TYPE A & B SOILS					
Depth of Trench (ft.)	Model Length (ft.) *WS= Standard WH= Heavy Duty*	Horiz. Cyl. Spacing (ft.)	Max. Vert. Spacing (ft.)	Max. Width of Trench (ft.) *Up to12 ft. - SEE NOTE* 2 12-15 ft. - SEE NOTE* 9*	Sheeting SEE NOTE* 3 and:
UP TO 10'	6WS, 6WH	5	4'	12' to 15'	4
	8WS, 8WH	6.0, 7.0	4'	12' to 15'	4
	12WS3	5	4'	12' to 15'	4
	12WH3	5.25	4'	12' to 15'	4
	12WH	8	4'	12' to 15'	4
	12WHX	10.5	4'	12' to 15'	4
	16WH3	7.25	4'	12' to 15'	4
11' TO 15'	6WS, 6WH	5	4'	12' to 15'	5
	8WS, 8WH	6.0, 7.0	4'	12' to 15'	5
	12WS3	5	4'	12' to 15'	5
	12WH3	5.25	4'	12' to 15'	5
	12WH	8	4'	12' to 15'	5
	12WHX	10.5	4'	12' to 15'	5
	16WH4	7.25 (1)	4'	12' to 15'	5
16' TO 20'	6WS, 6WH	5	4'	12' to 15'	5
	8WH	7	4'	12' to 15'	5
	12WS3	5	4'	12' to 15'	5
	12WH3	5.25	4'	12' to 15'	5
	12WH	8	4'	12' to 15'	5
	16WH4	7.25 (1)	4'	12' to 15'	5

*** SEE PAGE 14 FOR NOTES**

Nomenclature for Waler Models:

Prefix = waler length

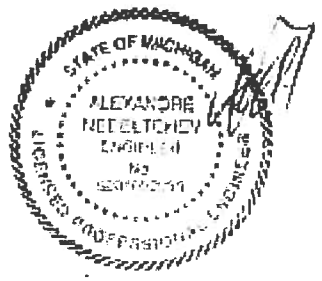
S = Standard Duty Walers

H = Heavy Duty Walers

X = 2 Cylinders At Maximum Spacing

Suffix = Number Of Cylinders

No Suffix = 2 Cylinders Minimum



01.04.2010

TYPE C-60 SOILS					
Depth of Trench (ft.)	Model Length (ft.) *WS= Standard WH= Heavy Duty*	Horiz. Cyl. Spacing (ft.)	Max. Vert. Spacing (ft.)	Max. Width of Trench (ft.) *Up to12 ft.* - SEE NOTE* 2 *12-15 ft.* - SEE NOTE* 9	Sheeting SEE NOTE* 3 and:
UP TO 10'	6WS, 6WH	5	4'	12' to 15'	5
	8WS, 8WH	6.0, 7.0	4'	12' to 15'	5
	12WS3	5	4'	12' to 15'	5
	12WH3	5.25	4'	12' to 15'	5
	12WH	8	4'	12' to 15'	5
	12WHX	10.5	4'	12' to 15'	5
	16WH3	7.25	4'	12' to 15'	5
11' TO 15'	6WS, 6WH	5	4'	12' to 15'	6
	8WS, 8WH	6.0, 7.0	4'	12' to 15'	6
	12WS3	5	4'	12' to 15'	6
	12WH3	5.25	4'	12' to 15'	6
	12WH	8	4'	12' to 15'	6
	12WHX	10.5	4'	12' to 15'	6
	16WH4	7.25 (1)	4'	12' to 15'	6
16' TO 20'	6WS, 6WH	5	4'	12' to 15'	7
	8WH	7	4'	12' to 15'	7
	16WH4	7.25 (1)	4'	12' to 15'	7

*** SEE PAGE 14 FOR NOTES**

Nomenclature for Waler Models:

Prefix = waler length

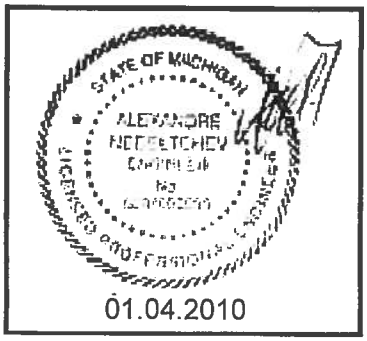
S = Standard Duty Walers

H = Heavy Duty Walers

X = 2 Cylinders At Maximum Spacing

Suffix = Number Of Cylinders

No Suffix = 2 Cylinders Minimum



01.04.2010

TYPE C-80 SOILS					
Depth of Trench (ft.)	Model Length (ft.) *WS= Standard WH= Heavy Duty*	Horiz. Cyl. Spacing (ft.)	Max. Vert. Spacing (ft.)	Max. Width of Trench (ft.) *Up to12 ft.* - SEE NOTE 2 *12-15 ft.* - SEE NOTE 9	Sheeting SEE NOTE 3 and:
UP TO 10'	6WS, 6WH	5	4'	12' or 15'	7, 8
	8WH	7.0	4'	12' or 15'	7, 8
	12WH3	5.25	4'	12' or 15'	7, 8
	12WH	8	4'	12' or 15'	7, 8
	12WHX	10.5	4'	12' or 15'	7, 8
	16WH3	7.25	4'	12' or 15'	7, 8
11' TO 15'	6WH	5	4'	12' or 15'	7, 8
	8WH	6.0, 7.0	4'	12' or 15'	7, 8
	16WH4	7.25 (1)	4'	12' or 15'	7, 8
16' TO 20'	6WH	5	4'	12' or 15'	7, 8

NOTES:

1. Utilize two, 2 in. diameter Hydraulic Cylinders. Trenches wider than 9'-4" up to 15' (112"-180") require Steel Oversleeves or universal one-piece aluminum extension, extending the full, collapsed length.
2. Utilize two, 2 in. diameter Hydraulic Cylinders with standard or heavy duty extension system as required for desired excavation width.
3. Plywood sheeting shall consist of 1.125 in. CDX plywood or .75 in. 14-ply Arctic Birch. Timber sheeting shall be #1 Douglas Fir with minimum Fb = 1,500 psi or equal.*
4. Provide 4 ft. wide plywood or 2x8 ft. timber sheeting at 2'0" O.C. if raveling or sloughing of excavation face appears likely to occur. The bottom of the sheeting shall extend to within 2 ft. of the bottom of the excavation.
5. Provide 4'0" wide plywood or 2x8 ft. timber sheeting at close spacing.
6. Provide 2x8 ft. timber sheeting at close spacing to bottom of excavation.
7. Provide 3x8 ft. timber sheeting at close spacing to bottom of excavation.
8. The max-distance from the bottom of the excavation to the bottom waler shall be 2½ ft. unless the sheeting is over-driven 1 ft. If over-driven, the maximun distance to the bottom waler shall be 4 ft.
9. Extra Heavy Duty Steel-Oversleeve Extensions Required

* See [13] of "General Information" for alternate sheeting.

Nomenclature for Waler Models:

Prefix = waler length

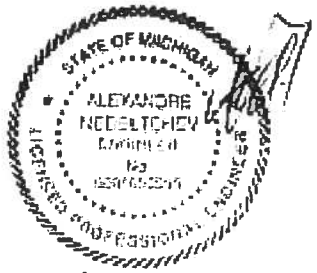
S = Standard Duty Walers

H = Heavy Duty Walers

X = 2 Cylinders At Maximum Spacing

Suffix = Number Of Cylinders

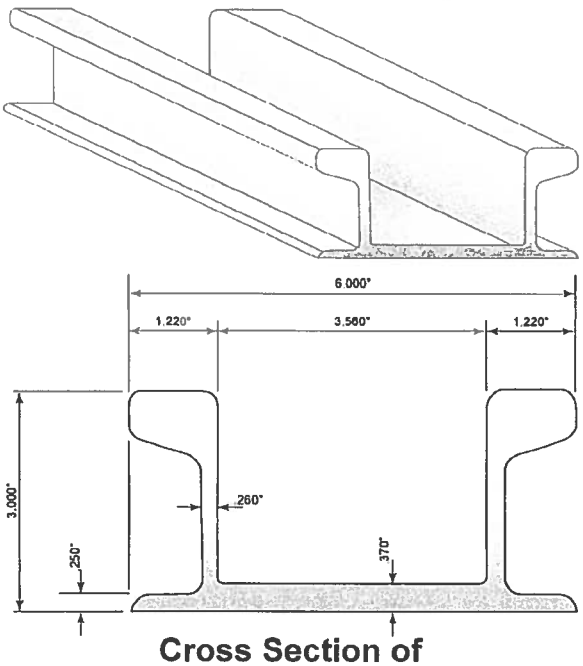
No Suffix = 2 Cylinders Minimum



Waler Rail Specification Sheet

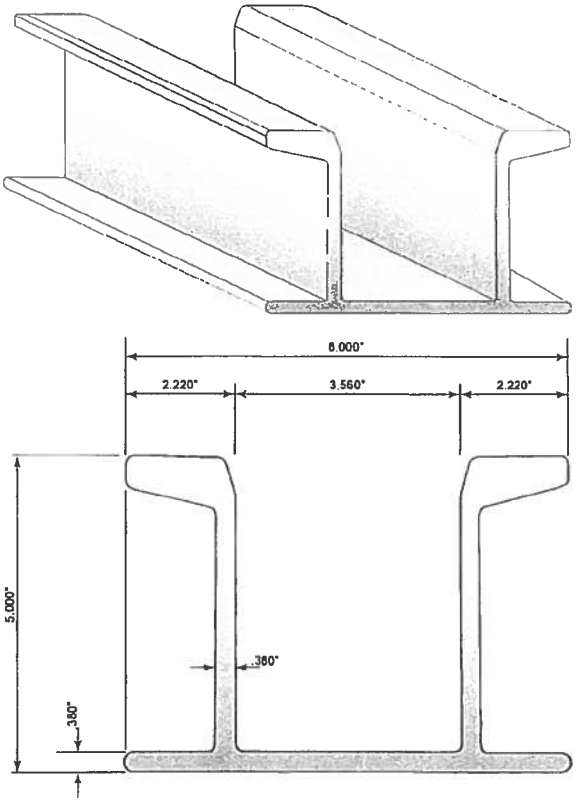
Section Properties	Standard Rail	Heavy Duty Rail
Material	Aluminum	Aluminum
Alloy	6061-T6	6061-T6
Area	4.87 in^2	9.76 $in.^2$
Weight	5.84 plf	11.72 plf
Section Modulus - Top (leg side)	S_x=3.62 $in.^3$	S_x=14.50 $in.^3$
Section Modulus - Bottom (blade side)	S_x=4.52 $in.^3$	S_x=14.40 $in.^3$
Equivalent Timber Size * (#2 Douglas Fir)	8x10 (on edge)	12x16 (on edge)

Standard Vertical Rail



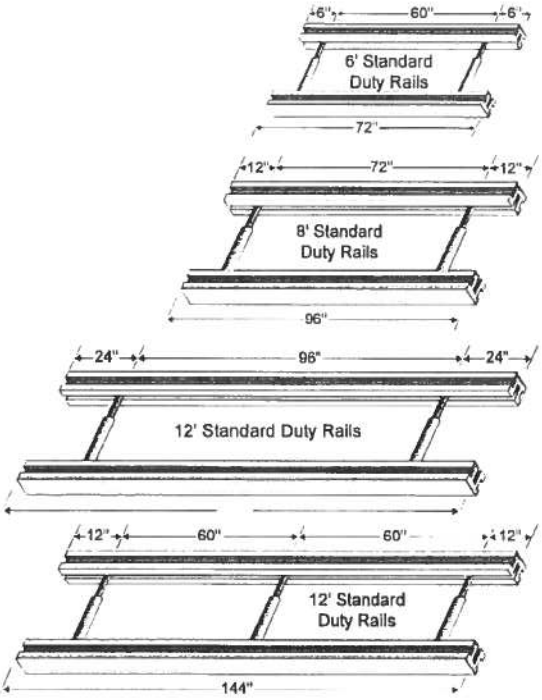
Cross Section of Standard Waler

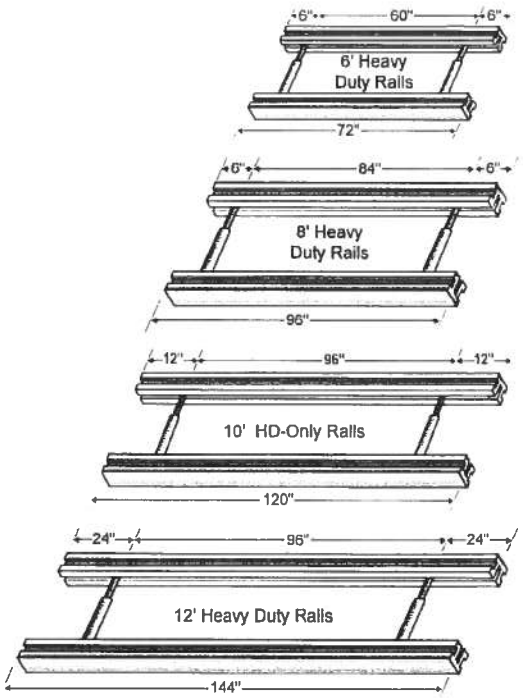
Heavy-Duty Vertical Rail

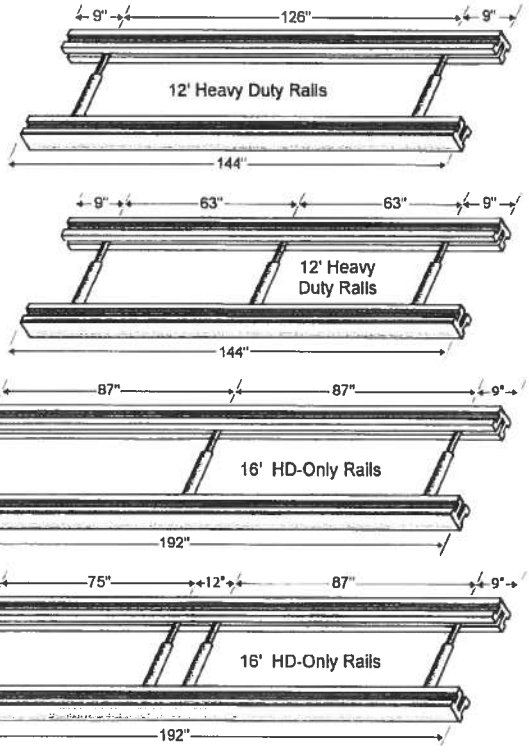


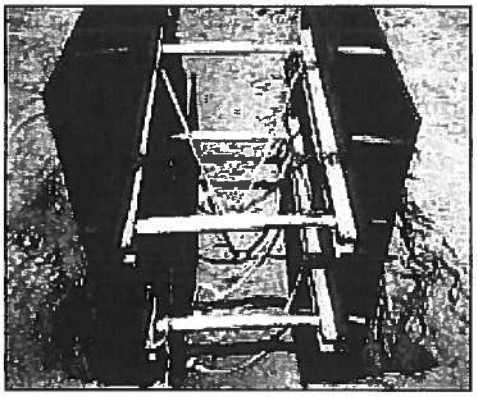
Cross Section of Heavy-Duty Waler

Waler Rail Specification Sheet







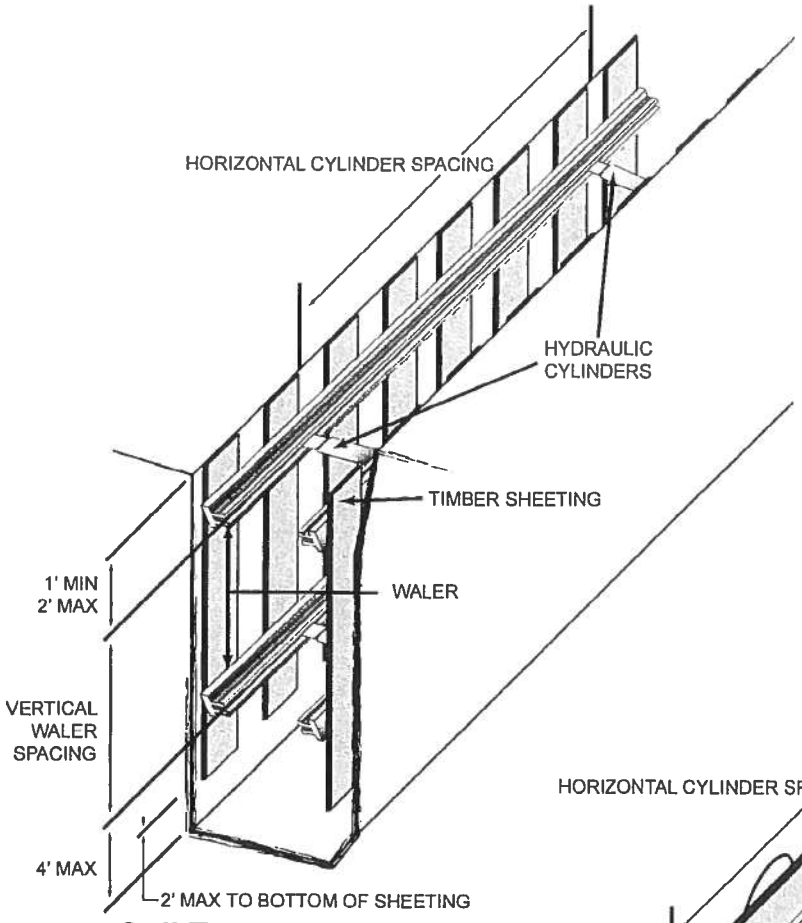


For Installing walers into trench:

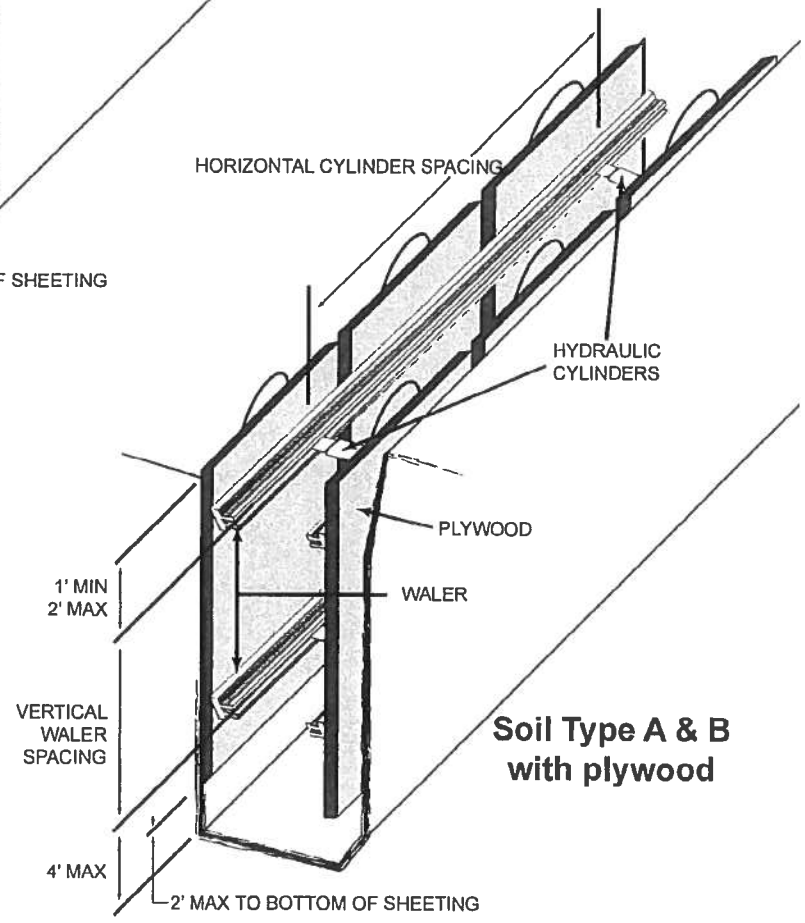
1. Attach sling to the lower waler set.
2. Lower the waler set stacked one on top of the other.
3. Lower the walers into the trench until the top set of walers are in place.
4. Pump the top cylinders out until the pump gage is in the green zone. Check pump gage to make sure pressure is holding.
5. Lower the bottom walers into place and repeat step 4.

Waler System

Typical Installations



Soil Type A & B with timber



Soil Type A & B with plywood