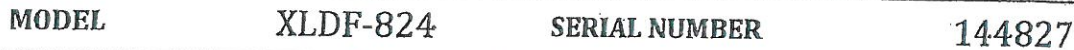


EFFICIENCY TRENCH SHIELDS
PAGE 1 OF 2



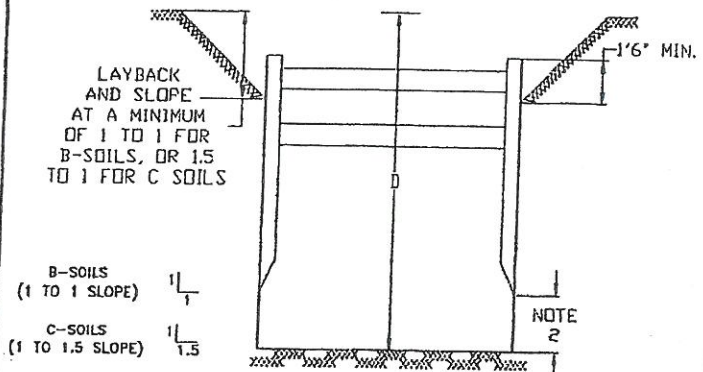
SHIELD SIZE	PSF RATING	MAXIMUM ALLOWABLE DEPTH OF CUT (FEET) SOIL TYPE TO BE EXCAVATED
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HEIGHT (FEET)	LENGTH (FEET)	MAXIMUM LATERAL EARTH PRESSURE CAPACITY AT TRENCH BOTTOM IN POUNDS PER SQUARE FOOT	SOIL TYPE TO BE EXCAVATED		
			TYPE B MEDIUM COHESIVE TO GRANULAR SOIL 45 PSF PER FOOT OF DEPTH	TYPE C-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
8	24	900	20	18	15

DESCRIPTION

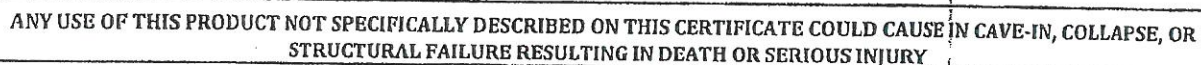
SOFT COHESIONLESS SOIL
UNCONFINED
COMPRESSIVE STRENGTH
LESS THAN 0.5 TSF GRAVEL,
SAND AND LOAMY SAND;
SUBMERGED SOIL OR
FRACTURED ROCK THAT IS
NOT STABLE

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.



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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 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.
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 RATING ARE FOR LATERAL EARTH PRESSURES ONLY AND DO NOT TAKE ANY SURCHARGES INTO ACCOUNT.

ASSEMBLY

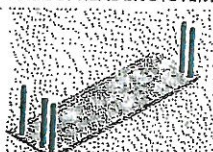
MUDPLATE SPREADERS SYSTEM 5 PIPE SPREADER SYSTEM



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 KEYPERS



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

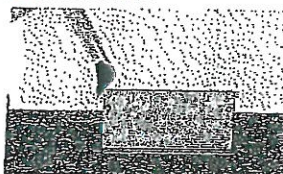


PULL SHIELD FORWARD BY FRONT TOP SPREADER PIPE OR WITH PULLING EYES. (PULLING EYES SHALL BE USED WITH SPREADERS WIDER THAN 72" OR WHEN SOIL PRESSURE IS SEVERE ENOUGH TO CAUSE SPREADER TO DEFLECT).

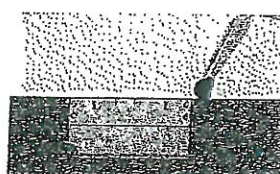
USING A TRENCH SHIELD IN UNSTABLE SOIL



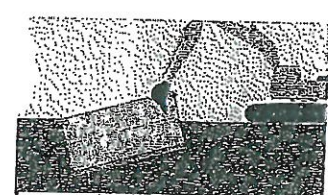
EXCAVATE UNTIL SOIL BEGINS TO CRUMBLE BEYOND DEIRED TRENCH WIDTH. PLACE SHIELD IN LINE OF EXCAVATION



PRESS DOWN ON CORNERS TO PUSH SHIELD DOWN TO GRADE

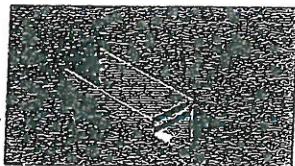


PULL SHIELD FORWARD AND UP ON APPROPRIATE ANGLE



EXCAVATE SOIL WITHIN THE SHIELD AND REPEAT PREVIOUS PROCESS

USING TRENCH SHIELDS FOR PATCHWORK, REPAIRS OR TIE-INS



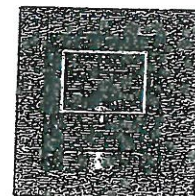
*CENTER SHIELD OVER WORK AREA
 *LAY SOIL AT ENDS BACK ACCORDING TO MANUFACTURER'S TABULATED DATA OR USE MANUFACTURER'S DESIGNED PLATES TO PROTECT FROM CAVE-INS

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.