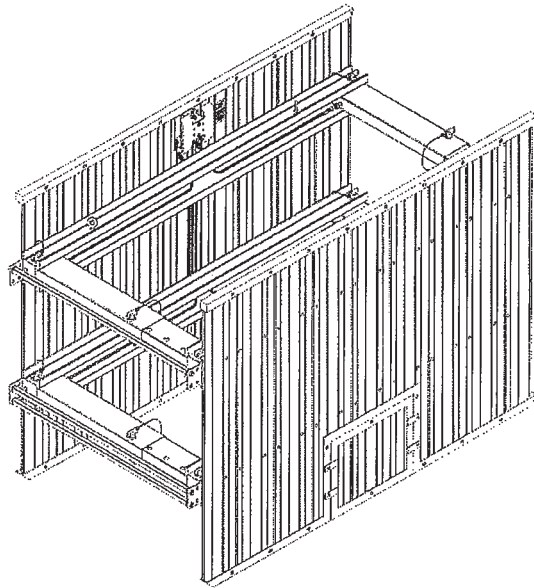


64-016

SPEED SHORE

MANUFACTURER'S TABULATED DATA

SHORING SHIELDS



January 1, 2005

SPEED  **SHORE**

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WARNING

EXCAVATION PROCEDURES MAY BE VERY DANGEROUS

- A TRAINED *COMPETENT PERSON* SHALL: SUPERVISE ALL EXCAVATION OPERATIONS, ENSURE THAT ALL PERSONNEL ARE WORKING IN SAFE CONDITIONS, AND HAVE THOROUGH KNOWLEDGE OF THIS TABULATED DATA. THE *COMPETENT PERSON* SHALL HAVE THE AUTHORITY TO STOP WORK WHEN IT IS UNSAFE FOR WORKERS TO ENTER AN EXCAVATION.
- ALL PERSONNEL SHALL BE TRAINED IN CORRECT EXCAVATION PROCEDURES, PROPER USE OF THE PROTECTIVE SYSTEM AND ALL SAFETY PRECAUTIONS.
- EXCAVATIONS AND PROTECTIVE SYSTEMS SHALL BE INSPECTED AT LEAST DAILY AND WHENEVER THERE IS A CHANGE OF SOIL, WATER OR OTHER JOB SITE CONDITIONS.
- ALL LIFTING AND PULLING EQUIPMENT, INCLUDING CABLES, SLINGS, CHAINS, SHACKLES AND SAFETY HOOKS SHALL BE EVALUATED FOR SUITABILITY AND CAPACITY, AND SHALL BE INSPECTED FOR DAMAGE OR DEFECTS PRIOR TO USE.
- ALL INSTALLATION AND REMOVAL OF SHORING AND SHIELDING SHALL BE FROM ABOVE GROUND ONLY.
- DO NOT ALLOW PERSONNEL TO ENTER AN EXCAVATION THAT IS NOT PROPERLY SHORED, SHIELDED OR SLOPED.
- PERSONNEL SHALL ALWAYS WORK WITHIN THE SHORING AND SHIELDING. PERSONNEL SHALL NOT STAND ON THE EDGE OF AN UNSHORED EXCAVATION.
- ALL PERSONNEL SHALL ENTER AND EXIT EXCAVATIONS ONLY WITHIN SHIELDED OR SHORED AREAS.

SPEED SHORE'S "MANUFACTURER'S TABULATED DATA" IS A GENERAL SET OF GUIDELINES AND TABLES TO ASSIST THE *COMPETENT PERSON* IN SELECTING A SAFETY SYSTEM AND THE PROPER SHORING OR SHIELDING EQUIPMENT. THE *COMPETENT PERSON* HAS SOLE RESPONSIBILITY FOR JOB SITE SAFETY AND THE PROPER SELECTION AND INSTALLATION AND REMOVAL OF THE SHORING OR SHIELDING EQUIPMENT.

THIS TABULATED DATA IS NOT INTENDED TO BE USED AS A JOB SPECIFIC EXCAVATION SAFETY PLAN, BUT SHALL BE USED BY THE *COMPETENT PERSON* TO SUPPLEMENT HIS TRAINING, HIS EXPERIENCE AND HIS KNOWLEDGE OF THE JOB CONDITIONS AND SOIL TYPE.

SPEED SHORE
TABULATED DATA

1.0 SCOPE

- 1.1 Speed Shore's Tabulated Data complies with the O.S.H.A. standards as stated in the Code of Federal Regulations 29, Part 1926, Subpart P - Excavations, Section 1926.652(c)(2). This data shall only be used by the contractor's *competent person* in the selection of Speed Shore Shoring Shields. The *competent person* shall be experienced and knowledgeable in trenching and excavation procedures, soil identification and in the use of Speed Shore Shoring Shields.
- 1.2 All personnel involved in the installation, removal and use of Shoring Shields shall be trained in their use and advised of appropriate safety procedures.
- 1.3 Table SS-1 is based upon requirements stated in CFR 29, Part 1926 and applicable portions of CFR 29, Part 1910. The *competent person* shall know and understand the requirements of those parts before using this data.
- 1.4 Whenever there is a variance between this Tabulated Data and CFR 29, Part 1926, Subpart P - Excavations, this Tabulated Data shall take precedence. Whenever a topic or subject is not contained in this Tabulated Data, the *competent person* shall refer to CFR 29, Part 1926, Subpart P - Excavations.
- 1.5 This data refers to the Code of Federal Regulations, 29, Parts 1910 and 1926. In states that have their own state O.S.H.A. refer to similar regulations in the current construction rules published by the state office of Occupational Health and Safety.
- 1.6 Table SS-1 shall be used only in excavations with soil conditions as noted. For other soil and excavation conditions and depths, site-specific engineered designs are required. Contact Speed Shore Corporation for assistance.
- 1.7 This Tabulated Data is applicable for standard products manufactured exclusively by Speed Shore and may only be used with Speed Shore manufactured products. Any modification of Speed Shore products not specifically authorized by Speed Shore Corporation voids this data.

2.0 DEFINITIONS (RE: CFR 29, Part 1926.32 Definitions) - RESTATED FOR EMPHASIS

- 2.1 1926.32 (F) "competent person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees; and who has authorization to take prompt corrective measures to eliminate them.
- 2.2 1926.32 (p) "Shall" means mandatory.

3.0 SOIL CLASSIFICATIONS

- 3.1 In order to use the data presented in Tables SS-1 the soil type, or types, in which the excavation is cut shall first be determined by the *competent person* according to the O.S.H.A. soil classifications as set forth in CFR 29, Part 1926, Subpart P, Appendix A.
- 3.2 Table SS-1 is also for use in Type C-60 soil (see 3.3 for definition).
- 3.3 Type C-60 soil is a moist, cohesive soil or a moist dense granular soil, which does not fit into Type A or Type B classifications, and is not flowing or submerged. This material can be cut with near vertical sidewalls and will stand unsupported long enough to allow the shields to be properly installed. The *competent person* must monitor the excavation for signs of deterioration of the soil as indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the Shoring Shields. An alternate design for less stable Type C soil may be required where there is evidence of deterioration.

- 3.4 Water flowing into an excavation, from either above or below ground, will cause a decrease in the stability of the soil. Therefore, the *competent person* shall take action to prevent water from entering the excavation and promptly remove any water that accumulates in the excavation. Closer monitoring of the soil is required under wet conditions, particularly in the less cohesive (weaker) soil conditions. A small amount of water, or flowing conditions may downgrade the soil classification to a less stable classification. A large amount of water, or flowing conditions will downgrade all soils to O.S.H.A. Type C. Speed Shore shoring and shielding systems may be used safely in wet conditions when the excavation is monitored by the *competent person*. Example: When repairing a leak in utility lines, it is often difficult or even impossible to keep water out of the excavation.

4.0 PRESENTATION OF INFORMATION

- 4.1 Information is presented in tabular form in Table SS-1. Table SS-1 presents the maximum excavation depths that Shoring Shields may be used in either the "hydraulic mode" or the "static mode". Also included are maximum depths when there are trench end loads against the Speed Strut End Beams. The depths are shown for O.S.H.A. Type A, B and C soils and Type C-60 soil (see 3.3 for definition).
- 4.2 Table SS-1 is not considered adequate when loads imposed by structures or by stored material adjacent to the trench weigh in excess of the load imposed by 3 feet of soil surcharge. The term "adjacent" as used here means the area within a horizontal distance from the edge of the trench equal to the depth of the trench.
- 4.3 Using Table SS-1, the *competent person* determines the respective load capacities and maximum allowable excavation depths.

5.0 ASSEMBLY

- 5.1 Shoring Shields shall be inspected by a *competent person* before assembly.
- 5.2 All damage shall be evaluated and repairs made under the direction of a registered professional engineer. All missing or damaged components shall be replaced with genuine Speed Shore parts.
- 5.3 All lifting and pulling equipment, (including cables, slings, chains, shackles and safety hooks) used to handle shields or components shall be evaluated for lifting capacity, and inspected for damage or defects, prior to use, by experienced operators and shall meet O.S.H.A. requirements.
- 5.4 Tag lines or other approved safety devices shall be utilized to keep employees away from loads handled by lifting equipment.
- 5.5 Speed Struts, pins with keepers and accessories shall be in place before using the Shoring Shields.
- 5.6 Two Speed Struts, hydraulic or static, are required at each end of all shields. Where there are three (3) walers on the Shoring Shield, three Speed Struts are required at each end of the shield.
- 5.7 All spreaders shall be pinned at each end with 1-inch diameter pins furnished by Speed Shore.
- 5.8 Assembly instructions:
- 5.8.1 Lay the first panel on ground, spreader sockets up.
 - 5.8.2 Stand spreaders over sockets and insert pins with keepers.
 - 5.8.3 Lower second panel onto spreader tubes and insert pins with keepers.
 - 5.8.4 Static Speed Struts spreaders shall be pinned to the width of the excavation to prevent lateral movement of the shield
 - 5.8.5 Attach 4-point lifting sling to lifting brackets.
 - 5.8.6 Stand the Shoring Shield up, attach tag lines and install into trench properly.

6.0 BASIS AND LIMITATIONS OF THE DATA

- 6.1 The Shoring Shields may be used in the "hydraulic mode" with the Speed Struts pressurized or in the "static mode" with the Speed Struts pinned.
- 6.2 All Speed Struts must be pressurized when the Shoring Shield is used in the "hydraulic mode".
- 6.3 When Shoring Shields are used in the "static mode", all Speed Struts must be pinned.
- 6.4 The maximum operating width of Shoring Shields with Speed Struts is 7 feet, 11 inches.
- 6.5 The bottom of the Shoring Shield may be a maximum of 2 feet above the bottom of the excavation in soil Types A, B and C-60.
- 6.6 The sheeting behind the ends of each Speed Strut must bear on firm soil or a solid and stable filler to distribute the cylinder load to the face of the excavation.
- 6.7 Static Speed Strut Modules may be used on Shoring Shields previously equipped with hydraulic Speed Struts.
- 6.8 The top of the sheeting shall be level with the top of the excavation or above it.
- 6.9 The faces of the excavation must be cut near vertical and straight.
- 6.10 If the top of the excavation is sloped away from the Shoring Shield, the top of the sheeting must be a minimum of 12 inches above the top of the slope. The top Speed Strut must be located below the top of the slope.
- 6.11 When the Shoring Shields are used in the "static mode", the gap between the Shoring Shield and the excavation face shall be no more than 6 inches on both sides.
- 6.12 No vertical load shall be applied to the Speed Strut.
- 6.13 Water flowing into an excavation, from either above or below ground, will cause a decrease in the stability of the soil. Therefore, the *competent person* shall take action to prevent water from entering the excavation and remove any water that accumulates in the excavation. Closer monitoring of the soil is required under wet conditions, particularly in less cohesive (weaker) soil conditions. A small amount of water, or flowing conditions, may downgrade the soil classification to a less stable classification. A large amount of water, or flowing conditions, may downgrade all soils to O.S.H.A. Type C. Speed Shore shoring and shielding systems may be used safely in wet conditions when the excavation is monitored by the *competent person*. Example: When repairing a leak in utility lines, it is often difficult or even impossible, to keep water out of the excavation.
- 6.14 In the "hydraulic mode" the Shoring Shields may be stacked vertically provided all Speed Struts are pressurized to a minimum of 750 p.s.i. The space between stacked shields shall be no more than 6 inches.
- 6.15 In the "static mode" Shoring Shields may be stacked vertically 2 high with the approved stacking brackets.
- 6.16 The Speed Strut manufactured by Speed Shore and furnished with Shoring Shields will support the loads across the end of the trench as shown in Table SS-1.
- 6.17 The Speed Struts will support the following sheeting or an approved equal for end loading:
 - Aluminum: Speed Shore's Aluminum Sheeting
 - Timber: 2 x 6 (S4S) Douglas Fir, Southern Yellow Pine or Oak
 - Steel: 1/2 inch or thicker Steel Plate
 - Plywood:
 - 3/4 inch Finn Form
 - 3/4 inch Omni Form
 - 3/4 inch 14 Ply Arctic White Birch
 - 3/4 inch Combi Exterior Plywood
 - 3/4 inch American Plywood Association, B-B, Plyform, Class I, Exterior
 - 3/4 inch American Plywood Association, High Density Overlay, Exterior
 - 1 1/8 inch CDX
 - Two sheets of 3/4 inch thick CDX

7.0 INSPECTION

- 7.1 The competent person must evaluate the soils to assure the rated capacity of the Shoring Shield is not exceeded by the lateral pressure of the soil. Soils shall be evaluated in accordance with Part 3.0.
- 7.2 The *competent person* shall monitor all phases of the assembly, installation and use of this product to evaluate and eliminate methods, which could endanger employees utilizing this product.
- 7.3 Daily inspections of the Shoring Shields and accessories must be performed by the *competent person* and deficiencies corrected.
- 7.4 Inspections shall be conducted as necessary for hazards associated with water accumulation, changing soil conditions, or changing site weather conditions.
- 7.5 Stacked shields shall be monitored to assure that each panel is secured to the one below it while in the static mode.

8.0 SAFETY SPECIFICATIONS

- 8.1 Employees shall be protected from loose or falling material. Shoring Shields must always be used in a manner that loose or falling soil cannot enter over the top or through the end of the shield. End plates may be required. Spoil piles must be kept back from the edge of the excavation at least 2 feet.
- 8.2 Employees shall not enter or exit shields through unprotected areas and shall remain in shields at all times while working.
- 8.3 Employees shall not be in or under a shield while it is being lifted or moved.
- 8.4 Bottom of shields may be a maximum of 2 feet above the bottom of the trench if there are no signs of deterioration of the trench face below or at the end of the shield.
- 8.5 Use of the spreader system for any purpose other than supporting the sidewall panels and Speed Shore-designed End Panels, or for pulling them forward is prohibited without written permission from the manufacturer.
- 8.6 Use Speed Shore supplied standard Speed Struts.
- 8.7 Water shall be prevented from entering the excavation and any water that does accumulate in the excavation shall be pumped out.
- 8.8 Contact Speed Shore for any non-typical use of the Shoring Shields.

8.0 EXAMPLE TO ILLUSTRATE THE USE OF TABLES SS-1:

Problem: A trench is 12 feet deep in soil that has been classified by the *competent person* to be O.S.H.A. Type C-60. For pipe joint purposes, 12 feet long shields are required. Which Shoring Shields may be used?

Studying Table SS-1 shows that an SS-0812- H is adequate down to 17 feet deep in the hydraulic mode and 14 feet in the static mode.

TABLE SS-1 - SHORING SHIELD WITH SPEED STRUTS

LOAD CAPACITY AND EXCAVATION DEPTH

			HYDRAULIC MODE (Note 3)					STATIC MODE (Note 6)					END LOADING							
DESCRIPTION			Soil Type / Allowable Depth					Soil Type / Allowable Depth					Soil Type / Allowable Depth							
			FEET					FEET					FEET							
MODEL	H	L	Cap.	A-	B-	B-	C-	C-	Cap.	A-	B-	B-	C-	C-	Cap.	A-	B-	B-	C-	C-
Note 8.	Ft.	Ft.	Note 2 P.S.F.	25	35	45	60	80	Note 2 P.S.F.	25	35	45	60	80	Note 2 P.S.F.	25	35	45	60	80
							(4)	(5)					(4)	(5)					(4)	(5)
SS-0505-M	5	5	3,000	25	25	25	25	16	1,100	25	25	25	21	16	1,100	25	25	25	21	16
SS-0606-M	6	6	2,300	25	25	25	25	16	1,100	25	25	25	21	16	1,100	25	25	25	21	16
SS-0608-H	6	8	1,700	25	25	25	25	16	1,100	25	25	25	21	16	1,100	25	25	25	21	16
SS-0610-H	6	10	1,400	25	25	25	25	16	1,000	25	25	25	19	15	1,100	25	25	25	21	16
SS-0612-H	6	12	1,100	25	25	25	21	12	830	25	25	21	16	12	1,100	25	25	25	21	16
SS-0806-M	8	6	1,400	25	25	25	25	16	1,100	25	25	25	21	16	1,100	25	25	25	21	16
SS-0808-M	8	8	1,400	25	25	25	25	16	1,100	25	25	25	21	16	1,100	25	25	25	21	16
SS-0810-H	8	10	1,100	25	25	25	21	15	1,000	25	25	25	19	15	1,100	25	25	25	21	16
SS-0812-H	8	12	900	25	25	23	17	9	670	25	21	16	12	9	1,100	25	25	25	21	16
SS-1010-H	10	10	900	25	25	23	18	10	740	25	23	18	14	10	1,100	25	25	25	21	16
SS-1012-H	10	12	750	25	24	19	14	-	400	15	11	9	-	-	1,100	25	25	25	21	16

NOTES TO TABLE SS-1

- (1) Wales are Speed Shore heavy duty except "M" models which have Speed Shore medium duty Wales with $S_x = 9.71$ inches.
- (2) The Shoring Shield capacities denote the maximum lateral soil pressure, in pounds per square foot (P.S.F.).
- (3) In the "hydraulic mode", the Shoring Shields are used with the Speed Strut pressurized to a minimum of 750 p.s.i. with Speed Shore shoring fluid. When Shoring Shields are pressurized against the excavation faces they may be stacked one above the other to the depths shown.
- (4) See 3.3 section of this Tabulated Data for definition of Type C-60 soil.
- (5) When Shoring Shields are used in O.S.H.A. Type C-80 soil, the shield wall must extend to the bottom of the excavation.
- (6) In the "static mode" the Shoring Shields are used with all the Speed Struts pinned. When Shoring Shields are used in the "static mode" and not pressurized, they may be stacked 2 deep, if the bottom shield is no deeper than the allowable depths shown. Shoring Shields shall be connected in the "static mode" with stacking brackets manufactured or approved by Speed Shore Corporation.
- (7) Models with Medium Duty Wale will be noted: SS-05x05-SW-M. The Medium Duty Wale has a section modulus of 9.71 inches. Models with Heavy Duty Wale will be noted: SS-08x10-SW-H. The Heavy Duty Wale has a section modulus of 14.06 inches.
- (8) If a specific model Shoring Shield is not shown in Table SS-1, the competent person must refer to the shoring shield certification to determine capacity and working depths. All other aspects of this tabulated data applies to any shoring shield not shown in Tables SS-1.

