Certification Sheet

P.O. Box 24126
Lansing, Mi 48909

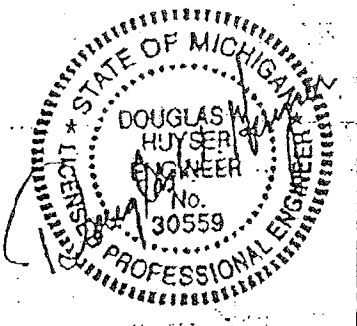
Efficiency Production, Inc.

Phone:

Model Number 810 HDHS Serial Number 110317

Reference to Occupational Safety and Health Administration Rules and Regulations. Vol.54, No. 209, 10-31-89, Part 1926, Subpart P.

SOIL TYPE TO BE EXCAVATED



CERTIFIED BY: INNOVATIVE ENGINEERING ASSOCIATES

SHIELD SIZE		PSF RATING Maximum Lateral Earth Pressure Capacity at Trench Bottom in Pounds Per Square Foot	TYPE A Stiff, Cohesive Soil 25 PSF Per Foot of Depth	TYPE B Medium, Cohesive to Granular Soil 45 PSF Per Foot of Depth	TYPE C-60 Medium, Cohesive to Submerged Soil 60 PSF Per Foot of Depth.
		DESCRIPTION Clay, Silty Clay, Sandy Clay, Clay Loam, Unconfined Compressive Strength of 1.5 TSF or Greater or Cemented Soils Such as Caliche or Hard Pan. See Note (7)	DESCRIPTION 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 (8)	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Rock that is not Stable. See Notes (9 & 10)	
HEIGHT	LENGTH	HYDRAULIC / STATIC	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT
8 FT	10 FT	1,200 PSF / 1,200 PSF	48 FT / 48 FT	27 FT / 27 FT	20 FT / 20 FT

LIMITATIONS

1. Hydra-Shield to be assembled and installed as shown on the reverse side and in accordance with manufacturers instructions.
2. Shield may be used in the "Hydraulic Mode" with all cylinders pressurized, or in the "Static Mode", with the steel tube spreaders pinned.
3. Shield shall extend to the bottom of excavation in Type C-60 soil.
4. Additional Shields may be stacked in the "Hydraulic Mode", provided the sides of all shields bear against the excavation face.
5. Depth certification is based on short term exposure with shields used in one position for 24 hours or less. Consult the manufacturer should long term exposure be required.
6. For depth certification indicated, surcharge loads imposed by structures or stored material adjacent to the excavation must not be in excess of the load imposed by a three foot soil surcharge. Adjacent is defined within a distance equal to the depth of the excavation.
7. No soil is Type A if the soil is 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.
8. Previously disturbed soils may be Type B unless they would be classified Type C. (See Tabulated Data Item 2e for more detail) Soil that meets requirements for Type A, but is fissured or subject to vibration may be Type B. Dry rock that is unstable and material that is part of a 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 the material would otherwise be classified Type B.
9. When excavations in Type C-60 soil are made with near vertical side walls, soil must be able to stand with unsupported vertical sidewalls long enough for shield installation. Otherwise it would be classified Type C.
10. 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 excavation, but only part of the depth of the retained soil is submerged. Conditions more severe would require the services of a soils engineer to establish the applicable design pressure.
11. The use of the EPI HYDRA-SHIELD shall be in accordance with this data and the OSHA Standards. Any use of this product not specically described on this certification could cause cave-in collapse, or structural failure resulting in death or serious injury.

SEE OTHER SIDE FOR ADDITIONAL INFORMATION ON INSTALLATION & HANDLING

Certification Sheet

P.O. Box 24126
Lansing, Mi 48909

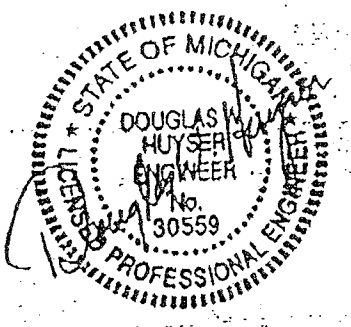
Efficiency Production, Inc.

Phone:

Model Number: 810 HDHS Serial Number: 110318

Reference to Occupational Safety and Health Administration Rules and Regulations. Vol.54, No. 209, 10-31-89, Part 1926, Subpart P.

SOIL TYPE TO BE EXCAVATED



CERTIFIED BY: INNOVATIVE ENGINEERING ASSOCIATES

SHIELD SIZE		PSF RATING Maximum Lateral Earth Pressure Capacity at Trench Bottom in Pounds Per Square Foot	TYPE A Stiff, Cohesive Soil 25 PSF Per Foot of Depth	TYPE B Medium, Cohesive to Granular Soil 45 PSF Per Foot of Depth	TYPE C-60 Medium, Cohesive to Submerged Soil 60 PSF Per Foot of Depth.
			DESCRIPTION Clay, Silty Clay, Sandy Clay, Clay Loam, Unconfined Compressive Strength of 1.5 TSF or Greater or Cemented Soils Such as Caliche or Hard Pan. See Note (7)	DESCRIPTION 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 (8)	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Rock that is not Stable. See Notes (9 & 10)
HEIGHT	LENGTH	HYDRAULIC / STATIC	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT
8 FT	10 FT	1,200 PSF / 1,200 PSF	48 FT / 48 FT	27 FT / 20 FT	20 FT / 12 FT

LIMITATIONS

1. Hydra-Shield to be assembled and installed as shown on the reverse side and in accordance with manufacturers instructions.
2. Shield may be used in the "Hydraulic Mode" with all cylinders pressurized, or in the "Static Mode", with the steel tube spreaders pinned.
3. Shield shall extend to the bottom of excavation in Type C-60 soil.
4. Additional Shields may be stacked in the "Hydraulic Mode", provided the sides of all shields bear against the excavation face.
5. Depth certification is based on short term exposure with shields used in one position for 24 hours or less. Consult the manufacturer should long term exposure be required.
6. For depth certification indicated, surcharge loads imposed by structures or stored material adjacent to the excavation must not be in excess of the load imposed by a three foot soil surcharge. Adjacent is defined within a distance equal to the depth of the excavation.
7. No soil is Type A if the soil is 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.
8. Previously disturbed soils may be Type B unless they would be classified Type C. (See Tabulated Data Item 2e for more detail) Soil that meets requirements for Type A, but is fissured or subject to vibration may be Type B. Dry rock that is unstable and material that is part of a 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 the material would otherwise be classified Type B.
9. When excavations in Type C-60 soil are made with near vertical side walls, soil must be able to stand with unsupported vertical sidewalls long enough for shield installation. Otherwise it would be classified Type C.
10. 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 excavation, but only part of the depth of the retained soil is submerged. Conditions more severe would require the services of a soils engineer to establish the applicable design pressure.
11. The use of the EPI HYDRA-SHIELD shall be in accordance with this data and the OSHA Standards. Any use of this product not specically described on this certification could cause cave-in collapse, or structural failure resulting in death or serious injury.

SEE OTHER SIDE FOR ADDITIONAL INFORMATION ON INSTALLATION & HANDLING

Certification Sheet

P.O. Box 24126
Lansing, MI 48909

Phone:

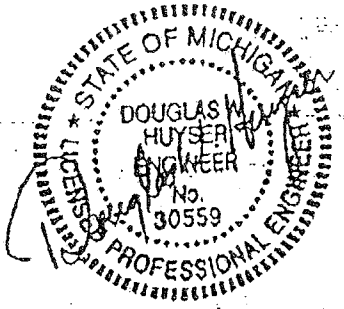
Efficiency Production, Inc.

Model Number: 810 HDHS

Serial Number: 110320

Reference to Occupational Safety and Health Administration Rules and Regulations. Vol.54, No. 209, 10-31-89, Part 1926, Subpart P.

SOIL TYPE TO BE EXCAVATED



CERTIFIED BY: INNOVATIVE ENGINEERING ASSOCIATES

SHIELD SIZE		PSF RATING Maximum Lateral Earth Pressure Capacity at Trench Bottom In Pounds Per Square Foot	TYPE A Stiff, Cohesive Soil 25 PSF Per Foot of Depth	TYPE B Medium, Cohesive to Granular Soil 45 PSF Per Foot of Depth	TYPE C-60 Medium, Cohesive to Submerged Soil 60 PSF Per Foot of Depth.
		DESCRIPTION	DESCRIPTION Clay, Silty Clay, Sandy Clay, Clay Loam, Unconfined Compressive Strength of 1.5 TSF or Greater or Cemented Soils Such as Caliche or Hard Pan. See Note (7)	DESCRIPTION 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 (8)	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Rock that is not Stable. See Notes (9 & 10)
HEIGHT	LENGTH	HYDRAULIC / STATIC	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT
8 FT	10 FT	1,200 PSF / 1,320 PSF	48 FT / 8 FT	27 FT / 5 FT	20 FT / 3 FT

LIMITATIONS

1. Hydra-Shield to be assembled and installed as shown on the reverse side and in accordance with manufacturers instructions.
2. Shield may be used in the "Hydraulic Mode" with all cylinders pressurized, or in the "Static Mode", with the steel tube spreaders pinned.
3. Shield shall extend to the bottom of excavation in Type C-60 soil.
4. Additional Shields may be stacked in the "Hydraulic Mode", provided the sides of all shields bear against the excavation face.
5. Depth certification is based on short term exposure with shields used in one position for 24 hours or less. Consult the manufacturer should long term exposure be required.
6. For depth certification indicated, surcharge loads imposed by structures or stored material adjacent to the excavation must not be in excess of the load imposed by a three foot soil surcharge. Adjacent is defined within a distance equal to the depth of the excavation.
7. No soil is Type A if the soil is 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.
8. Previously disturbed soils may be Type B unless they would be classified Type C. (See Tabulated Data Item 2e for more detail) Soil that meets requirements for Type A, but is fissured or subject to vibration may be Type B. Dry rock that is unstable and material that is part of a 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 the material would otherwise be classified Type B.
9. When excavations in Type C-60 soil are made with near vertical side walls, soil must be able to stand with unsupported vertical sidewalls long enough for shield installation. Otherwise it would be classified Type C.
10. 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 excavation, but only part of the depth of the retained soil is submerged. Conditions more severe would require the services of a soils engineer to establish the applicable design pressure.
11. The use of the EPI HYDRA-SHIELD shall be in accordance with this data and the OSHA Standards. Any use of this product not specically described on this certification could cause cave-in collapse, or structural failure resulting in death or serious injury.

SEE OTHER SIDE FOR ADDITIONAL INFORMATION ON INSTALLATION & HANDLING

Certification Sheet

P.O. Box 24126
Lansing, Mi 48909

Efficiency Production, Inc.

Phone:

Model Number: 810 HDHS

Serial Number: 110319

Reference to Occupational Safety and Health Administration Rules and Regulations. Vol.54, No. 209, 10-31-89, Part 1926, Subpart P.

SOIL TYPE TO BE EXCAVATED

STATE OF MICHIGAN LICENSED PROFESSIONAL ENGINEER
DOUGLAS W. HUYSER
ENGINEER
No. 30559

CERTIFIED BY: INNOVATIVE ENGINEERING ASSOCIATES

SHIELD SIZE		PSF RATING	TYPE A	TYPE B	TYPE C-60
		Maximum Lateral Earth Pressure Capacity at Trench Bottom In Pounds Per Square Foot	Stiff, Cohesive Soil 25 PSF Per Foot of Depth	Medium, Cohesive to Granular Soil 45 PSF Per Foot of Depth	Medium, Cohesive to Submerged Soil 60 PSF Per Foot of Depth.
			DESCRIPTION Clay, Silty Clay, Sandy Clay, Clay Loam, Unconfined Compressive Strength of 1.5 TSF or Greater or Cemented Soils Such as Caliche or Hard Pan. See Note (7)	DESCRIPTION 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 (8)	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Rock that is not Stable. See Notes (9 & 10)
HEIGHT	LENGTH	HYDRAULIC / STATIC	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT
8 FT	10 FT	1,200 PSF / 1,200 PSF	48 FT / 48 FT	27 FT / 27 FT	20 FT / 20 FT

LIMITATIONS

1. Hydra-Shield to be assembled and installed as shown on the reverse side and in accordance with manufacturers instructions.
2. Shield may be used in the "Hydraulic Mode" with all cylinders pressurized, or in the "Static Mode", with the steel tube spreaders pinned.
3. Shield shall extend to the bottom of excavation in Type C-60 soil.
4. Additional Shields may be stacked in the "Hydraulic Mode", provided the sides of all shields bear against the excavation face.
5. Depth certification is based on short term exposure with shields used in one position for 24 hours or less. Consult the manufacturer should long term exposure be required.
6. For depth certification indicated, surcharge loads imposed by structures or stored material adjacent to the excavation must not be in excess of the load imposed by a three foot soil surcharge. Adjacent is defined within a distance equal to the depth of the excavation.
7. No soil is Type A if the soil is 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.
8. Previously disturbed soils may be Type B unless they would be classified Type C. (See Tabulated Data Item 2e for more detail) Soil that meets requirements for Type A, but is fissured or subject to vibration may be Type B. Dry rock that is unstable and material that is part of a 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 the material would otherwise be classified Type B.
9. When excavations in Type C-60 soil are made with near vertical side walls, soil must be able to stand with unsupported vertical sidewalls long enough for shield installation. Otherwise it would be classified Type C.
10. 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 excavation, but only part of the depth of the retained soil is submerged. Conditions more severe would require the services of a soils engineer to establish the applicable design pressure.
11. The use of the EPI HYDRA-SHIELD shall be in accordance with this data and the OSHA Standards. Any use of this product not specically described on this certification could cause cave-in collapse, or structural failure resulting in death or serious injury.

SEE OTHER SIDE FOR ADDITIONAL INFORMATION ON INSTALLATION & HANDLING

Hydra Shield
Certification Sheet

P.O. Box 84126
Lansing, MI 48909

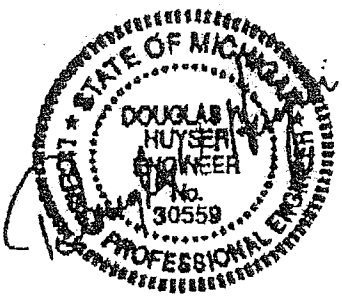
Efficiency Production, Inc.

Phone:

Model Number 810 HS Serial Number 108325

Reference to Occupational Safety and Health Administration Rules and Regulations. Vol.54, No. 209, 10-31-89, Part 1926, Subpart P.

SOIL TYPE TO BE EXCAVATED



CERTIFIED BY: INNOVATIVE ENGINEERING ASSOCIATES

SHIELD SIZE		PSF RATING Maximum Lateral Earth Pressure Capacity at Trench Bottom in Pounds Per Square Foot	TYPE A Stiff, Cohesive Soil 25 PSF Per Foot of Depth	TYPE B Medium, Cohesive to Granular Soil 45 PSF Per Foot of Depth	TYPE C-90 Medium, Cohesive to Submerged Soil 90 PSF Per Foot of Depth.
		DESCRIPTION Clay, Silty Clay, Sandy Clay, Clay Loam, Unconfined Compressive Strength of 1.5 TSF or Greater or Cemented Soils Such as Caliche or Hard Pan. See Note (7)	DESCRIPTION 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 (8)	DESCRIPTION Soft Cohesive Soil Unconfined Compressive Strength Less than .5 TSF Gravel, Sand and Loamy Sand; Submerged Soil or Rock that is not Stable. See Notes (9 & 10)	
HEIGHT	LENGTH	HYDRAULIC	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT	MAXIMUM ALLOWABLE DEPTH OF CUT
8 FT	10 FT	1060 PSF	25 FT	25 FT	20 FT

LIMITATIONS

1. Hydra-Shield to be assembled and installed as shown on the reverse side and in accordance with manufacturers instructions.
2. Shield may be used in the "Hydraulic Mode" with all cylinders pressurized, or in the "Static Mode", with the steel tube spreaders pinned.
3. Shield shall extend to the bottom of excavation in Type C-90 soil.
4. Additional Shields may be stacked in the "Hydraulic Mode", provided the sides of all shields bear against the excavation face.
5. Depth certification is based on short term exposure with shields used in one position for 24 hours or less. Consult the manufacturer should long term exposure be required.
6. For depth certification indicated, surcharge loads imposed by structures or stored material adjacent to the excavation must not be in excess of the load imposed by a three foot soil surcharge. Adjacent is defined within a distance equal to the depth of the excavation.
7. No soil is Type A if the soil is 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.
8. Previously disturbed soils may be Type B unless they would be classified Type C. (See Tabulated Data Item 2e for more detail) Soil that meets requirements for Type A, but is fissured or subject to vibration may be Type B. Dry rock that is unstable and material that is part of a 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 the material would otherwise be classified Type B.
9. When excavations in Type C-90 soil are made with near vertical side walls, soil must be able to stand with unsupported vertical sidewalls long enough for shield installation. Otherwise it would be classified Type C.
10. 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 excavation, but only part of the depth of the retained soil is submerged. Conditions more severe would require the services of a soils engineer to establish the applicable design pressure.
11. The use of the EPI HYDRA-SHIELD shall be in accordance with this data and the OSHA Standards. 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.

SEE OTHER SIDE FOR ADDITIONAL INFORMATION ON INSTALLATION & HANDLING