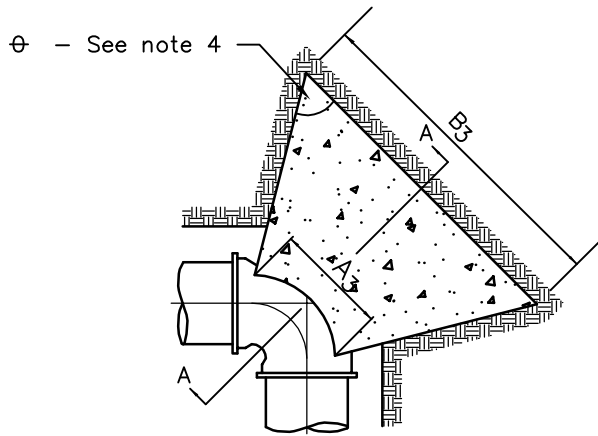


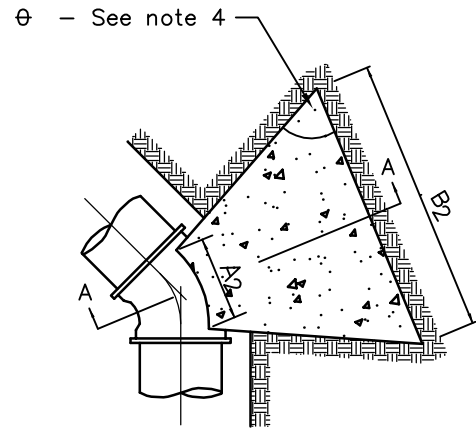
**NOTES:**

1. Shape of back of buttress may vary as long as poured against firm undisturbed earth.
2. Dimension C1,C2,C3 should be large enough to make angle  $\theta$  equal to or larger than 45°.
3. Dimension A1,A2,A3 should be as large as possible without interfering with MJ bolts.
4.  $\theta = 45^\circ$  Minimum.
5. Place polyethylene between concrete & pipe.

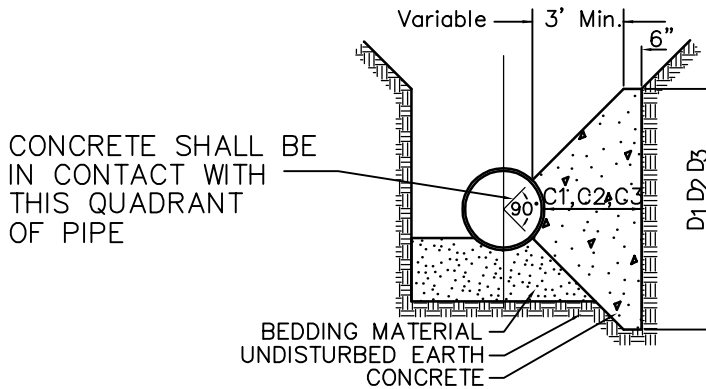
BUTTRESS DIMENSIONS						
PIPE SIZE	22 1/2° BEND		45° BEND		90° BEND	
	B1	D1	B2	D2	B3	D3
6"	1'-5"	1'-5"	1'-5"	1'-5"	2'-1"	1'-6"
8"	1'-5"	1'-5"	2'-1"	1'-6"	2'-8"	2'-0"
12"	1'-10"	1'-10"	3'-4"	2'-0"	4'-9"	2'-6"
16"	3'-0"	2'-0"	3'-10"	3'-0"	6'-2"	3'-6"
20"	3'-6"	2'-8"	5'-6"	3'-4"	8'-4"	4'-0"
24"	4'-4"	3'-0"	6'-10"	3'-10"	9'-8"	5'-0"
30"	-	-	9'-3"	6'-0"	17'-0"	6'-0"



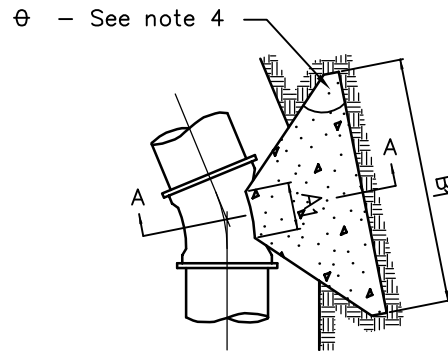
**PLAN 90° BENDS**



**PLAN 45° BENDS**



**SECTION A-A**



**PLAN 22 1/2° BENDS**



**STANDARD DETAILS  
CONCRETE THRUST BLOCKING**



Last Revision:  
June 2005

**COTTAGE GROVE, MINNESOTA**

City Plate No.  
WAT-6