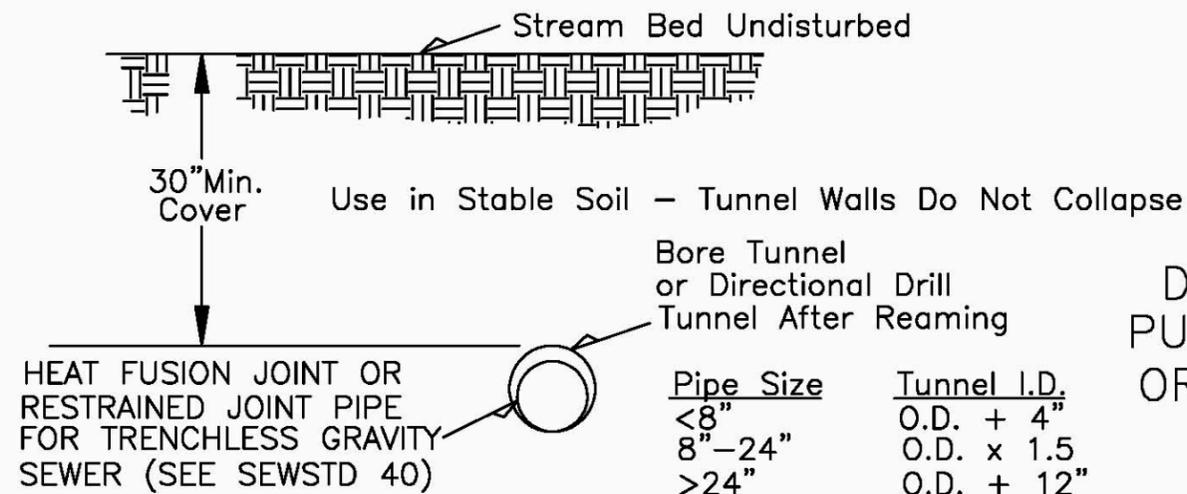


Stream Crossing Alternative No. 3 - Open Cut & Casing

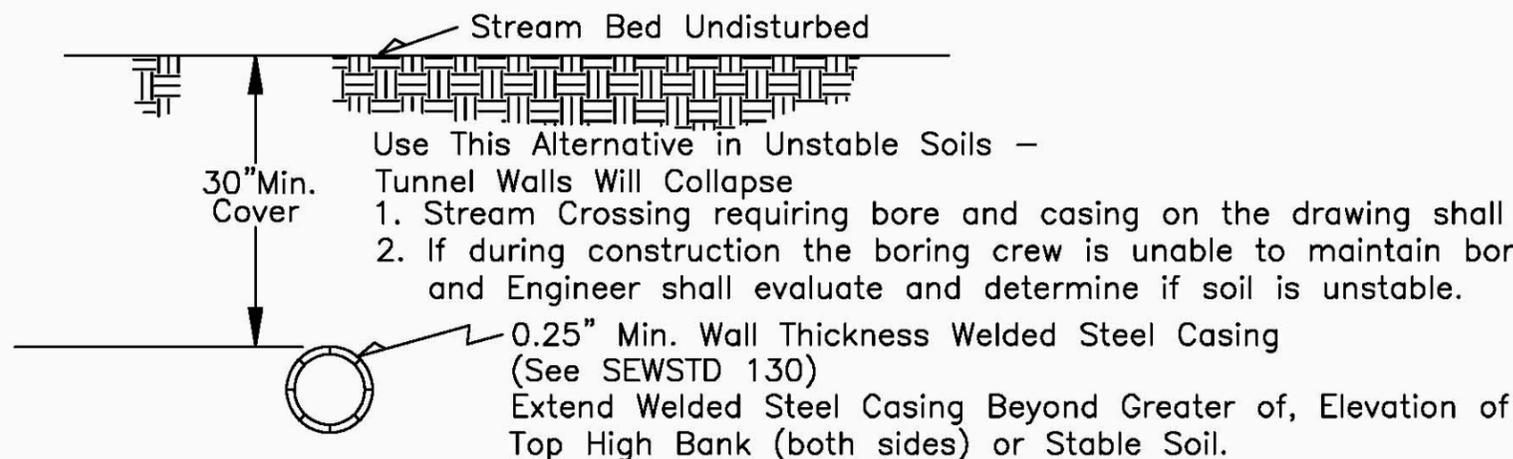
**18" Rip-Rap By ODOT 713.02**  
 Maximum Weight of Stone = 300 lbs.  
 Average Weight of Stone = 70-125 lbs.  
 No More Than 20% shall weigh less than 30 lbs.

**Single Course Backing (Filter Blanket) by ODOT 713.03**  
 100% Passing 4" sieve  
 60-90% Passing 2" sieve  
 40-70% Passing 1" sieve  
 15-40% Passing 3/8" sieve  
 0-15% Passing #4 sieve



DO NOT EXCEED SAFE PULL STRENGTH OF PIPE OR MAXIMUM ALLOWABLE BENDING RADIUS

Stream Crossing Alternative No. 2 - Trenchless Sewer Construction in Stable Soil and Do Not Disturb Streambed



Stream Crossing Alternative No. 1 - Bore & Casing Beneath Undisturbed Streambed

NOT TO SCALE

**GRAVITY SEWER BELOW GRADE  
 STREAM CROSSING STANDARDS-1  
 SANITARY SEWER PIPE STANDARDS**

THE CITY OF  
**PONCA CITY, OKLAHOMA**

CITY ENGINEERING DEPT. \* 516 E. GRAND \* P. O. BOX 1450 \* PONCA CITY, OK. \* (580)767-0328, FAX-0325

Designed by	MIKE CHAPMAN	Checked by	
Drawn by	SIMON CORNELL	Revised by	
Project No.		Date:	OCT 2008
			SEWSTD 170