



# SARK & ASSOCIATES

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RE: Structural Engineering Review of 'Stabilizer' Foundation System

At your request I have reviewed the foundation repair system that uses an S4x7.7 steel beam in conjunction with custom welded steel connection brackets. The purpose of the review is to determine loading capacities of the various components and issue a statement on the structural advantages of the system.

The S4x7.7 vertical steel beams placed against the interior face of the foundation wall were reviewed for a lateral soil pressure of 50 PCF and 60 PCF equivalent fluid pressure. Based on these values the S4x7.7 beams can be spaced at the distances shown in the tables below.

Depth Below Grade	9' High Wall		8' High Wall		7' High Wall	
	50 pcf	60 pcf	50 pcf	60 pcf	50 pcf	60 pcf
9'-0"	3'-4"	2'-9"	-	-	-	-
8'-6"	3'-6"	2'-11"	-	-	-	-
8'-0"	3'-9"	3'-2"	4'-9"	4'-0"	-	-
7'-6"	4'-0"	3'-4"	5'-1"	4'-3"	-	-
7'-0"	4'-3"	3'-7"	5'-5"	4'-6"	6'-6"	5'-5"
6'-6"	4'-7"	3'-10"	5'-10"	4'-10"	7'-0"	5'-10"
6'-0"	5'-0"	4'-2"	6'-4"	5'-3"	7'-7"	6'-4"
5'-6"	5'-5"	4'-7"	6'-10"	5'-9"	8'-3"	6'-10"
5'-0"	6'-0"	5'-0"	7'-7"	6'-4"	9'-0"	7'-6"

The choice of soil pressure is at the discretion of the contractor, depending on the severity of damage to the foundation walls, and the soil composition, if known.

The welded steel bracket used at the top of the steel beam, where the floor joists are perpendicular to the foundation wall is capable of resisting a maximum horizontal load of 2,640 pounds. The fasteners should be (4) 1/2" dia through bolts into the floor joists on each side of the bracket. The welded steel bracket is suitable for all three wall heights stated above.

The welded steel bracket used at the top of the steel beam, where the floor joists are parallel to the foundation wall is capable of resisting a maximum horizontal load of 1,500 pounds, provided the top of the steel beam extends above the top of the bracket. The fasteners should be (2) 1/2" dia x 4-1/2" long lag screws into the floor joists or wood blocking. The welded steel bracket is suitable for all three wall heights stated above.

The welded steel bracket used at the base of the steel beam to provide a connection to the existing footing is capable of resisting a maximum horizontal load of 6,040 pounds. The fasteners should be (2) 1/2" dia x 4" embedment expansion anchor bolts into the footing. This bracket is suitable for all three wall heights stated above.

This foundation repair system has adjustability in the field to meet the needs of the various conditions encountered, including fitting to multiple joist spacings and adjustment over the life of the repair. The nut welded to the brackets provides stability to the bolt used to tighten the beam against the foundation wall, and allows for adjustment at the time of installation.

Thank you for the opportunity to be of service and if you have any questions with regards to this letter report please call me.

Sincerely,



Gregory Sarkisian, P.E.

