

# SPEED SHORE®

PIONEERING TRENCH SAFETY

## TABULATED DATA AND STEEL FRAME ALUMINUM PANEL SHIELD CERTIFICATION

SERIAL NUMBER: 20-4006AS		MODEL: APS-SF-0816
HEIGHT = 8 feet	LENGTH = 16 feet	THICKNESS = 3 inches
MAXIMUM LATERAL EARTH PRESSURE = 431 Pounds per square foot		

MAXIMUM DEPTH OF EXCAVATION		
O.S.H.A. Soil Type	Equivalent Weight Effect ( <i>p.c.f.</i> )	Depth "H" ( <i>feet</i> )
A	25	18
B	35	14
B	45	12
C	60	10
C	80	8
Spreader Size = 5 inch Schedule 80 Pipe / Maximum Spreader Length = 12 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:

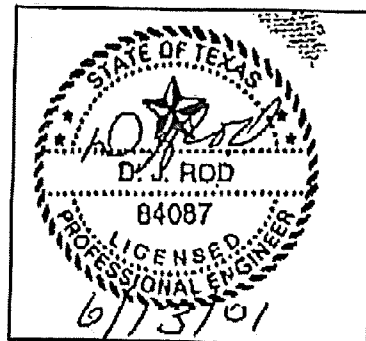
1. Contractors must assign a "*competent person*", knowledgeable and capable of complying with all federal regulations, state and local laws and ordinances. **NOTE:** For copies of applicable federal or state laws contact: Dept. of Labor, Occupational Safety and Health Division
2. A "*competent person*", 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.

11.24.00

Page 1 of 1

### SPEED SHORE CORPORATION

3330 S. Sam Houston Pkwy. E  
Houston, Texas 77047  
Phone (713) 943-0750 Fax (713) 943-8483





# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

N820DW

MODEL NO.

9604568

SERIAL NO.

05/03/96

DATE SHIPPED

## SHORT TERM EXPOSURE DEPTH/CAPACITY CHART

SOIL TYPE	EFP	MAXIMUM DEPTH	SHIELD CAPACITY
A	25	34'	850
B	45	19'	855
C	60	15'	900

*Shield capacity is in PSF per foot along the bottom of the Trench Shield*

## LONG TERM EXPOSURE DEPTH/CAPACITY CHART

SOIL TYPE	EFP	MAXIMUM DEPTH	SHIELD CAPACITY
A	25	26'	650
B	45	15'	675
C	60	12'	720

*Shield capacity is in PSF per foot along the bottom of the Trench Shield*

### 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 and B are as defined in the OSHA standard. Soil Type C is defined as follows:

Soil cohesive to saturated soil with an Equivalent Fluid Pressure (EFP) or Equivalent Weight Effect of 60 PSF per foot of depth. This type of soil is a clay with an unconfined compressive strength of .5 tons/Sq. Ft., but greater than .25 Tons/SF, saturated sand or clay, or fractured rock that is not stable.

(Note: Soil conditions more severe can be encountered with an EFP greater than 60 PSF/F. These conditions would be submerged soils, flowing mud, or muck. Such severe conditions would require the services of a soils engineer to determine the actual soil pressure. Consult GME when soil pressures exceed the tabulated values.)

3. Trench Shields shall be used in accordance with the depth/capacity charts. 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 homogenous soil conditions. Soil pressures may vary due to: non-homogenous 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 accounted for in the maximum depths. Surcharge loads are possible due to: heavy equipment, vibrations, or spoil piles, adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench shields are not capable of providing stability to adjacent buildings or other structures. Refer to the OSHA standard for applicable requirements when trenching near buildings and other structures.

Long Term exposure is for trench shields used in one position greater than 24 hours. Short Term exposure is for shields used in one position for 24 hours or less. GME recommends that the chart for Long Term exposure be used to maximize protection. However, the chart for Short Term exposure may be used if the criteria for Short Term exposure can be met at all times.

### GENERAL NOTES FOR TRENCH SHIELD USE:

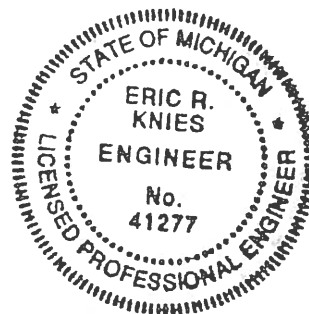
1. Trench Shields are to be assembled and installed in accordance with manufacturer's instructions.

2. Any modifications to shields or use of component parts not manufactured by GME will void the tabulated data unless otherwise specified or allowed in writing by GME.

3. GME Trench Shields may be stacked, provided that appropriate connections are made between stacked shields as specified by GME. The stacked shields need only have a depth rating equal to or greater than the actual depth at which it is used.

4. 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 damage the tabulated data is void until repairs are made as specified by a registered professional engineer.

5. 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 or required.



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



# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

N620DW

MODEL NO.

9604570

SERIAL NO.

05/03/96

DATE SHIPPED

## SHORT TERM EXPOSURE DEPTH/CAPACITY CHART

SOIL TYPE	EFP	MAXIMUM DEPTH	SHIELD CAPACITY
A	25	35'	875
B	45	20'	900
C	60	15.5'	930

Shield capacity is in PSF per foot along the bottom of the Trench Shield

## LONG TERM EXPOSURE DEPTH/CAPACITY CHART

SOIL TYPE	EFP	MAXIMUM DEPTH	SHIELD CAPACITY
A	25	27'	675
B	45	15.5'	698
C	60	12'	720

Shield capacity is in PSF per foot along the bottom of the Trench Shield

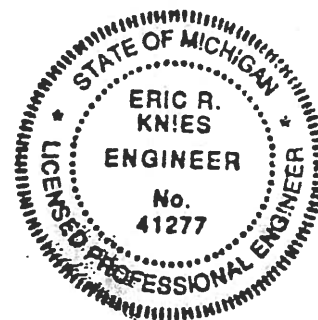
### CONDITIONS FOR USE OF TABULATED DATA:

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 and B are as defined in the OSHA standard. Soil type C is defined as follows:  
Soil cohesive to saturated soil with an Equivalent Fluid Pressure (EFP) or Equivalent Weight Effect of 60 PSF per foot of depth. This type of soil is a clay with an unconfined compressive strength of .5 tons/Sq. Ft., but greater than .25 Tons/SF, saturated sand or clay, or fractured rock that is not stable.  
(Note: Soil conditions more severe can be encountered with an EFP greater than 60 PSF/F. These conditions would be submerged soils, flowing mud, or muck. Such severe conditions would require the services of a soils engineer to determine the actual soil pressure. Consult GME when soil pressures exceed the tabulated values.)
3. Trench Shields shall be used in accordance with the depth/capacity charts. 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 homogenous soil conditions. Soil pressures may vary due to: non-homogenous 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 accounted for in the maximum depths. Surcharge loads are possible due to: heavy equipment, vibrations, or spoil piles, adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)
5. Trench shields are not capable of providing stability to adjacent buildings or other structures. Refer to the OSHA standard for applicable requirements when trenching near buildings and other structures.

Long Term exposure is for trench shields used in one position greater than 24 hours. Short Term exposure is for shields used in one position for 24 hours or less. GME recommends that the chart for Long Term exposure be used to maximize protection. However, the chart for Short Term exposure may be used if the criteria for Short Term exposure can be met at all times.

### GENERAL NOTES FOR TRENCH SHIELD USE:

1. Trench Shields are to be assembled and installed in accordance with manufacturer's instructions.
2. Any modifications to shields or use of component parts not manufactured by GME will void the tabulated data unless otherwise specified or allowed in writing by GME.
3. GME Trench Shields may be stacked, provided that appropriate connections are made between stacked shields as specified by GME. The stacked shields need only have a depth rating equal to or greater than the actual depth at which it is used.
4. 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 damage the tabulated data is void until repairs are made as specified by a registered professional engineer.
5. 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 or required.



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

PREPARED BY: RAYMOND E. PRYMUS P.C.

FOR: ICON EQUIPMENT DISTRIBUTORS

TABULATED DATA OF ALLOWABLE DEPTHS FOR ICON  
TRENCH SHIELDS

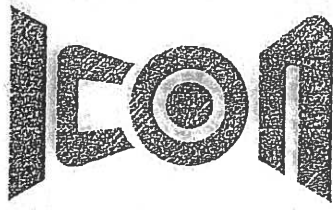
TRENCH SHIELD	SHIELD DIMENSIONS			PSF	MAX. ALLOWABLE DEPTH IN FT.			
	Wall	H	L		SOIL TYPE			
	IN.	FT.	FT.		A	B	C60	C80
SW3I608	3	6	8	1,298	64.9	36.1	27.0	20.3
SW3I610	3	6	10	785	39.3	21.8	16.4	12.3
SW3I612	3	6	12	526	26.3	14.6	10.9	8.2
SW3I808	3	8	8	1,118	55.9	31.1	23.3	17.5
SW3I810	3	8	10	676	33.8	18.8	14.1	10.6
SW3I812	3	8	12	453	22.6	12.6	9.4	7.1
DW4I612	4	6	12	2,983	149.2	82.9	62.2	46.6
DW4I616	4	6	16	1,578	78.9	43.8	32.9	24.7
DW4I620	4	6	20	974	48.7	27.1	20.3	15.2
DW4IE812	4	8	12	1,394	69.7	38.7	29.0	21.8
DW4IE816	4	8	16	987	49.4	27.4	20.6	15.4
DW4IE820	4	8	20	609	30.5	16.9	12.7	9.5
DW4I812	4	8	12	1,621	81.1	45.0	33.8	25.3
DW4I816	4	8	16	1,216	60.8	33.8	25.3	19.0
DW4I820	4	8	20	925	46.2	25.7	19.3	14.5
DW4IS812	4	8	12	2,190	109.5	60.8	45.6	34.2
DW4IS816	4	8	16	1,498	74.9	41.6	31.2	23.4
DW4IS820	4	8	20	925	46.2	25.7	19.3	14.5
DW4I412	4	4	12	2,630	131.5	73.0	54.8	41.1
DW4I416	4	4	16	1,391	69.5	38.6	29.0	21.7
DW4I420	4	4	20	859	42.9	23.9	17.9	13.4
DW6I616	6	6	16	2,118	105.9	58.8	44.1	33.1
DW6I620	6	6	20	1,308	65.4	36.3	27.2	20.4
DW6I624	6	6	24	887	44.3	24.6	18.5	13.9

NOTE: THE ALLOWABLE SOIL PRESSURES INCLUDE 33 1/3% OVERSTRESS FOR TEMPORARY USE.

DESIGN HAS BEEN REVIEWED BY THE PROFESSIONAL ENGINEERING FIRM OF RAYMOND E. PRYMUS P.C., N.Y. LICENSE # 050457.

DO NOT COPY OR REUSE WITHOUT WRITTEN PERMISSION OF RAYMOND E. PRYMUS P.C.

TS-TabData1.123



# TABULATED DATA

4ICN820DW

MODEL NO.

98081297-2

SERIAL NO.

09/11/98

DATE SHIPPED

## MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	42'
B	45	25'
C	60	20'
C	80	16'

956 PSF

SHIELD CAPACITY

12 FT

MAX SPREADER LENGTH

8" SCH 80

SPREADER SIZE

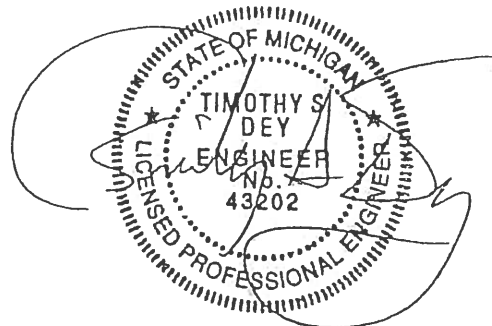
### CONDITIONS FOR USE OF TABULATED DATA:

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. 2 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.

FOR ICON EQUIPMENT DISTRIBUTORS, INC. PRIVATE LABEL AND MANUFACTURED BY GRISWOLD MACHINE & ENGINEERING, INC.



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



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



# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

LD824

MODEL NO.

11818

SERIAL NO.

DATE SHIPPED

## SHORT TERM EXPOSURE DEPTH/CAPACITY CHART

SOIL TYPE	EFP	MAXIMUM DEPTH	SHIELD CAPACITY
A	25	46'	1150
B	45	26'	1170
C	60	20'	1200

Shield capacity is in PSF per foot along the bottom of the Trench Shield

## LONG TERM EXPOSURE DEPTH/CAPACITY CHART

SOIL TYPE	EFP	MAXIMUM DEPTH	SHIELD CAPACITY
A	25	35'	875
B	45	20'	900
C	60	15'	900

Shield capacity is in PSF per foot along the bottom of the Trench Shield

### 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 and B are as defined in the OSHA standard. Soil Type C is defined as follows:

Soil cohesive to saturated soil with an Equivalent Fluid Pressure (EFP) or Equivalent Weight Effect of 60 PSF per foot of depth. This type of soil is a clay with an unconfined compressive strength of .5 tons/Sq. Ft., but greater than .25 Tons/SF, saturated sand or clay, or fractured rock that is not stable.

(Note: Soil conditions more severe can be encountered with an EFP greater than 60 PSF/F. These conditions would be submerged soils, flowing mud, or muck. Such severe conditions would require the services of a soils engineer to determine the actual soil pressure. Consult GME when soil pressures exceed the tabulated values.)

3. Trench Shields shall be used in accordance with the depth/capacity charts. 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 homogenous soil conditions. Soil pressures may vary due to: non-homogenous 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 accounted for in the maximum depths. Surcharge loads are possible due to: heavy equipment, vibrations, or spoil piles, adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench shields are not capable of providing stability to adjacent buildings or other structures. Refer to the OSHA standard for applicable requirements when trenching near buildings and other structures.

Long Term exposure is for trench shields used in one position greater than 24 hours. Short Term exposure is for shields used in one position for 24 hours or less. GME recommends that the chart for Long Term exposure be used to maximize protection. However, the chart for Short Term exposure may be used if the criteria for Short Term exposure can be met at all times.

### GENERAL NOTES FOR TRENCH SHIELD USE:

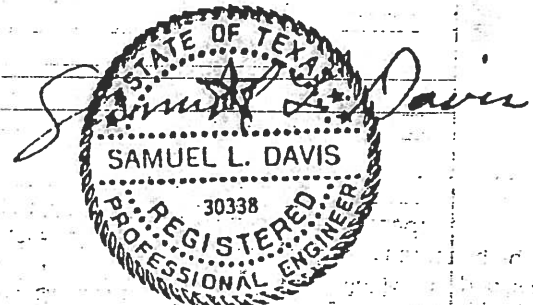
1. Trench Shields are to be assembled and installed in accordance with manufacturer's instructions.

2. Any modifications to shields or use of component parts not manufactured by GME will void the tabulated data unless otherwise specified or allowed in writing by GME.

3. GME Trench Shields may be stacked, provided that appropriate connections are made between stacked shields as specified by GME. The stacked shields need only have a depth rating equal to or greater than the actual depth at which it is used.

4. 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 damage the tabulated data is void until repairs are made as specified by a registered professional engineer.

5. 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 or required.



Griswold Machine & Engineering, Inc.  
Highway M-60 at Arbogast Road  
Union City, MI 49094  
Phone 800 248-2054



# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

**K1024**

**MODEL NO.**

**000112108-2**

**SERIAL NO.**

**11/20/00**

**DATE SHIPPED**

## MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	41'
B	45	25'
C	60	20'
C	80	16'

**894 PSF**

**SHIELD CAPACITY**

**15 FT**

**MAX SPREADER  
LENGTH**

**8" SCH 80**

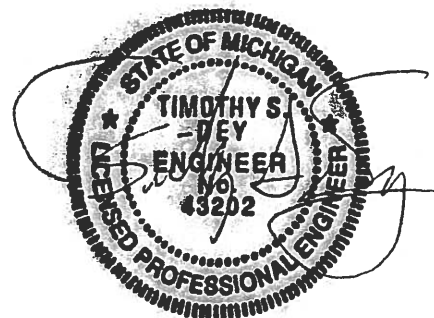
**SPREADER SIZE**

### 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 fine 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. 2 inch diameter pins furnished by GME shall be placed in all spreader to collar connections.
7. Wing Spreaders specifically manufactured by GME are required if pipe clearance exceeds 60".

### 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.



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



Griswold Machine & Engineering, Inc.  
594 W. Highway M - 60  
Union City, MI 48094  
Phone 517 - 741 - 4300



# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

**K624**

**MODEL NO.**

**00112109-2**

**SERIAL NO.**

**11/20/00**

**DATE SHIPPED**

## MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	37'
B	45	22'
C	60	17'
C	80	14'

**850 PSF**

**SHIELD CAPACITY**

**15 FT**

**MAX SPREADER  
LENGTH**

**8" SCH 80**

**SPREADER SIZE**

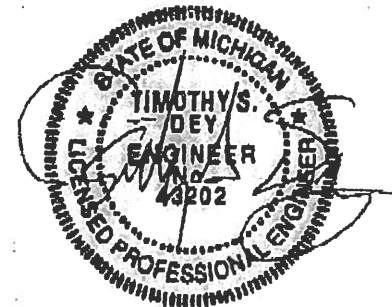
### CONDITIONS FOR USE OF TABULATED DATA:

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 - 80 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. 7 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 48094  
Phone 517 - 741 - 4300





# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

**N820DW**

**MODEL NO.**

**0004754-2**

**SERIAL NO.**

**04/13/00**

**DATE SHIPPED**

## MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	42'
B	45	25'
C	60	20'
C	80	16'

**956 PSF**

**SHIELD CAPACITY**

**15 FT**

**MAX SPREADER  
LENGTH**

**8" SCH 80**

**SPREADER SIZE**

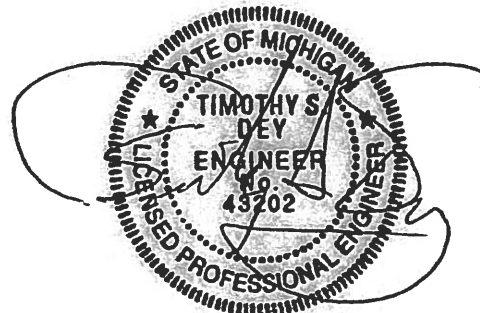
### CONDITIONS FOR USE OF TABULATED DATA:

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. 2 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.

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



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



# TRENCH SHIELD MANUFACTURER'S TABULATED DATA

**N820DW**

**MODEL NO.**

**0004756-2**

**SERIAL NO.**

**04/13/00**

**DATE SHIPPED**

## MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	42'
B	45	25'
C	60	20'
C	80	16'

**956 PSF**

**SHIELD CAPACITY**

**15 FT**

**MAX SPREADER  
LENGTH**

**8" SCH 80**

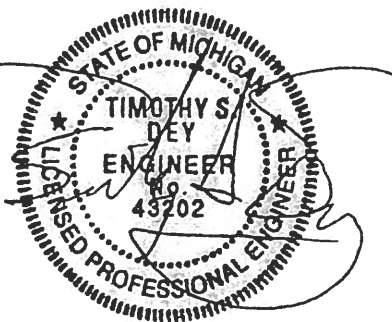
**SPREADER SIZE**

### 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. 2 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.



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



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



685 HULL ROAD, MASON, MI 48854  
PHONE (517) 676-8800

EFFICIENCY  
TRENCH SHIELDS

MODEL

**MHXLDF-810**

SERIAL NUMBER

**1 2 3 1 4 7**

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		
HEIGHT (FEET)	LENGTH (FEET)	MAXIMUM LATERAL EARTH PRESSURE CAPACITY AT TRENCH BOTTOM IN POUNDS PER SQUARE FOOT	SOIL TYPE TO BE EXCAVATED		
			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	10	1830	41	31	23
<b>LIMITATIONS IN USE OF TABLE</b> 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.			<b>DESCRIPTION</b> Clay, with Unconfined Compressive Strength Greater than .5 TSF But Less than 1.5 TSF Cohesionless Gravel, Silt, Silt Loam or Sandy Loam.	<b>DESCRIPTION</b> Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or fractured Rock that is not Stable.	<b>DESCRIPTION</b> Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or fractured Rock that is not Stable.
			CONTINUED ON REVERSE SIDE		



**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.

9. 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 HORIZONTAL TO ONE VERTICAL (4H:1V) OR GREATER.
10. PREVIOUSLY DISTURBED SOILS MAY BE TYPE B UNLESS THEY WOULD BE CLASSIFIED 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 BUT ONLY IF MATERIAL WOULD OTHERWISE BE CLASSIFIED AS TYPE B.
11. 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 SOILS ENGINEER TO ESTABLISH THE DESIGN PRESSURE. CONSULT THE MANUFACTURER FOR PRESSURES EXCEEDING TABULATED VALUES.
12. ANY USE OF A TRENCH SHIELD WITHOUT EFFICIENCY SPREADERS AND PINS OR EQUAL WILL VOID THE TABULATED DATA AND WARRANTY.
13. 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.
14. 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.
15. CONDITION OF SHIELD, SPREADER PIPES, AND SPREADER PINS MUST BE CHECKED/INSPECTED FOR SERVICEABILITY 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 HAVE NOT BEEN DOCUMENTED AND CERTIFIED BY A REGISTERED PROFESSIONAL ENGINEER.
16. DEPTH AND PSF RATINGS ARE FOR LATERAL EARTH PRESSURES ONLY AND DO NOT TAKE ANY SURCHARGES INTO ACCOUNT.

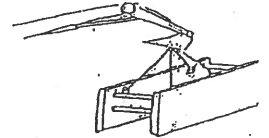
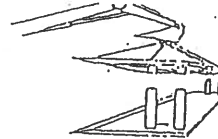
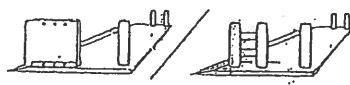
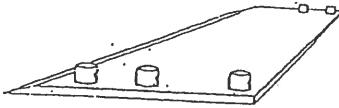
**Assembly**

Lay side panel flat on ground with collar sockets up ...

Place spreader pipe and/or plate onto 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.



Mud Plate Spreader System 5 Pipe Spreader System

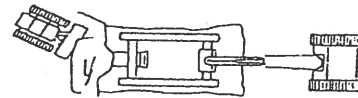
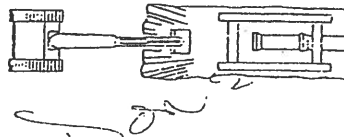
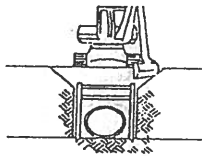
4 Pipe Spreader System

**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 top of the shield. Slope soil 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).



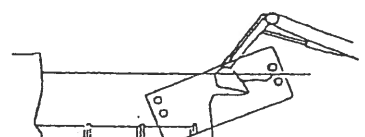
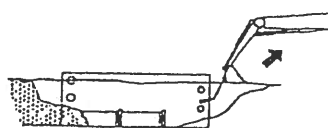
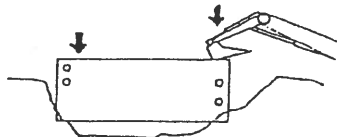
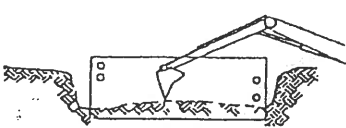
**Using a shield in unstable soil**

Excavate until soil begins to crumble beyond desired trench width. Place shield on 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 shields for patchwork, repairs or tie-ins**

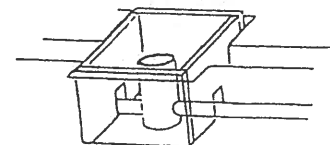
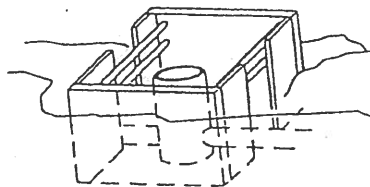
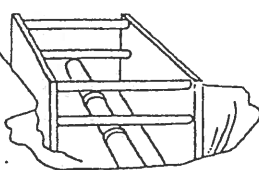
- \* Center shield over work area.
- \* Lay soil at ends back according to manufacturers tabulated data or use manufacturer's designed end plates to protect from cave-ins.

**Manhole box with 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 manufacturers 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 manufactures 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.

December 3, 1990

DAB #1 10x20 LD  
DAB #2 8x20 LD  
DAB #3 6x20 K  
DAB #4 8x12 N



Parking Consultants  
Restoration Engineers

Mr. Lowell Crane  
GME Griswold Machine & Engineering  
Highway M-60  
Union City, MI 49094

Re: OSHA Requirements and GME Trench Shields

Dear Lowell:

In accordance with your request, we have reviewed the OSHA requirements as they pertain to the design of trench shields. The following trench shields were designed in compliance with OSHA standards Vol. 54, No. 209, October 31, 1989, 29CFR, Part 1926, Subpart P, Section 1926.652.

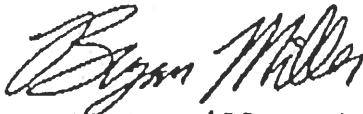
<u>SERIES</u>	<u>SIZE</u>
LD	616 620 624 816 820 824 1016 1020 1024
LHD	616 620 624 628 816 820 824 828 1016 1020 1024 1028
LDX	626 628 630 632 826 828 830 832 1026 1028 1030 1032
N (SW)	612 616 620 624
N (DW)	812 816 820 612 616 620 812 816 820
NHD (DW)	612 616 620 624 812 816 820 824
B	616 620 624 816 820 824
K	616 620 624 816 820 824
E (SW)	48 410 68 610 612 88 810 812
E (DW)	612 616 812 816
Manhole Box	MH8DW MH8SW MH10DW MH10SW

Mr. Crane  
December 3, 1990  
Page -2-

<u>SERIES</u>	<u>SIZE</u>
SB	416 420 424
SK	416 420 424
SL	416 420 424
SN (DW)	416 418 420 424
SN (SW)	412 416 420

If you have any questions, please call us.

Sincerely,



J. Bryan Miller, P.E.  
Project Engineer  
Michigan License No. 34922

JBM/dlr



# N Series Trench Shield Maximum Safe Trench Depths

## N812 Double Wall

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	31.0	990
40	24.0	1040
50	19.0	1050
60	15.5	1050
70	13.0	1050
80	10.5	1000

## N816 Double Wall

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	24.0	780
40	18.5	820
50	15.0	850
60	12.5	870
00	10.5	875
00	9.0	880

## N820 Double Wall

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	16.5	555
40	12.5	580
50	10.0	600
60	8.5	630
70	7.5	665
80	6.5	680

### Conditions For Use Of These Tables

1. Trench Shield to be installed in accordance with certified depths.
2. Tables are provided for illustrative purposes only. They are based upon static load conditions and assumed soil pressures. Safe depths can vary from design assumptions.
3. Safe trench depths are based upon trench shields being in new condition. Wear and tear, significant rust, distorted or damaged units, altered units, as well as other causes of weakening can reduce the safe depths from those shown in these tables.
4. Soil condition guidelines are provided for general reference only. Actual soil conditions must be verified by a qualified soils engineer.
5. Embankment above top of shield to be laid back at least to angle of repose.
6. Surcharge load (placement of soil or additional loads as might be caused by equipment adjacent to or in the vicinity of the installed Trench Shield) has been included in soil pressure calculations.
7. It is the contractor's responsibility to maintain the working area within the Trench Shield free of water for hydrostatic + sub soil condition.
8. Trench Shields are to protect workers. They should not be utilized as soil support systems without the consultation of a qualified engineer.
9. GME will not be liable for any usage other than specified.



**GRISWOLD MACHINE & ENGINEERING, INC.**  
 Union City, Michigan 49094  
 Phone: 800-248-2054  
 (In Michigan call 517-744-1171)

### Additional Safety Considerations:

1. Ladders are required within 25' of men working in ditches over 4' in depth.
2. Excavated materials must be stored more than 2' from edge of the excavation.
3. Do not allow employees underneath suspended loads.
4. Hard hats must be worn by all personnel at all times when on the job site.
5. Personal protective equipment (eye shields, toe shields, etc.) must be used when a hazard exists.

# K Series Trench Shield Maximum Safe Trench Depths

316

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	34.0	1080
40	25.0	1080
50	20.0	1100
60	16.0	1080
70	14.0	1120
80	12.0	1120

K820

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	25.0	810
40	19.0	840
50	15.5	875
60	13.5	930
00	12.0	980
00	10.5	1000

K824

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	17.0	570
40	14.0	640
50	11.5	675
60	10.0	720
70	9.0	770
80	8.0	800

## Conditions For Use Of These Tables

1. Trench Shield to be installed in accordance with certified depths.
2. Tables are provided for illustrative purposes only. They are based upon static load conditions and assumed soil pressures. Safe depths can vary from design assumptions.
3. Safe trench depths are based upon trench shields being in new condition. Wear and tear, significant rust, distorted or damaged units, altered units, as well as other causes of weakening can reduce the safe depths from those shown in these tables.
4. Soil condition guidelines are provided for general reference only. Actual soil conditions must be verified by a qualified soils engineer.
5. Embankment above top of shield to be laid back at least to angle of repose.
6. Surcharge load (placement of soil or additional loads as might be caused by equipment adjacent to or in the vicinity of the installed Trench Shield) has been included in soil pressure calculations.
7. It is the contractor's responsibility to maintain the working area within the Trench Shield free of water for hydrostatic + sub soil condition.
8. Trench Shields are to protect workers. They should not be utilized as soil support systems without the consultation of a qualified engineer.
9. GME will not be liable for any usage other than specified.



**GRISWOLD MACHINE & ENGINEERING, INC.**  
 Union City, Michigan 49094  
 Phone: 800-248-2054  
 (In Michigan call 517-741-4471 collect)

## Additional Safety Considerations:

1. Ladders are required within 25' of men working in ditches over 4' in depth.
2. Excavated materials must be stored more than 2' from edge of the excavation.
3. Do not allow employees underneath suspended loads.
4. Hard hats must be worn by all personnel at all times when on the job site.
5. Personal protective equipment (eye shields, toe shields, etc.) must be used when a hazard exists.
6. Shoring Systems should be inspected daily by a competent person.



# LD Series Trench Shield Maximum Safe Trench Depths

## D816

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	47.0	1470
40	35.5	1500
50	28.5	1525
60	24.0	1560
70	20.5	1575
80	18.0	1600

## LD820

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	34.5	1095
40	26.5	1140
50	21.5	1175
60	18.5	1230
70	16.0	1260
80	14.5	1320

## LD824

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Shield Bottom (lb/ft)
30	25.0	810
40	19.0	840
50	16.0	900
60	13.5	930
70	12.0	980
80	10.5	1000

### Conditions For Use Of These Tables

1. Trench Shield to be installed in accordance with certified depths.
2. Tables are provided for illustrative purposes only. They are based upon static load conditions and assumed soil pressures. Safe depths can vary from design assumptions.
3. Safe trench depths are based upon trench shields being in new condition. Wear and tear, significant rust, distorted or damaged units, altered units, as well as other causes of weakening can reduce the safe depths from those shown in these tables.
4. Soil condition guidelines are provided for general reference only. Actual soil conditions must be verified by a qualified soils engineer.
5. Embankment above top of shield to be laid back at least to angle of repose.
6. Surcharge load (placement of soil or additional loads as might be caused by equipment adjacent to or in the vicinity of the installed Trench Shield) has been included in soil pressure calculations.
7. It is the contractor's responsibility to maintain the working area within the Trench Shield free of water for hydrostatic + sub soil condition.
8. Trench Shields are to protect workers. They should not be utilized as soil support systems without the consultation of a qualified engineer.
9. GME will not be liable for any usage other than specified.



**GRISWOLD MACHINE & ENGINEERING, INC.**  
 Union City, Michigan 49094  
 Phone: 800-248-2054  
 (In Michigan call 517-741-4471 collect)

### Additional Safety Considerations:

1. Ladders are required within 25' of men working in ditches over 4' in depth.
2. Excavated materials must be stored more than 2' from edge of the excavation.
3. Do not allow employees underneath suspended loads.
4. Hard hats must be worn by all personnel at all times when on the job site.
5. Personal protective equipment (eye shields, toe shields, etc.) must be used when a hazard exists.
6. Shoring Systems should be inspected daily by a competent person and after rain/storms or any change in conditions.

# Manhole Box Maximum Safe Trench Depths

## MH8SW

### MAX. ALLOWABLE PARAMETERS

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Box Bottom (lb/ft)
30.00	15.50	525.00
40.00	12.00	560.00
50.00	10.00	600.00
60.00	8.50	630.00
70.00	7.00	630.00
80.00	6.50	680.00

## MH10SW

### MAX. ALLOWABLE PARAMETERS

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Box Bottom (lb/ft)
30.00	10.50	375.00
40.00	8.00	400.00
50.00	6.50	425.00
60.00	5.50	450.00
70.00	5.00	490.00
80.00	4.50	520.00

## MH8DW AND MH10DW

### MAX. ALLOWABLE PARAMETERS

Equivalent Fluid Pressure (psf/ft)	Maximum Depth (ft)	Maximum Allowance Horizontal Load at Box Bottom (lb/ft)
30.00	30.00	960.00
40.00	21.00	920.00
50.00	16.00	900.00
60.00	13.00	900.00
70.00	10.50	875.00
80.00	8.50	840.00

### Conditions For Use Of These Tables

1. Trench Shield to be installed in accordance with certified depths.
2. Tables are provided for illustrative purposes only. They are based upon static load conditions and assumed soil pressures. Safe depths can vary from design assumptions.
3. Safe trench depths are based upon trench shields being in new condition. Wear and tear, significant rust, distorted or damaged units, altered units, as well as other causes of weakening can reduce the safe depths from those shown in these tables.
4. Soil condition guidelines are provided for general reference only. Actual soil conditions must be verified by a qualified soils engineer.
5. Embankment above top of shield to be laid back at least to angle of repose. 1:3
6. Surcharge load (placement of soil or additional loads as might be caused by equipment adjacent to or in the vicinity of the installed Trench Shield) has been included in soil pressure calculations.
7. It is the contractor's responsibility to maintain the working area within the Trench Shield free of water for hydrostatic + sub soil condition.
8. Trench Shields are to protect workers. They should not be utilized as soil support systems without the consultation of a qualified engineer.
9. GME will not be liable for any usage other than specified.



**GRISWOLD MACHINE & ENGINEERING, INC.**  
 Union City, Michigan 49094  
 Phone: 800-248-2054  
 (In Michigan call: 517-741-4471 collect)

### Additional Safety Considerations:

1. Ladders are required within 25' of men working in ditches over 4' in depth.
2. Excavated materials must be stored more than 2' from edge of the excavation.
3. Do not allow employees underneath suspended loads.
4. Hard hats must be worn by all personnel at all times when on the job site.
5. Personal protective equipment (eye shields, toe shields, etc.) must be used when a hazard exists.
6. Shoring Systems should be inspected daily by a competent person and after rainstorms or any change in conditions.

## MANUFACTURERS TABULATED DATA

### SPECIFICATIONS FOR TRENCH USE

1. The shoring system is to be used in strict compliance with the manufacturers standards, including the certified depth chart, the trench application plans and the trench elevations showing the strut locations. No exceptions without the written approval of the manufacturer.
2. Voids between the trench wall and the shield must be filled.
3. The soil pressure for the trench being excavated should be verified by a soils engineer for the proper use of the shield system.
4. A minimum of 2 pins must connect the vertical connector to the end of each panel. A minimum of 2 pins are required at each end of all struts.
5. Shield system is to be used in compliance with O.S.H.A. Standards 29 CFR Part 1926, Subpart P. Shoring System complies with section 1926.652 with regard to design and depth ratings.
6. All members of the shoring system must be in good condition. No damaged or bent pieces are to be used.
7. Struts are not intended to be used as a ladder; refer to O.S.H.A. Standards for other applicable safety requirements.
8. Struts must be placed at the joint between each vertical connector, as shown in the trench elevations drawings.
9. Certified depths will be invalid if heavy equipment or excavated soil is placed adjacent to the trench in such a way that a 100 psf surcharge load is exceeded. Consult a Professional Engineer for extra load factors.

#### CERTIFIED DEPTH CHARTS

CHART "A"

2 & 3 SIDED PANEL SYSTEM

SOIL TYPE	EQUIVALENT FLUID PRESSURE (PSF)	MAXIMUM ALLOWED DEPTH (FT.)			
		6' PANEL	8' PANEL	10' PANEL	12' PANEL
A	30	48	36	23	15
B	45	33	24	15	10
	60	25	18	12	7
C	80	18	13	8	5

CHART "B"

4 SIDED PANEL SYSTEM

SOIL TYPE	EQUIVALENT FLUID PRESSURE (PSF)	MAXIMUM ALLOWED DEPTH (FT.)			
		6' PANEL	8' PANEL	10' PANEL	12' PANEL
A	30	48	29	17	10
B	45	33	19	11	7
	60	25	15	9	5
C	80	18	11	6	4

Washington Aluminum Company  
1330 Knecht Avenue  
Baltimore, Maryland 21229-5511

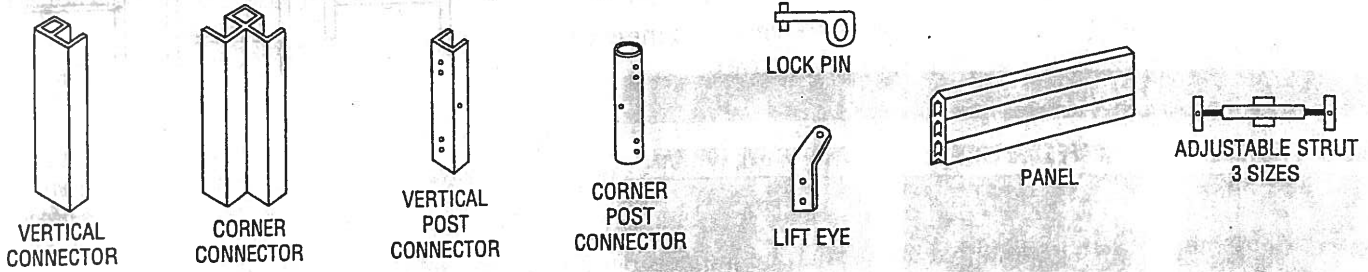
(410) 242-1000 Ext. 318  
(410) 247-4890 FAX



*Patrick W. Sweeney*

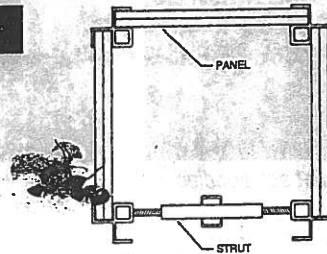
SOIL TYPE	EQUIVALENT FLUID PRESSURE (PSF)	MAXIMUM ALLOWED DEPTH (FT.)			
		6' PANEL	8' PANEL	10' PANEL	12' PANEL
A	30	48	36	23	15
B	45	33	24	15	10
C	60	25	18	12	7

component list

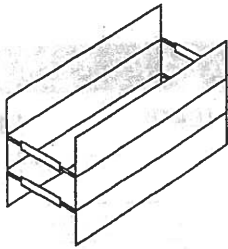


corner connector

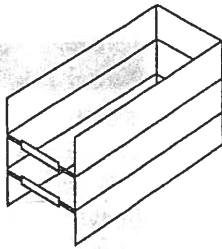
→ ALLOWS VERSATILITY IN CONFIGURATIONS



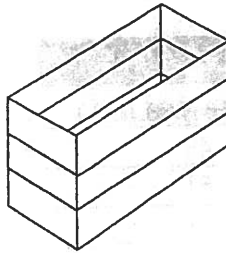
2 SIDED STRUTS BOTH ENDS



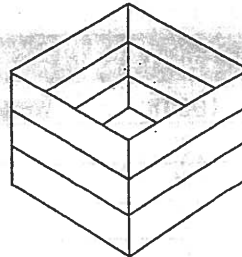
3 SIDED STRUTS ONE END



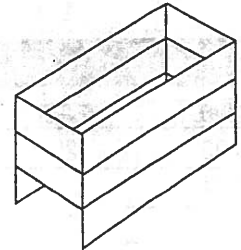
4 SIDED ALL PANELS RECTANGLE



4 SIDED ALL PANELS SQUARE



4 SIDED ALL PANELS PIPE CLEARANCE



OSHA

Every DURALITE™ Modular Trench System is certified by a professional engineer to meet OSHA safety requirements. With DURALITE™ you can be confident that future compliance requirements will also be met.

**DURALITE™**  
Modular Shoring Systems

portable

reliable

durable

affordable

AND BACKED BY THE BEST.



Washington Aluminum Company  
1330 Knecht Avenue  
Baltimore, MD 21229-5511  
(410) 242-1000 ext. 318  
(410) 247-4890 Fax

ICON EQUIPMENT DISTRIBUTORS  
NY-NJ-PA Reg. Off.-800-836-5011  
New England Reg. Off.-800-724-6241  
MD-VA Reg. Off.-800-429-4266  
Ohio Reg. Off.-800-720-4266

**MODEL**

816 XLD

**SERIAL NUMBER**

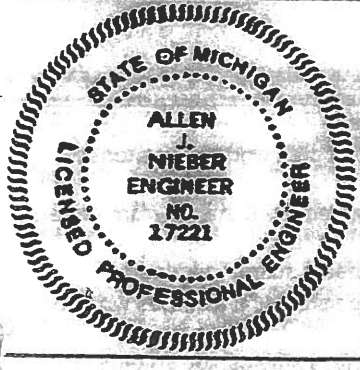
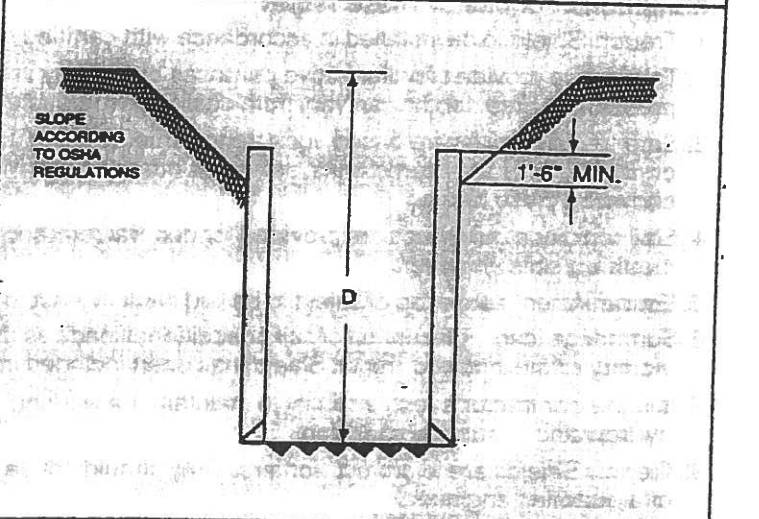
**SAMPLE**

REFERENCE TO OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS. VOL 54, NO. 209, 10-31-89, PART 1926, SUBPART P

SHIELD SIZE		PSF RATING	MAXIMUM ALLOWABLE DEPTH OF CUT (FEET)		
			D		
HEIGHT (FEET)	LENGTH (FEET)	MAXIMUM LATERAL EARTH PRESSURE CAPACITY AT TRENCH BOTTOM IN POUNDS PER SQUARE FOOT	TYPE A	TYPE B	TYPE C
			8'	16'	1,170#

- LIMITATIONS IN USE OF TABLE**
1. TRENCH SHIELD TO BE ASSEMBLED AND INSTALLED AS SHOWN AND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
  2. BANK ABOVE TOP OF SHIELD TO BE LAID BACK ACCORDING TO OSHA REGULATIONS.
  3. CONSULT MANUFACTURER WHEN BOTTOM OF SHIELD IS NOT AT TRENCH BOTTOM.
  4. ADDITIONAL SHIELDS MAY BE STACKED WITH NO PENALTY IN DEPTH OF CUT.
  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. DEPTH CERTIFICATION IS BASED ON SHORT TERM EXPOSURE WITH EXCAVATION OPEN A PERIOD OF TIME EQUAL TO 24 HOURS OR LESS. CONSULT THE MANUFACTURER SHOULD LONG TERM EXPOSURE BE REQUIRED.

DESCRIPTION	DESCRIPTION	DESCRIPTION
Clay, silty clay, sandy clay, clay loam, unconfined compressive strength of 1.5 tons per square foot or greater. (See note 8 on reverse side).	Clay with unconfined compressive strength greater than .5 TSF but less than 1.5 TSF. cohesionless gravel, silt, silt loam or sandy loam. (See Note 9 on reverse side).	Clay with unconfined compressive strength less than .5 TSF, submerged sand, clay or fractured rock that is not stable. (See Note 10 on reverse side).



**CERTIFIED BY:**

McCLURG & ASSOCIATES, INC. CONSULTING ENGINEERS  
FEBRUARY 15, 1991

©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 certification could cause cave-in, collapse, or structural failure resulting in death or serious injury.

# LD Series Trench Shield Maximum Safe Trench Depths

## LD1016

Equivalent Fluid Pressure (psf/f)	Maximum Depth (f)	Maximum Allowance Horizontal Load at Shield Bottom (lb/f)
30	50.0	1560
40	37.5	1580
50	30.0	1600
60	25.0	1620
70	21.5	1645
80	19.0	1680

## LD1020

Equivalent Fluid Pressure (psf/f)	Maximum Depth (f)	Maximum Allowance Horizontal Load at Shield Bottom (lb/f)
30	35.0	1110
40	27.0	1160
50	22.5	1225
60	19.0	1260
70	17.0	1330
80	15.0	1360

## LD1024

Equivalent Fluid Pressure (psf/f)	Maximum Depth (f)	Maximum Allowance Horizontal Load at Shield Bottom (lb/f)
30	25.5	825
40	20.0	880
50	16.5	925
60	14.5	990
70	12.5	1015
80	11.5	1080

### Conditions For Use Of These Tables

1. Trench Shield to be installed in accordance with certified depths.
2. Tables are provided for illustrative purposes only. They are based upon static load conditions and assumed soil pressures. Safe depths can vary from design assumptions.
3. Safe trench depths are based upon trench shields being in new condition. Wear and tear, significant rust, distorted or damaged units, altered units, as well as other causes of weakening can reduce the safe depths from those shown in these tables.
4. Soil condition guidelines are provided for general reference only. Actual soil conditions must be verified by a qualified soils engineer.
5. Embankment above top of shield to be laid back at least to angle of repose.
6. Surcharge load (placement of soil or additional loads as might be caused by equipment adjacent to or in the vicinity of the installed Trench Shield) has been included in soil pressure calculations.
7. It is the contractor's responsibility to maintain the working area within the Trench Shield free of water for hydrostatic + sub soil condition.
8. Trench Shields are to protect workers. They should not be utilized as soil support systems without the consultation of a qualified engineer.
9. GME will not be liable for any usage other than specified.



**GRISWOLD MACHINE & ENGINEERING, INC.**  
 Union City, Michigan 49094  
 Phone: 800-248-2054  
 (In Michigan call 517-741-4471 collect)

### Additional Safety Considerations:

1. Ladders are required within 25' of men working in ditches over 4' in depth.
2. Excavated materials must be stored more than 2' from edge of the excavation.
3. Do not allow employees underneath suspended loads.
4. Hard hats must be worn by all personnel at all times when on the job site.
5. Personal protective equipment (eye shields, toe shields, etc.) must be used when a hazard exists.
6. Shoring Systems should be inspected daily by a competent person and after rainstorms or any change in conditions that might increase the possibility of a cave-in or slide.