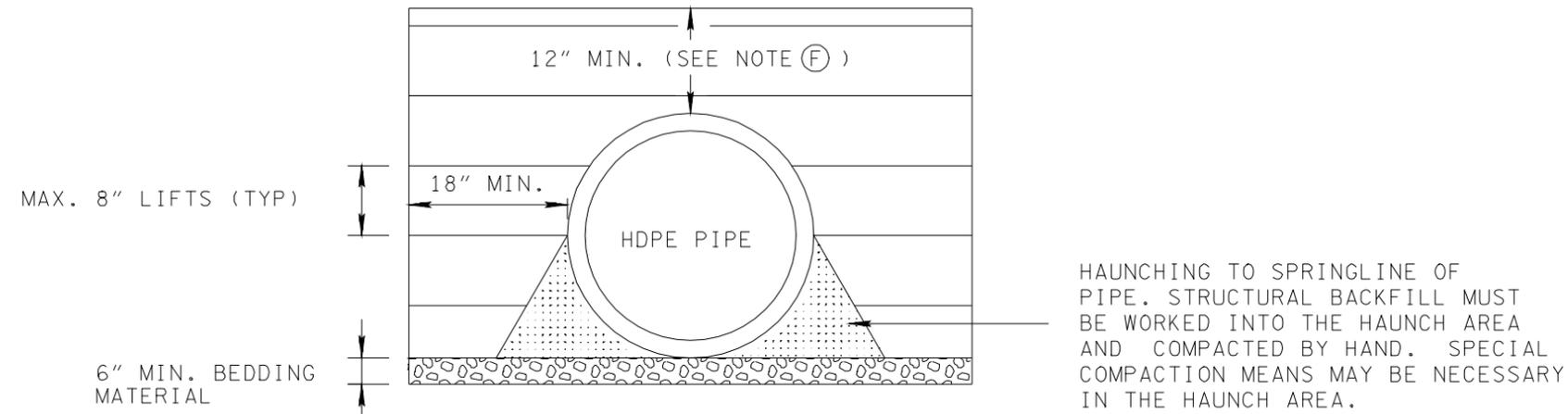


OPEN DITCH INSTALLATION  
(TYPICAL CROSS-SECTION)

PIPE DIAMETER (INCHES)	W TRENCH WIDTH (MIN.) (INCHES)	CY. OF BEDDING MATL. (CLASS B) PER LIN. FT
12	50	0.356
15	53	0.404
18	57	0.462
24	63	0.563
30	68	0.657
36	80	0.848
42	85	0.954
48	92	1.095



STRUCTURAL BACKFILL DETAIL  
(TYPE "A" OR TYPE "B" AGGREGATE, GRADING D OR E)

GENERAL NOTES

- (A) THE STIFFNESS OF INSITU SOIL FOR THE VERTICAL SIDE WALLS OF THE TRENCH SHALL BE VERIFIED BY ENGINEER. HDPE PIPE SHOULD NOT BE INSTALLED IF THE INSITU SOIL IS NOT STABLE AND FIRM.
- (B) HDPE PIPE SHALL BE ASSEMBLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. PIPE SHALL BE PLACED IN THE BED STARTING AT THE DOWNSTREAM END. FOR MIN. INSTALLATION REQUIREMENTS REFER TO ASTM D2321 OR AASHTO SECTION 30.
- (C) JOINTS FOR HDPE PIPE SHALL MEET THE PERFORMANCE REQUIREMENT FOR SOILTIGHTNESS UNLESS WATERTIGHTNESS IS SPECIFIED. JOINTS SHALL BE INSTALLED SO THAT THE CONNECTION OF PIPE SECTIONS, FOR A CONTINUOUS LINE, WILL BE FREE FROM IRREGULARITIES IN THE FLOW LINE.
- (D) ONLY AS MUCH TRENCH AS CAN BE SAFELY MAINTAINED SHALL BE OPENED. ALL TRENCHES SHALL BE BACKFILLED AND COMPACTED AS SOON AS PRACTICABLE, BUT NOT LATER THAN THE END OF EACH WORKING DAY.
- (E) BACKFILL REQUIREMENTS: THE BACKFILL SHALL BE GRANULAR COMPACTABLE TYPE "A" OR TYPE "B" AGGREGATE, GRADING D OR E MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 903.05. A MINIMUM OF 6 INCHES OF BEDDING COMPACTED TO A MIN. 90% STANDARD PROCTOR DENSITY SHALL BE PROVIDED PRIOR TO PLACEMENT OF THE PIPE UNLESS OTHERWISE SPECIFIED.  
  
STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING AN 8 INCH LOOSE LIFT THICKNESS AND BROUGHT UP EVENLY AND SIMULTANEOUSLY ON BOTH SIDES OF THE PIPE TO AN ELEVATION NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE.  
  
A MINIMUM COMPACTION LEVEL OF 90% STANDARD PROCTOR DENSITY PER AASHTO T99 SHALL BE ACHIEVED BY USE OF VIBRATORY PLATE. HYDROHAMMER TYPE COMPACTORS SHALL NOT BE USED OVER THE PIPE. ALL COMPACTION EQUIPMENT USED SHALL BE APPROVED BY THE ENGINEER.
- (F) COVER OF AT LEAST 24 INCHES SHALL BE PROVIDED BEFORE ALLOWING CONSTRUCTION EQUIPMENT TO CROSS THE HDPE PIPE.
- (G) ALL HDPE PIPE INSTALLATIONS REQUIRE CONCRETE ENDWALLS.
- (H) HDPE PIPE SHALL NOT BE INSTALLED IF WATER IS PRESENT IN THE TRENCH OR LOCATION WHERE THE WATER TABLE IS FOUND HIGH. ALSO, AT THE SITES WHERE THE INLET OR THE OUTLET OF THE DRAINAGE PIPE WILL BE SUBMERGED DUE TO PONDING HDPE PIPE SHALL NOT BE INSTALLED.
- (I) ALL HIGH-DENSITY POLYETHYLENE (HDPE) PIPE USED FOR CULVERT AND STORMDRAIN APPLICATIONS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M294, TYPE S, CURRENT EDITION AND VERIFIED THROUGH THE PLASTIC PIPE INSTITUTE (PPI) THIRD PARTY CERTIFICATION PROGRAM. ALL HDPE PIPE DELIVERED AND USED SHALL BEAR THE THIRD PARTY ADMINISTERED PPI SEAL.
- (J) ACCEPTANCE REQUIREMENT FOR HDPE PIPE PER AASHTO, SECTION 30.5.6 (AS ADOPTED BY THE AASHTO SUBCOMMITTEE ON BRIDGES AND STRUCTURES, JUNE 29, 2005) ARE AS FOLLOWS:
  - (1) ALL PIPES SHALL UNDERGO INSPECTION DURING INSTALLATION.
  - (2) FINAL INSPECTIONS SHALL BE CONDUCTED NO SOONER THAN 30 DAYS AFTER COMPLETIONS OF INSTALLATION AND FINAL FILL.
  - (3) THE PIPE SHALL BE EVALUATED TO DETERMINE WHETHER THE INTERNAL DIAMETER OF THE BARREL HAS BEEN REDUCED MORE THAN 5% WHEN MEASURED NOT LESS THAN 30 DAYS FOLLOWING COMPLETION OF THE INSTALLATION.
  - (4) FOR LOCATIONS WHERE PIPE DEFLECTION EXCEEDS 5% OF THE INSIDE DIAMETER, AN EVALUATION SHALL BE CONDUCTED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL CONSIDERING THE SEVERITY OF THE DEFLECTION, STRUCTURAL INTEGRITY, ENVIRONMENTAL CONDITIONS, AND THE DESIGN SERVICE LIFE OF THE PIPE. PIPE REMEDIATION OR REPLACEMENT SHALL BE REQUIRED FOR LOCATIONS WHERE THE EVALUATION FINDS THAT THE DEFLECTION COULD BE PROBLEMATIC.
  - (5) INSTALLED PIPE DEFLECTIONS THAT EXCEED 5% OF THE INITIAL INSIDE DIAMETER MAY INDICATE THAT THE INSTALLATION WAS SUBSTANDARD. APPROPRIATE REMEDIATION, IF ANY, WILL DEPEND UPON THE SEVERITY OF THE DEFLECTION.
  - (6) IN ALL PIPE INSTALLATIONS, AT LEAST 10% OF THE TOTAL NUMBER OF PIPE RUNS REPRESENTING AT LEAST 10% OF THE TOTAL PROJECT FOOTAGE ON THE PROJECT SHALL BE RANDOMLY SELECTED BY THE ENGINEER AND INSPECTED FOR DEFLECTION. ALSO AS DETERMINED BY THE 100% VISUAL INSPECTION IN AASHTO SECTION 30.5.6.1, ALL AREAS IN WHICH DEFLECTION CAN BE VISUALLY DETECTED SHALL BE INSPECTED FOR DEFLECTION.
- (K) EXCAVATION FOR HDPE PIPE WILL NOT BE MEASURED AND PAID FOR DIRECTLY, BUT THE COST WILL BE INCLUDED IN THE COST OF THE PROPOSED PIPE CULVERT.
- (L) PAYMENT FOR TYPE "A" OR TYPE "B" BACKFILL INCLUDING BEDDING MATERIAL WILL BE INCLUDED IN THE UNIT PRICE OF THE HDPE PIPE.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE  
DEPARTMENT OF TRANSPORTATION

STANDARD DETAILS  
FOR  
HDPE PIPE  
INSTALLATION