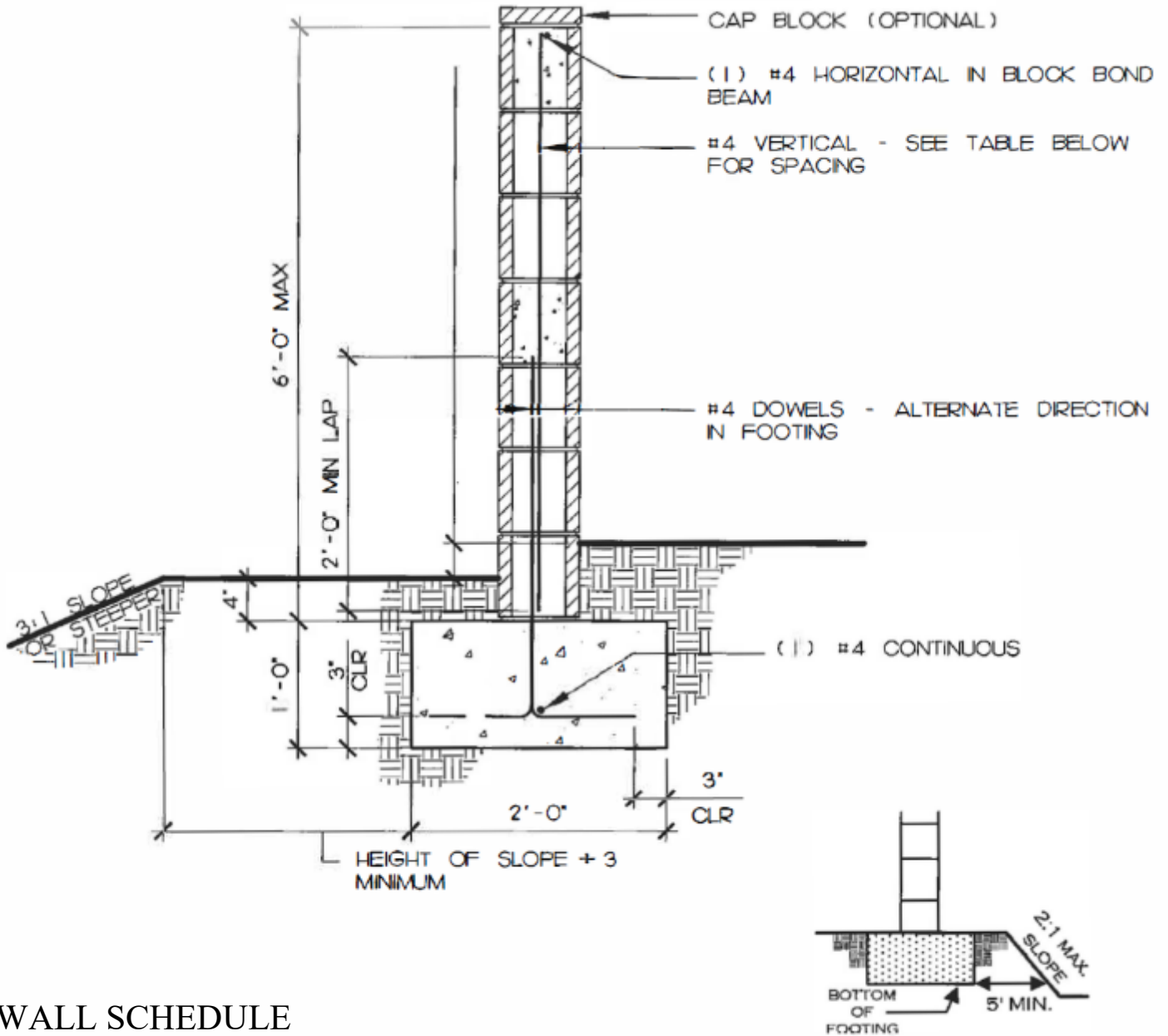
DESIGNED FOR 80 MPH WIND SPEED

REBAR PLACEMENT ILLUSTRATION





Combined wall at Center of Footing (without surcharge)



WALL SCHEDULE

WALL HEIGHT "H"	FOOTING HEIGHT "A"	TOE WIDTH "B"	HEEL WIDTH "C"	KEY WIDTH "D"	KEY WIDTH "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 & MID HEIGHT



Combined wall NOTES page

CONSTRUCTION REQUIREMENTS

1. All work shall conform to the 2022 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

1. Concrete masonry shall conform to ASTM C90
F'm = 1,500 psi
2. Mortar: Type M - 2,500 psi or type S -1,800 psi
3. Grout Shall Conform to ASTM C476, 2,000 psi
4. Concrete: Minimum 2,500 psi, type V Cement
5. Steel Reinforcing: Grade 60, ASTM A615

DESIGN CRITERIA

1. 2022 CBC & City of Upland Amendments
2. Soil Bearing Value: 1,500 psf.
3. Active Soil Pressure: 45.0 psf/ft.
4. Passive Soil Pressure: 250.0 psf/ft.
5. Soil Density: 115.0 psf.
6. Soil Friction: 0.35.
7. Wind Load: 14.84 psf.
8. No Seismic load for Walls Less Than 6' high.