



TABLE 1
RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
12" (300mm)	30" (762mm)
15" (375mm)	34" (864mm)
18" (450mm)	39" (991mm)
24" (600mm)	48" (1219mm)
30" (750mm)	56" (1422mm)
36" (900mm)	64" (1626mm)
42" (1050mm)	72" (1829mm)
48" (1200mm)	80" (2032mm)
60" (1500mm)	96" (2438mm)

NOTES:

- ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION. NATIVE SOILS SHALL BE OF ADEQUATE STIFFNESS TO WITHSTAND A VERTICAL CUT WITHOUT MATERIAL SLOUGHING. DUE TO THE FINAL SET STRENGTH, CEMENT STABILIZED SAND (CSS) SHALL BE COMPACTED TO 85% SPD OR GREATER. SEE NOTES 7 AND 9 REGARDING SET STRENGTH.
- RECOMMENDED TRENCH WIDTHS ARE LISTED IN TABLE 1 PER ASTM D2321. THESE VALUES ARE BASED ON PROVIDING SUFFICIENT SPACE BETWEEN THE PIPE O.D. AND THE TRENCH WALL, SUCH THAT WORKING ROOM FOR COMPACTION EQUIPMENT IS PROVIDED WITHOUT DAMAGING THE PIPE OR TRENCH WALL INTEGRITY. NARROWER TRENCHES MAY BE POSSIBLE BASED ON THE COMPACTION EQUIPMENT.
- CSS SHALL HAVE A MIX DESIGN OF ADEQUATE FINAL STRENGTH TO CARRY ALL LIVE AND DEAD LOADING BUT ALLOW FOR ANY FUTURE EXCAVATION. TYPICAL 7 DAY COMPRESSIVE STRENGTHS RANGE BETWEEN 50 AND 100 PSI. MIX DESIGNS CAN VARY BASED ON THE CEMENT, ASH, SOIL, ADMIXTURES, AND WATER RATIO AND SHALL BE DESIGNED AND DEFINED BY THE ENGINEER OF RECORD. THE AMERICAN CONCRETE INSTITUTE (ACI) REPORT ACI 230.1R-09 IS ONE RESOURCE THAT PROVIDES MIX DESIGNS BASED ON DIFFERENT CLASSIFICATIONS OF SOIL.
- CSS SHOULD NOT BE PLACED WHEN TEMPERATURES ARE BELOW 40°F, AGAINST FROZEN TRENCH MATERIAL OR WHEN APPRECIABLE PRECIPITATION IS FORECASTED DURING PLACEMENT.
- FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
- BEDDING:** SUITABLE MATERIAL SHALL BE CSS, OR CLASS I OR II PER ASTM D2321. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 12"-24" DIAMETER PIPE (300mm-600mm); 6" (150mm) FOR 30"-60" (750mm-1500mm) DIAMETER PIPE. THE MIDDLE 1/3 BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED.
- FINAL BACKFILL:** THE CSS BACKFILL SHALL BE ALLOWED TO CURE AT LEAST 4 HOURS TO REACH AN INITIAL SET STRENGTH PRIOR TO PLACING SOIL ABOVE THE PIPE EMBEDMENT. ADDITIONAL CURE TIME MAY BE REQUIRED BASED ON THE OVERALL FINAL FILL HEIGHT (SEE NOTE 9).
- MINIMUM COVER:** MINIMUM COVER, H, IS 12" (300mm) THROUGH 48" (1200mm) DIAMETER PIPE AND 24" (600mm) OF COVER FOR 60" (1500mm) DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.
- MAXIMUM COVER:** MAXIMUM COVER, H, IS BASED ON A MINIMUM 4HR SET TIME OF THE CSS BACKFILL PRIOR TO ANY SOIL PLACEMENT ABOVE THE BACKFILL ENVELOPE. FILL HEIGHTS UP TO 15FT ARE SUITABLE FOR ALL DIAMETERS. LONGER SET TIME MAY ALLOW FOR GREATER FILL HEIGHTS, CONTACT AN ADS REPRESENTATIVE FOR GUIDANCE; SET TIME LESS THAN 4HR MAY RESULT IN HIGHER THAN EXPECTED DEFLECTION AND IMPACT LONG-TERM PERFORMANCE.

© 2020 ADS, INC.

2	INITIAL BACKFILL	JAB	04/02/20	
REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D

ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT. NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. IT IS THE DESIGN ENGINEERS RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEETS OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

**N-12 HDPE TRENCH INSTALLATION
(CEMENT STABILIZED SAND)**

DRAWING NUMBER: STD-101K



4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DRAWN BY	CKM
DATE	8/14/18
CHK'D BY	
SCALE	NTS
SHEET	1 OF 1