**J. HOWARD ENGINEERING**
**8105 Edgewater Drive, #209**
**Oakland, CA 94621**
Contrs. Lic. No.
503495

# SUBMITTAL TRANSMITTAL

**TO:** **City of Oakland**
250 Frank H Ogawa Plaza, Ste 4314
Oakland, CA 94612

Attn: Wezlon Miles
Tel: (510) 238-5238
Fax: (510) 238-6633

Date: October 26, 2015

Job No.: OAK05 Submittal #: **1.0**

Project: SS Rehab of 17th, 21st, 27th St, Inyo St, & 25th Ave
Subject: Shoring Plan

Gentlemen,

We are enclosing the following submittal information for review and approval in accordance with the contract documents. Please return two (2) approved/marked sets for our records.

| No. | Copies | Ref Spec/Dwg | Description | Source |
|---|---|---|---|---|
| 1 | 1 | 2-5.3.2 | Shoring Plan | JHE |
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Notes:

Review Action (check one):
[ ] 1 -No Exceptions Noted
[ ] 2 -Make Corections Noted
[ ] 3 -Revise & Resubmit
[ ] 4 -Not Acceptable -Resubmit

**PLEASE DIRECT ANY QUESTIONS REGARDING THIS SUBMITTAL TO:**
Ron H. Zelaya, P.E.
Phone (510) 303-9591
ronzelaya@sbcglobal.net

Cc:

**J. HOWARD ENGINEERING**

By: R. Zelaya

STATE OF CALIFORNIA
DEPARTMENT OF INDUSTRIAL RELATIONS
**DIVISION OF OCCUPATIONAL SAFETY AND HEALTH**

No: **2015-904744**

## ANNUAL PERMIT

Permit Issued To

(Insert Contractor/Project Administrator's Name, Address and Telephone No.)

J Howard Engineering Inc
Attn: Safety Mgr or Joseph Howard
8105 Edgewater Dr Ste 209
Oakland CA 94621-2044

(510) 639-7080

No.

Date 5/29/2015

Region 1

District 4

Tel. (510) 622-2916

**Type of Permit** T1-ANNUAL TRENCH/EXCAVATION

Pursuant to Labor Code Sections 6500 and 6502, this Permit is issued to the above-named employer for the projects described below.

| State Contractor's License Number | 503495 | Permit Valid through | May 28, 2016 | |
|---|---|---|---|---|
| Description of Project | Location Address | City and County | Anticipated Dates Starting | Anticipated Dates Completion |
| Various<br>Conditions of Issuance: | Statewide | | May 29, 2015 | May 28, 2016 |

**This Permit is issued upon the following conditions:**

1. That the work is performed by the same employer. If this is an annual permit the appropriate District Office shall be notified, in writing, of dates and location of job site prior to commencement.

2. The employer will comply with all occupational safety and health standards or orders applicable to the above projects, and any other lawful orders of the Division.

3. That if any unforeseen condition causes deviation from the plans or statements contained in the Permit Application Form the employer will notify the Division immediately.

4. Any variation from the specification and assertions of the Permit Application Form or violation of safety orders may be cause to revoke the permit.

5. This permit shall be posted at or near each place of employment as provided in 8 CCR 341.4

| Received From | Received By | |
|---|---|---|
| Joseph Howard | Permit Unit | |
| ☐ Cash<br>☒ Check 16439 | Amount<br>$100.00 | Date<br>5/29/15 |

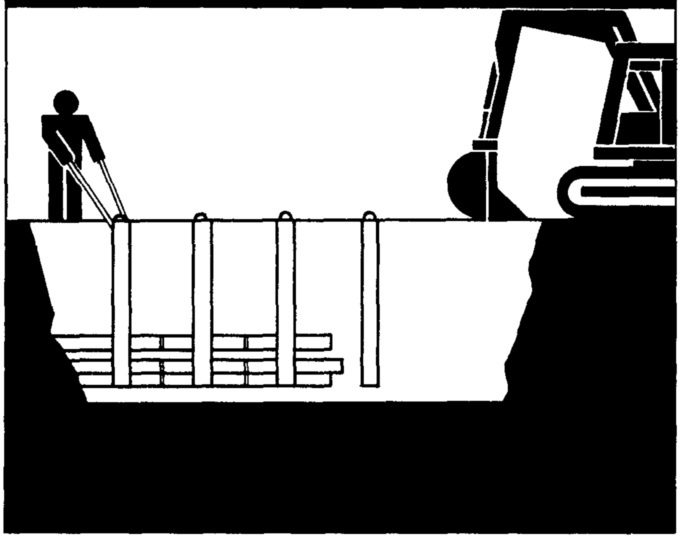
Investigated by ______________________
Safety Engineer Date

Approved by Robert E Low 5/29/2015
District Manager/Permit Unit Date

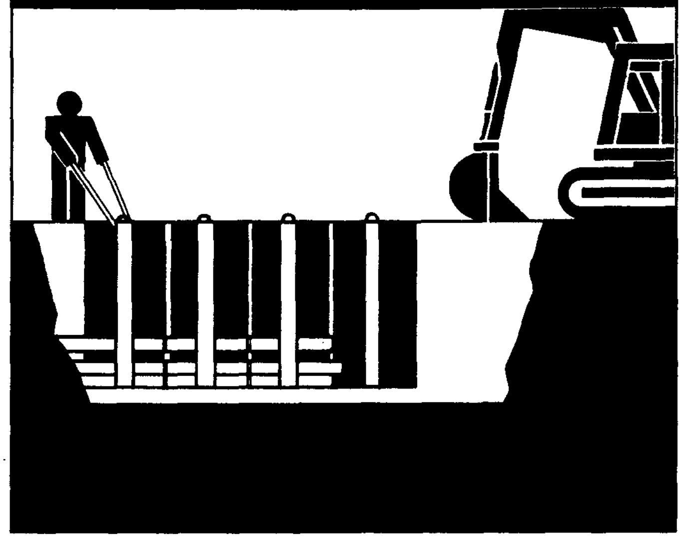
SAFE-T-SHORE®

# VERTICAL SHORE APPLICATIONS

INSTALLATION AND REMOVAL OF 5′ AND 3½′ SAFE-T-SHORES

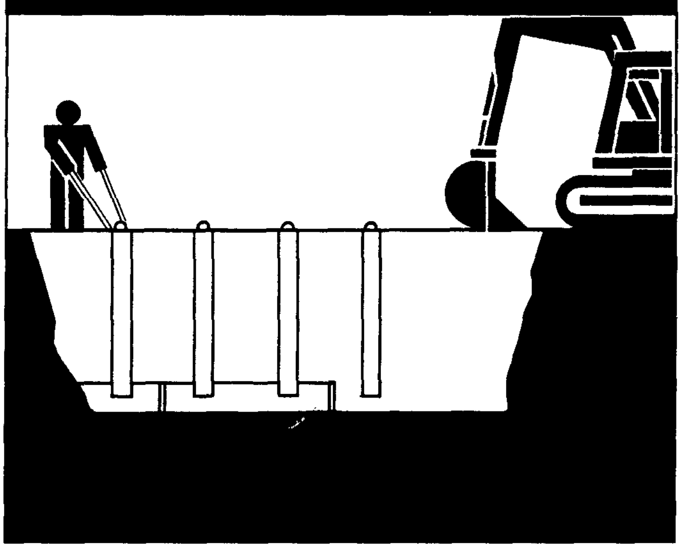


INSTALLATION AND REMOVAL OF 5′ AND 3½′ SAFE-T-SHORES USING PLYWOOD BACKING

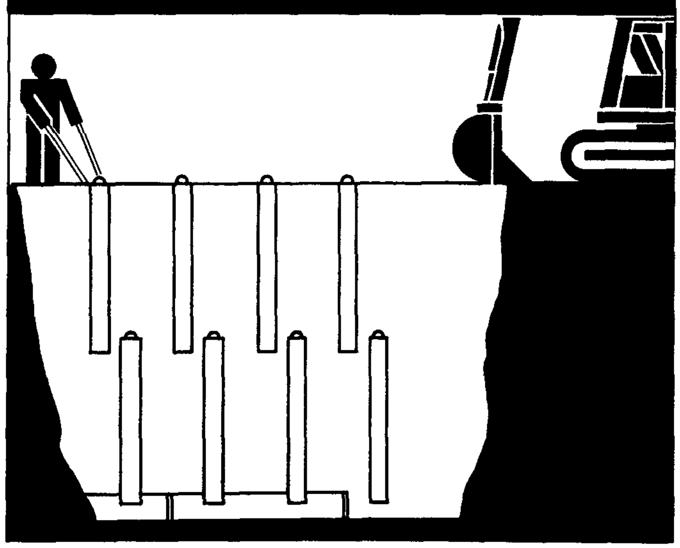


***FOR YOUR NEEDS***... Select SAFE-T-SHORE's 5-foot or 3½-foot system. One man installs and removes it while you're trenching. The 5-foot and 3½-foot SAFE-T-SHORE systems install quickly and safely, and can be multiple-stacked and adapted to timber backing.

INSTALLATION AND REMOVAL OF 7′



DOUBLE STACKING OF SAFE-T-SHORES

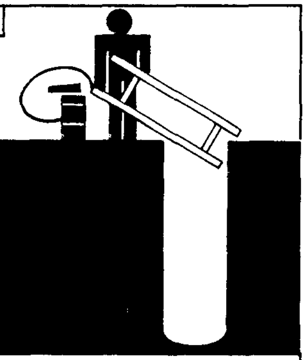


The basic 7-foot system will multiple-stack to safely spot-brace trenches which exceed 8 feet in depth. In many instances, a single workman can handle installation and removal. The SAFE-T-SHORE also adapts to plywood backing, and can be machine-installed when necessary.

# INSTALLATION

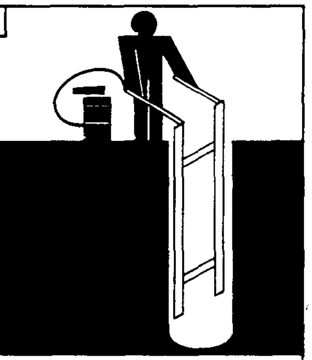
SAFE-T-SHORE®

1



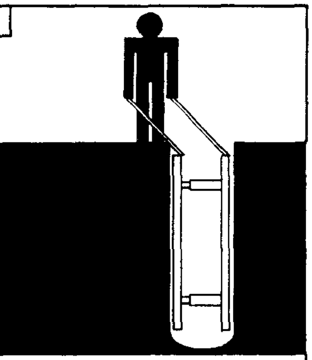
Position SAFE-T-SHORE across the trench at point of entry (as pictured) with handles facing away from trench and male hydraulic fitting on the lower rail side. Once positioned, remove female hydraulic coupling from top of pump can and place on male hydraulic fitting on the SAFE-T-SHORE, (make sure ¼ turn valve on pump is in open position). Place release tool hook through handle on lower rail.

2



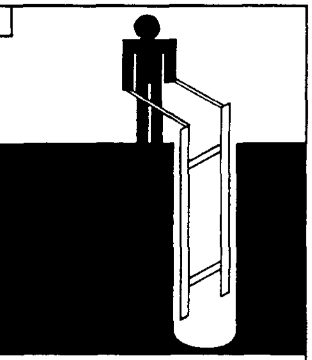
While holding lower rail with hook, pull top rail back until shore is in folded position. Lower shore into trench with hook to desired position. Release top rail into trench until shore is completely unfolded and cylinders are horizontal to trench bottom. SAFE-T-SHORE is now suspended in trench on the hook of release tool.

3



With free hand, turn ¼ turn valve on pump to closed position. Pump shore to a minimum pressure of 750 pounds per square inch (psi) as shown on pump gauge. Higher pressures can be used when needed. Remove hook from handle.

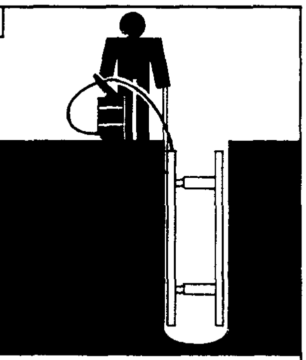
4



Lower release tool (with hook in contact with rail) until pressure plate is engaged behind collar of female hydraulic coupling from pump hose. With one hand, pull tool towards yourself while holding pump hose with other hand. When disconnected, turn ¼ turn valve back to open position, and place female coupling back on pump until installation of your next SAFE-T-SHORE.

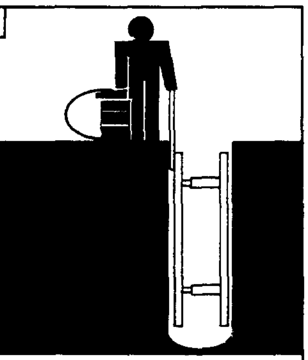
# REMOVAL

1



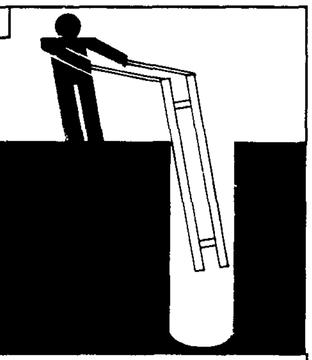
Lower release tool between handle and rail with hook facing toward the opposing trench wall. Place tool such that spray deflector is above male hydraulic fitting, and push on handle so the pressure plate depresses check valve on male hydraulic fitting. This will release the SAFE-T-SHORE shoring fluid from the cylinders.

2



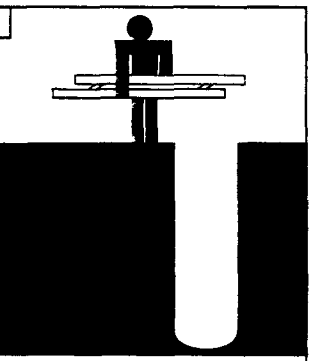
The rail nearest you will drop engaging the handle with the hook on release tool. Pull removal tool until shore is in folded position.

3



By pulling both the release tool and removal tool, remove SAFE-T-SHORE from trench.

4



Remove tools from shore and fold SAFE-T-SHORE flat to be carried to next installation point.

**§1541.1. Requirements for Protective Systems, Appendix D**

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Aluminum Hydraulic Shoring for Trenches

(a) Scope. This appendix contains information that can be used when aluminum hydraulic shoring is provided as a method of protection against cave-ins in trenches that do not exceed 20 feet in depth. This appendix must be used when design of the aluminum hydraulic protective system cannot be performed in accordance with Section 1541.1(c)(2).

(b) Soil Classification. In order to use data presented in this appendix, the soil type or types in which the excavation is made must first be determined using the soil classification method set forth in Appendix A of this Article.

(c) Presentation of Information. Information is presented in several forms as follows:

(1) Information is presented in tabular form in Tables D-1.1, D-1.2, D-1.3 and D-1.4. Each table presents the maximum vertical and horizontal spacings that may be used with various aluminum member sizes and various hydraulic cylinder sizes. Each table contains data only for the particular soil type in which the excavation or portion of the excavation is made. Tables D-1.1 and D-1.2 are for vertical shores in Types A and B soil. Tables D-1.3 and D-1.4 are for horizontal waler systems in Types B and C soil.

(2) Information concerning the basis of the tabular data and the limitations of the data is presented in Section (d) of this appendix.

(3) Information explaining the use of the tabular data is presented in Section (e) of this appendix.

(4) Information illustrating the use of the tabular data is presented in Section (f) of this appendix.

(5) Miscellaneous notations (footnotes) regarding Table D-1.1 through D-1.4 are presented in Section (g) of this appendix.

(6) Figures, illustrating typical installations of hydraulic shoring, are included just prior to the Tables. The illustrations page is entitled ``Aluminum Hydraulic Shoring: Typical Installations."

(d) Basis and limitations of the data.

(1) Vertical shore rails and horizontal wales are those that meet the Section Modulus requirements in the D-1 Tables. Aluminum material is 6061-T6 or material of equivalent strength and properties.

(2) Hydraulic cylinders specifications.

(A) 2-inch cylinders shall be a minimum 2-inch inside diameter with a minimum safe working capacity of no less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(B) 3-inch cylinders shall be minimum 3-inch inside diameter with a safe working capacity of not less than 30,000 pounds axial compressive load at extensions as recommended by product manufacturer.

(3) Limitation of application.

(A) It is not intended that the aluminum hydraulic specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most commonly experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be otherwise designed as specified in Section 1541.1(c).

(B) When any of the following conditions are present, the members specified in the Tables are no considered adequate. In this case, an alternative aluminum hydraulic shoring system or other type of protective system must be designed in accordance with Section 1541.1.

1. When vertical loads imposed on crossbraces exceed a 100 pound gravity load distributed on a one foot section of the center of the hydraulic cylinder.

2. When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

3. When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

(e) Use of Tables D-1.1, D-1.2, D-1.3 and D-1.4. The members of the shoring system that are to be selected using this information are the hydraulic cylinders, and either the vertical shores or the horizontal wales. When a waler system is used the vertical timber sheeting to be used is also selected from these tables. The Tables D-1.1 and D-1.2 for vertical shores are used in Type A and B soils that do not require sheeting. Type B soils that may require sheeting, and Type C soils that always require sheeting, are found in the horizontal wale Tables D-1.3 and D-1.4. The soil type must first be determined in accordance with the soil classification system described in Appendix A to Section 1541.1. Using the appropriate table, the selection of the size and spacing of the members is made. The selection is based on the depth and width of the trench where the members are to be installed. In these tables the vertical spacing is held constant at four feet on center. The tables show the maximum horizontal spacing of cylinders allowed for each size of wale in the waler system tables, and in the vertical shore tables, the hydraulic cylinder horizontal spacing is the same as the vertical shore spacing.

(f) Example to Illustrate the Use of the Tables:

(1) Example 1.

A trench dug in Type A soil is 6 feet deep and 3 feet wide. From Table D-1.1: Find vertical shores and 2 inch diameter cylinders spaced 8 feet on center (o.c.) horizontally and 4 feet on center (o.c.) vertically. (See Figures 1 & 3 for typical installations.)

(2) Example 2:

A trench is dug in Type B soil that does not require sheeting, 13 feet deep and 5 feet wide. From Table D-1.2: Find vertical shores and 2 inch diameter cylinders spaced 6.5 feet o.c. horizontally and 4 feet o.c. vertically. (See Figures 1 & 3 for typical installations.)

(3) Example 3:

A trench is dug in Type B soil that does not require sheeting, but does experience some minor raveling of the trench face. The trench is 16 feet deep and 9 feet wide. From Table D-1.2: Find vertical shores and 2 inch diameter cylinder (with special oversleeves as designated by footnote #2) spaced 5.5 feet o.c. horizontally and 4 feet o.c. vertically. Plywood (per footnote (g)(7) to the D-1 Table) should be used behind the shores. (See Figures 2 & 3 for typical installations.)

(4) Example 4:

A trench is dug in previously disturbed Type B soil, with characteristics of a Type C soil, and will require sheeting. The trench is 18 feet deep, and 12 feet wide. 8 foot horizontal spacing between cylinders is desired for working space. From Table D-1.3: Find horizontal wale with a section modulus of 14.0 spaced at 4 feet o.c. vertically and 3 inch diameter cylinder spaced at 9 feet maximum o.c. horizontally, 3 x 12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

(5) Example 5:

A trench is dug in Type C soil, 9 feet deep and 4 feet wide. Horizontal cylinder spacing in excess of 6 feet is desired for working space. From Table D-1.4: Find horizontal wale with a section modulus of 7.0 and 2 inch diameter cylinders spaced at 6.5 feet o.c. horizontally. Or, find horizontal wale with a 14.0 section modulus and 3 inch diameter cylinder spaced at 10 feet o.c. horizontally. Both wales are spaced 4 feet o.c. vertically, 3x12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

(g) Footnotes, and general notes, for Tables D-1.1, D-1.2, D-1.3, and D-1.4.

(1) For applications other than those listed in the tables, refer to Section 1541.1(c)(2) for use of manufacturer's tabulated data. For trench depths in excess of 20 feet, refer to Section 1541.1(c)(2) and 1541.1(c)(3).

(2) 2-inch diameter cylinders, at this width, shall have structural steel tube (3.5 x 3.5 x 0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.

(3) Hydraulic cylinders capacities.

(A) 2-inch cylinders shall be a minimum 2-inch inside diameter with a safe working capacity of not less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(B) 3-inch cylinders shall be a minimum 3-inch inside diameter with a safe work capacity of not less than 30,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(4) All spacing indicated is measured center to center.

(5) Vertical shoring rails shall have a minimum section modulus of 0.40 inch.

(6) When vertical shores are used, there must be a minimum of three shores spaced equally, horizontally, in a group.

(7) Plywood shall be 1.125 inches thick of wood or 0.75 inch thick, 14 ply, arctic white birch (Finland form). Please note that plywood is not intended as a structural member, but only for prevention of local raveling (sloughing of the trench face) between shores. Equivalent material may be used if it has been approved in accordance with Section 1505(a).

(8) See Appendix C for timber specifications.

(9) Wales are calculated for simple span conditions.

(10) See Appendix D, Section (d), for basis and limitations of the data.

ALUMINUM HYDRAULIC SHORING
TYPICAL INSTALLATIONS

FIGURE NO.1
VERTICAL ALUMINUM HYDRAULIC SHORING (SPOT BRACING)

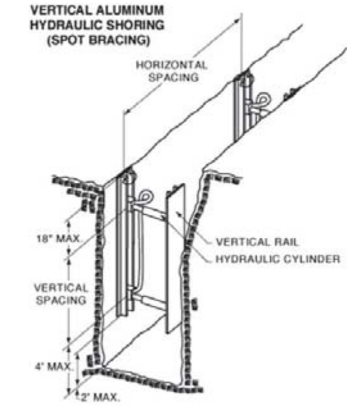



FIGURE NO.2
VERTICAL ALUMINUM HYDRAULIC SHORING (WITH PLYWOOD)

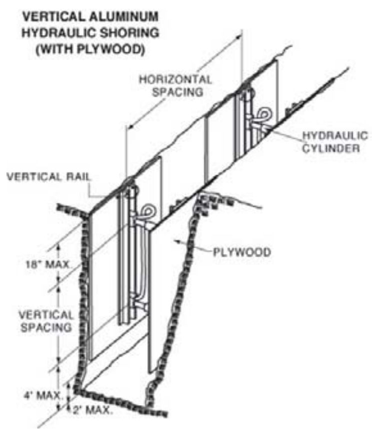



FIGURE NO.3
VERTICAL ALUMINUM HYDRAULIC SHORING (STACKED)

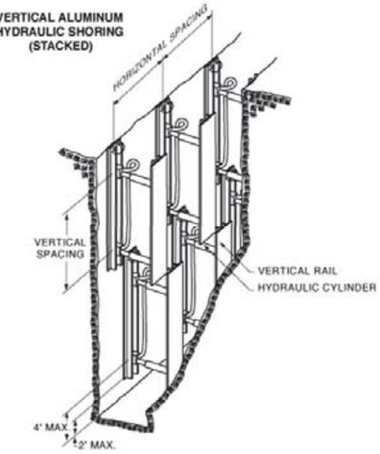
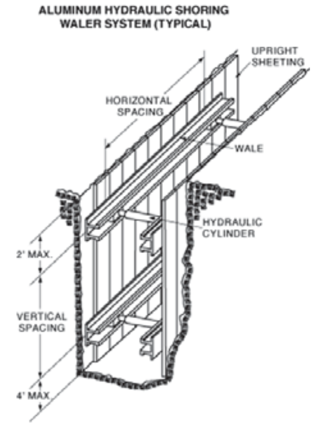



FIGURE NO.4
ALUMINUM HYDRAULIC SHORING WALER SYSTEM (TYPICAL)




NOTE: Authority Cited: Section 142.3, Labor Code. Reference 142.3, Labor Code.

TABLE D - 1.1
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL TYPE A

| DEPTH OF TRENCH (FEET) | HYDRAULIC CYLINDERS | | | | |
|---|---|---|---|---|---|
| | MAXIMUM HORIZONTAL SPACING (FEET) | MAXIMUM VERTICAL SPACING (FEET) | WIDTH OF TRENCH (FEET) | | |
| | | | UP TO 8 | OVER 8 UP TO 12 | OVER 12 UP TO 15 |
| OVER 5 UP TO 10 | 8 | 4 | 2 INCH DIAMETER | 2 INCH DIAMETER NOTE(2) | 3 INCH DIAMETER |
| OVER 10 UP TO 15 | 8 | | | | |
| OVER 15 UP TO 20 | 7 | | | | |
| OVER 20 | NOTE(1) | | | | |

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)
Note (1): See Appendix D, Item (g)(1)
Note (2): See Appendix D, Item (g)(2)

TABLE D - 1.2
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL TYPE B

| DEPTH OF TRENCH (FEET) | HYDRAULIC CYLINDERS | | | | |
|---|---|---|---|---|---|
| | MAXIMUM HORIZONTAL SPACING (FEET) | MAXIMUM VERTICAL SPACING (FEET) | WIDTH OF TRENCH (FEET) | | |
| | | | UP TO 8 | OVER 8 UP TO 12 | OVER 12 UP TO 15 |
| OVER 5 UP TO 10 | 8 | 4 | 2 INCH DIAMETER | 2 INCH DIAMETER NOTE(2) | 3 INCH DIAMETER |
| OVER 10 UP TO 15 | 6.5 | | | | |
| OVER 15 UP TO 20 | 5.5 | | | | |
| OVER 20 | NOTE(1) | | | | |

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)
Note (1): See Appendix D, Item (g)(1)
Note (2): See Appendix D, Item (g)(2)

## TABLE D - 1.3
## ALUMINUM HYDRAULIC SHORING
## WALER SYSTEMS
## FOR SOIL TYPE B

| DEPTH OF TRENCH (FEET) | WALES: VERTICAL SPACING (FEET) | WALES: * SECTION MODULUS (IN(3)) | HYDRAULIC CYLINDERS, WIDTH OF TRENCH (FEET): UP TO 8 HORIZ SPACING | UP TO 8 CYLINDER DIAMETER | OVER 8 UP TO 12 HORIZ SPACING | OVER 8 UP TO 12 CYLINDER DIAMETER |
|---|---|---|---|---|---|---|
| OVER 5 UP TO 10 | 4 | 3.5 | 8.0 | 2 IN | 8.0 | 2 IN NOTE (2) |
| | | 7.0 | 9.0 | 2 IN | 9.0 | 2 IN NOTE (2) |
| | | 14.0 | 12.0 | 3 IN | 12.0 | 3 IN |
| OVER 10 UP TO 15 | 4 | 3.5 | 6.0 | 2 IN | 6.0 | 2 IN NOTE (2) |
| | | 7.0 | 8.0 | 3 IN | 8.0 | 3 IN |
| | | 14.0 | 10.0 | 3 IN | 10.0 | 3 IN |
| OVER 15 UP TO 20 | 4 | 3.5 | 5.5 | 2 IN | 5.5 | 2 IN NOTE (2) |
| | | 7.0 | 6.0 | 3 IN | 6.0 | 3 IN |
| | | 14.0 | 9.0 | 3 IN | 9.0 | 3 IN |
| OVER 20 | NOTE (1) | | | | | |

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)
Note (1): See Appendix D, Item (g)(1)
Note (2): See Appendix D, Item (g)(2)
*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.
**Douglas fir or equivalent with a bending strenth not less than 1500 psi.

## TABLE D - 1.3
## ALUMINUM HYDRAULIC SHORING
## WALER SYSTEMS
## FOR SOIL TYPE B

[Continued]

| DEPTH OF TRENCH (FEET) | WALES: VERTICAL SPACING (FEET) | WALES: * SECTION MODULUS (IN(3)) | HYDRAULIC CYLINDERS, WIDTH OF TRENCH (FEET): OVER 12 UP TO 15 HORIZ SPACING | OVER 12 UP TO 15 CYLINDER DIAMETER | TIMBER UPRIGHTS, MAX. HORIZ SPACING (ON CENTER): SOLID SHEET | 2 FT | 3 FT |
|---|---|---|---|---|---|---|---|
| OVER 5 UP TO 10 | 4 | 3.5 | 8.0 | 3 IN | | | |
| | | 7.0 | 9.0 | 3 IN | --- | --- | 3x12 |
| | | 14.0 | 12.0 | 3 IN | | | |
| OVER 10 UP TO 15 | 4 | 3.5 | 6.0 | 3 IN | | | |
| | | 7.0 | 8.0 | 3 IN | --- | 3x12 | --- |
| | | 14.0 | 10.0 | 3 IN | | | |
| OVER 15 UP TO 20 | 4 | 3.5 | 5.5 | 3 IN | | | |
| | | 7.0 | 6.0 | 3 IN | 3x12 | --- | --- |
| | | 14.0 | 9.0 | 3 IN | | | |
| OVER 20 | NOTE (1) | | | | | | |

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)
Note (1): See Appendix D, Item (g)(1)
Note (2): See Appendix D, Item (g)(2)
*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.
**Douglas fir or equivalent with a bending strenth not less than 1500 psi.

TABLE D - 1.4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE C

| DEPTH OF TRENCH (FEET) | WALES: VERTICAL SPACING (FEET) | WALES: * SECTION MODULUS (IN(3)) | HYDRAULIC CYLINDERS, WIDTH OF TRENCH (FEET), UP TO 8: HORIZ SPACING | UP TO 8: CYLINDER DIAMETER | OVER 8 UP TO 12: HORIZ SPACING | OVER 8 UP TO 12: CYLINDER DIAMETER |
|---|---|---|---|---|---|---|
| OVER 5 UP TO 10 | 4 | 3.5 | 6.0 | 2 IN | 6.0 | 2 IN NOTE (2) |
| | | 7.0 | 6.5 | 2 IN | 6.5 | 2 IN NOTE (2) |
| | | 14.0 | 10.0 | 3 IN | 10.0 | 3 IN |
| OVER 10 UP TO 15 | 4 | 3.5 | 4.0 | 2 IN | 4.0 | 2 IN NOTE (2) |
| | | 7.0 | 5.5 | 3 IN | 5.5 | 3 IN |
| | | 14.0 | 8.0 | 3 IN | 8.0 | 3 IN |
| OVER 15 UP TO 20 | 4 | 3.5 | 3.5 | 2 IN | 3.5 | 2 IN NOTE (2) |
| | | 7.0 | 5.0 | 3 IN | 5.0 | 3 IN |
| | | 14.0 | 6.0 | 3 IN | 6.0 | 3 IN |
| OVER 20 | NOTE (1) | | | | | |

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)
Note (1): See Appendix D, Item (g)(1)
Note (2): See Appendix D, Item (g)(2)
*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.
**Douglas fir or equivalent with a bending strenth not less than 1500 psi.

TABLE D - 1.4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE C

[Continued]

| DEPTH OF TRENCH (FEET) | WALES: VERTICAL SPACING (FEET) | WALES: * SECTION MODULUS (IN(3)) | HYDRAULIC CYLINDERS, WIDTH OF TRENCH (FEET), OVER 12 UP TO 15: HORIZ SPACING | OVER 12 UP TO 15: CYLINDER DIAMETER | TIMBER UPRIGHTS, MAX. HORIZ SPACING (ON CENTER): SOLID SHEET | 2 FT | 3 FT |
|---|---|---|---|---|---|---|---|
| OVER 5 UP TO 10 | 4 | 3.5 | 6.0 | 3 IN | | | |
| | | 7.0 | 6.5 | 3 IN | 3x12 | --- | --- |
| | | 14.0 | 10.0 | 3 IN | | | |
| OVER 10 UP TO 15 | 4 | 3.5 | 4.0 | 3 IN | | | |
| | | 7.0 | 5.5 | 3 IN | 3x12 | --- | --- |
| | | 14.0 | 8.0 | 3 IN | | | |
| OVER 15 UP TO 20 | 4 | 3.5 | 3.5 | 3 IN | | | |
| | | 7.0 | 5.0 | 3 IN | 3x12 | --- | --- |
| | | 14.0 | 6.0 | 3 IN | | | |
| OVER 20 | NOTE (1) | | | | | | |

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)
Note (1): See Appendix D, Item (g)(1)
Note (2): See Appendix D, Item (g)(2)
*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.
**Douglas fir or equivalent with a bending strenth not less than 1500 psi.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.