AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLSB-610	HEIGHT:	6'
SERIAL NUMBER:	ASI-1909151	LENGTH:	10'
MAX. PRESSURE CAPACITY:	720 PSF		

SPECIFICATIONS FOR USE

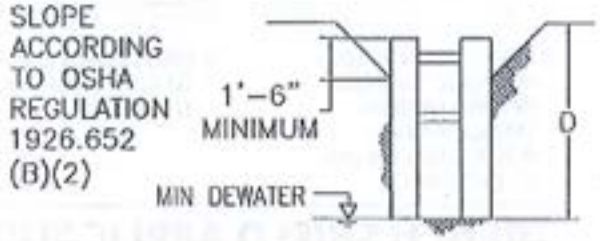
- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
- SOIL SHALL BE CLASSIFIED IN ACCORDANCE WITH OSHA APPENDIX A BY A COMPETENT PERSON OR BY A REGISTERED CIVIL ENGINEER PRIOR TO THE INSTALLATION OF THIS EQUIPMENT.
- THIS TABULATED DATA IS PROVIDED BY THE MANUFACTURER. ITS PURPOSE IS TO ASSIST THE COMPETENT PERSON IN SELECTING THE PROPER SAFETY SHORING EQUIPMENT FOR THE PROJECT. THE COMPETENT PERSON HAS SOLE RESPONSIBILITY FOR JOB SITE SAFETY AND THE PROPER SELECTION OF THE SHORING EQUIPMENT.
- THIS TABULATED DATA IS NOT INTENDED TO BE A SUBSITUTE FOR THE ON SITE ENGINEERS PLAN. IT IS INTENDED TO BE USED BY THE COMPETENT PERSON TO SUPPLEMENT HIS TRAINING, HIS KNOWLEDGE & EXPERIENCE OF THE JOB CONDITIONS & SOIL TYPES.
- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
- METHODS USED AND SAFETY PROCEDURES ASSOCIATED WITH THIS EXCAVATION, INSTALLATION & REMOVAL OF THE SHORING SYSTEM, OR DEWATERING ARE THE SOLE RESPONSIBILTY OF THE CONTRACTOR.
- MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS.OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
- SHIELDS ARE DESIGNED TO BE PUSHED TO GRADE, IF NECESSARY, ANY ABUSE OF THIS PRODUCT BY THE EXCAVATOR CAUSING MAJOR STRUCTURAL DAMAGE WILL VOID THIS TABULATED DATA AND WARRANTY.
- IN ADDITION OF THE SHIELD, SPREADERS AND SPREADER PINS MUST BE INSPECTED BY THE COMPETENT PERSON BEFORE EACH USE. CERTIFICATION IS INVALID IF ANY VISABLE WEAR OR DAMAGE IS EVIDENT. NO REPAIRS SHOULD BE MADE TO THE SHIELD THAT HAVE NOT BEEN PREVIOUSLY DOCUMENTED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER AND APPROVED BY AMERICAN SHORING.

MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**14'**
TYPE C-60	**12'**
TYPE C-80	**8'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

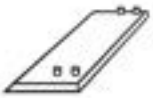


CERTIFIED BY:

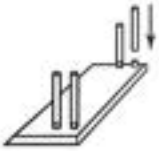
Michael S. Tuculescu, PE

American Shoring Inc. 1.800.407.4674
www.americanshoring.com

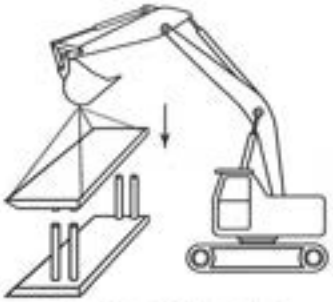
TRENCH SHIELD ASSEMBLY



1. LAY PANEL FLAT ON THE GROUND WITH THE SPREADER COLLARS POINTED UP.



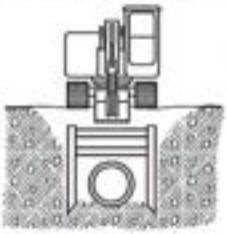
2. PLACE SPREADER PIPES ONTO THE COLLARS AND PIN INTO PLACE. SECURE PINS WITH KEEPERS.



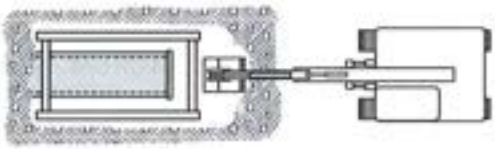
3. LOWER SECOND PANEL ONTO SPREADERS AND PIN INTO PLACE. SECURE PINS WITH KEEPERS.

4. STAND TRENCH SHIELD IN UPRIGHT POSITION AND PREPARE FOR INSTALLATION.

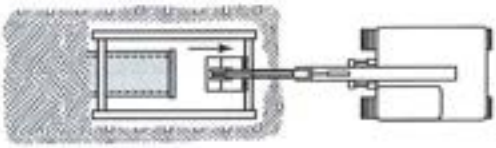
TRENCH SHIELD INSTALLED IN STABLE SOIL



1. EXCAVATE TO GRADE JUST SLIGHTLY WIDER THAN THE TRENCH SHIELD. DIG WALLS VERTICAL TO MINIMUM OF 18" BELOW THE TOP OF THE SHIELD. SLOPE SOIL ABOVE SHIELD ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS. INSTALL SHIELD INTO TRENCH.



2. EXCAVATE IN FRONT OF THE SHIELD

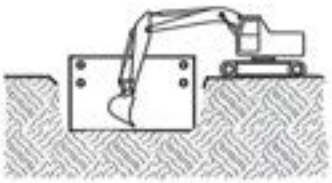


3. PULL SHIELD FORWARD BY FRONT SPREADER PIPES OR WITH THE PULLING EYES.

* PULLING EYES MAY BE USED WITH SPREADERS WIDER THAN 72", OR WHEN THE SOIL PRESSURE IS SEVERE ENOUGH TO CAUSE SPREADERS TO DEFLECT.

AMERICAN SHORING INC.

TRENCH SHIELD INSTALLED IN UNSTABLE SOIL



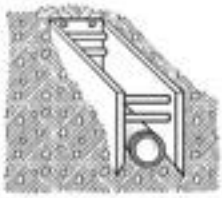
1. EXCAVATE UNTIL SOIL BEGINS TO CRUMBLE BEYOND DESIRED TRENCH WIDTH. PLACE SHIELD IN LINE OF EXCAVATION.

2. PRESS DOWN ON CORNERS TO PUSH SHIELD DOWN TO GRADE.

3. PULL SHIELD FORWARD AND UP ON APPROPRIATE ANGLE- *(SEE ABOVE).

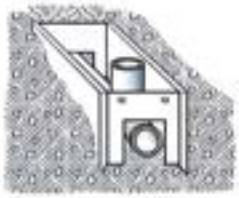
4. EXCAVATE SOIL WITHIN THE SHIELD AND REPEAT PROCESS.

TRENCH SHIELD APPLICATIONS



TIE-INS, REPAIR OR PATCH WORK
1. CENTER SHIELD OVER WORK AREA.
2. LAY SOIL BACK AT ENDS ACCORDING TO MANUFACTURER'S TABULATED DATA OR USE MANUFACTURER'S DESIGNED END PLATES TO PROTECT FROM CAVE-INS.

CORNER END PLATES
CORNER END PLATES HELP PREVENT MATERIAL FROM FLOWING INTO THE END OF SHIELD. SOIL AT ENDS SHOULD BE SLOPED ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS.



FOUR SIDED SHIELDS
WHEN USING SHIELDS AS PROTECTION WORK DURING MANHOLE ASSEMBLY WORK. INSURE THAT PROPER END PANELS ARE USED; OR LAY SOIL AT THE ENDS BACK ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS.

1. ALWAYS USE TRENCH SHIELDS IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, FEDERAL SAFETY LAWS AND O.S.H.A. REGULATIONS. FAILURE TO DO SO COULD CAUSE SEVERE INJURY OR DEATH.
2. ALL WORK TO BE PREFORMED WITHIN THE CONFINES OF THE SHIELD.
3 THIS ABOVE MATERIAL IS INTENDED TO PROVIDE BASIC INFORMATION ONLY.

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MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	8SDW-824	HEIGHT:	8'
SERIAL NUMBER:		LENGTH:	24'
MAX. PRESSURE CAPACITY:	1440 PSF		

SPECIFICATIONS FOR USE

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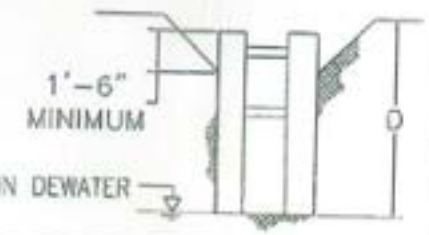
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**30'**
TYPE C-60	**24'**
TYPE C-80	**18'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



CERTIFIED BY:

Michael S. Tuculescu, PE

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4SDW-816	HEIGHT:	8'
SERIAL NUMBER:	ASI-1011107	LENGTH:	16'
MAX. PRESSURE CAPACITY:	1560 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
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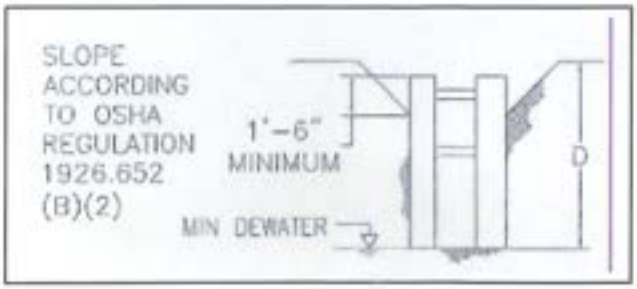
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**35'**
TYPE C-60	**26'**
TYPE C-80	**20'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



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Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4SDW-410	HEIGHT:	4'
SERIAL NUMBER:	ASI-1707137	LENGTH:	10'
MAX. PRESSURE CAPACITY:	2220 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
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MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**49'**
TYPE C-60	**37'**
TYPE C-80	**28'**

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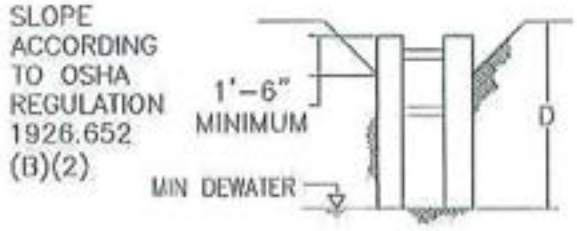
DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



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MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4DWE-814	HEIGHT:	8'
SERIAL NUMBER:	ASI-051193	LENGTH:	14'
MAX. PRESSURE CAPACITY:	960 PSF		

SPECIFICATIONS FOR USE

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- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ½" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
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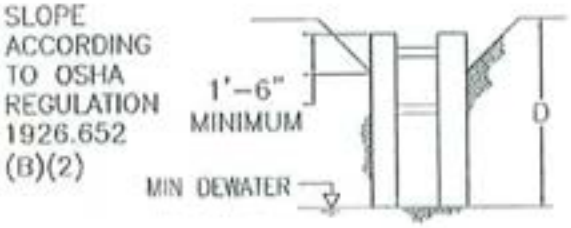
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**21'**
TYPE C-60	**16'**
TYPE C-80	**12'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

Michael S. Tuculescu, PE

J.M. TURNER ENGINEERING, INC.
Consulting Engineers
CIVIL ENGINEERING • STRUCTURAL ENGINEERING
CONSTRUCTION ENGINEERING

WEST ROAD
DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS MANHOLE INSTALLATION TOWN OF ORLEANS, MA

SLIDE RAIL SHORING DESIGN CALCULATIONS

American Shoring, Inc.
207 Lake Street
Newburgh, NY 12550

Design an excavation plan for the above-mentioned project. The maximum depth of the excavation is to be 24'. Soil parameters are based on the boring logs provided in the geotechnical report by AECOM with project number: 60476644. Soil parameters used for active pressure are as follows: Soil Unit Weight = 120 pcf, Internal Angle of Friction = 28 degrees. A 200 psf surcharge from ground surface to a depth of 10' and a 100 psf from a depth of 10' to a depth of 20' were added to account for traffic and/or construction equipment adjacent to excavation. Dewater, if necessary, to maintain a maximum water table level at the bottom of the excavation.

DATE: 11/10/2020
BY: M.M.
BY DIRECTION OF: A.J.V.
SHEET NO: 1 OF 2
JOB NO: 18174-2

J.M. TURNER ENGINEERING, INC.
1325 COLLEGE AVENUE
SANTA ROSA, CA 95404
PH# : (707) 528-4503
FAX# : (707) 528-4506

SUBJECT: American Shoring — SHEET NO.: 2 OF 2
Downtown Area West Road — BY: M.M. DATE: 11/10/20
Shoring Design Calculations — CHKD BY: ____ DATE: ____

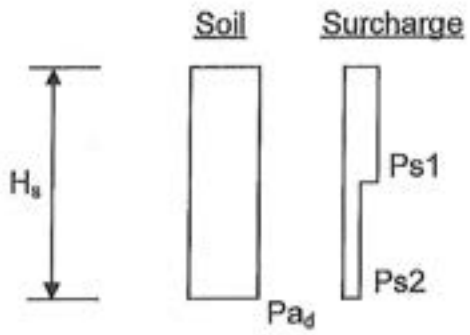
Check Slide Rail Panel Rating:

Active Pressure:

Internal Angle of Friction (deg): $\phi := 28$

Unit Weight of Soil (pcf): $\gamma := 120$

Maximum Height of System (ft): $H_s := 24$



$$Ka := \tan\left[\left(45 - \frac{\phi}{2}\right)\cdot deg\right]^2$$

$Ka = 0.36$

$Pa_d := 0.65 \cdot Ka \cdot \gamma \cdot H_s$

$Pa_d = 676$

Surcharge:

Surcharge used to account for traffic and/or construction equipment adjacent to excavation.

$Ps1 := 200$ (0' to 10')

$Ps2 := 100$ (10' to 20')

Total Pressure:

Total Pressure (psf): $Pt := Pa_d + Ps1$

$Pt = 876$

Use Slide Rail Panels, with a Minimum Rating of 876 psf.

AMERICAN SHORING INC.

WEST ROAD
COLLECTION SYSTEM AND PUMP STATIONS
DOWNTOWN AREA
TOWN OF ORLEANS, MA

EXCAVATION SHORING PLAN

INDEX:

SHEET S/1 COVER PAGE
SHEET S/2 PLAN VIEW & SECTIONS

GENERAL NOTES

1. PROVIDE ACCESS AND BARRICADING PER OSHA REQUIREMENTS.
2. VERIFY LOCATION AND SIZE OF ALL EXISTING UNDERGROUND UTILITIES AND/OR PIPES, PRIOR TO COMMENCING EXCAVATION.
3. THIS PLAN IS DESIGNED FOR PROTECTION OF WORKERS, EXISTING UTILITIES, STRUCTURES AND/OR SUBSTRUCTURES CLEARLY SPECIFIED ON PLANS. LAYOUT IS PER CONTRACT DRAWINGS.
4. VERIFY THAT REQUIRED CLEARANCES ARE OBTAINED AND THAT THERE IS SUFFICIENT WORKING SPACE.
5. THIS PLAN IS IN ACCORDANCE WITH FEDERAL AND/OR STATE OSHA REGULATIONS, DESIGN BY A REGISTERED CIVIL ENGINEER.
6. THESE PLANS ARE NOT INTENDED TO SHOW THE METHOD AND MEANS OF EXCAVATION OF THE WORK, WHICH IS THE RESPONSIBILITY OF THE CONTRACTOR.
7. PROVIDE A COMPETENT PERSON AT THE SITE WHERE THIS PLAN IS IN USE. THEY SHALL BE RESPONSIBLE MAKING SURE THAT ALL ELEMENTS OF THIS PLAN ARE ADHERED TO AND SHALL NOTIFY THE ENGINEER IF CONDITIONS ENCOUNTERED ARE DIFFERENT THAN ANTICIPATED AND SHOWN ON THIS PLAN. IF CONDITIONS ARE DIFFERENT, THIS PLAN MUST BE MODIFIED TO COVER THOSE CONDITIONS OR A NEW PLAN SHALL BE USED.
8. CONTACT J.M. TURNER ENGINEERING FOR PLAN REVIEW AND/OR POSSIBLE PLAN REVISIONS IF ANY EXISTING STRUCTURE(S), BUILDING(S) OR RAILROAD(S), NOT ALREADY SHOWN HEREON, ARE WITHIN A DISTANCE EQUAL TO THE DEPTH OF EXCAVATION, FROM EDGE OF EXCAVATION TO STRUCTURE.
9. CONTACT J.M. TURNER ENGINEERING FOR PLAN REVIEW AND/OR PLAN REVISIONS IF EXISTING PARALLEL UTILITIES ARE 48" IN DIAMETER OR LARGER AND ARE CLOSER THAN 48" FROM EDGE OF EXCAVATION.
10. REVIEW SHORING PLANS TO VERIFY PROPOSED DESIGN IS IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND/OR REQUIREMENTS.
11. DIFFERENT PANEL LENGTHS MAY BE USED PROVIDED THE OVERALL EXCAVATION DIMENSIONS ARE NOT EXCEEDED.

811
KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.

INSTALLATION/REMOVAL SEQUENCE

1. INSTALL SLIDE RAIL POSTS, PANELS SO THAT THE BOTTOM OF THE SHORING IS NO MORE THAN 2' ABOVE THE BOTTOM OF THE EXCAVATION.
2. COMMENCE PROJECT WORK.
3. SIMULTANEOUSLY BACKFILL THE EXCAVATION WHILE PULLING THE PANELS AND POSTS.

STEEL REQUIREMENTS

- PROVIDE STEEL SHAPES IN ACCORDANCE WITH MANUFACTURER'S TABULATED DATA SHEETS UNLESS OTHERWISE SPECIFIED.

WELDING REQUIREMENTS

- WELD IN ACCORDANCE WITH MANUFACTURER'S TABULATED DATA SHEETS UNLESS OTHERWISE SPECIFIED.

TIMBER REQUIREMENTS

- PROVIDE TIMBER IN ACCORDANCE WITH MANUFACTURER'S TABULATED DATA SHEETS, OR BETTER UNLESS OTHERWISE SPECIFIED.

DEWATERING REQUIREMENTS

- DEWATER INSIDE EXCAVATION AS NEEDED TO ALLOW CONSTRUCTION OF SHORING AND/OR REQUIRED WORK OPERATIONS.
- DEWATERING IS THE RESPONSIBILITY OF THE CONTRACTOR. IF DEWATERING WELLS, SPECIAL SUMP PUMPS OR ANY REQUIREMENTS FOR DEWATERING REQUIRED BY THE REVIEWING AGENCY, CONTRACTOR SHALL ADDRESS IN A SEPARATE SUBMITTAL.
- DEWATERING WELLS MAY BE REQUIRED (AS MANY AS NEEDED) TO MAINTAIN THE WATER LEVEL AT THE BOTTOM OF THE EXCAVATION.

SLIDE RAIL NOTES:

- PROVIDE TABULATED DATA FOR EQUIPMENT TO BE USED AT THE JOBSITE.
- MANUFACTURERS TABULATED DATA APPLIES EXCEPT AS IS NOTED HERE.
- INSTALL SHORING IN ACCORDANCE WITH THIS PLAN.
- PROPERLY INSTALL SHORING PRIOR TO ENTERING EXCAVATION. WORKERS MUST ENTER, EXIT, AND WORK IN SHORED AREAS ONLY.

COMMONWEALTH OF MASSACHUSETTS
ADRIANUS J. VERMEULEN
Civil
No. 46320
REGISTERED PROFESSIONAL ENGINEER
11/6/2020

REVISIONS	BY

WEST ROAD
COLLECTION SYSTEM AND PUMP STATIONS
DOWNTOWN AREA
TOWN OF ORLEANS, MA
EXCAVATION SHORING PLAN

AMERICAN SHORING INC.

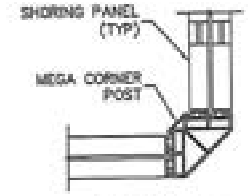
J.M. TURNER ENGINEERING, INC.
CONSULTING ENGINEERS
1200 COLLEGE AVE., SANTA ROSA, CA 95404
(707) 528-4300 FAX (707) 578-4028

DATE: 11/06/20
DRAWN BY: A.B.B.
CHECKED BY: A.J.V.
DRAWING NO: 18174-S/S1
SHEET: 1 OF 2

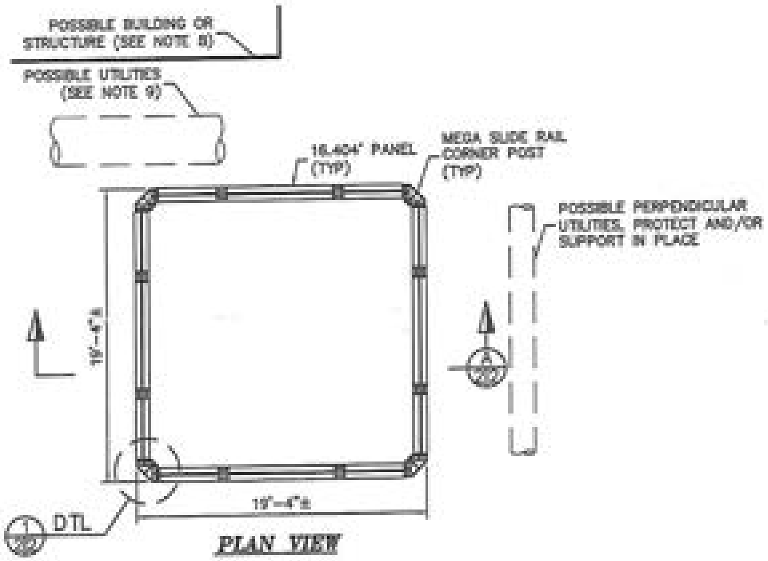
WEST ROAD
COLLECTION SYSTEM AND PUMP STATIONS
DOWNTOWN AREA
TOWN OF ORLEANS, MA
EXCAVATION SHORING PLAN

SETBACK TABLE

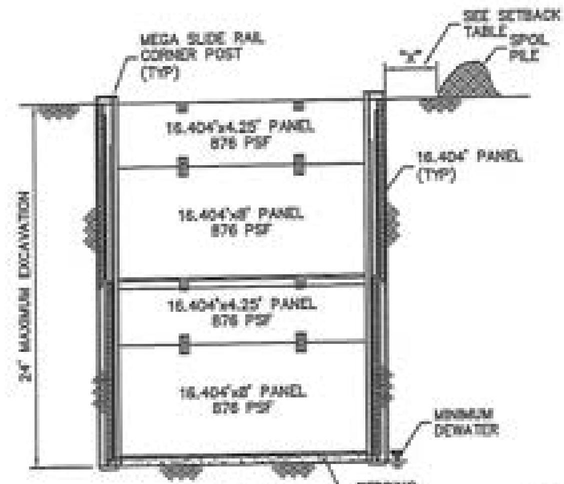
X = SETBACK	
K-RAIL	X=1'
HS 20-44 TRAFFIC	X=4'
SPOIL PILE	X=4'
EXCAVATOR	X=4'
DUMP TRUCK	X=4'
3 CY LOADER	X=4'
5 CY LOADER	X=5'
CRANE TO 30 TON	X=8'
CONCRETE TRUCK	X=10'



DETAIL 1
NTS



PLAN VIEW



SECTION A

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

REVISIONS	BY

WEST ROAD
COLLECTION SYSTEM AND PUMP STATIONS
DOWNTOWN AREA
TOWN OF ORLEANS, MA
EXCAVATION SHORING PLAN

AMERICAN SHORING INC.

J.M. TURNER ENGINEERING, INC.
CONSULTING ENGINEERS

DATE: 11/06/20
DRAWN BY: A.S.B.
CHECKED BY: A.J.V.
DRAWING NO. 18174-2/
SHEET: 2 OF 2

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4SDW-810	HEIGHT:	8'
SERIAL NUMBER:	ASI-1707134	LENGTH:	10'
MAX. PRESSURE CAPACITY:	2340 PSF		

SPECIFICATIONS FOR USE

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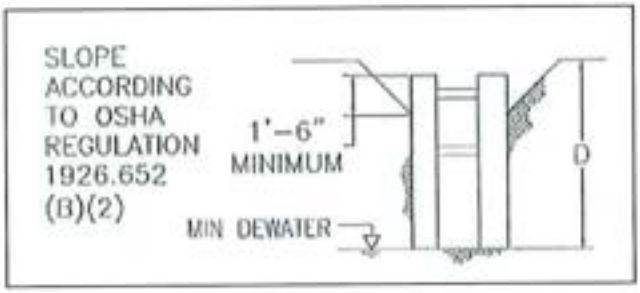
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**51'**
TYPE C-60	**39'**
TYPE C-80	**30'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4SDW-420	HEIGHT:	4'
SERIAL NUMBER:	ASI-200573	LENGTH:	20'
MAX. PRESSURE CAPACITY:	1080 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
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MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**23'**
TYPE C-60	**18'**
TYPE C-80	**15'**

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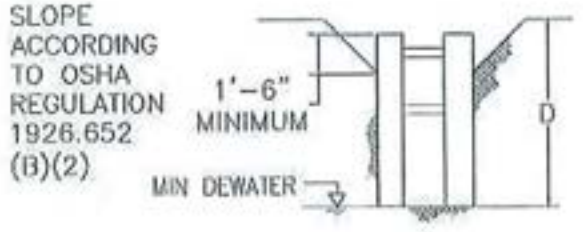

CERTIFIED BY:

Michael S. Tuculescu, PE

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4DWE-412	HEIGHT:	4'
SERIAL NUMBER:	ASI-1707131	LENGTH:	12'
MAX. PRESSURE CAPACITY:	1560 PSF		

SPECIFICATIONS FOR USE

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- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ½" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
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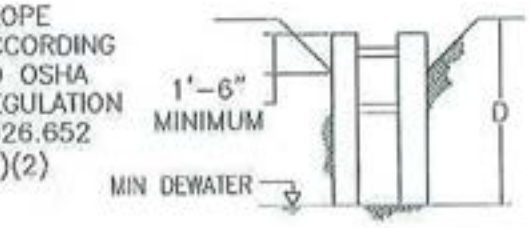
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**35'**
TYPE C-60	**26'**
TYPE C-80	**18'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



CERTIFIED BY:

Michael S. Tuculescu, PE

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	3SDW-86	HEIGHT:	8'
SERIAL NUMBER:	ASI-2011154	LENGTH:	6'
MAX. PRESSURE CAPACITY:	1740 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
- SOIL SHALL BE CLASSIFIED IN ACCORDANCE WITH OSHA APPENDIX A BY A COMPETENT PERSON OR BY A REGISTERED CIVIL ENGINEER PRIOR TO THE INSTALLATION OF THIS EQUIPMENT.
- THIS TABULATED DATA IS PROVIDED BY THE MANUFACTURER. ITS PURPOSE IS TO ASSIST THE COMPETENT PERSON IN SELECTING THE PROPER SAFETY SHORING EQUIPMENT FOR THE PROJECT. THE COMPETENT PERSON HAS SOLE RESPONSIBILITY FOR JOB SITE SAFETY AND THE PROPER SELECTION OF THE SHORING EQUIPMENT.
- THIS TABULATED DATA IS NOT INTENDED TO BE A SUBSITUTE FOR THE ON SITE ENGINEERS PLAN. IT IS INTENDED TO BE USED BY THE COMPETENT PERSON TO SUPPLEMENT HIS TRAINING, HIS KNOWLEDGE & EXPERIENCE OF THE JOB CONDITIONS & SOIL TYPES.
- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
- METHODS USED AND SAFETY PROCEDURES ASSOCIATED WITH THIS EXCAVATION, INSTALLATION & REMOVAL OF THE SHORING SYSTEM, OR DEWATERING ARE THE SOLE RESPONSIBILTY OF THE CONTRACTOR.
- MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
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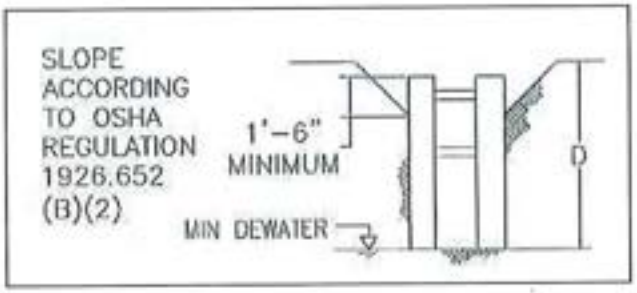
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**37'**
TYPE C-60	**29'**
TYPE C-80	**22'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

Michael S. Tuculescu, PE

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4DWE-614	HEIGHT:	6'
SERIAL NUMBER:	ASI-200346	LENGTH:	14'
MAX. PRESSURE CAPACITY:	960 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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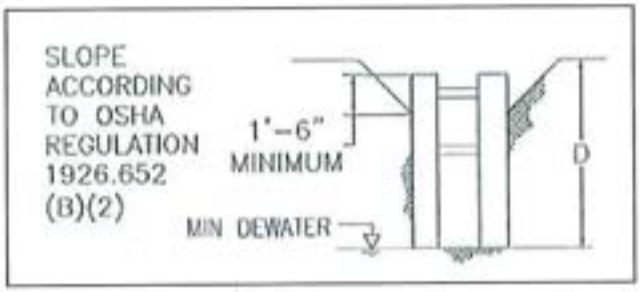
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**21'**
TYPE C-60	**16'**
TYPE C-80	**12'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

Michael S. Tuculescu, PE

J.M. TURNER ENGINEERING, INC.
Consulting Engineers
CIVIL ENGINEERING • STRUCTURAL ENGINEERING
CONSTRUCTION ENGINEERING

WEST ROAD
DOWNTOWN AREA COLLECTION SYSTEM AND PUMP STATIONS PIPELINE INSTALLATION TOWN OF ORLEANS, MA

SLIDE RAIL SHORING DESIGN CALCULATIONS

American Shoring, Inc.
207 Lake Street
Newburgh, NY 12550

Design an excavation plan for the above-mentioned project. The maximum depth of the excavation is to be 24'. Soil parameters are based on the boring logs provided in the geotechnical report by AECOM with project number: 60476644. Soil parameters used for active pressure are as follows: Soil Unit Weight = 120 pcf, Internal Angle of Friction = 28 degrees. A 200 psf surcharge from ground surface to a depth of 10' and a 100 psf from a depth of 10' to a depth of 20' were added to account for traffic and/or construction equipment adjacent to excavation. Dewater, if necessary, to maintain a maximum water table level at the bottom of the excavation.

DATE: 11/10/2020
BY: M.M.
BY DIRECTION OF: A.J.V.
SHEET NO: 1 OF 7
JOB NO: 18174-1

J.M. TURNER ENGINEERING , INC.
1325 COLLEGE AVENUE
SANTA ROSA, CA 95404
PH# : (707) 528-4503
FAX# : (707) 528-4505

SUBJECT: American Shoring SHEET NO.: 2 OF ____
Downtown Area West Road BY: M.M. DATE: 11/10/20
Shoring Design Calculations CHKD BY: ____ DATE: ____

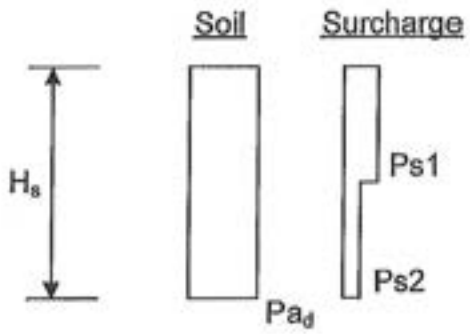
Check Slide Rail Panel Rating:

Active Pressure:

Internal Angle of Friction (deg): $\phi := 28$

Unit Weight of Soil (pcf): $\gamma := 120$

Maximum Height of System (ft): $H_s := 24$



$$Ka := \tan\left[\left(45 - \frac{\phi}{2}\right)\cdot deg\right]^2$$

$Ka = 0.36$

$Pa_d := 0.65 \cdot Ka \cdot \gamma \cdot H_s$

$Pa_d = 676$

Surcharge:

Surcharge used to account for traffic and/or construction equipment adjacent to excavation.

$Ps1 := 200$ (0' to 10')

$Ps2 := 100$ (10' to 20')

Total Pressure:

Total Pressure (psf): $Pt := Pa_d + Ps1$

$Pt = 876$

Use Slide Rail Panels, with a Minimum Rating of 876 psf.

J.M. TURNER ENGINEERING, INC.
1325 COLLEGE AVENUE
SANTA ROSA, CA 95404
PH# : (707) 528-4503
FAX# : (707) 528-4505

SUBJECT: American Shoring — SHEET NO.: 5 OF ____
Downtown Area West Road — BY: M.M. DATE: 11/10/20
Shoring Design Calculations — CHKD BY: ____ DATE: ____

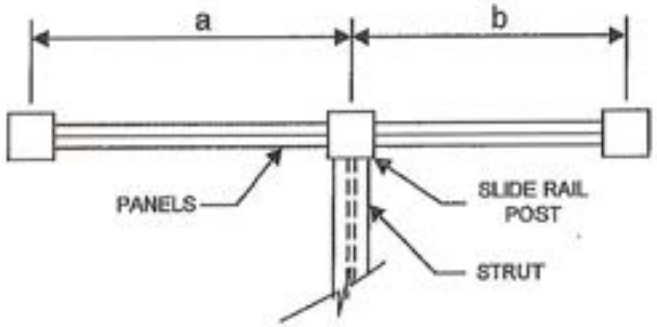
Check Mega Post and Mega Rolling Strut:

From given data: Max Lateral Earth Pressure (psf): $W1 := 676$

Surcharge Pressure (psf): $Ps1 := 200$ $Ps2 := 100$

Shoring panels used (ft): $a := 20.685$ $b := 20.685$

Tributary Width (ft): $Tw := \frac{a}{2} + \frac{b}{2}$ $Tw = 20.685$



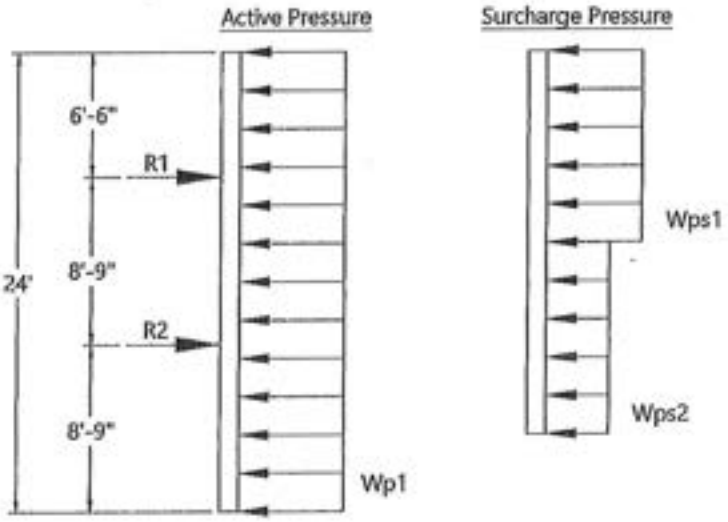
Active Pressure on Post (kips/lf):

$Wp1 := \frac{Tw \cdot W1}{1000}$ $Wp1 = 13.98$

$Wps1 := \frac{Tw \cdot Ps1}{1000}$ $Wps1 = 4.14$ $Wps2 := \frac{Tw \cdot Ps2}{1000}$ $Wps2 = 2.07$

Check Post:

Load Diagram shown at right was Loaded into RISA2d Structural program to find the results listed below: (Filename: 18174-1/P1)



Results:

Reactions (kips): $R1 := 173.7$ $R2 := 223.9$

Max. Moment (k*ft): $Mmax_p := 558.5 \leq 594$ (k*ft) **OK**

Max. Sher (kips): $Vmax_p := 132.2 \leq 312$ (kips) **OK**

Worst Case Load (kips): $P := \max(R1, R2) = 223.9$

Check Mega Rolling Strut:

$S_{xx} := 464$ $S_{yy} := 115$ $Ag := 44.7$

$R_{xx} := 14.6$ $R_{yy} := 3.3$ $Lc := 2.71$

$F_y := 50$ $\gamma_s := 490$ $Ls := 6$ $Mall := 1180$

Bending of Strut Extensions (ksi):

$Fb := 0.6 \cdot F_y$ $Fb = 30$

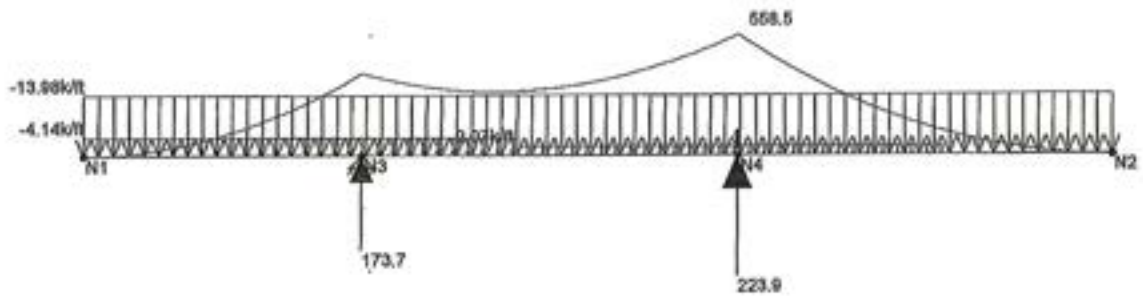
$Mmax := \frac{\gamma_s \cdot \frac{Ag}{12} \cdot Ls^2}{8 \cdot 1000}$ $Mmax = 8.2$ $fb := \frac{Mmax \cdot 12}{S_{xx}}$ $fb = 0.212$ $\frac{fb}{Fb} = 0.01 \leq 1.00$ **OK**

Axial of Strut Extensions (kips):

$Pmax := R1 + R2$ $Pmax = 397.6$

$K := 1$ $\frac{K \cdot Ls \cdot 12}{R_{yy}} = 21.8$ Thus.... $Fa := 28.9$ <---AISC Table 4-22

$fa := \frac{Pmax}{Ag}$ $fa = 8.89$ $\frac{fa}{Fa} = 0.31 \leq 1.00$ **OK**



Loads: LC 1, SR Post
Results for LC 1, SR Post
Member Bending Moments (k-ft)
Reaction and Moment Units are k and k-ft

J.M. Turner Engineering	American Shoring	
M.M.		Nov 10, 2020 at 1:40 PM
18174-1		P1.r2d

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Temp [F]
1	N1	0	0	0
2	N2	24	0	0
3	N3	6.5	0	0
4	N4	15.25	0	0

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Rotation[k-ft/rad]
1	N3	Reaction	Reaction	
2	N4		Reaction	

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Joint	Point	Distributed
1	Active Pressure	None					1
2	Surcharge Pressure	None					2

Load Combinations

	Description	Sol..	PD..	SR..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..
1	SR Post	Yes			1	1	2	1																

Joint Loads and Enforced Displacements

Joint Label	L.D.M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/ft,...
No Data to Print ...			

Member Point Loads

Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
No Data to Print ...			

Member Distributed Loads (BLC 1 : Active Pressure)

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-13.98	-13.98	0	0

Member Distributed Loads (BLC 2 : Surcharge Pressure)

	Member Label	Direction	Start Magnitude[k/ft,F...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-4.14	-4.14	0	10
2	M1	Y	-2.07	-2.07	10	20

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	MZ [k-ft]
1	1	N3	0	173.71	0
2	1	N4	0	223.91	0
3	1	Totals:	0	397.62	
4	1	COG (ft):	X: 11.427	Y: 0	

Maximum Member Section Forces

	LC	Member Label		Axial[k]	Loc[ft]	Shear[k]	Loc[ft]	Moment[k-ft]	Loc[ft]
1	1	M1	max	0	0	132.157	15.25	558.524	15.25
2			min	0	0	-117.78	6.5	0	0

J.M. TURNER ENGINEERING, INC.
1325 COLLEGE AVENUE
SANTA ROSA, CA 95404
PH# : (707) 528-4503
FAX# : (707) 528-4505

Combined Stress:

$$CS := if\left(\frac{fa}{Fa} \geq 0.2, \frac{fa}{Fa} + \frac{8}{9}\cdot\frac{fb}{Fb}, \frac{fa}{2\cdot Fa} + \frac{fb}{Fb}\right) \qquad CS = 0.31 \leq 1.00 \text{ OK}$$

Check Rollers on Mega Rolling Strut:

Allowable Tensile Load (kips): $Pt_{all} := 130.176$

Allowable Compressive Load (kips): $Pa_{all} := 275.813$

$$\frac{P}{Pa_{all}} = 0.81 \leq 1.00 \text{ OK}$$

Check Bending on Mega Rolling Strut:

Allowable Moment (k*ft): Mall = 1180

Maximum Moment (k*ft): $Mmax_s := (R2 - R1)\cdot Lc$ $Mmax_s = 136$

$$\frac{Mmax_s}{Mall} = 0.12 \leq 1.00 \text{ OK}$$

Use a Mega Rail and Mega Rolling Strut

AMERICAN SHORING INC.

WEST ROAD
COLLECTION SYSTEM AND PUMP STATIONS
DOWNTOWN AREA
TOWN OF ORLEANS, MA

EXCAVATION SHORING PLAN

INDEX:

SHEET S/1 COVER PAGE
SHEET S/2 PLAN VIEW
SHEET S/3 SECTIONS

GENERAL NOTES

1. PROVIDE ACCESS AND BARRICADING PER OSHA REQUIREMENTS.
2. VERIFY LOCATION AND SIZE OF ALL EXISTING UNDERGROUND UTILITIES AND/OR PIPES, PRIOR TO COMMENCING EXCAVATION.
3. THIS PLAN IS DESIGNED FOR PROTECTION OF WORKERS, EXISTING UTILITIES, STRUCTURES AND/OR SUBSTRUCTURES CLEARLY SPECIFIED ON PLANS. LAYOUT IS PER CONTRACT DRAWINGS.
4. VERIFY THAT REQUIRED CLEARANCES ARE OBTAINED AND THAT THERE IS SUFFICIENT WORKING SPACE.
5. THIS PLAN IS IN ACCORDANCE WITH FEDERAL AND/OR STATE OSHA REGULATIONS, DESIGN BY A REGISTERED CIVIL ENGINEER.
6. THESE PLANS ARE NOT INTENDED TO SHOW THE METHOD AND MEANS OF EXCAVATION OF THE WORK, WHICH IS THE RESPONSIBILITY OF THE CONTRACTOR.
7. PROVIDE A COMPETENT PERSON AT THE SITE WHERE THIS PLAN IS IN USE. THEY SHALL BE RESPONSIBLE MAKING SURE THAT ALL ELEMENTS OF THIS PLAN ARE ADHERED TO AND SHALL NOTIFY THE ENGINEER IF CONDITIONS ENCOUNTERED ARE DIFFERENT THAN ANTICIPATED AND SHOWN ON THIS PLAN. IF CONDITIONS ARE DIFFERENT, THIS PLAN MUST BE MODIFIED TO COVER THOSE CONDITIONS OR A NEW PLAN SHALL BE USED.
8. CONTACT J.M. TURNER ENGINEERING FOR PLAN REVIEW AND/OR POSSIBLE PLAN REVISIONS IF ANY EXISTING STRUCTURE(S), BUILDING(S) OR RAILROAD(S), NOT ALREADY SHOWN HEREON, ARE WITHIN A DISTANCE EQUAL TO THE DEPTH OF EXCAVATION, FROM EDGE OF EXCAVATION TO STRUCTURE.
9. CONTACT J.M. TURNER ENGINEERING FOR PLAN REVIEW AND/OR PLAN REVISIONS IF EXISTING PARALLEL UTILITIES ARE 48" IN DIAMETER OR LARGER AND ARE CLOSER THAN 48" FROM EDGE OF EXCAVATION.
10. REVIEW SHORING PLANS TO VERIFY PROPOSED DESIGN IS IN ACCORDANCE WITH CONTRACT SPECIFICATIONS AND/OR REQUIREMENTS.
11. DIFFERENT PANEL LENGTHS MAY BE USED PROVIDED THE OVERALL EXCAVATION DIMENSIONS ARE NOT EXCEEDED.

811
KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.

INSTALLATION/REMOVAL SEQUENCE

1. INSTALL SLIDE RAIL POSTS, PANELS AND ROLLING STRUT SO THAT THE BOTTOM OF THE SHORING IS NO MORE THAN 2' ABOVE THE BOTTOM OF THE EXCAVATION.
2. COMMENCE PROJECT WORK.
3. SIMULTANEOUSLY BACKFILL THE EXCAVATION WHILE PULLING THE PANELS AND POSTS.

STEEL REQUIREMENTS

- PROVIDE STEEL SHAPES IN ACCORDANCE WITH MANUFACTURER'S TABULATED DATA SHEETS UNLESS OTHERWISE SPECIFIED.

WELDING REQUIREMENTS

- WELD IN ACCORDANCE WITH MANUFACTURER'S TABULATED DATA SHEETS UNLESS OTHERWISE SPECIFIED.

TIMBER REQUIREMENTS

- PROVIDE TIMBER IN ACCORDANCE WITH MANUFACTURER'S TABULATED DATA SHEETS, OR BETTER UNLESS OTHERWISE SPECIFIED.

DEWATERING REQUIREMENTS

- DEWATER INSIDE EXCAVATION AS NEEDED TO ALLOW CONSTRUCTION OF SHORING AND/OR REQUIRED WORK OPERATIONS.
- DEWATERING IS THE RESPONSIBILITY OF THE CONTRACTOR. IF DEWATERING WELLS, SPECIAL SUMP PUMPS OR ANY REQUIREMENTS FOR DEWATERING REQUIRED BY THE REVIEWING AGENCY, CONTRACTOR SHALL ADDRESS IN A SEPARATE SUBMITTAL.
- DEWATERING WELLS MAY BE REQUIRED (AS MANY AS NEEDED) TO MAINTAIN THE WATER LEVEL AT THE BOTTOM OF THE EXCAVATION.

SLIDE RAIL NOTES:

- PROVIDE TABULATED DATA FOR EQUIPMENT TO BE USED AT THE JOBSITE.
- MANUFACTURERS TABULATED DATA APPLIES EXCEPT AS IS NOTED HERE.
- INSTALL SHORING IN ACCORDANCE WITH THIS PLAN.
- PROPERLY INSTALL SHORING PRIOR TO ENTERING EXCAVATION. WORKERS MUST ENTER, EXIT, AND WORK IN SHORED AREAS ONLY.

COMMONWEALTH OF MASSACHUSETTS
ADRIANUS J. VERMEULEN
CIVIL
REGISTERED PROFESSIONAL ENGINEER
11/11/2020

REVISIONS	BY

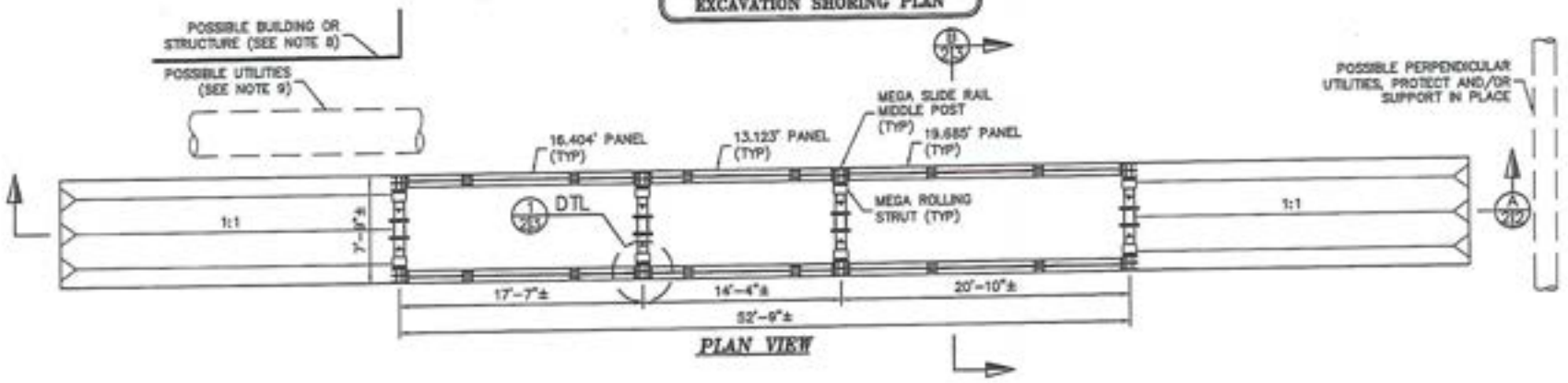
WEST ROAD
DOWNTOWN AREA
COLLECTION SYSTEM AND PUMP STATIONS
TOWN OF ORLEANS, MA
EXCAVATION SHORING PLAN

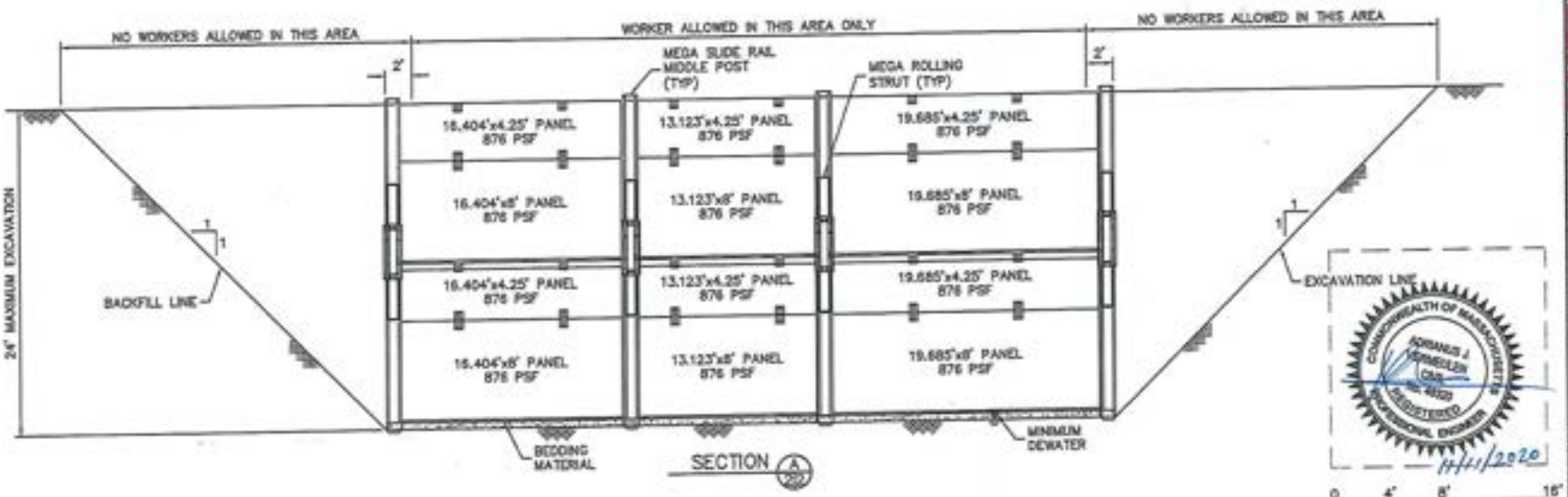
AMERICAN SHORING INC.

J.M. TURNER ENGINEERING, INC.
CONSULTING ENGINEERS

DATE:	11/06/20
DRAWN BY:	A.B.R.
CHECKED BY:	A.J.V.
DRAWING NO.:	[illegible]
SHEET:	1 OF 3

WEST ROAD
COLLECTION SYSTEM AND PUMP STATIONS
DOWNTOWN AREA
TOWN OF ORLEANS, MA
EXCAVATION SHORING PLAN





0 4' 8' 16'
SCALE: 1/8" = 1'-0"

REVISIONS	BY

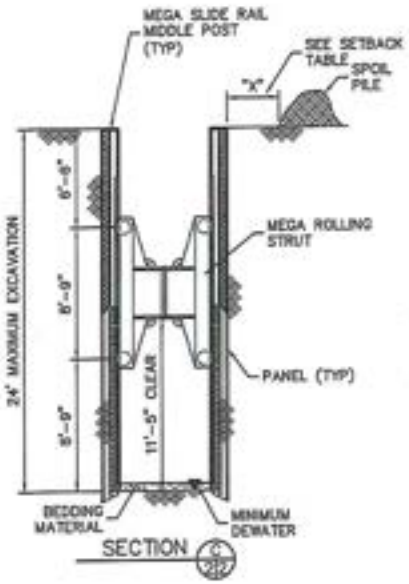
WEST ROAD
DOWNTOWN AREA
COLLECTION SYSTEM AND PUMP STATIONS
TOWN OF ORLEANS, MA
EXCAVATION SHORING PLAN

AMERICAN SHORING INC.

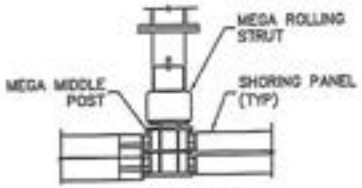
J.M. TURNER ENGINEERING, INC.
CONSULTING ENGINEERS

DATE: 11/09/20
DRAWN BY: A.R.R.
CHECKED BY: A.J.V.
DRAWING NO: 18174-1/S2
SHEET: 2 OF 3

WEST ROAD
COLLECTION SYSTEM AND PUMP STATIONS
DOWNTOWN AREA
TOWN OF ORLEANS, MA
EXCAVATION SHORING PLAN



SECTION C 2/1



DETAIL 1 2/1
NTS

SETBACK TABLE

X = SETBACK	
K-RAIL	X=1'
HS 20-44 TRAFFIC	X=4'
SPOIL PILE	X=4'
EXCAVATOR	X=4'
DUMP TRUCK	X=4'
3 CY LOADER	X=4'
5 CY LOADER	X=5'
CRANE TO 30 TON	X=8'
CONCRETE TRUCK	X=10'

COMMONWEALTH OF MASSACHUSETTS
ADRIANUS J. VERMEULEN
CIVIL
REGISTERED PROFESSIONAL ENGINEER
11/11/2020

0 4' 8' 16'
SCALE: 1/8" = 1'-0"

REVISIONS	BY

WEST ROAD
DOWNTOWN AREA
COLLECTION SYSTEM AND PUMP STATIONS
TOWN OF ORLEANS, MA
EXCAVATION SHORING PLAN

AMERICAN SHORING Inc.

J.M. TURNER ENGINEERING, INC.
CONSULTING ENGINEERS
1305 COLLEGE AVE, SANTA ROSA, CA 95404
(707) 528-4500 FAX (707) 528-4505

DATE: 11/06/20
DRAWN BY: A.B.S.
CHECKED BY: A.J.V.
DRAWING NO: 18174-1/33
SHEET: 1 OF 1

TRENCH SHIELD MANUFACTURER'S TABULATED DATA

4M616	MODEL NO.
M2532	SERIAL NO.
1/7/04	DATE SHIPPED

MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	62'
B	45	36'
C	60	28'
C	80	21'

1,473 PSF	SHIELD CAPACITY
20 FT	MAX SPREADER LENGTH
8 IN SCH 80	SPREADER SIZE

CONDITIONS FOR USE OF TABULATED DATA:

1. This Tabulated Data has been prepared by a registered professional engineer as required to comply with the OSHA standard 29 CFR Part 1926, Subpart P.

2. The Soil Types A - 25, B - 45, and C - 80 are as defined in the OSHA Standard. Soil Type C - 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged and has an Equivalent Fluid Pressure (EFP) of 60 PSF per foot of depth. The competent person must monitor the excavation for signs of deterioration that may alter soil pressures and produce the Soil Type C - 80 condition. Such signs are indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the shield.

3. Trench Shields shall be used in accordance with the depth chart. The maximum depth is the distance from the surface of the excavation to the bottom of the trench. Depth ratings shown are based upon examples of homogeneous soil conditions. Soil pressures may vary due to non - homogeneous soils, surcharge loads, and slope of embankment (layback). Actual soil pressures should be verified to be sure that the shield capacity is not exceeded.

4. Surcharge loads are not included in the maximum depth table. Surcharge loads are possible due to heavy equipment, vibrations, or soil piles adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench Shields are not intended to provide stability to adjacent buildings or other structures.

6. 2 inch diameter pins furnished by GME shall be placed in all spreader to collar connections.

WARNING!
Use of this equipment not in accordance with Manufacturers Tabulated Data may lead to injury or death.

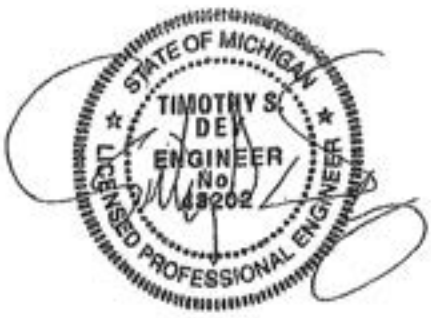
GENERAL NOTES FOR TRENCH SHIELD USE:

1. Any modifications to shields using parts not manufactured by GME will void Tabulated Data unless otherwise specified or allowed in writing by GME.

2. GME Trench Shields may be stacked provided that appropriate connections are made between stacked shields as specified by GME. Each stacked shield shall have a depth rating equal to or greater than the actual depth at which it is used.

3. Maximum depths are based on shields being in structurally sound condition. Trench Shields should be inspected prior to each use for any damage or deterioration. If a shield has sustained major structural damage or permanent deformation of a structural member or connection, the Tabulated Data is void until repairs are made as specified by a registered professional engineer.

4. The use of GME Trench Shields shall be in accordance with this tabulated data and all requirements of the OSHA standard. Trench Shield usage other than specified or required may create unsafe conditions that could cause a cave - in, structural failure, or collapse resulting in a disabling injury or even death. GME shall not be liable for shield usage other than specified.



Griswold Machine & Engineering, Inc.
594 W. Highway M - 60
Union City, MI 49094
Phone 517 - 741 - 4300

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TRENCH SHIELD MANUFACTURER'S TABULATED DATA

6H424 NKE	MODEL NO.
M04091714	SERIAL NO.
10/12/04	DATE SHIPPED

MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	53'
B	45	30'
C	60	23'
C	80	18'

1,267 PSF	SHIELD CAPACITY
20 FT	MAX SPREADER LENGTH
8 IN SCH 80	SPREADER SIZE

CONDITIONS FOR USE OF TABULATED DATA:

1. This Tabulated Data has been prepared by a registered professional engineer as required to comply with the OSHA standard 29 CFR Part 1926, Subpart P.

2. The Soil Types A - 25, B - 45, and C - 60 are as defined in the OSHA Standard. Soil Type C - 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged and has an Equivalent Fluid Pressure (EFP) of 60 PSF per foot of depth. The competent person must monitor the excavation for signs of deterioration that may alter soil pressures and produce the Soil Type C - 80 condition. Such signs are indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the shield.

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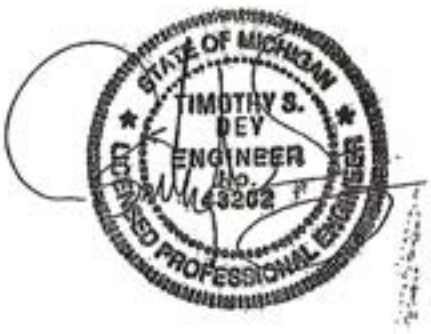

WARNING!
Use of this equipment not in accordance with Manufacturers Tabulated Data may lead to injury or death.

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Griswold Machine & Engineering, Inc.
594 W. Highway M - 60
Union City, MI 49094
Phone 517 - 741 - 4300

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	6SDW-820	HEIGHT:	8'
SERIAL NUMBER:		LENGTH:	20'
MAX. PRESSURE CAPACITY:	1440 PSF		

SPECIFICATIONS FOR USE

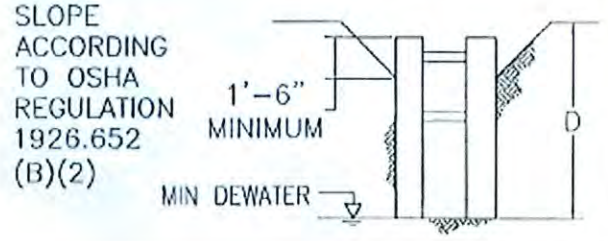
- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
- SOIL SHALL BE CLASSIFIED IN ACCORDANCE WITH OSHA APPENDIX A BY A COMPETENT PERSON OR BY A REGISTERED CIVIL ENGINEER PRIOR TO THE INSTALLATION OF THIS EQUIPMENT.
- THIS TABULATED DATA IS PROVIDED BY THE MANUFACTURER. ITS PURPOSE IS TO ASSIST THE COMPETENT PERSON IN SELECTING THE PROPER SAFETY SHORING EQUIPMENT FOR THE PROJECT. THE COMPETENT PERSON HAS SOLE RESPONSIBILITY FOR JOB SITE SAFETY AND THE PROPER SELECTION OF THE SHORING EQUIPMENT.
- THIS TABULATED DATA IS NOT INTENDED TO BE A SUBSITUTE FOR THE ON SITE ENGINEERS PLAN. IT IS INTENDED TO BE USED BY THE COMPETENT PERSON TO SUPPLEMENT HIS TRAINING, HIS KNOWLEDGE & EXPERIENCE OF THE JOB CONDITIONS & SOIL TYPES.
- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
- METHODS USED AND SAFETY PROCEDURES ASSOCIATED WITH THIS EXCAVATION, INSTALLATION & REMOVAL OF THE SHORING SYSTEM, OR DEWATERING ARE THE SOLE RESPONSIBILTY OF THE CONTRACTOR.
- MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS.OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
- SHIELDS ARE DESIGNED TO BE PUSHED TO GRADE, IF NECESSARY, ANY ABUSE OF THIS PRODUCT BY THE EXCAVATOR CAUSING MAJOR STRUCTURAL DAMAGE WILL VOID THIS TABULATED DATA AND WARRANTY.
- THE CONDITION OF THE SHIELD, SPREADERS AND SPREADER PINS MUST BE CHECKED AND INSPECTED BY THE COMPETENT PERSON BEFORE EACH USE. THIS CERTIFICATION IS INVALID IF ANY VISABLE WEAR OR DAMAGE IS OBSERVED. NO REPAIRS SHOULD BE MADE TO THE SHIELD THAT HAVE NOT BEEN PREVIOUSLY DOCUMENTED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER AND APPROVED BY AMERICAN SHORING.

MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**32'**
TYPE C-60	**24'**
TYPE C-80	**19'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLES-24	HEIGHT:	2'
SERIAL NUMBER:	N/A	LENGTH:	4'
MAX. PRESSURE CAPACITY:	2040 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
- METHODS USED AND SAFETY PROCEDURES ASSOCIATED WITH THIS EXCAVATION, INSTALLATION & REMOVAL OF THE SHORING SYSTEM, OR DEWATERING ARE THE SOLE RESPONSIBILTY OF THE CONTRACTOR.
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- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
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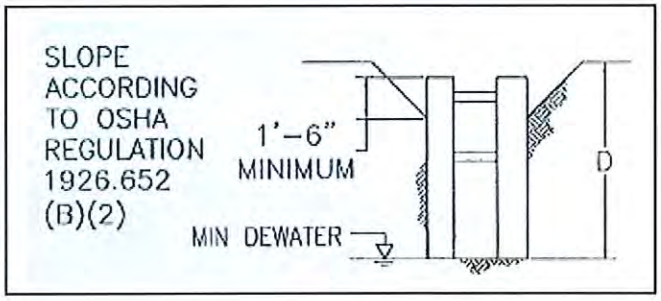
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**57'**
TYPE C-60	**34'**
TYPE C-80	**26'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



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AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLES-26	HEIGHT:	2'
SERIAL NUMBER:	N/A	LENGTH:	6'
MAX. PRESSURE CAPACITY:	1920 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
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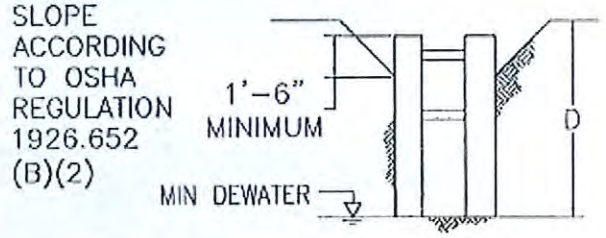
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**53'**
TYPE C-60	**32'**
TYPE C-80	**24'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	8SDW-1024H	HEIGHT:	10'
SERIAL NUMBER:	ASI-1908136	LENGTH:	24'
MAX. PRESSURE CAPACITY:	1847 PSF (10' Long 8" Sch 100 Spreaders)		

SPECIFICATIONS FOR USE

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- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
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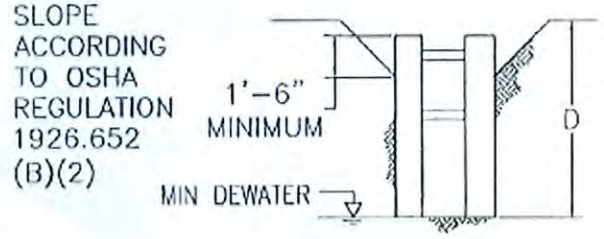
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**39'**
TYPE C-60	**30'**
TYPE C-80	**22'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



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AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	6SDW-820	HEIGHT:	8'
SERIAL NUMBER:	ASI-1908137	LENGTH:	20'
MAX. PRESSURE CAPACITY:	1440 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
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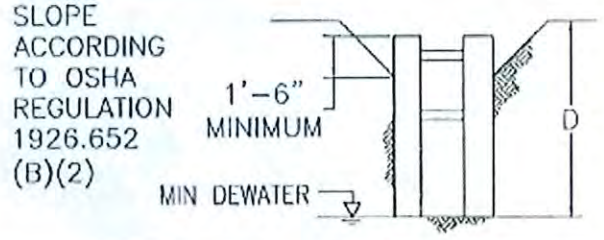
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**32'**
TYPE C-60	**24'**
TYPE C-80	**19'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



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207 Lake Street (Rte. 32)
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Phone: 800-407-4674
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MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4SDW-420	HEIGHT:	4'
SERIAL NUMBER:	ASI-150448	LENGTH:	20'
MAX. PRESSURE CAPACITY:	1080 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
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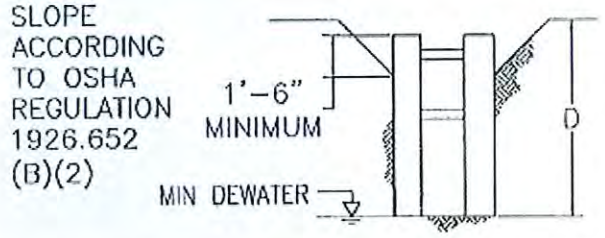
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**23'**
TYPE C-60	**18'**
TYPE C-80	**15'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

Michael S. Tuculescu, PE

AMERICAN SHORING INC.

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Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	6DWE-812	HEIGHT:	8'
SERIAL NUMBER:	ASI-1908138	LENGTH:	12'
MAX. PRESSURE CAPACITY:	2038 PSF		

SPECIFICATIONS FOR USE

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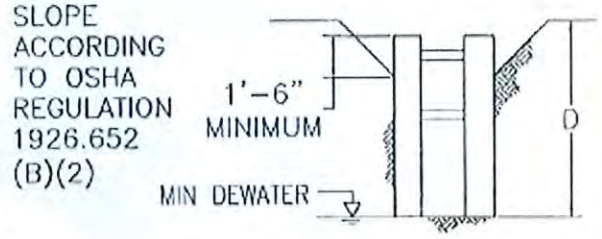
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**43'**
TYPE C-60	**32'**
TYPE C-80	**24'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



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207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLSB-66	HEIGHT:	6'
SERIAL NUMBER:	ASI-199150	LENGTH:	6'
MAX. PRESSURE CAPACITY:	1740 PSF		

SPECIFICATIONS FOR USE

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MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**38'**
TYPE C-60	**29'**
TYPE C-80	**21'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

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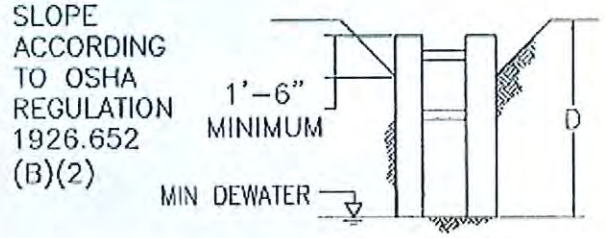

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Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLSB-610	HEIGHT:	6'
SERIAL NUMBER:	ASI-1909151	LENGTH:	10'
MAX. PRESSURE CAPACITY:	720 PSF		

SPECIFICATIONS FOR USE

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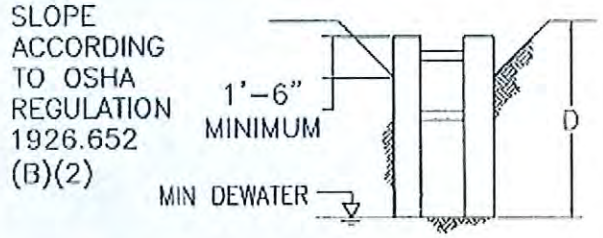
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**14'**
TYPE C-60	**12'**
TYPE C-80	**8'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

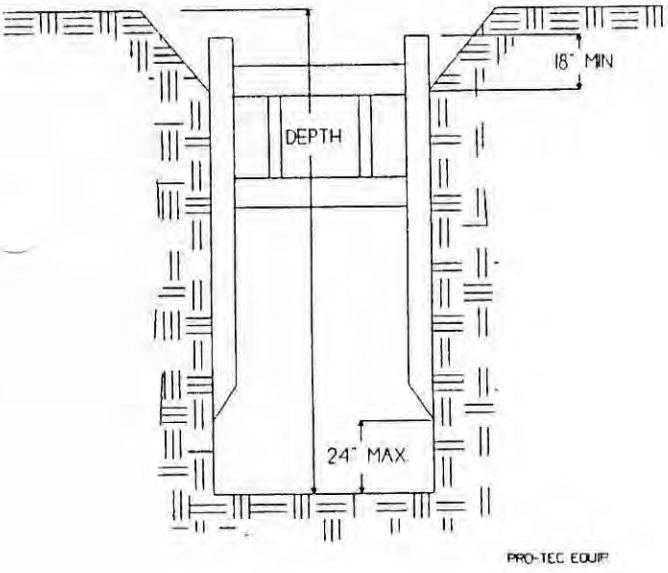
Michael S. Tuculescu, PE

TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER	SERIAL NUMBER	SIZE
PAL3-610D	15884	6' HIGH X 10' LONG
	PIVOT STYLE	

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	60 FEET	1500	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	33 FEET	1500	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	25 FEET	1500	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



STATE OF MICHIGAN
SCOTT M. GILLETT
ENGINEER
NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   * Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Lipsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 292-1225 • Fax: (517) 541-0329

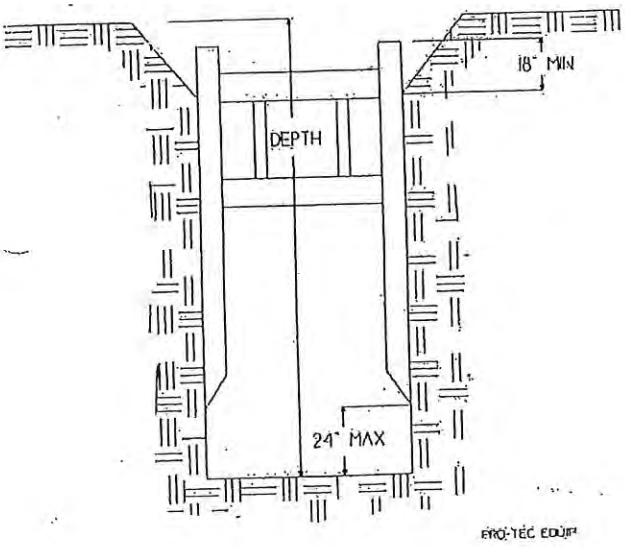
TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER	SERIAL NUMBER	SIZE
PAL3-610D	15884	6' HIGH X 10' LONG

PIVOT STYLE

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	60 FEET	1500	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	33 FEET	1500	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	25 FEET	1500	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



STATE OF MICHIGAN
SCOTT M. GILLETT
ENGINEER
NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
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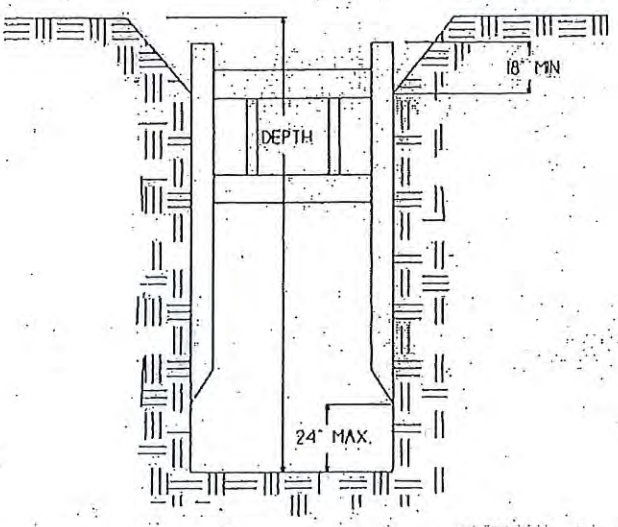
TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER	SERIAL NUMBER	SIZE
PAL3-610D	15886 PIVOT STYLE	6' HIGH X 10' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	60 FEET	1500	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	33 FEET	1500	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	25 FEET	1500	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



STATE OF MICHIGAN
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NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
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5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
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AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	6SDW-820	HEIGHT:	8'
SERIAL NUMBER:	ASI-1908137	LENGTH:	20'
MAX. PRESSURE CAPACITY:	1440 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
- SOIL SHALL BE CLASSIFIED IN ACCORDANCE WITH OSHA APPENDIX A BY A COMPETENT PERSON OR BY A REGISTERED CIVIL ENGINEER PRIOR TO THE INSTALLATION OF THIS EQUIPMENT.
- THIS TABULATED DATA IS PROVIDED BY THE MANUFACTURER. ITS PURPOSE IS TO ASSIST THE COMPETENT PERSON IN SELECTING THE PROPER SAFETY SHORING EQUIPMENT FOR THE PROJECT. THE COMPETENT PERSON HAS SOLE RESPONSIBILITY FOR JOB SITE SAFETY AND THE PROPER SELECTION OF THE SHORING EQUIPMENT.
- THIS TABULATED DATA IS NOT INTENDED TO BE A SUBSITUTE FOR THE ON SITE ENGINEERS PLAN. IT IS INTENDED TO BE USED BY THE COMPETENT PERSON TO SUPPLEMENT HIS TRAINING, HIS KNOWLEDGE & EXPERIENCE OF THE JOB CONDITIONS & SOIL TYPES.
- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
- METHODS USED AND SAFETY PROCEDURES ASSOCIATED WITH THIS EXCAVATION, INSTALLATION & REMOVAL OF THE SHORING SYSTEM, OR DEWATERING ARE THE SOLE RESPONSIBILTY OF THE CONTRACTOR.
- MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
- SHIELDS ARE DESIGNED TO BE PUSHED TO GRADE, IF NECESSARY, ANY ABUSE OF THIS PRODUCT BY THE EXCAVATOR CAUSING MAJOR STRUCTURAL DAMAGE WILL VOID THIS TABULATED DATA AND WARRANTY.
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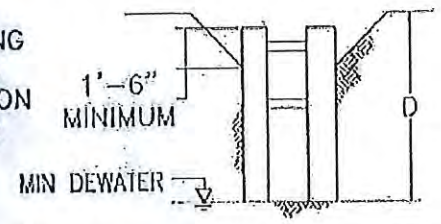
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH "D" PER SOIL TYPES:

TYPE B	**32'**
TYPE C-60	**24'**
TYPE C-80	**19'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



CERTIFIED BY:

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	4SDW-420	HEIGHT:	4'
SERIAL NUMBER:	ASI-150448	LENGTH:	20'
MAX. PRESSURE CAPACITY:	1080 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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- MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
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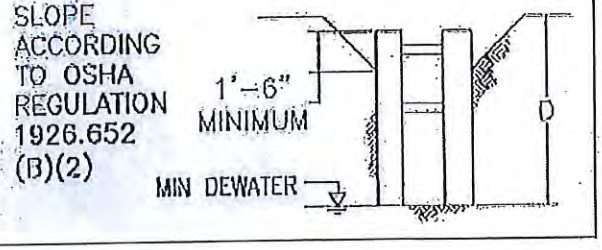
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**23'**
TYPE C-60	**18'**
TYPE C-80	**15'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

Michael S. Tuculescu, PE

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	6DWE-812	HEIGHT:	8'
SERIAL NUMBER:	ASI-1908138	LENGTH:	12'
MAX. PRESSURE CAPACITY:	2038 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
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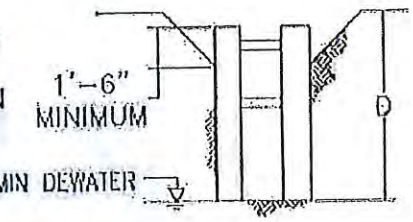
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**43'**
TYPE C-60	**32'**
TYPE C-80	**24'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



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FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLSB-66	HEIGHT:	6'
SERIAL NUMBER:	ASI-199150	LENGTH:	6'
MAX. PRESSURE CAPACITY:	1740 PSF		

SPECIFICATIONS FOR USE

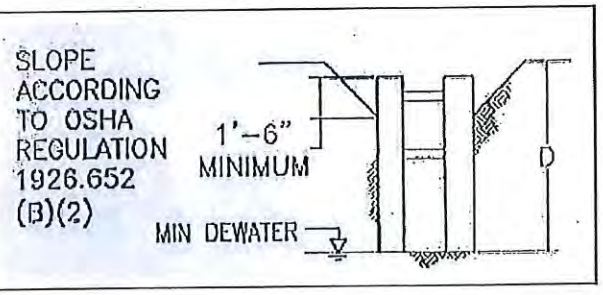
- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
- SOIL SHALL BE CLASSIFIED IN ACCORDANCE WITH OSHA APPENDIX A BY A COMPETENT PERSON OR BY A REGISTERED CIVIL ENGINEER PRIOR TO THE INSTALLATION OF THIS EQUIPMENT.
- THIS TABULATED DATA IS PROVIDED BY THE MANUFACTURER. ITS PURPOSE IS TO ASSIST THE COMPETENT PERSON IN SELECTING THE PROPER SAFETY SHORING EQUIPMENT FOR THE PROJECT. THE COMPETENT PERSON HAS SOLE RESPONSIBILITY FOR JOB SITE SAFETY AND THE PROPER SELECTION OF THE SHORING EQUIPMENT.
- THIS TABULATED DATA IS NOT INTENDED TO BE A SUBSITUTE FOR THE ON SITE ENGINEERS PLAN. IT IS INTENDED TO BE USED BY THE COMPETENT PERSON TO SUPPLEMENT HIS TRAINING, HIS KNOWLEDGE & EXPERIENCE OF THE JOB CONDITIONS & SOIL TYPES.
- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
- METHODS USED AND SAFETY PROCEDURES ASSOCIATED WITH THIS EXCAVATION, INSTALLATION & REMOVAL OF THE SHORING SYSTEM, OR DEWATERING ARE THE SOLE RESPONSIBILTY OF THE CONTRACTOR.
- MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
- SHIELDS ARE DESIGNED TO BE PUSHED TO GRADE, IF NECESSARY, ANY ABUSE OF THIS PRODUCT BY THE EXCAVATOR CAUSING MAJOR STRUCTURAL DAMAGE WILL VOID THIS TABULATED DATA AND WARRANTY.
- THE CONDITION OF THE SHIELD, SPREADERS AND SPREADER PINS MUST BE CHECKED AND INSPECTED BY THE COMPETENT PERSON BEFORE EACH USE. THIS CERTIFICATION IS INVALID IF ANY VISABLE WEAR OR DAMAGE IS OBSERVED. NO REPAIRS SHOULD BE MADE TO THE SHIELD THAT HAVE NOT BEEN PREVIOUSLY DOCUMENTED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER AND APPROVED BY AMERICAN SHORING.

MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**38'**
TYPE C-60	**29'**
TYPE C-80	**21'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.



CERTIFIED BY:

Michael S. Tuculescu, PE

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLSB-610	HEIGHT:	6'
SERIAL NUMBER:	ASI-1909151	LENGTH:	10'
MAX. PRESSURE CAPACITY:	720 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
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- MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
- SHIELDS ARE DESIGNED TO BE PUSHED TO GRADE, IF NECESSARY, ANY ABUSE OF THIS PRODUCT BY THE EXCAVATOR CAUSING MAJOR STRUCTURAL DAMAGE WILL VOID THIS TABULATED DATA AND WARRANTY.
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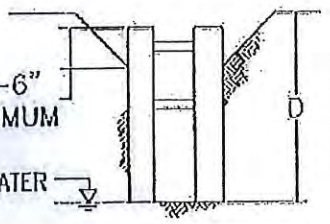
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH "D" PER SOIL TYPES:

TYPE B	**14'**
TYPE C-60	**12'**
TYPE C-80	**8'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



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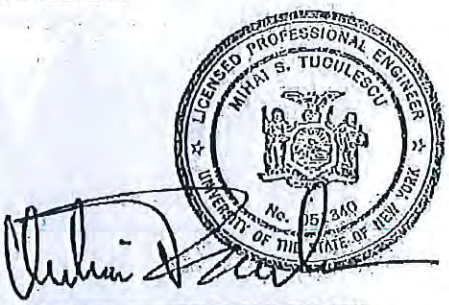

Michael S. Tuculescu, PE

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207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	6SDW-820	HEIGHT:	8'
SERIAL NUMBER:		LENGTH:	20'
MAX. PRESSURE CAPACITY:	1440 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
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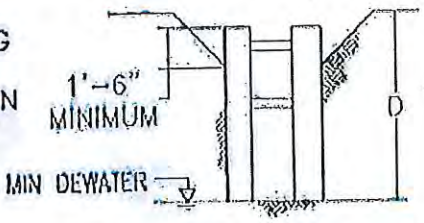
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**32'**
TYPE C-60	**24'**
TYPE C-80	**19'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



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207 Lake Street (Rte. 32)
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Phone: 800-407-4674
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MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLES-24	HEIGHT:	2'
SERIAL NUMBER:	N/A	LENGTH:	4'
MAX. PRESSURE CAPACITY:	2040 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
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- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
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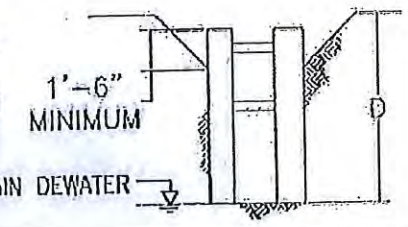
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	57'
TYPE C-60	34'
TYPE C-80	26'

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



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207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	MLES-26	HEIGHT:	2'
SERIAL NUMBER:	N/A	LENGTH:	6'
MAX. PRESSURE CAPACITY:	1920 PSF		

SPECIFICATIONS FOR USE

- ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART 1926, SUBPART P.
- THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
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- THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALIDATE THE CERTIFIED DEPTHS.
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- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
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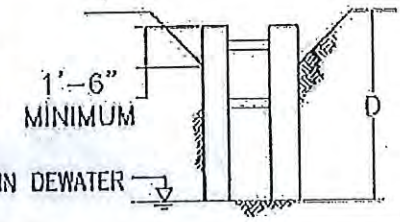
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**53'**
TYPE C-60	**32'**
TYPE C-80	**24'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



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Phone: 800-407-4674
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MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	8SDW-1024H	HEIGHT:	10'
SERIAL NUMBER:	ASI-1908136	LENGTH:	24'
MAX. PRESSURE CAPACITY:	1847 PSF (10' Long 8" Sch 100 Spreaders)		

SPECIFICATIONS FOR USE

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- BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
- METHODS USED AND SAFETY PROCEDURES ASSOCIATED WITH THIS EXCAVATION, INSTALLATION & REMOVAL OF THE SHORING SYSTEM, OR DEWATERING ARE THE SOLE RESPONSIBILTY OF THE CONTRACTOR.
- MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
- GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
- FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
- SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
- USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
- SHIELDS ARE DESIGNED TO BE PUSHED TO GRADE. IF NECESSARY, ANY ABUSE OF THIS PRODUCT BY THE EXCAVATOR CAUSING MAJOR STRUCTURAL DAMAGE WILL VOID THIS TABULATED DATA AND WARRANTY.
- THE CONDITION OF THE SHIELD, SPREADERS AND SPREADER PINS MUST BE CHECKED AND INSPECTED BY THE COMPETENT PERSON BEFORE EACH USE. THIS CERTIFICATION IS INVALID IF ANY VISABLE WEAR OR DAMAGE IS OBSERVED. NO REPAIRS SHOULD BE MADE TO THE SHIELD THAT HAVE NOT BEEN PREVIOUSLY DOCUMENTED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER AND APPROVED BY AMERICAN SHORING.

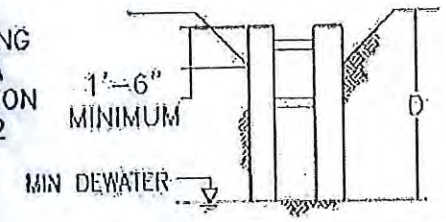
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH "D" PER SOIL TYPES:

TYPE B	39'
TYPE C-60	30'
TYPE C-80	22'

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

SLOPE ACCORDING TO OSHA REGULATION 1926.652 (B)(2)



CERTIFIED BY

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	3ZL-66	HEIGHT:	6'
SERIAL NUMBER:	ASI-130108	LENGTH:	6'
MAX. PRESSURE CAPACITY:	829 PSF		

SPECIFICATIONS FOR USE

ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
SOIL SHALL BE CLASSIFIED IN ACCORDANCE WITH OSHA APPENDIX A BY A COMPETENT PERSON OR BY A REGISTERED CIVIL ENGINEER PRIOR TO THE INSTALLATION OF THIS EQUIPMENT.
THIS TABULATED DATA IS PROVIDED BY THE MANUFACTURER. ITS PURPOSE IS TO ASSIST THE COMPETENT IN SELECTING THE PROPER SAFETY SHORING EQUIPMENT FOR THE PROJECT. THE COMPETENT PERSON HAS SOLE RESPONSIBILITY FOR JOB SITE SAFETY AND THE PROPER SELECTION OF THE SHORING EQUIPMENT.
THIS TABULATED DATA IS NOT INTENDED TO BE A SUBSITUTE FOR THE ON SITE ENGINEERS PLAN. IT IS INTENDED TO BE USED BY THE COMPETENT PERSON TO SUPPLEMENT HIS TRAINING, HIS KNOWLEDGE & EXPERIENCE OF THE JOB CONDITIONS & SOIL TYPES.
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BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
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MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS.OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
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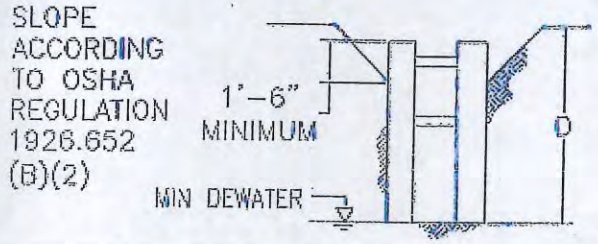
MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	22'
TYPE C-60	18'
TYPE C-80	14'

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

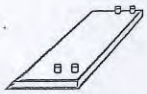


CERTIFIED BY:

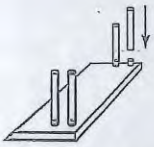
Michael S. Tuculescu, PE

American Shoring Inc. 1.800.407.4674
www.americanshoring.com

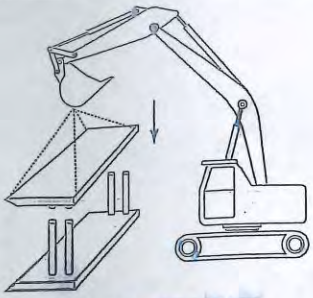
TRENCH SHIELD ASSEMBLY



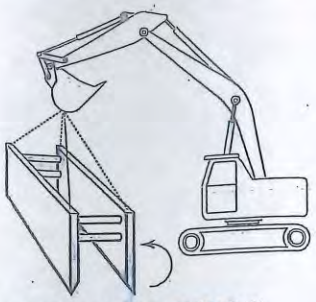
1. LAY PANEL FLAT ON THE GROUND WITH THE SPREADER COLLARS POINTED UP.



2. PLACE SPREADER PIPES ONTO THE COLLARS AND PIN INTO PLACE. SECURE PINS WITH KEEPERS.

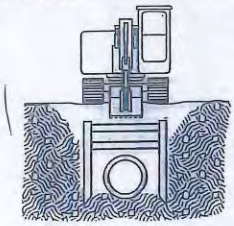


3. LOWER SECOND PANEL ONTO SPREADERS AND PIN INTO PLACE. SECURE PINS WITH KEEPERS.

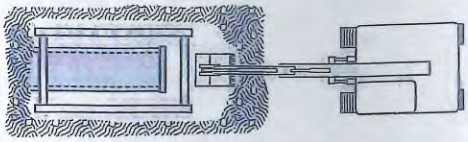


4. STAND TRENCH SHIELD IN UPRIGHT POSITION AND PREPARE FOR INSTALLATION.

TRENCH SHIELD INSTALLED IN STABLE SOIL

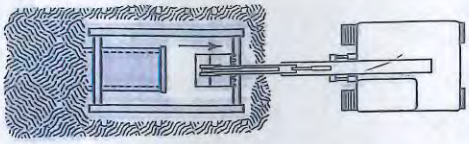


1. EXCAVATE TO GRADE JUST SLIGHTLY WIDER THAN THE TRENCH SHIELD. DIG WALLS VERTICAL TO MINIMUM OF 18" BELOW THE TOP OF THE SHIELD. SLOPE SOIL ABOVE SHIELD ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS. INSTALL SHIELD INTO TRENCH.



2. EXCAVATE IN FRONT OF THE SHIELD

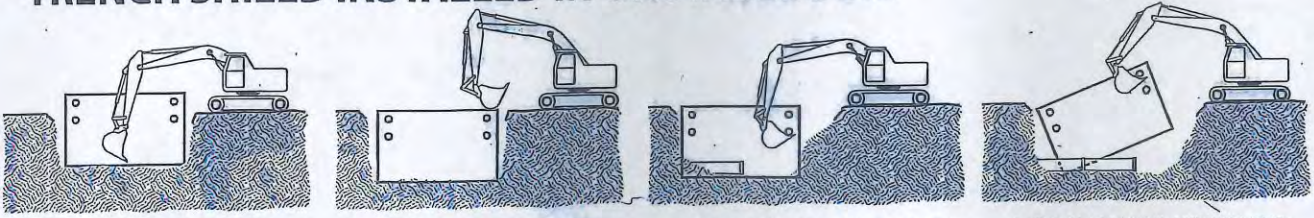
AMERICAN SHORING INC.



3. PULL SHIELD FORWARD BY FRONT SPREADER PIPES OR WITH THE PULLING EYES.

* PULLING EYES MAY BE USED WITH SPREADERS WIDER THAN 72", OR WHEN THE SOIL PRESSURE IS SEVERE ENOUGH TO CAUSE SPREADERS TO DEFLECT.

TRENCH SHIELD INSTALLED IN UNSTABLE SOIL



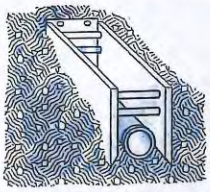
1. EXCAVATE UNTIL SOIL BEGINS TO CRUMBLE BEYOND DESIRED TRENCH WIDTH. PLACE SHIELD IN LINE OF EXCAVATION.

2. PRESS DOWN ON CORNERS TO PUSH SHIELD DOWN TO GRADE.

3. PULL SHIELD FORWARD AND UP ON APPROPRIATE ANGLE- *(SEE ABOVE).

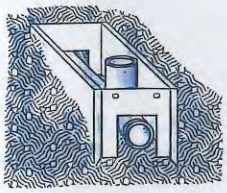
4. EXCAVATE SOIL WITHIN THE SHIELD AND REPEAT PROCESS.

TRENCH SHIELD APPLICATIONS



TIE-INS, REPAIR OR PATCH WORK
1. CENTER SHIELD OVER WORK AREA.
2. LAY SOIL BACK AT ENDS ACCORDING TO MANUFACTURER'S TABULATED DATA OR USE MANUFACTURER'S DESIGNED END PLATES TO PROTECT FROM CAVE-INS.

CORNER END PLATES
CORNER END PLATES HELP PREVENT MATERIAL FROM FLOWING INTO THE END OF SHIELD. SOIL AT ENDS SHOULD BE SLOPED ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS.



FOUR SIDED SHIELDS
WHEN USING SHIELDS AS PROTECTION WORK DURING MANHOLE ASSEMBLY WORK. INSURE THAT PROPER END PANELS ARE USED; OR LAY SOIL AT THE ENDS BACK ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS.

1. ALWAYS USE TRENCH SHIELDS IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, FEDERAL SAFETY LAWS AND O.S.H.A. REGULATIONS. FAILURE TO DO SO COULD CAUSE SEVERE INJURY OR DEATH.
2. ALL WORK TO BE PREFORMED WITHIN THE CONFINES OF THE SHIELD.
3 THIS ABOVE MATERIAL IS INTENDED TO PROVIDE BASIC INFORMATION ONLY.

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AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	3ZL-66	HEIGHT:	6'
SERIAL NUMBER:	ASI-130107	LENGTH:	6'
MAX. PRESSURE CAPACITY:	829 PSF		

SPECIFICATIONS FOR USE

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MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**22'**
TYPE C-60	**18'**
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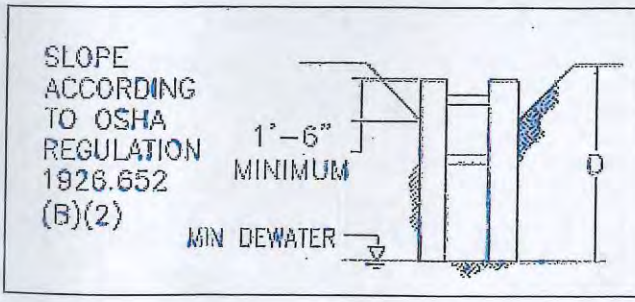
DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

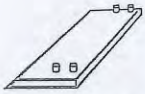


CERTIFIED BY:

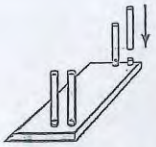
Michael S. Tuculescu, PE

American Shoring Inc. 1.800.407.4674
www.americanshoring.com

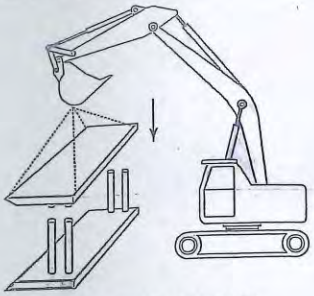
TRENCH SHIELD ASSEMBLY



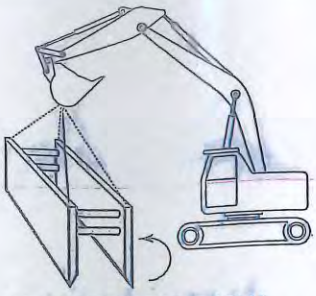
1. LAY PANEL FLAT ON THE GROUND WITH THE SPREADER COLLARS POINTED UP.



2. PLACE SPREADER PIPES ONTO THE COLLARS AND PIN INTO PLACE. SECURE PINS WITH KEEPERS.

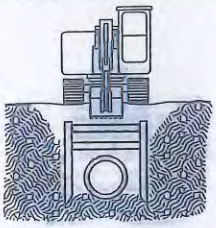


3. LOWER SECOND PANEL ONTO SPREADERS AND PIN INTO PLACE. SECURE PINS WITH KEEPERS.

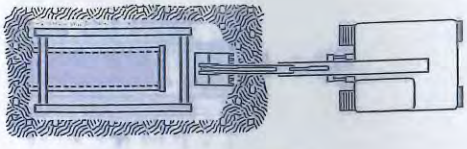


4. STAND TRENCH SHIELD IN UPRIGHT POSITION AND PREPARE FOR INSTALLATION.

TRENCH SHIELD INSTALLED IN STABLE SOIL

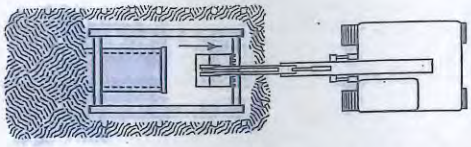


1. EXCAVATE TO GRADE JUST SLIGHTLY WIDER THAN THE TRENCH SHIELD. DIG WALLS VERTICAL TO MINIMUM OF 18" BELOW THE TOP OF THE SHIELD. SLOPE SOIL ABOVE SHIELD ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS. INSTALL SHIELD INTO TRENCH.



2. EXCAVATE IN FRONT OF THE SHIELD

AMERICAN SHORING INC.



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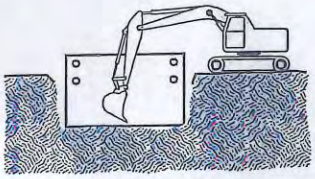
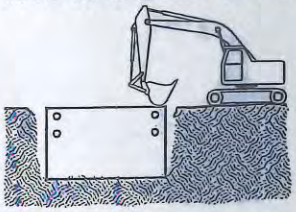
* PULLING EYES MAY BE USED WITH SPREADERS WIDER THAN 72", OR WHEN THE SOIL PRESSURE IS SEVERE ENOUGH TO CAUSE SPREADERS TO DEFLECT.

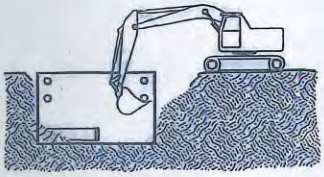
TRENCH SHIELD INSTALLED IN UNSTABLE SOIL



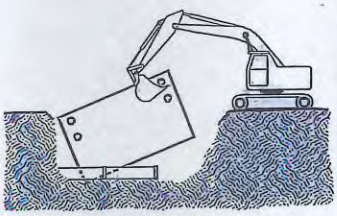
1. EXCAVATE UNTIL SOIL BEGINS TO CRUMBLE BEYOND DESIRED TRENCH WIDTH. PLACE SHIELD IN LINE OF EXCAVATION.



2. PRESS DOWN ON CORNERS TO PUSH SHIELD DOWN TO GRADE.

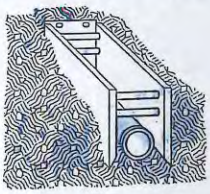


3. PULL SHIELD FORWARD AND UP ON APPROPRIATE ANGLE- *(SEE ABOVE).



4. EXCAVATE SOIL WITHIN THE SHIELD AND REPEAT PROCESS.

TRENCH SHIELD APPLICATIONS



TIE-INS, REPAIR OR PATCH WORK
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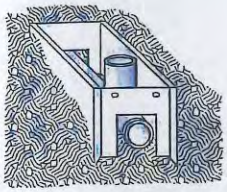
2. LAY SOIL BACK AT ENDS ACCORDING TO MANUFACTURER'S TABULATED DATA OR USE MANUFACTURER'S DESIGNED END PLATES TO PROTECT FROM CAVE-INS.

CORNER END PLATES
CORNER END PLATES HELP PREVENT MATERIAL FROM FLOWING INTO THE END OF SHIELD. SOIL AT ENDS SHOULD BE SLOPED ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS.



FOUR SIDED SHIELDS
WHEN USING SHIELDS AS PROTECTION WORK DURING MANHOLE ASSEMBLY WORK. INSURE THAT PROPER END PANELS ARE USED; OR LAY SOIL AT THE ENDS BACK ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS.

1. ALWAYS USE TRENCH SHIELDS IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, FEDERAL SAFETY LAWS AND O.S.H.A. REGULATIONS. FAILURE TO DO SO COULD CAUSE SEVERE INJURY OR DEATH.
2. ALL WORK TO BE PREFORMED WITHIN THE CONFINES OF THE SHIELD.
3 THIS ABOVE MATERIAL IS INTENDED TO PROVIDE BASIC INFORMATION ONLY.

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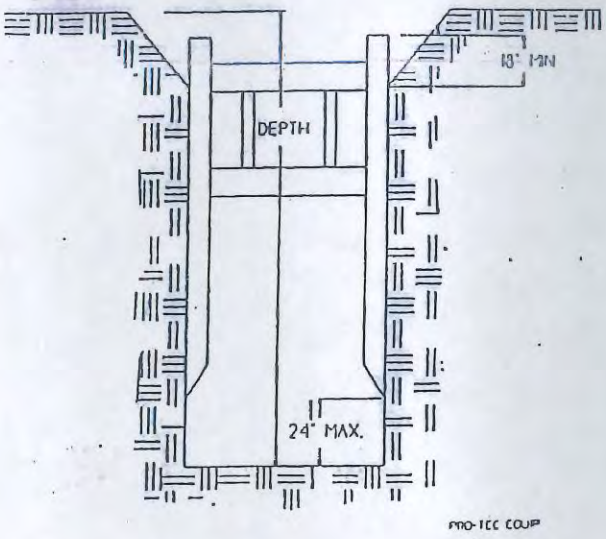
TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER	SERIAL NUMBER	SIZE
PRO8-824D	12481	8' HIGH X 24' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	58 FEET	1400	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	32 FEET	1400	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	24 FEET	1400	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   * Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

STATE OF MICHIGAN
SCOTT M. GILLETT
ENGINEER
NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Lipsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 292-1225 • Fax: (517) 541-0329

EFFICIENCY America's Trench Box Builder
PRODUCTION, INC.
889 HULL ROAD, MASON, MI 48854
PHONE (517) 676-9800

MODEL HT6F-824 SERIAL NUMBER 123915

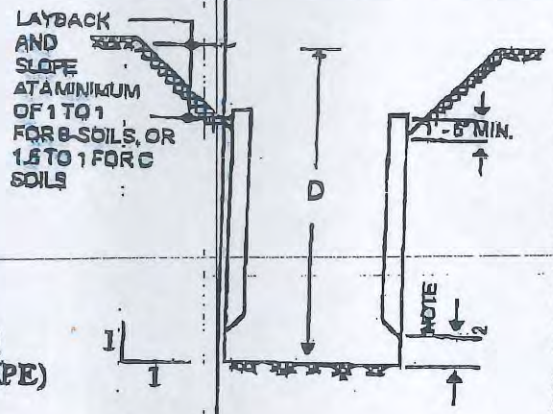
REFERENCE TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS, 29 CFR, NO 208, PART 1926, SUBPART P

SHIELD SIZE		PSF RATING	MAXIMUM ALLOWABLE DEPTH OF CUT (FEET) D		
			SOIL TYPE TO BE EXCAVATED		
HEIGHT (FEET)	LENGTH (FEET)	MAXIMUM LATERAL EARTH PRESSURE CAPACITY AT TRENCH BOTTOM IN POUNDS PER SQUARE FOOT	TYPE B MEDIUM COHESIVE TO GRANULAR SOIL 45 PSF PER FOOT OF DEPTH.	TYPE C-60 SOFT COHESIVE TO SUBMERGED SOIL 60 PSF PER FOOT OF DEPTH.	TYPE C-80 SOFT COHESIVE TO SUBMERGED SOIL, 80 PSF PER FOOT OF DEPTH.
8	24	1080	24	18	14
			DESCRIPTION Clay, with Unconfined Compressive Strength Greater than .5 TSF But Less than 1.5 TSF Cohesionless Gravel, Silt, Silt Loam or Sandy Loam.	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Fractured Rock that is not Stable.	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Fractured Rock that is not Stable.

LIMITATIONS IN USE OF TABLE

1. TRENCH SHIELD TO BE ASSEMBLED AND INSTALLED AS SHOWN AND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. EXCAVATION 2 FEET BELOW BOTTOM OF SHIELD IS PERMITTED WHEN NO LOSS OF SOIL FROM BEHIND OR BELOW THE BOTTOM OF SHIELD IS ENCOUNTERED. SEE PARAGRAPH 1926.652 (e)(2)(ii). THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE. SUDDEN SHIFTING OF THE SHIELD VERTICALLY SHALL BE AVOIDED.
3. CONSULT MANUFACTURER WHEN RESTRICTION ON NOTE 2 IS NOT MET.
4. ADDITIONAL SHIELDS MAY BE STACKED WITH NO PENALTY IN DEPTH OF CUT AS LONG AS THE RATING OF THE BOTTOM SHIELD IS NOT EXCEEDED.
5. DEPTHS OF CUTS SHOWN ARE BASED ON EXAMPLES OF VARIOUS SOIL CONDITIONS. VERIFY ACTUAL SOIL PRESSURES PRIOR TO EACH USE.
6. ANY MODIFICATIONS OR ALTERATIONS NOT ALLOWED UNLESS APPROVED IN WRITING BY EFFICIENCY PRODUCTION, INC.
7. CONTRACTOR'S COMPETENT/QUALIFIED PERSON SHALL BE RESPONSIBLE FOR MONITORING SOIL CONDITIONS AND SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL RULES AND REGULATIONS.
8. SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NOMINAL 1 MAN 1/4" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURED BY EFFICIENCY PRODUCTION, INC.

CONTINUED ON REVERSE SIDE.



B-SOILS (1 TO 1 SLOPE) 1 / 1

C-SOILS (1.5 TO 1 SLOPE) 1 / 1.5

STATE OF MICHIGAN
NATHAN G. [illegible]
ENGINEER
No. [illegible]
LICENSED PROFESSIONAL ENGINEER

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EFFICIENCY PRODUCTION, INC.

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MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENT NUMBERS:
4,090,365-4,114,383-4,269,028
ONE OR MORE OF THE FOLLOWING CANADIAN PATENT NUMBERS: 1,062,683-1,062,684

USE THIS PRODUCT ONLY IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, OR LOCAL LAWS

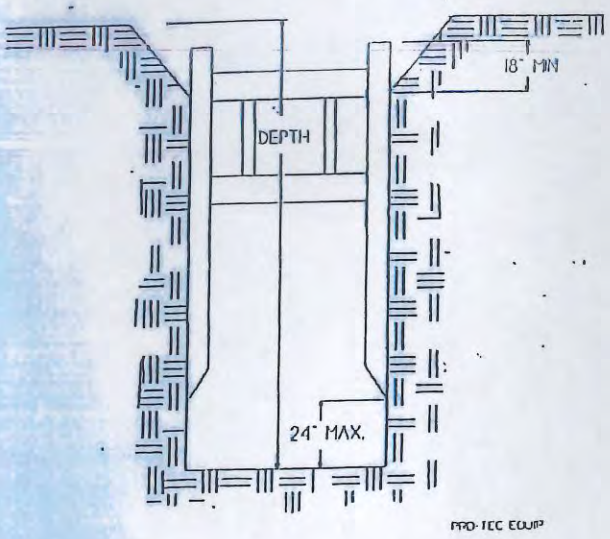
Any use of this product not specifically described on this certificate could cause cave-in, collapse, or structural failure resulting in death or serious injury.

TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER	SERIAL NUMBER	SIZE
PRO8-824D	12912	8' HIGH X 24' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	56 FEET	1400	Still Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	32 FEET	1400	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	24 FEET	1400	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   * Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

STATE OF MICHIGAN
SCOTT M. GILLETT
ENGINEER
NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Lipsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 292-1225 • Fax: (517) 541-0329

EFFICIENCY PRODUCTION INC. America's Trench Box Builder® 685 HULL ROAD, MASON, MI 48854 PHONE (517) 676-8800	SERIAL NUMBER 109574	PAGE 1 OF 2 STEEL TRENCH SHIELD
MODEL: MHXLD-812		FOAM FILLED NO

REFERENCE TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS, 29 CFR, NO 209, PART 1926, SUBPART P

SHIELD SIZE		PSF RATING	EXAMPLES OF MAXIMUM ALLOWABLE DEPTH OF CUT (FEET) IN SOIL TYPE TO BE EXCAVATED		
HEIGHT (FEET)	LENGTH (FEET)	MAXIMUM LATERAL EARTH PRESSURE CAPACITY AT TRENCH BOTTOM IN POUNDS PER SQUARE FOOT	TYPE B-45 (II) MEDIUM COHESIVE TO GRANULAR SOIL 45 PSF PER FT OF DEPTH	TYPE C-60 (III) SOFT COHESIVE TO SATURATED SOIL. 60 PSF PER FT OF DEPTH	TYPE C-80 (IV) SOFT SUBMERGED AND FLOWING SOIL. 80 PSF PER FT OF DEPTH
8	12	1360	30	23	17

LIMITATIONS IN USE OF TABLE

1. TRENCH SHIELD TO BE ASSEMBLED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. (SEE PAGE-2)

2. EXCAVATION 2 FEET BELOW BOTTOM OF SHIELD IS PERMITTED WHEN NO LOSS OF SOIL FROM BEHIND OR BELOW THE BOTTOM OF SHIELD IS ENCOUNTERED. SEE PARAGRAPH 1926.652 (e)(2)(i). THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE. SUDDEN SHIFTING OF THE SHIELD VERTICALLY SHALL BE AVOIDED.

3. DEPTH RATING IS BASED ON TEMPORARY LOADING, CONSULT MANUFACTURER IF SHIELD IS SUBJECT TO LONG TERM LOADING

4. ADDITIONAL SHIELDS MAY BE STACKED WITH NO PENALTY IN DEPTH OF CUT AS LONG AS THE RATING OF THE EACH SHIELD IS NOT EXCEEDED AT THE DEPTH IT IS USED. MANUFACTURER APPROVED STACKING METHOD MUST BE USED.

5. C-80 DOES NOT REPRESENT THE WORST POSSIBLE SOIL CONDITION. OBTAIN SITE-SPECIFIC ENGINEERING FOR EXTREMELY NON-STABLE CONDITIONS SUCH AS MARINE CLAY, PEAT, SOFT SUBMERGED AND FLOWING CLAYS, ETC.

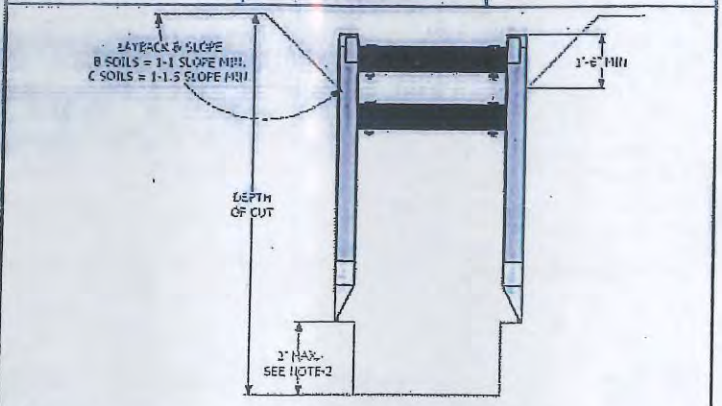
6. ANY MODIFICATIONS OR ALTERATIONS NOT ALLOWED UNLESS APPROVED IN WRITING BY EFFICIENCY PRODUCTION, INC.

7. CONTRACTOR'S COMPETENT/QUALIFIED PERSON SHALL BE RESPONSIBLE FOR MONITORING SOIL CONDITIONS AND SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS, RULES, AND REGULATIONS.

8. SPREADER PINS SHALL BE 8620 COLD DRAWN 80-90 KSI MIN. YIELD AND NO MORE THAN 1/4" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURED BY EFFICIENCY PRODUCTION, INC.

CONTINUED ON REVERSE SIDE

TYPE B-45 (II) DESCRIPTION	TYPE C-60 (III) DESCRIPTION	TYPE C-80 (IV) DESCRIPTION
CLAY, WITH UNCONFINED COMPRESSIVE STRENGTH GREATER THAN 0.5 TSF BUT LESS THAN 1.5 TSF COHESIONLESS GRAVEL, SILT, SILT LOAM OR SANDY LOAM	SOFT COHESIVE SOIL UNCONFINED COMPRESSIVE STRENGTH GREATER THAN 0.3 TSF, BUT LESS THAN 0.5 TSF CLAY, SAND AND LOAMY SAND; SATURATED SOIL THAT IS STABLE, DRY SAND, OR DEWATERED SOILS	SOFT COHESIVE SOIL UNCONFINED COMPRESSIVE STRENGTH LESS THAN 0.3 TSF, FRACTURED ROCK THAT IS NOT STABLE, OR SUBMERGED SAND AND LOAMY SAND THAT IS FLOWING. (SEE NOTE 5)



MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENT NUMBERS: 4,090,365-4,114,383-4,259,028 ONE OR MORE OF THE FOLLOWING CANADIAN PATENT NUMBERS: 1,062,683-1,062,684

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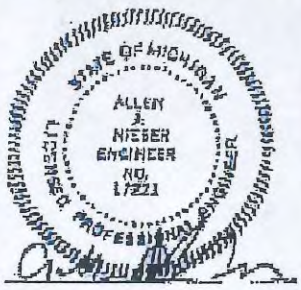


⚠WARNING: Any use of this product not specifically described on this certificate could cause cave-in, collapse, or structural failure, and may result in injury, or death

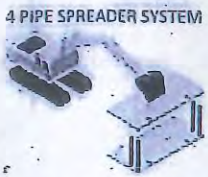
- NOT TYPE A IF FISSURED, SUBJECT TO VIBRATION, PREVISOUSLY DISTURBED OR PART OF A SLOPED LAYERED SYSTEM WHERE LAYERS DIP INTO EXCAVATION ON A SLOPE OF FOUR HORIZONTAL TO ONE VERTICAL (4H:1V) OR GREATER.
- PREVIOUSLY DISTURBED SOILS MAY BE TYPE B UNLESS THEY WOULD BE CLASSIFIED AS TYPE C. SOIL THAT MEETS THE REQUIREMENTS OF TYPE A, BUT IT IS SUBJECT TO VIBRATION OR FISSURED MAY BE TYPE B. DRY ROCK THAT IS NOT STABLE OR SOIL THAT IS PART OF A SLOPED, LAYERED SYSTEM WHERE LAYERS DIP INTO THE EXCAVATION ON A SLOPE LESS STEEP THAN FOUR HORIZONTAL TO ONE VERTICAL (4H:1V) ARE TYPE B BUT ONLY IF MATERIAL WOULD OTHERWISE BE CLASSIFIED AS TYPE B.
- SOIL IN A SLOPED LAYERED SYSTEM WHERE LAYERS DIP INTO THE EXCAVATION ON A SLOPE OF FOUR HORIZONTAL TO ONE VERTICAL (4H:1V) OR STEEPER MAY BE TYPE C. SUBMERGED SOIL IS MATERIAL WITH WATER FREELY SEEPING AND ENTERING THE TRENCH, BUT ONLY PART OF THE DEPTH OF THE RETAINED SOIL IS SUBMERGED. CONDITIONS MORE SEVERE WOULD REQUIRE DEWATERING OR SEALING FOUR SIDES OF THE EXCAVATION AND PUMPING THE TRENCH, SUCH SEVERE CONDITIONS WOULD REQUIRE THE SERVICES OF A LICENSED GEOTECHNICAL ENGINEER TO ESTABLISH THE DESIGN PRESSURE. CONSULT THE MANUFACTURER FOR PRESSURES EXCEEDING TABULATED VALUES.
- ANY SOIL THAT WILL STAND UNSUPPORTED LONG ENOUGH TO INSTALL TRENCH SHIELD MAY BE CLASSIFIED AS C-60
- ANY USE OF A TRENCH SHIELD WITHOUT EFFICIENCY SPREADERS AND PINS OR EQUAL WILL VOID THE TABULATED DATA AND WARRANTY.
- SHIELD WAS DESIGNED TO BE USED WITHOUT PLATES EXTENDING BELOW, ABOVE, OR NEXT TO IT. ANY USE OF SUCH PLATES OR PANELS MAY VOID THE TABULATED DATA AND MAY REQUIRE SITE SPECIFIC ENGINEERING PREPARED BY A LICENSED PROFESSIONAL ENGINEER.
- TRENCH SHIELDS ARE DESIGNED TO BE PUSHED TO GRADE IF NECESSARY. AS NOTED BELOW, ANY UNNECESSARY ABUSE BY THE EXCAVATOR AND OR OPERATOR (SUCH AS POUNDING WITH THE BUCKET) WILL VOID THE TABULATED DATA AS WELL AS THE WARRANTY.
- CONDITION OF SHIELD, SPREADER PIPES, AND SPREADER PINS MUST BE CHECKED/ INSPECTED FOR SERVICEABLITY BY THE COMPETENT PERSON PRIOR TO EACH USE. PSF RATING IS NOT VALID IF THERE IS ANY VISIBLE DAMAGE TO, OR REPAIRS MADE TO THE SHIELD THAT HAS NOT BEEN DOCUMENTED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
- A MINIMUM OF 2 SPREADERS, 1 ARCH, OR 1 SPREADER AND 1 MUDPLATE MUST BE INSTALLED ON EACH END OF TRENCH SHIELD PRIOR TO USE.
- DEPTH AND PSF RATING ARE FOR LATERAL EARTH PRESSURES ONLY. AN ADDITIONAL LATERAL SURCHARGE PRESSURE UP TO 72PSF IS ALLOWED

ASSEMBLY (DIS-ASSEMBLE SHIELD IN REVERSE ORDER)

MUDPLATE SPREADERS SYSTEM 5 PIPE SPREADER SYSTEM 4 PIPE SPREADER SYSTEM

LAY SIDE PANEL FLAT ON GROUND WITH COLLAR SOCKETS UP

PLACE SPREADER PIPE AND/OR PLATE ON TO COLLARS OR INTO BRACKETS AND PIN IN PLACE. SECURE PINS WITH KEEPERS



LOWER SECOND SIDEWALL ONTO SPREADERS AND PIN

STAND TRENCH SHIELD IN UPRIGHT POSITION AND PREPARE FOR INSTALLATION

USING A TRENCH SHIELD IN STABLE SOIL

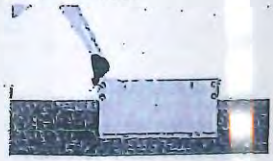
EXCAVATE TO GRADE JUST SLIGHTLY WIDER THAN THE TRENCH SHIELD. DIG WALLS VERTICAL TO MINIMUM OF 18" BELOW THE TOP OF THE SHIELD. SLOPE SOILS ABOVE SHIELD ACCORDING TO MANUFACTURERS TABULATED DATA. INSTALL SHIELD IN TRENCH.

EXCAVATE IN FRONT OF THE TRENCH SHIELD

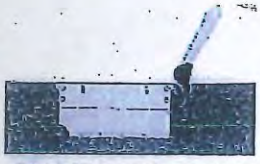
PULL SHIELD FORWARD BY FRONT TOP SPREADER PIPE OR WITH PULLING EYES. (PULLING EYES SHALL BE USED WITH SPREADERS WIDER THAN 72" OR WHEN SOIL PRESSURE IS SEVERE ENOUGH TO CAUSE SPREADER TO DEFLECT).

USING A TRENCH SHIELD IN UNSTABLE SOIL

EXCAVATE UNTIL SOIL BEGINS TO CRUMBLE BEYOND DESIRED TRENCH WIDTH. PLACE SHIELD IN LINE OF EXCAVATION



PRESS DOWN ON CORNERS TO PUSH SHIELD DOWN TO GRADE



PULL SHIELD FORWARD AND UP ON APPROPRIATE ANGLE

EXCAVATE SOIL WITHIN THE SHIELD AND REPEAT PREVIOUS PROCESS

USING TRENCH SHIELDS FOR PATCHWORK, REPAIRS OR TIE-INS

*CENTER SHIELD OVER WORK AREA
*LAY SOIL AT ENDS BACK ACCORDING TO MANUFACTURER'S TABULATED DATA OR USE MANUFACTURER'S DESIGNED PLATES TO PROTECT FROM CAVE-INS

MANHOLE BOX W/CORNER END PLATES

CORNER END PLATES HELP PREVENT LOOSE MATERIAL FROM RUNNING INTO THE END OF THE SHIELD. SOIL AT ENDS SHOULD BE SLOPED ACCORDING TO MANUFACTURER'S TABULATED DATA

USING 4-SIDED SHIELDS

WHEN USING SHIELDS AS PROTECTION DURING MANHOLE ASSEMBLY WORK, INSURE THAT PROPER END PANELS ARE USED, OR LAY SOIL AT THE ENDS BACK ACCORDING TO MANUFACTURER'S TABULATED DATA

*THIS MATERIAL IS INTENDED TO PROVIDE BASIC ASSEMBLY AND INSTALLATION INFORMATION ONLY. *ALWAYS USE TRENCH SHIELD IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY LAWS AND REGULATIONS. *FAILURE TO DO SO COULD CAUSE SEVERE INJURY OR DEATH.

EFFICIENCY PRODUCTION, LLC. America's Trench Box Builder

685 HULL ROAD, MASON, MI 48854
PHONE (517) 676-9800

PAGE 1 OF 2
TRENCH SHIELD

MODEL HT6P-824

SERIAL NUMBER 123916

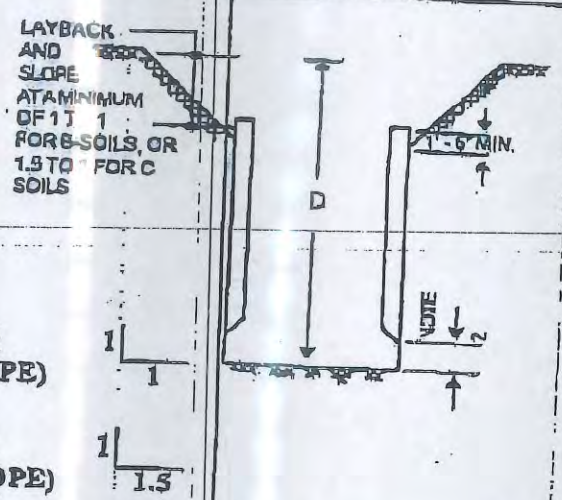
REFERENCE TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS, 29 CFR, NO 209, PART 1926, SUBPART P

SHIELD SIZE		PSF RATING	MAXIMUM ALLOWABLE DEPTH OF CUT (FEET) D		
			SOIL TYPE TO BE EXCAVATED		
HEIGHT (FEET)	LENGTH (FEET)	MAXIMUM LATERAL EARTH PRESSURE CAPACITY AT TRENCH BOTTOM IN POUNDS PER SQUARE FOOT	TYPE B MEDIUM COHESIVE TO GRANULAR SOIL 45 PSF PER FOOT OF DEPTH.	TYPE C-60 SOFT COHESIVE TO SUBMERGED SOIL 60 PSF PER FOOT OF DEPTH.	TYPE C-80 SOFT COHESIVE TO SUBMERGED SOIL 80 PSF PER FOOT OF DEPTH.
8	24	1080	24	18	14
			DESCRIPTION Clay, with Unconfined Compressive Strength Greater than .5 TSF But Less than 1.5 TSF Cohesionless Gravel, Silt, Silt Loam or Sandy Loam.	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Fractured Rock that is not Stable	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Fractured Rock that is not Stable.

LIMITATIONS IN USE OF TABLE

1. TRENCH SHIELD TO BE ASSEMBLED AND INSTALLED AS SHOWN AND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. EXCAVATION 2 FEET BELOW BOTTOM OF SHIELD IS PERMITTED WHEN NO LOSS OF SOIL FROM BEHIND OR BELOW THE BOTTOM OF SHIELD IS ENCOUNTERED. SEE PARAGRAPH 1926.652 (b)(2)(i). THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE. SUDDEN SHIFTING OF THE SHIELD VERTICALLY SHALL BE AVOIDED.
3. CONSULT MANUFACTURER WHEN RESTRICTION ON NOTE 2 IS NOT MET.
4. ADDITIONAL SHIELDS MAY BE STACKED WITH NO PENALTY IN DEPTH OF CUT AS LONG AS THE RATING OF THE BOTTOM SHIELD IS NOT EXCEEDED.
5. DEPTHS OF CUTS SHOWN ARE BASED ON EXAMPLES OF VARIOUS SOIL CONDITIONS. VERIFY ACTUAL SOIL PRESSURE PRIOR TO EACH USE.
6. ANY MODIFICATIONS OR ALTERATIONS NOT ALLOWED UNLESS APPROVED IN WRITING BY EFFICIENCY PRODUCTION, INC.
7. CONTRACTOR'S COMPETENT QUALIFIED PERSON SHALL BE RESPONSIBLE FOR MONITORING SOIL CONDITIONS AND SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL RULES AND REGULATIONS.
8. SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN 1/4" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURED BY EFFICIENCY PRODUCTION, INC.

CONTINUED ON REVERSE SIDE



CERTIFIED BY:
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STATE OF MICHIGAN
NATHAN G. [illegible]
ENGINEER
No. 36804
LICENSED PROFESSIONAL ENGINEER

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENT NUMBERS: 4,090,363-4,114,383-4,269,028
ONE OR MORE OF THE FOLLOWING CANADIAN PATENT NUMBERS: 1,062,683-1,082,884

USE THIS PRODUCT ONLY IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, OR LOCAL LAWS

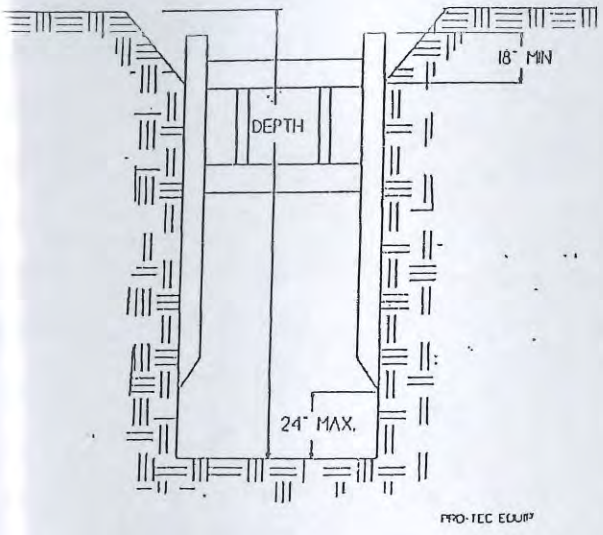
Any use of this product not specifically described on this certificate could cause cave-in, collapse, or structural failure resulting in death or serious injury.

TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH
CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER	SERIAL NUMBER	SIZE
PRO8-824D	12912	8' HIGH X 24' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	56 FEET	1400	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	32 FEET	1400	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	24 FEET	1400	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   * Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

STATE OF MICHIGAN
SCOTT M. GILLETT
ENGINEER NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Lipsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 292-1225 • Fax: (517) 541-0329

TRENCH SHIELD MANUFACTURER'S TABULATED DATA

MH10DW
MODEL NO.

M2227
SERIAL NO.

01/23/04
DATE SHIPPED

MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	50'
B	45	29'
C	60	23'
C	80	18'

1,147 PSF
SHIELD CAPACITY

8 FT
MAX SPREADER LENGTH

5" SCH 80
SPREADER SIZE

CONDITIONS FOR USE OF TABULATED DATA:

1. This Tabulated Data has been prepared by a registered professional engineer as required to comply with the OSHA standard 29 CFR Part 1926, Subpart P.

2. The Soil Types A - 25, B - 45, and C - 80 are as defined in the OSHA Standard. Soil Type C - 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged and has an Equivalent Fluid Pressure (EFP) of 60 PSF per foot of depth. The competent person must monitor the excavation for signs of deterioration that may alter soil pressures and produce the Soil Type C - 80 condition. Such signs are indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the shield.

3. Trench Shields shall be used in accordance with the depth chart. The maximum depth is the distance from the surface of the excavation to the bottom of the trench. Depth ratings shown are based upon examples of homogeneous soil conditions. Soil pressures may vary due to non - homogeneous soils, surcharge loads, and slope of embankment (layback). Actual soil pressures should be verified to be sure that the shield capacities are not exceeded.

4. Surcharge loads are not included in the maximum depth table. Surcharge loads are possible due to heavy equipment, vibrations, or soil piles adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench Shields are not intended to provide stability to adjacent buildings or other structures.

6. 1.38 inch diameter pins furnished by GME shall be placed in all spreader to collar connections.

GENERAL NOTES FOR TRENCH SHIELD USE:

1. Any modifications to shields using parts not manufactured by GME will void Tabulated Data unless otherwise specified or allowed in writing by GME.

2. GME Trench Shields may be stacked provided that appropriate connections are made between stacked shields as specified by GME. Each stacked shield shall have a depth rating equal to or greater than the actual depth at which it is used.

3. Maximum depths are based on shields being in structurally sound condition. Trench Shields should be inspected prior to each use for any damage or deterioration. If a shield has sustained major structural damage or permanent deformation of a structural member or connection, the Tabulated Data is void until repairs are made as specified by a registered professional engineer.

4. The use of GME Trench Shields shall be in accordance with this tabulated data and all requirements of the OSHA standard. Trench Shield usage other than specified or required may create unsafe conditions that could cause a cave - in, structural failure, or collapse resulting in a disabling injury or even death. GME shall not be liable for shield usage other than specified.

STATE OF MICHIGAN
TIMOTHY S. DEE
ENGINEER
No. 43202
LICENSED PROFESSIONAL ENGINEER

WARNING!
Use of this equipment not in accordance with Manufacturers Tabulated Data may lead to injury or death.

001 Griswold Machine & Engineering, Inc.

Griswold Machine & Engineering, Inc.
594 W. Highway M 60
Union City, MI 49094
Phone 517 - 741 - 4300

M.H.

TRENCH SHIELD MANUFACTURER'S TABULATED DATA

MH10DW

MODEL NO.

M080333 4

SERIAL NO.

05/08/08

DATE SHIPPED

MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	70'
B	45	40'
C	60	31'
C	80	25'

1,641 PSF

SHIELD CAPACITY

8 FT

MAX SPREADER LENGTH

5 IN SCH 80

SPREADER SIZE

CONDITIONS FOR USE OF TABULATED DATA:

1. This Tabulated Data has been prepared by a registered professional engineer as required to comply with the OSHA standard 29 CFR Part 1926, Subpart P.

2. The Soil Types A - 25, B - 45, and C - 80 are as defined in the OSHA Standard. Soil Type C - 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged and has an Equivalent Fluid Pressure (EFP) of 60 PSF per foot of depth. The competent person must monitor the excavation for signs of deterioration that may alter soil pressures and produce the Soil Type C - 80 condition. Such signs are indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the shield.

3. Trench Shields shall be used in accordance with the depth chart. The maximum depth is the distance from the surface of the excavation to the bottom of the trench. Depth ratings shown are based upon examples of homogeneous soil conditions. Soil pressures may vary due to non - homogeneous soils, surcharge loads, and slope of embankment (layback). Actual soil pressures should be verified to be sure that the shield capacity is not exceeded.

4. Surcharge loads are not included in the maximum depth table. Surcharge loads are possible due to heavy equipment , vibrations, or soil piles adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench Shields are not intended to provide stability to adjacent buildings or other structures.

6. 1 3/8 inch diameter pins furnished by GME shall be placed in all spreader to collar connections.

WARNING!
Use of this equipment not in accordance with Manufacturers Tabulated Data may lead to injury or death

©2005 Griswold Machine & Engineering, Inc.

GENERAL NOTES FOR TRENCH SHIELD USE:

1. Any modifications to shields using parts not manufactured by GME will void Tabulated Data unless otherwise specified or allowed in writing by GME.

2. GME Trench Shields may be stacked provided that appropriate connections are made between stacked shields as specified by GME. Each stacked shield shall have a depth rating equal to or greater than the actual depth at which it is used.

3. Maximum depths are based on shields being in structurally sound condition. Trench Shields should be inspected prior to each use for any damage or deterioration. If a shield has sustained major structural damage or permanent deformation of a structural member or connection, the Tabulated Data is void until repairs are made as specified by a registered professional engineer.

4. The use of GME Trench Shields shall be in accordance with this tabulated data and all requirements of the OSHA standard. Trench Shield usage other than specified or required may create unsafe conditions that could cause a cave - in, structural failure, or collapse resulting in a disabling injury or even death. GME shall not be liable for shield usage other than specified.

STATE OF MICHIGAN
TIMOTHY S. DAY
ENGINEER
NO. 41202
LICENSED PROFESSIONAL ENGINEER

Griswold Machine & Engineering, Inc.
594 W. Highway M - 60
Union City, MI 490[illegible]
Phone 517 - 741 - [illegible]00

M.H.

TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER

PAL3 10D

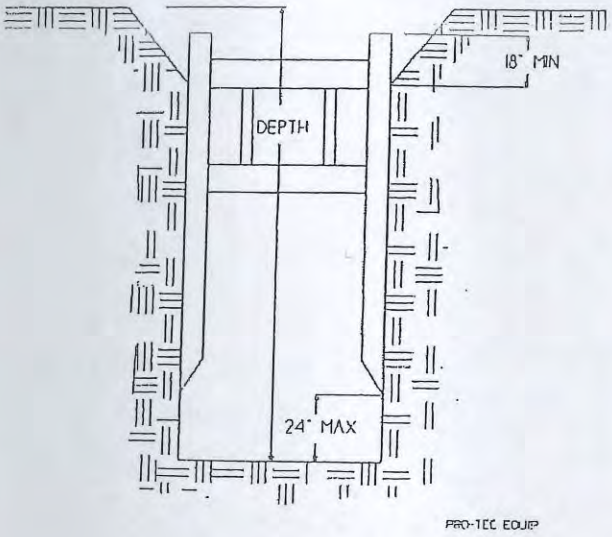
SERIAL NUMBER

15886
PIVOT STYLE

SIZE

6' HIGH X 10' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	60 FEET	1500	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	33 FEET	1500	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	25 FEET	1500	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



PRO-TEC EQUIP

STATE OF MICHIGAN
SCOTT M. GILLETT
ENGINEER
NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   * Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Lipsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 292-1225 • Fax: (517) 541-0329

TRENCH SHIELD CERTIFICATION

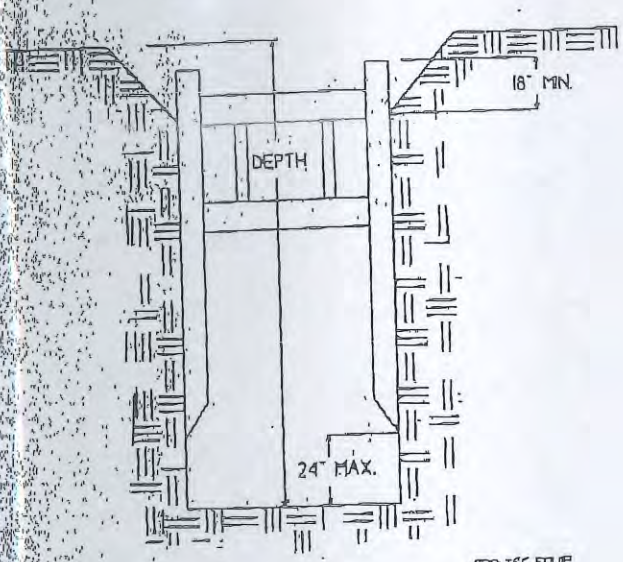
A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER
PRO8-524D

SERIAL NUMBER
16468

SIZE
8' HIGH X 24' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	4 FEET	1068	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	2[illegible] FEET	1068	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	18 FEET	1068	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



PRO-TEC EQUIP

STATE OF MICHIGAN
SCOTT M. GILLETT
ENGINEER
NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Lipsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 282-1226 • Fax: (517) 541-0329

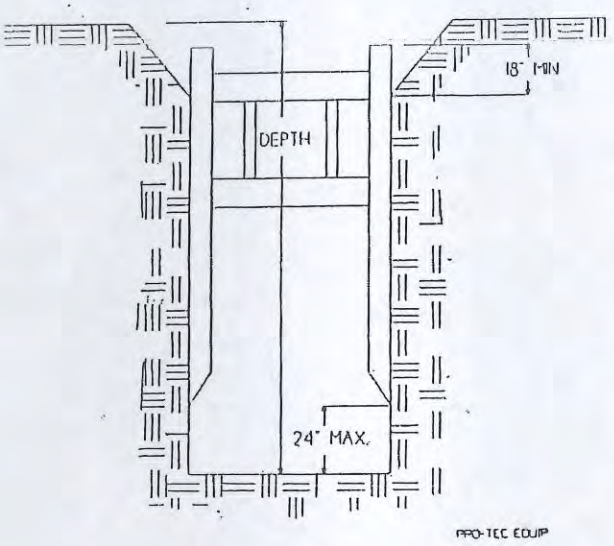
TOTAL P.02

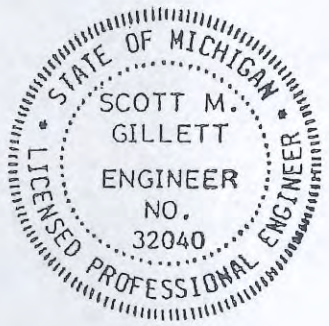
TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER	SERIAL NUMBER	SIZE
PAL3-86D	15275	8' HIGH X 6' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	81 FEET	2040	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	45 FEET	2040	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	34 FEET	2040	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.





Scott M. Gillett

LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   * Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Lipsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 292-1225 • Fax: (517) 541-0329

Robert B. Our - PH 508-432-4385

TRENCH SHIELD MANUFACTURER'S TABULATED DATA

4M820
MODEL NO.

M07071297
SERIAL NO.

07/25/07
DATE SHIPPED

MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	41'
B	45	25'
C	60	19'
C	80	16'

926 PSF
SHIELD CAPACITY

20 FT
MAX SPREADER LENGTH

8 IN SCH 80
SPREADER SIZE

CONDITIONS FOR USE OF TABULATED DATA:

1. This Tabulated Data has been prepared by a registered professional engineer as required to comply with the OSHA standard 29 CFR Part 1926, Subpart P.

2. The Soil Types A - 25, B - 45, and C - 80 are as defined in the OSHA Standard. Soil Type C - 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged and has an Equivalent Fluid Pressure (EFP) of 60 PSF per foot of depth. The competent person must monitor the excavation for signs of deterioration that may alter soil pressures and produce the Soil Type C - 80 condition. Such signs are indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the shield.

3. Trench Shields shall be used in accordance with the depth chart. The maximum depth is the distance from the surface of the excavation to the bottom of the trench. Depth ratings shown are based upon examples of homogeneous soil conditions. Soil pressures may vary due to non - homogeneous soils, surcharge loads, and slope of embankment (layback). Actual soil pressures should be verified to be sure that the shield capacity is not exceeded.

4. Surcharge loads are not included in the maximum depth table. Surcharge loads are possible due to heavy equipment , vibrations, or soil piles adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench Shields are not intended to provide stability to adjacent buildings or other structures.

6. 2 inch diameter pins furnished by GME shall be placed in all spreader to collar connections.

WARNING!
Use of this equipment not in accordance with Manufacturers Tabulated Data may lead to injury or death.

GENERAL NOTES FOR TRENCH SHIELD USE:

1. Any modifications to shields using parts not manufactured by GME will void Tabulated Data unless otherwise specified or allowed in writing by GME.

2. GME Trench Shields may be stacked provided that appropriate connections are made between stacked shields as specified by GME. Each stacked shield shall have a depth rating equal to or greater than the actual depth at which it is used.

3. Maximum depths are based on shields being in structurally sound condition. Trench Shields should be inspected prior to each use for any damage or deterioration. If a shield has sustained major structural damage or permanent deformation of a structural member or connection, the Tabulated Data is void until repairs are made as specified by a registered professional engineer.

4. The use of GME Trench Shields shall be in accordance with this tabulated data and all requirements of the OSHA standard. Trench Shield usage other than specified or required may create unsafe conditions that could cause a cave - in, structural failure, or collapse resulting in a disabling injury or even death. GME shall not be liable for shield usage other than specified.

STATE OF MICHIGAN
TIMOTHY L. DEY
ENGINEER
No. [illegible]
LICENSED PROFESSIONAL ENGINEER

Griswold Machine & Engineering, Inc.
594 W. Highway M - 60
Union City, MI 49094
Phone 517 - 741 - 4300

* 2007 Griswold Machine & Engineering, Inc.

EFFICIENCY PRODUCTION, INC. America's Trench Box Builder
685 HULL ROAD, MASON, MI 48854
PHONE (517) 676-8800

PAGE 1 OF 2
TRENCH SHIELD

MODEL **HT6F-824**

SERIAL NUMBER **123915**

REFERENCE TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS, 29 CFR, NO 209, PART 1926, SUBPART P

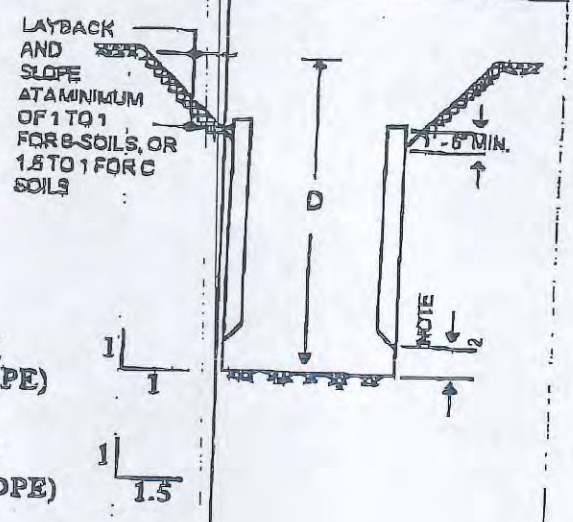
SHIELD SIZE		PSF RATING	MAXIMUM ALLOWABLE DEPTH OF CUT (FEET) D		
			SOIL TYPE TO BE EXCAVATED		
HEIGHT (FEET)	LENGTH (FEET)	MAXIMUM LATERAL EARTH PRESSURE CAPACITY AT TRENCH BOTTOM IN POUNDS PER SQUARE FOOT	TYPE B MEDIUM COHESIVE TO GRANULAR SOIL 45 PSF PER FOOT OF DEPTH.	TYPE C-60 SOFT COHESIVE TO SUBMERGED SOIL 60 PSF PER FOOT OF DEPTH.	TYPE C-80 SOFT COHESIVE TO SUBMERGED SOIL 80 PSF PER FOOT OF DEPTH.
8	24	1080	24	18	14

LIMITATIONS IN USE OF TABLE

1. TRENCH SHIELD TO BE ASSEMBLED AND INSTALLED AS SHOWN AND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. EXCAVATION 2 FEET BELOW BOTTOM OF SHIELD IS PERMITTED WHEN NO LOSS OF SOIL FROM BEHIND OR BELOW THE BOTTOM OF SHIELD IS ENCOUNTERED. SEE PARAGRAPH 1926.652 (e) (2)(I). THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE. SUDDEN SHIFTING OF THE SHIELD VERTICALLY SHALL BE AVOIDED.
3. CONSULT MANUFACTURER WHEN RESTRICTION ON NOTE 2 IS NOT MET.
4. ADDITIONAL SHIELDS MAY BE STACKED WITH NO PENALTY IN DEPTH OF CUT AS LONG AS THE RATING OF THE BOTTOM SHIELD IS NOT EXCEEDED.
5. DEPTHS OF CUTS SHOWN ARE BASED ON EXAMPLES OF VARIOUS SOIL CONDITIONS. VERIFY ACTUAL SOIL PRESSURES PRIOR TO EACH USE.
6. ANY MODIFICATIONS OR ALTERATIONS NOT ALLOWED UNLESS APPROVED IN WRITING BY EFFICIENCY PRODUCTION, INC.
7. CONTRACTOR'S COMPETENT/QUALIFIED PERSON SHALL BE RESPONSIBLE FOR MONITORING SOIL CONDITIONS AND SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL RULES AND REGULATIONS.
8. SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN 1/4" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURED BY EFFICIENCY PRODUCTION, INC.

CONTINUED ON REVERSE SIDE.

DESCRIPTION (TYPE B)	DESCRIPTION (TYPE C-60)	DESCRIPTION (TYPE C-80)
Clay, with Unconfined Compressive Strength Greater than .5 TSF But Less than 1.5 TSF Cohesionless Gravel, Silt, Silt Loam or Sandy Loam.	Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or fractured Rock that is not Stable.	Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or fractured Rock that is not Stable.



CERTIFIED BY:
EFFICIENCY PRODUCTION, INC.

COPYRIGHT:
1991 EFFICIENCY PRODUCTION, INC.
ALL RIGHTS RESERVED

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENT NUMBERS: 4,090,365-4,114,383-4,259,028
ONE OR MORE OF THE FOLLOWING CANADIAN PATENT NUMBERS: 1,062,683-1,062,684

USE THIS PRODUCT ONLY IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, OR LOCAL LAWS

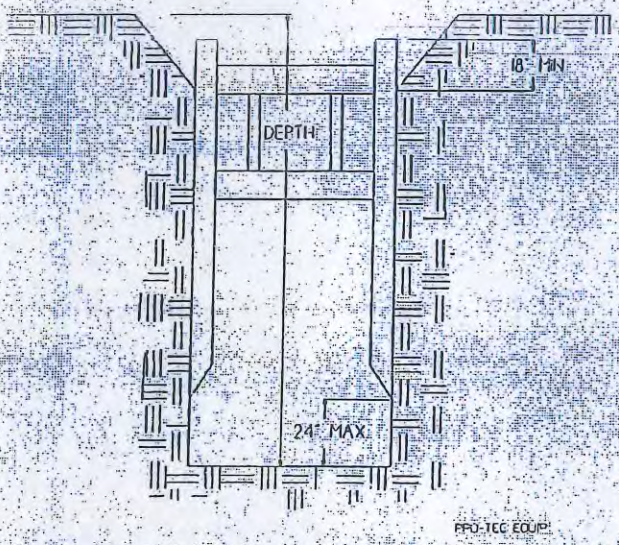
Any use of this product not specifically described on this certificate could cause cave-in, collapse, or structural failure resulting in death or serious injury.

TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER	SERIAL NUMBER	SIZE
PRO8-824D	14363	8' HIGH X 24' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	56 FEET	1400	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	32 FEET	1400	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	24 FEET	1400	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   * Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

STATE OF MICHIGAN
SCOTT M. GILLETT
ENGINEER NO. 32040
LICENSED PROFESSIONAL ENGINEER

Scott M. Gillett

Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Lipsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 292-1225 • Fax: (517) 541-0329

TRENCH SHIELD CERTIFICATION

A COPY OF THIS SHEET MUST ACCOMPANY EACH CORRESPONDING TRENCH SHIELD AT EVERY JOB SITE.

MODEL NUMBER

PRO8-824D

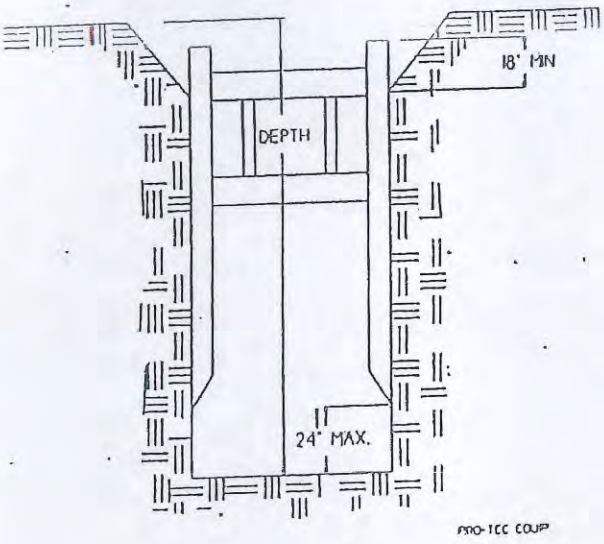
SERIAL NUMBER

12481

SIZE

8' HIGH X 24' LONG

SOIL	MAX. DEPTH	PSF	SOIL DESCRIPTION
TYPE A	56 FEET	1400	Stiff Cohesive Soil, 25 PSF per foot, clay, silty clay, clay loam with unconfined compressive strength of 1.5 ton per square foot or greater. See note 7.
TYPE B	32 FEET	1400	Medium Cohesive to granular soil, 45 PSF per foot of depth. Clay with unconfined compressive strength greater than 0.5 TSF but less than 1.5 TSF. Cohesionless gravel, silt, silt loam or sandy loam. See note 8.
TYPE C	24 FEET	1400	Soft Cohesive to Saturated Soil, 60 PSF per foot of depth. Clay with unconfined compressive strength less than 0.5 TSF, saturated sand, clay or fractured rock that is not stable. See note 9.



LIMITATIONS

1) Soil above shield must be sloped according to OSHA Subpart P. Slope must begin no less than 18" below the top of shield.
2) Shield may be suspended no more than 2 feet above bottom of the trench and only if there is no possible loss of soil from behind or below bottom of shield.
3) A minimum of 2 spreader pipes are required on each end with manufacturer approved pins and keepers.
4) Repairs and modifications must first be approved by manufacturer or registered professional engineer.
5) Shields may be stacked as long as each is rated to the depth it is used and manufacturer approved stack connections are utilized to prevent lateral movement of the shields.
6) Surcharge loads have not been included in the above depth ratings. The allowable working depth of the shield must be reduced to account for any surcharge loading which occurs within the influence line of the shield.
7) Not Type A if fissured, subject to vibration, previously disturbed or part of a sloped layered system where layers dip into excavation on a slope of four horizontals to one vertical (4H:1V) or greater.
8) Previously disturbed soils may be Type B unless they would be classed as Type C. Soil that meets requirements of Type A but is subject to vibration or fissured may be Type B. Dry rock that is not stable or soil that is part of a sloped layered system where layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V) are Type B if material would otherwise be classified as Type B.
9) Soil in a sloped layered system where layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper may be Type C. Saturated soil or soils from which water is freely seeping but is not standing in the trench.
   * Conditions more severe would require dewatering or the sealing of four sides of the excavation and pumping the trench. Such severe conditions would require the services of a soils engineer to establish the design pressure. Consult the manufacturer for pressures exceeding tabulated values.
10) PRO-TEC trench shields are to be used in accordance with Federal, state and Local laws. Refer to Occupational Safety and Health Administration (OSHA) rules and regulations Vol. 54, No. 209, 10/31/89, Part 1926, Subpart P.

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SCOTT M. GILLETT
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Usage of trench shields other than specified could cause failure or cave-ins resulting in serious injury or death.

P.O. Box Box 130 • 1298 Upsey Drive • Charlotte, MI 48813
Phone: (517) 541-0303 • 1 (800) 292-1225 • Fax: (517) 541-0329

AMERICAN SHORING INC.

207 Lake Street (Rte. 32)
Newburgh, NY 12550
Phone: 800-407-4674
FAX: 800-361-1973

MANUFACTURER'S TABULATED DATA

MODEL NUMBER:	3ZL-66	HEIGHT:	6'
SERIAL NUMBER:	ASI-130108	LENGTH:	6'
MAX. PRESSURE CAPACITY:	829 PSF		

SPECIFICATIONS FOR USE

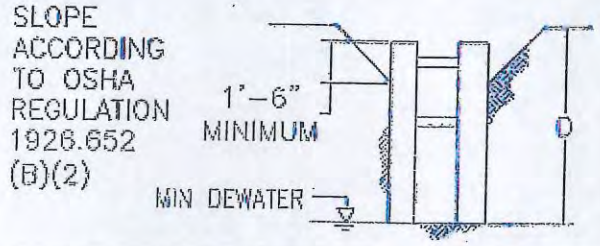
ALL EXCAVATIONS AND CONSTRUCTION PROCEDURES SHALL BE IN ACCORDANCE WITH OSHA CFR 29, PART '1926, SUBPART P.
THE USE OF THE SHORING SYSTEM DESCRIBED SHALL BE ASSEMBLED, INSTALLED AND USED THE MANUFACTURER'S INSTRUCTIONS AND O.S.H.A. STANDARDS. ANYTHING NOT SPECIFICALLY ADDRESSED WITHIN THE O.S.H.A. STANDARDS IS NOT PERMITTED.
SOIL SHALL BE CLASSIFIED IN ACCORDANCE WITH OSHA APPENDIX A BY A COMPETENT PERSON OR BY A REGISTERED CIVIL ENGINEER PRIOR TO THE INSTALLATION OF THIS EQUIPMENT.
THIS TABULATED DATA IS PROVIDED BY THE MANUFACTURER. ITS PURPOSE IS TO ASSIST THE COMPETENT IN SELECTING THE PROPER SAFETY SHORING EQUIPMENT FOR THE PROJECT. THE COMPETENT PERSON HAS SOLE RESPONSIBILITY FOR JOB SITE SAFETY AND THE PROPER SELECTION OF THE SHORING EQUIPMENT.
THIS TABULATED DATA IS NOT INTENDED TO BE A SUBSITUTE FOR THE ON SITE ENGINEERS PLAN. IT IS INTENDED TO BE USED BY THE COMPETENT PERSON TO SUPPLEMENT HIS TRAINING, HIS KNOWLEDGE & EXPERIENCE OF THE JOB CONDITIONS & SOIL TYPES.
THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT SURCHARGE LOADING DOES NOT EXCEED 72PSF. ANYTHING IN EXCESS OF 72PSF CAN INVALADATE THE CERTIFIED DEPTHS.
BOTTOM OF SHIELD MUST NOT BE MORE THAN TWO FEET ABOVE THE TRENCH BOTTOM PER FEDERAL OSHA CFR PART 1926.652(G) (2.) THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE.
METHODS USED AND SAFETY PROCEDURES ASSOCIATED WITH THIS EXCAVATION, INSTALLATION & REMOVAL OF THE SHORING SYSTEM, OR DEWATERING ARE THE SOLE RESPONSIBILTY OF THE CONTRACTOR.
MANUFACTURER CERTIFICATION IS NOT VALID IF THE SHIELD IS MODIFIED IN ANY MANNER BY ATTACHING, WELDING OR RESTING ANY OTHER SHIELDS OR PLATE TO EXTEND THE SPECIFIC HEIGHT, LENGTH, OR CLEARANCE OUTLINED ABOVE. NEVER LEAN OR ALLOW SHEATHING ON PLATES OR SPREADERS TO CLOSE OFF ENDS.OF EXCAVATION, WITHOUT WRITTEN APPROVAL FROM OUR LICENSED PROFESSIONAL ENGINEER. NO MODIFICATIONS OR ALTERATIONS ARE ALLOWED UNLESS APPROVED BY AMERICAN SHORING, INC. IN WRITING.
GROUND WATER LEVEL MUST BE LOCATED OR DRAWN DOWN TO BELOW THE BOTTOM OF THIS EXCAVATION; OTHERWISE SOIL MUST MINIMUMLY BE CLASSIFIED AS TYPE C-80.
FILL ALL VOIDS BETWEEN TRENCH WALL AND SHIELD.
SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN ¼" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURERED BY AMERICAN SHORING, INC. ANY USE OF THE SHIELD WITHOUT PROPER PINS WILL VOID THIS TABULATED DATA AS WELL AS THE WARRANTY, AND COULD CAUSE INJURY OR DEATH.
USE OF ANY SPREADERS OR PINS NOT PROVIDED BY AMERICAN SHORING WILL VOID THE TABULATED DATA AND WARRANTY.
SHIELDS ARE DESIGNED TO BE PUSHED TO GRADE, IF NECESSARY, ANY ABUSE OF THIS PRODUCT BY THE EXCAVATOR CAUSING MAJOR SCRUCTURAL DAMAGE WILL VOID THIS TABULATED DATA AND WARRANTY.
THE CONDITION OF THE SHIELD, SPREADERS AND SPREADER PINS MUST BE CHECKED AND INSPECTED BY THE COMPETENT PERSON BEFORE EACH USE. THIS CERTIFICATION IS INVALID IF ANY VISABLE WEAR OR DAMAGE IS OBSERVED. NO REPAIRS SHOULD BE MADE TO THE SHIELD THAT HAVE NOT BEEN PREVIOUSLY DOCUMENTED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER AND APPROVED BY AMERICAN SHORING.

MAXIMUM ALLOWABLE TRENCH SHIELD DEPTH"D" PER SOIL TYPES:

TYPE B	**22'**
TYPE C-60	**18'**
TYPE C-80	**14'**

THE SOIL TYPE SHALL BE CLASSIFIED BY A COMPETENT PERSON PER FEDERAL OSHA CONSTRUCTION SAFETY ORDERS, CFR 29 APPENDIX A.

DEPTH RATINGS ACCOUNT FOR 72 PSF MINIMUM OSHA SURCHARGE.

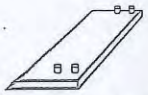


CERTIFIED BY:

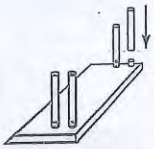
Michael S. Tuculescu, PE

American Shoring Inc. 1.800.407.4674
www.americanshoring.com

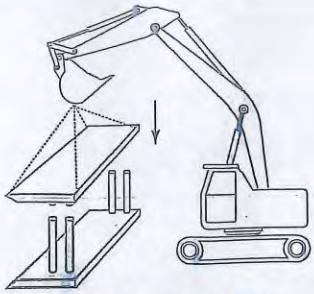
TRENCH SHIELD ASSEMBLY



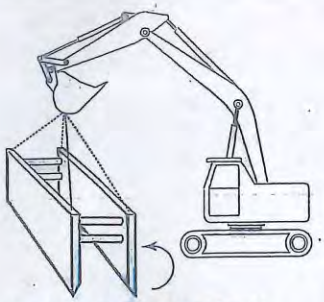
1. LAY PANEL FLAT ON THE GROUND WITH THE SPREADER COLLARS POINTED UP.



2. PLACE SPREADER PIPES ONTO THE COLLARS AND PIN INTO PLACE. SECURE PINS WITH KEEPERS.

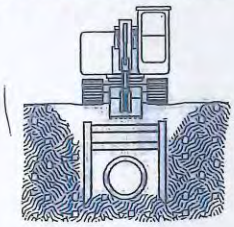


3. LOWER SECOND PANEL ONTO SPREADERS AND PIN INTO PLACE. SECURE PINS WITH KEEPERS.

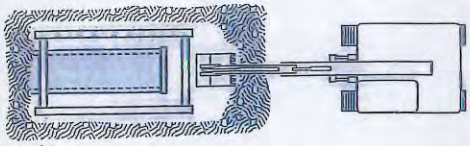


4. STAND TRENCH SHIELD IN UPRIGHT POSITION AND PREPARE FOR INSTALLATION.

TRENCH SHIELD INSTALLED IN STABLE SOIL

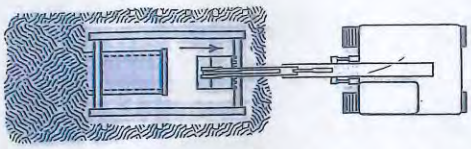


1. EXCAVATE TO GRADE JUST SLIGHTLY WIDER THAN THE TRENCH SHIELD. DIG WALLS VERTICAL TO MINIMUM OF 18" BELOW THE TOP OF THE SHIELD. SLOPE SOIL ABOVE SHIELD ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS. INSTALL SHIELD INTO TRENCH.



2. EXCAVATE IN FRONT OF THE SHIELD

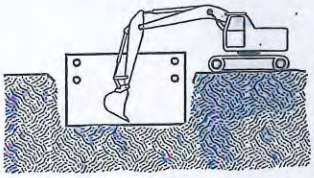
AMERICAN SHORING INC.



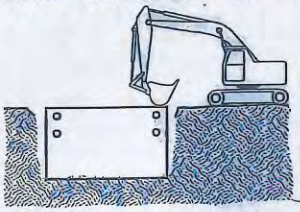
3. PULL SHIELD FORWARD BY FRONT SPREADER PIPES OR WITH THE PULLING EYES.

* PULLING EYES MAY BE USED WITH SPREADERS WIDER THAN 72", OR WHEN THE SOIL PRESSURE IS SEVERE ENOUGH TO CAUSE SPREADERS TO DEFLECT.

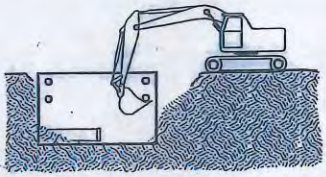
TRENCH SHIELD INSTALLED IN UNSTABLE SOIL



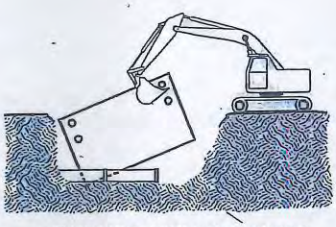
1. EXCAVATE UNTIL SOIL BEGINS TO CRUMBLE BEYOND DESIRED TRENCH WIDTH. PLACE SHIELD IN LINE OF EXCAVATION.



2. PRESS DOWN ON CORNERS TO PUSH SHIELD DOWN TO GRADE.

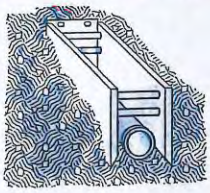


3. PULL SHIELD FORWARD AND UP ON APPROPRIATE ANGLE- *(SEE ABOVE).



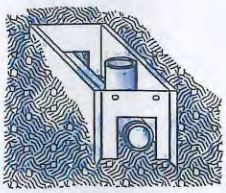
4. EXCAVATE SOIL WITHIN THE SHIELD AND REPEAT PROCESS.

TRENCH SHIELD APPLICATIONS



TIE-INS, REPAIR OR PATCH WORK
1. CENTER SHIELD OVER WORK AREA.
2. LAY SOIL BACK AT ENDS ACCORDING TO MANUFACTURER'S TABULATED DATA OR USE MANUFACTURER'S DESIGNED END PLATES TO PROTECT FROM CAVE-INS.

CORNER END PLATES
CORNER END PLATES HELP PREVENT MATERIAL FROM FLOWING INTO THE END OF SHIELD. SOIL AT ENDS SHOULD BE SLOPED ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS.



FOUR SIDED SHIELDS
WHEN USING SHIELDS AS PROTECTION WORK DURING MANHOLE ASSEMBLY WORK. INSURE THAT PROPER END PANELS ARE USED; OR LAY SOIL AT THE ENDS BACK ACCORDING TO MANUFACTURER'S TABULATED DATA & O.S.H.A. REGULATIONS.

1. ALWAYS USE TRENCH SHIELDS IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, FEDERAL SAFETY LAWS AND O.S.H.A. REGULATIONS. FAILURE TO DO SO COULD CAUSE SEVERE INJURY OR DEATH.
2. ALL WORK TO BE PREFORMED WITHIN THE CONFINES OF THE SHIELD.
3 THIS ABOVE MATERIAL IS INTENDED TO PROVIDE BASIC INFORMATION ONLY.

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CERTIFICATION SHEET

Engineer's Statement : This certifies that the Kundel Trench Shield has been designed in accordance with the requirements and guidelines promulgated by the occupational safety and health administrations rules and regulations for construction standards for excavations (29) part 1926.650-.652 subpart P. Shorelite Lite shoring systems are also designed in accordance with CSAO (Construction Safety Association of Ontario) Canada.

Michael J. Venetta, P.E.
Ohio Registration # E-46015

Henry Venetta, P.E.
Ohio Registration # E-25091

Manufacturer's Statement: Kundel Industries Inc. hereby certifies that all materials and processes involved in the manufacture of each and every Kundel Trench Shield strictly and stringently follow every material, production and design specification put forth by Venetta Engineering to ensure that each and every Kundel Trench Shield is in full accordance with the requirements and guidelines promulgated by the Occupational Safety and Health Administration.

Robert Kundel, President
Kundel Industries, Inc.

Manufacture's Tabulated Data			
Model : TP5-6X20-K			
Size : 6X20			
Serial # : 13357			
Pressure Ratings & Allowable Loads			
Soil	Standard Mode	Clear Mode	Super Mode
"A" Soil (ft)	31	N/A	N/A
"B" Soil (ft)	18	N/A	N/A
"C" soil (ft)	14	N/A	N/A
"Muck" (ft)	11	N/A	N/A
Pressure (psf)	840	N/A	N/A

7-26-00

Pressure Ratings and allowable loads are based on short term excavations and the following ; "A", "B", and "C" depth ratings are in feet and are in accordance with OSHA specification Appendix "A" which refers to *The National Bureau of Standards Reports BSS-121*. Soil classification "Muck" is also defined in *The National Bureau of Standards Series BSS-121* on page 39 Notation #3. Pressure Ratings are in pounds per square foot and are equal to those found at the bottom of the trench.

**Please note that all tables and notes are for illustrative purposes only. The tables are based upon static load conditions and assumed soil pressures. Safe depths can vary from design assumptions. The tabulated data stated aboved is for use with both 4 or 5 pipe systems. Please refer to all manufacture's usage instructions.

Kundel Industries
1510 Ridge Rd
Vienna, OH 44473
Phone (330) 259-9009

9/14/16

CHANDLER, ARIZONA
PHONE (800) 380-0103

SAFE-T-SHORE TRENCH
SHIELDS PAGE 1 OF 2

MODEL S6D10X24 **SERIAL NUMBER** **S24051**

REFERENCE TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS, 29 CFR, NO 209, PART 1926, SUBPART P

SHIELD SIZE		PSF RATING	MAXIMUM ALLOWABLE DEPTH OF CUT (FEET) SOIL TYPE TO BE EXCAVATED		
HEIGHT (FEET)	LENGTH (FEET)	MAXIMUM LATERAL EARTH PRESSURE CAPACITY AT TRENCH BOTTOM IN POUNDS PER SQUARE FOOT	TYPE B MEDIUM COHESIVE TO GRANULAR SOIL 45 PSF PER FOOT OF DEPTH	TYPE C-COHESIVE SOFT COHESIVE TO SUBMERGED CLAY SOIL. 60 PSF PER FOOT OF DEPTH	TYPE C-60 SOFT NON COHESIVE TO SUBMERGED SANDY SOIL. 60 PSF PER FOOT OF DEPTH
10	24	1200	27	24	20

LIMITATIONS IN USE OF TABLE

1. TRENCH SHIELD TO BE ASSEMBLED AND INSTALLED AS SHOWN AND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

2. EXCAVATION 2 FEET BELOW BOTTOM OF SHIELD IS PERMITTED WHEN NO LOSS OF SOIL FROM BEHIND OR BELOW THE BOTTOM OF SHIELD IS ENCOUNTERED. SEE PARAGRAPH 1926.652 (e)(2)(i). THE COMPETENT PERSON SHALL MAKE THE DETERMINATION FOR COMPLIANCE. SUDDEN SHIFTING OF THE SHIELD VERTICALLY SHALL BE AVOIDED.

3. CONSULT MANUFACTURER WHEN RESTRICTION ON NOTE 2 IS NOT MET.

4. ADDITIONAL SHIELDS MAY BE STACKED WITH NO PENALTY IN DEPTH OF CUT AS LONG AS THE RATING OF THE BOTTOM SHIELD IS NOT EXCEEDED.

5. DEPTHS OF CUTS SHOWN ARE BASED ON EXAMPLES OF VARIOUS SOIL CONDITIONS. VERIFY ACTUAL SOIL PRESSURES PRIOR TO EACH USE.

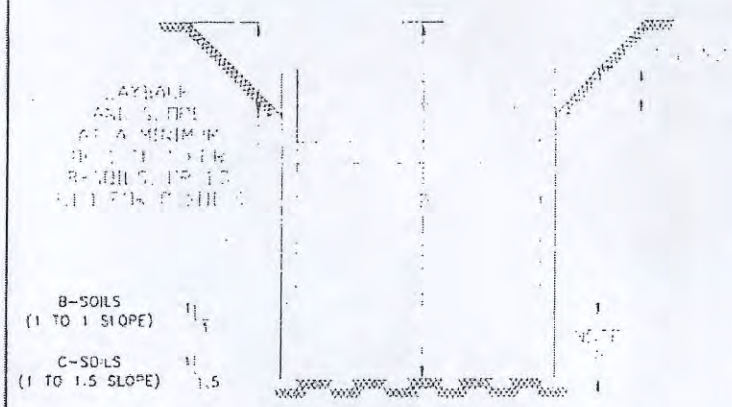
6. ANY MODIFICATIONS OR ALTERATIONS NOT ALLOWED UNLESS APPROVED IN WRITING BY EFFICIENCY PRODUCTION, INC.

7. CONTRACTOR'S COMPETENT/QUALIFIED PERSON SHALL BE RESPONSIBLE FOR MONITORING SOIL CONDITIONS AND SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL RULES AND REGULATIONS.

8. SPREADER PINS SHALL BE AISI C-1018 60-75 KSI MIN. YIELD AND NO MORE THAN 1/4" SMALLER THAN COLLAR AND SPREADER PIN HOLES AS MANUFACTURED BY EFFICIENCY PRODUCTION, INC.

CONTINUED ON REVERSE SIDE

DESCRIPTION	DESCRIPTION	DESCRIPTION
CLAY, WITH UNCONFINED COMPRESSIVE STRENGTH GREATER THAN 0.5 TSF BUT LESS THAN 1.5 TSF COHESIONLESS GRAVEL, SILT, SILT LOAM OR SANDY LOAM	SOFT COHESIVE SOIL UNCONFINED COMPRESSIVE STRENGTH EQUAL TO 0.5 TSF CLAY, SAND AND LOAMY SAND; SUBMERGED SOIL THAT IS STABLE	SOFT COHESIONLESS SOIL UNCONFINED COMPRESSIVE STRENGTH LESS THAN 0.5 TSF GRAVEL, SAND AND LOAMY SAND; SUBMERGED SOIL OR FRACTURED ROCK THAT IS NOT STABLE



STATE OF MICHIGAN
NATHAN G. BOHE
ENGINEER
No. 39964
LICENSED PROFESSIONAL ENGINEER

CERTIFIED BY:
EFFICIENCY PRODUCTION INC.

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ALL RIGHTS RESERVED

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENT NUMBERS: 4,090,365-4,114,383-4,259,028 ONE OR MORE OF THE FOLLOWING CANADIAN PATENT NUMBERS: 1,062,683-1,062,684

USE THIS PRODUCT ONLY IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE OR LOCAL LAWS

ANY USE OF THIS PRODUCT NOT SPECIFICALLY DESCRIBED ON THIS CERTIFICATE COULD CAUSE IN CAVE-IN, COLLAPSE, OR STRUCTURAL FAILURE RESULTING IN DEATH OR SERIOUS INJURY

SPEED SHORE®

PIONEERING TRENCH SAFETY

TABULATED DATA AND TRENCH SHIELD CERTIFICATION

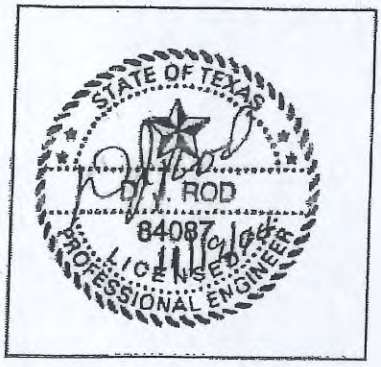
SERIAL NUMBER:11-2057		MODEL: TS-0810DW4KE-CE L
HEIGHT = 8 feet	LENGTH = 10 feet	THICKNESS= 4 inches
MAXIMUM LATERAL EARTH PRESSURE =	1,820 Pounds per square foot	

MAXIMUM DEPTH OF EXCAVATION		
O.S.H.A. Soil Type	Equivalent Weight Effect *(p.c.f.)*	Depth "H" *(feet)*
A	25	50
B	35	50
B	45	43
C	60	33
C	80	26
Spreader Size = 8 inch Schedule 80 Pipe / Maximum Spreader Length = 20 feet		

This shield is manufactured to meet the requirements of O.S.H.A. CFR 29, Part 1926, Subpart P. This shield must be used in a manner consistent with safe working procedures, Federal, State and local regulation and manufacturer's instructions. Contact manufacturer for any non-standard use of this trench shield.

GENERAL NOTES AND INSTRUCTIONS:

1. Contractors must assign a ***"competent person"*** , knowledgeable and capable of complying with all federal regulations, state and local laws and ordinances. **NOTE:** For copies of applicable federal or state laws contact: Dept. of Labor, Occupational Safety and Health Division
2. A *"competent person"* , trained and experienced in the proper use of trench shields, safe excavation practices and soil classification methods must direct and control the use of this trench shield.
3. This Tabulated Data applies to standard products manufactured exclusively by SPEED SHORE CORPORATION. This data complies with the requirements of federal O.S.H.A. CFR 29, Part 1926, Subpart P-Excavations. Information not found in this data shall be referenced by obtaining copies of the applicable Federal or State laws governing excavation
4. Modifications of this product shall be approved by the manufacturer in writing and shall accompany this Tabulated Data sheet. Any modification not specifically allowed by SPEED SHORE CORPORATION voids this data.



SPEED SHORE CORPORATION
3330 S. Sam Houston Pkwy. East
Houston, Texas 77047
Phone (713) 943-0750 Fax (713) 943-8483

SPEED SHORE®

PIONEERING TRENCH SAFETY

TABULATED DATA AND TRENCH SHIELD CERTIFICATION

SERIAL NUMBER: 6-2228		MODEL: TS-0810DW4
HEIGHT = 8 feet	LENGTH = 10 feet	THICKNESS= 4 inches
MAXIMUM LATERAL EARTH PRESSURE =	1,820 Pounds per square foot	

MAXIMUM DEPTH OF EXCAVATION		
O.S.H.A. Soil Type	Equivalent Weight Effect *(p.c.f.)*	Depth "H" *(feet)*
A	25	50
B	35	50
B	45	43
C	60	33
C	80	26
Spreader Size = 8 inch Schedule 80 Pipe / Maximum Spreader Length = 20 feet		

This shield is manufactured to meet the requirements of O.S.H.A. CFR 29, Part 1926, Subpart P. This shield must be used in a manner consistent with safe working procedures, Federal, State and local regulation and manufacturer's instructions. Contact manufacturer for any non-standard use of this trench shield.

GENERAL NOTES AND INSTRUCTIONS:

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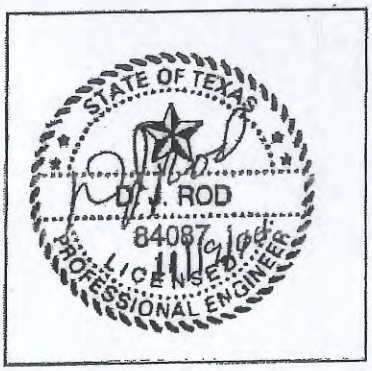

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SPEED SHORE®

PIONEERING TRENCH SAFETY

TABULATED DATA AND TRENCH SHIELD CERTIFICATION

SERIAL NUMBER: 10-2080		MODEL: TS-0820DW6 KE-CEL
HEIGHT = 8 feet	LENGTH = 20 feet	THICKNESS= 6 inches
MAXIMUM LATERAL EARTH PRESSURE =	1,282 Pounds per square foot	

MAXIMUM DEPTH OF EXCAVATION		
O.S.H.A. Soil Type	Equivalent Weight Effect *(p.c.f.)*	Depth "H" *(feet)*
A	25	50
B	35	39
B	45	31
C	60	24
C	80	19
Spreader Size = 8 inch Schedule 80 Pipe / Maximum Spreader Length = 20 feet		

This shield is manufactured to meet the requirements of O.S.H.A. CFR 29, Part 1926, Subpart P. This shield must be used in a manner consistent with safe working procedures, Federal, State and local regulation and manufacturer's instructions. Contact manufacturer for any non-standard use of this trench shield.

GENERAL NOTES AND INSTRUCTIONS:

1. Contractors must assign a ***"competent person"*** , knowledgeable and capable of complying with all federal regulations, state and local laws and ordinances. **NOTE:** For copies of applicable federal or state laws contact: Dept. of Labor, Occupational Safety and Health Division
2. A ***"competent person"*** , trained and experienced in the proper use of trench shields, safe excavation practices and soil classification methods must direct and control the use of this trench shield.
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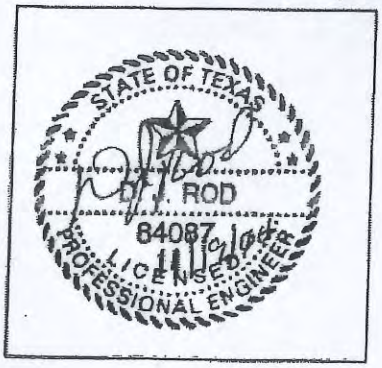

SPEED SHORE CORPORATION
3330 S. Sam Houston Pkwy. East
Houston, Texas 77047
Phone (713) 943-0750 Fax (713) 943-8483

SPEED SHORE®

PIONEERING TRENCH SAFETY

TABULATED DATA AND TRENCH SHIELD CERTIFICATION

SERIAL NUMBER: 3-2486		MODEL: TS- 08 16 DW 6
HEIGHT = 08 feet	LENGTH = 16 feet	THICKNESS= 6 inches
MAXIMUM LATERAL EARTH PRESSURE =	2,047 Pounds per square foot	

MAXIMUM DEPTH OF EXCAVATION		
O.S.H.A. Soil Type	Equivalent Weight Effect *(p.c.f.)*	Depth "H" *(feet)*
A	25	50
B	35	50
B	45	48
C	60	37
C	80	29
Spreader Size = 8 inch Schedule 80 Pipe / Maximum Spreader Length = 20 feet		

This shield is manufactured to meet the requirements of O.S.H.A. CFR 29, Part 1926, Subpart P. This shield must be used in a manner consistent with safe working procedures, Federal, State and local regulation and manufacturer's instructions. Contact manufacturer for any non-standard use of this trench shield.

GENERAL NOTES AND INSTRUCTIONS:

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11.24.00

STATE OF TEXAS
D.J. ROD
84087
LICENSED
PROFESSIONAL ENGINEER

SPEED SHORE CORPORATION
P.O. Box 450889
Houston, Texas 77245-0889
Phone (713) 943-0750 Fax (713) 943-8483