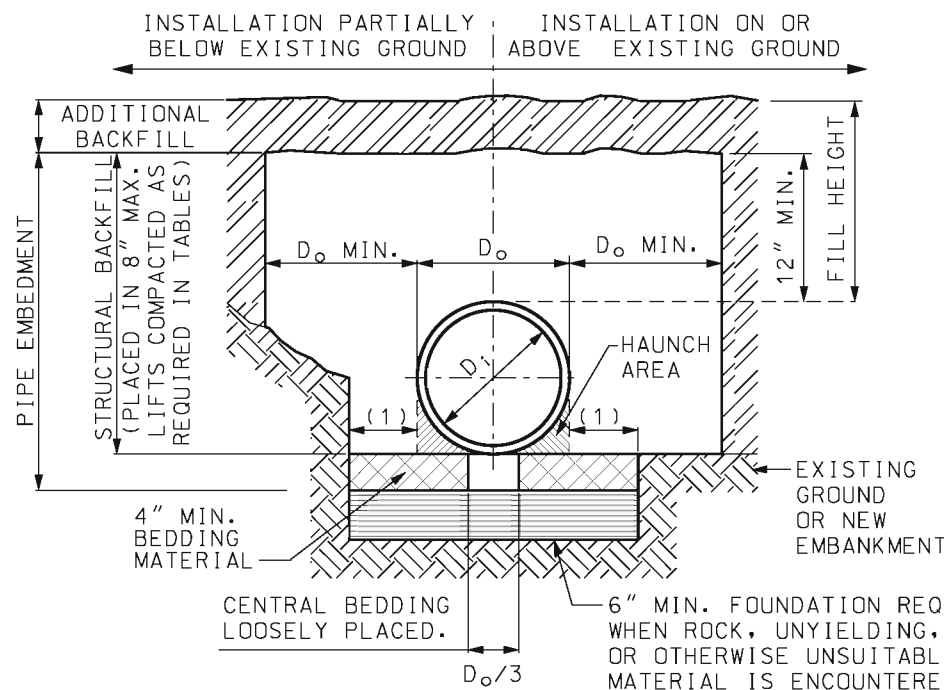


### TRENCH INSTALLATION

#### LEGEND

$D_i$  = INSIDE DIAMETER OF PIPE.  
 $D_o$  = OUTSIDE DIAMETER OF PIPE.  
 (1) =  $(D_o/4)+6$ " (MIN.)

NOTE:  
 MULTIPLE PIPE SHALL BE INSTALLED WITH A MINIMUM CLEARANCE BETWEEN PIPES OF  $\frac{1}{2} D_o$  OR 12", WHICHEVER IS GREATER, BUT NOT TO EXCEED 36".



### EMBANKMENT INSTALLATION

#### CONSTRUCTION SEQUENCE

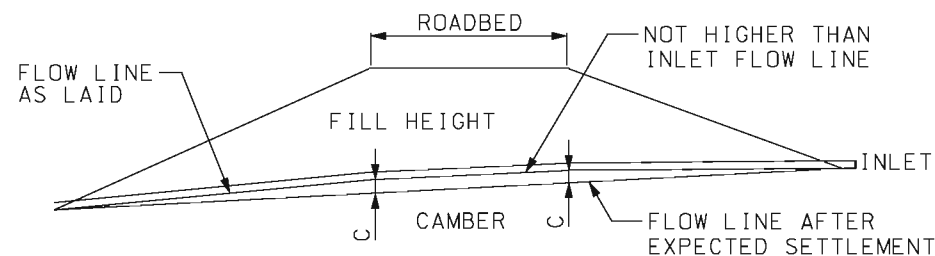
1. PLACE BEDDING MATERIAL TO GRADE.
2. COMPACT BEDDING OUTSIDE THE MIDDLE THIRD OF THE PIPE.
3. INSTALL PIPE TO GRADE.
4. COMPLETE STRUCTURAL BACKFILL ACCORDING TO SPECIFICATIONS.

FILL HEIGHT LIMITS																			
STRUCTURAL BACKFILL	SPECIFIED NOMINAL DIA OF PIPE (IN.)	POLYETHYLENE				STEEL REINFORCED POLYETHYLENE		POLYVINYL				DOUBLE WALL POLYPROPYLENE		TRIPLE WALL POLYPROPYLENE					
		COMPACTION 90% SPD		COMPACTION 95% SPD		COMPACTION 90% SPD		COMPACTION 90% SPD		COMPACTION 95% SPD		COMPACTION 90% SPD		COMPACTION 95% SPD		COMPACTION 90% SPD		COMPACTION 95% SPD	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
GRAVEL (AASHTO M145 SOIL TYPE A1 & A3)	12	2'	19'	2'	26'	--	--	2'	32'	2'	61'	2'	21'	2'	29'	--	--	--	--
	15	2'	19'	2'	27'	--	--	2'	32'	2'	55'	2'	22'	2'	31'	--	--	--	--
	18	2'	17'	2'	25'	--	--	2'	31'	2'	60'	2'	19'	2'	27'	--	--	--	--
	24	2'	15'	2'	21'	2'	50'	2'	30'	2'	54'	2'	16'	2'	22'	--	--	--	--
	30	2'	17'	2'	24'	2'	50'	2'	31'	2'	52'	2'	11'	2'	15'	2'	17'	2'	23'
	36	2'	13'	2'	19'	2'	50'	2'	30'	2'	53'	--	--	--	--	2'	15'	2'	21'
	42	2'	13'	2'	19'	2'	50'	--	--	--	--	--	--	--	--	2'	19'	2'	27'
	48	2'	12'	2'	18'	2'	30'	--	--	--	--	--	--	--	--	2'	12'	2'	17'
COURSE SAND (AASHTO M145 SOIL TYPE A-1-b)	12	2'	17'	2'	23'	--	--	2'	32'	2'	55'	2'	18'	2'	24'	--	--	--	--
	15	2'	16'	2'	22'	--	--	2'	32'	2'	49'	2'	22'	2'	31'	--	--	--	--
	18	2'	15'	2'	21'	--	--	2'	31'	2'	53'	2'	16'	2'	21'	--	--	--	--
	24	2'	14'	2'	20'	2'	50'	2'	30'	2'	48'	2'	13'	2'	17'	--	--	--	--
	30	2'	13'	2'	19'	2'	50'	2'	31'	2'	46'	2'	7'	2'	10'	2'	17'	2'	23'
	36	2'	12'	2'	17'	2'	50'	2'	30'	2'	46'	--	--	--	--	2'	15'	2'	21'
	42	2'	13'	2'	18'	2'	50'	--	--	--	--	--	--	--	--	2'	19'	2'	27'
	48	2'	12'	2'	17'	2'	30'	--	--	--	--	--	--	--	--	2'	12'	2'	17'
SILTY SAND OR SILTY GRAVEL (AASHTO M145 SOIL TYPES A-2-4 & A-2-5)	12	3.3'	10'	2'	17'	--	--	2.7'	16'	2'	33'	2.8'	11'	2'	19'	--	--	--	--
	15	3.4'	10'	2'	16'	--	--	2.7'	16'	2'	33'	2.8'	11'	2'	23'	--	--	--	--
	18	3.6'	10'	2'	15'	--	--	2.7'	15'	2'	32'	3'	11'	2'	16'	--	--	--	--
	24	3.8'	9'	2'	14'	2'	50'	2.7'	15'	2'	31'	3.3'	10'	2'	13'	--	--	--	--
	30	3.7'	10'	2'	14'	2'	50'	2.8'	15'	2'	31'	3.4'	6'	2'	7'	3'	10'	2'	17'
	36	4.2'	7'	2'	12'	2'	50'	2.8'	14'	2'	31'	--	--	--	--	3.3'	10'	2'	15'
	42	4.2'	7'	2'	13'	2'	50'	--	--	--	--	--	--	--	--	3.2'	11'	2'	20'
	48	4.5'	6'	2'	12'	2'	30'	--	--	--	--	--	--	--	--	3.1'	9'	2'	13'
60	3.3'	7'	2'	14'	2'	30'	--	--	--	--	--	--	--	--	2'	10'	2'	17'	

### MINIMUM COVER FOR CONSTRUCTION LOADS

NOMINAL PIPE DIA. (IN.)	MINIMUM COVER (FT) FOR INDICATED AXLE LOADS (THOUSANDS OF POUNDS)			
	18-50	50-75	75-110	110-150
12-36	2.0	2.5	3.0	3.0
42-60	3.0	3.0	3.5	4.0

MINIMUM COVER LIMITS ARE NOT SUFFICIENT FOR SILTY SAND OR SILTY GRAVEL STRUCTURAL BACKFILL COMPACTED TO 90% STANDARD PROCTOR DENSITY. THE CONTRACTOR SHALL PROVIDE MINIMUM COVER PLUS ANY ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. IN UNPAVED SITUATIONS, THE SURFACE MUST BE MAINTAINED TO A LEVEL AND NON-RUTTED CONDITION.



NOTE:  
 ON YIELDING SOIL, PIPE CULVERTS SHALL BE PLACED ON A CAMBERED FLOW LINE. THE AMOUNT OF CAMBER WILL VARY WITH SOIL CONDITION AND WILL BE SPECIFIED ON THE DESIGN PLANS.

### TYPICAL CAMBERED FLOW LINE


NOTE:

SPD = STANDARD PROCTOR DENSITY.

FILL HEIGHT MEASURED FROM THE TOP OF PIPE TO SURFACE.

LIMITS ACCOUNT FOR SHORT-TERM TEMPORARY WATER TABLE DEPTHS OF FIVE FEET ABOVE SPRINGLINE. TABLES ARE NOT APPLICABLE FOR LONG-TERM PERMANENT WATER TABLE DEPTHS ABOVE SPRINGLINE.


WHEN PIPES ARE USED AS GROUP A, FILL HEIGHTS ARE LIMITED TO SHADED VALUES.



**MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION**

105 WEST CAPITOL  
 JEFFERSON CITY, MO 65102  
 1-888-ASK-MODOT (1-888-275-6636)

**THERMOPLASTIC PIPE INSTALLATION METHODS**



THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE EFFECTIVE: 04/01/2015  
 DATE PREPARED: 2/27/2015

**730.00E**

SHEET NO.  
 1 OF 1

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.