

Chapter 9 DESIGN DETAILS

The following chapter contains drawings, design details, and charts for recommended use with SmartBlock insulating forms. These drawings, design details, and charts are based upon generally approved design and engineering techniques and are intended **as guides only**.

Because specific conditions may vary, architects, engineers, and local building officials should be consulted for proper application in all SmartBlock insulating form projects.

9.1 Design Section

TABLE "A"

30 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	1'-9"	6"	-	-	#4 @ 20"
4'	2'-2"	6"	6"	9"	#4 @ 20"
5'	2'-9"	1'-0"	9"	1'-0"	#4 @ 20"
6'	3'-4"	1'-0"	1'-0"	1'-0"	#5 @ 20"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"

35 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	1'-9"	6"	3"	6"	#4 @ 20"
4'	2'-3"	6"	8"	9"	#4 @ 20"
5'	3'-0"	1'-0"	10"	1'-0"	#4 @ 20"
6'	3'-8"	1'-0"	1'-4"	1'-0"	#5 @ 20"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"
40 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	1'-1"	6"	4"	6"	#4 @ 20"
4'	2'-6"	6"	10"	9"	#4 @ 20"
5'	3'-2"	1'-0"	1'-2"	1'-0"	#4 @ 20"
6'	3'-10"	1'-0"	1'-7"	1'-0"	#5 @ 20"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"
45 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	2'-0"	6"	6"	6"	#4 @ 20"
4'	2'-8"	6"	1'-0"	9"	#4 @ 20"
5'	3'-6"	1'-0"	1'-4"	1'-0"	#4 @ 20"
6'	4'-0"	1'-0"	1'-10"	1'-6"	#5 @ 20"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"
50 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	2'-2"	6"	9"	6"	#4 @ 20"
4'	2'9"	6"	1'-2"	9"	#4 @ 20"
5'	3'-6"	1'-0"	1'-6"	1'-0"	#5 @ 20"
6'	4'-3"	1'-0"	2'-0"	1'-6"	#5 @ 20"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"
55 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	2'-2"	6"	9"	6"	#4 @ 20"
4'	2'-11"	6"	1'-3"	9"	#4 @ 20"
5'	3'-8"	1'-0"	1'-8"	1'-6"	#5 @ 20"
6'	4'-6"	1'-0"	2'-3"	1'-9"	#5 @ 20"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"
60 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	2'-3"	6"	10"	6"	#4 @ 20"
4'	3'-2"	6"	1'-5"	1'-0"	#4 @ 20"
5'	3'-10"	1'-0"	1'-10"	1'-6"	#5 @ 20"
6'	4'-8"	1'-0"	2'-5"	2'-0"	#5 @ 10"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"
65 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	2'-3"	6"	1'-0"	9"	#4 @ 20"
4'	3'-1"	6"	1'-6"	1'-3"	#4 @ 20"
5'	3'-11"	1'-0"	2'-0"	1'-6"	#5 @ 20"
6'	4'-9"	1'-0"	2'-7"	2'-0"	#5 @ 10"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"
70 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	2'-4"	6"	1'-0"	1'-0"	#4 @ 20"
4'	3'-3"	1'-0"	1'-6"	1'-3"	#4 @ 20"
5'	4'-1"	1'-0"	2'-2"	1'-6"	#5 @ 20"
6'	4'-11"	1'-0"	2'-10"	2'-3"	#5 @ 10"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "A"
75 PCF ACTIVE SOIL PRESSURE

H	B	C	D	E	X BARS
3'	2'-5"	6"	1'-1"	1'-0"	#4 @ 20"
4'	3'-4"	1'-0"	1'-8"	1'-6"	#4 @ 20"
5'	4'-3"	1'-0"	2'-4"	1'-6"	#5 @ 20"
6'	5'-1"	1'-0"	2'-11"	2'-6"	#5 @ 10"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "B"
8 FOOT RETAINING WALL

ACTIVE SOIL PRESSURE	H	B	C	D	COURSES OF VWF 8	E	X BARS
30	8'	4'-6"	1'-0"	1'-10"	-	2'-0"	#5 @ 10"
35	8'	4'-11"	1'-0"	2'-2"	-	2'-0"	#5 @ 10"
40	8'	5'-4"	1'-0"	2'-6"	-	2'-0"	#5 @ 10"
45	8'	5'-6"	1'-0"	2'-10"	-	3'-0"	#5 @ 10"
50	8'	5'-10"	1'-0"	3'-1"	-	3'-0"	#6 @ 10"
55	8'	6'-2"	1'-0"	3'-4"	1	3'-0"	#6 @ 10"
60	8'	6'-7"	1'-0"	3'-8"	1	3'-0"	#6 @ 10"
65	8'	6'-10"	1'-0"	3'-10"	1	3'-6"	#6 @ 10"
70	8'	7'-0"	1'-6"	3'-11"	1	3'-6"	#6 @ 10"
75	8'	7'-2"	1'-6"	4'-2"	2	3'-6"	#6 @ 10"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "C"
10 FOOT RETAINING WALL

ACTIVE SOIL PRESSURE	H	B	C	D	E	COURSES OF VWF8	X BARS	Y BARS
40	10'	6'-0"	1'-6"	3'-4"	3'-0"	3	#7 @ 10"	-
45	10'	6'-6"	1'-6"	3'-8"	3'-6"	3	#7 @ 10"	-
50	10'	7'-0"	1'-6"	4'-1"	4'-0"	3	#6 @ 10"	#7 @ 9"
55	10'	7'-0"	1'-6"	4'-4"	4'-0"	3	#6 @ 10"	#7 @ 8"

- Note: 1. Design is also based upon:
- a. Soil bearing capacity of 1000 PSF
 - b. Soil weight of 120 PCF
 - c. Passive pressure of 250 PSF
 - d. Coefficient of friction = 0.35
 - e. Consult with a local soil engineer or building department official to verify all soil values.
- 2.
- a. $f_y = 40,000$ psi for #4; $f_y = 60,000$ psi for #5 or larger
 - b. Consult with local building officials to verify conformance with minimum and maximum steel requirements.

TABLE "D"
STEM WALL FOUNDATIONS - WOOD FRAME WALLS

STORIES	A (MIN.)	B (MIN.)	C (MIN.)
ONE	1' - 0"	6"	1' - 0"
TWO	1' - 3"	7"	1' - 6"

TABLE "E"
FULL HEIGHT SMARTBLOCK WALLS

STORIES	A (MIN.)	B (MIN.)	C (MIN.)
ONE	1' - 9"	9"	1' - 0"
TWO	3' - 0"	1' - 3"	1' - 6"