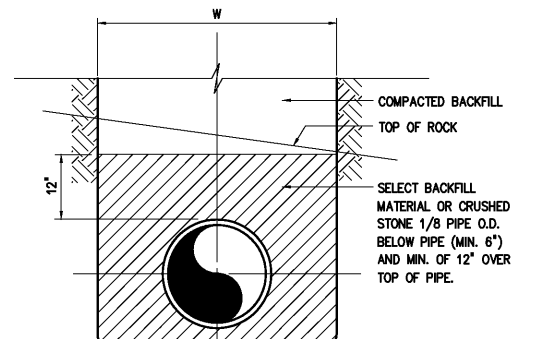
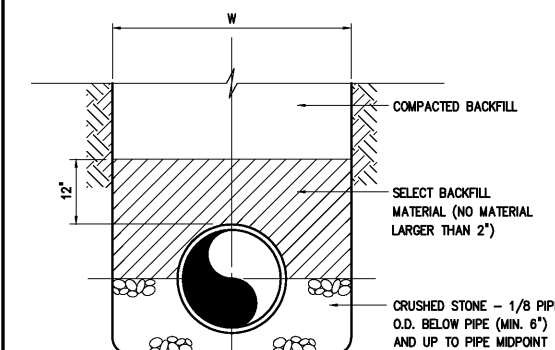


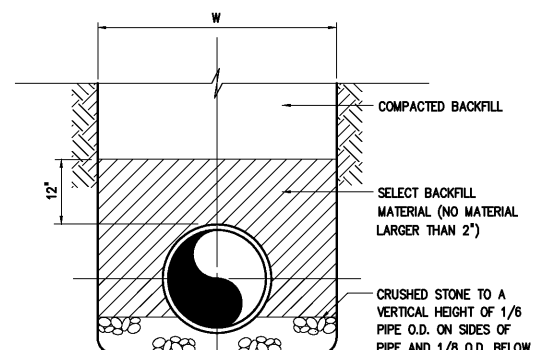
TYPE A  
IN EARTH  
0222100



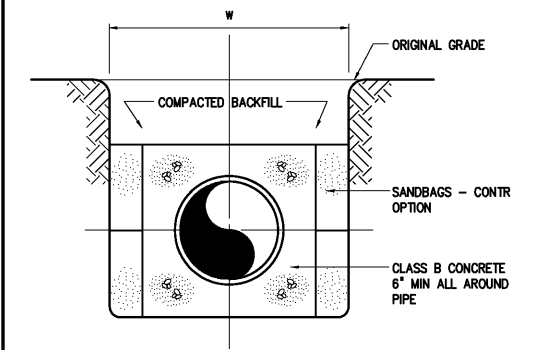
TYPE A  
IN ROCK  
0222101



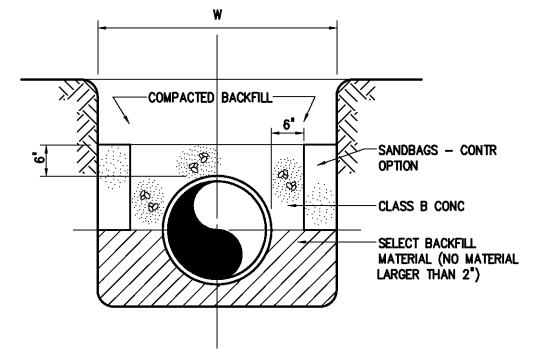
TYPE B  
0222102



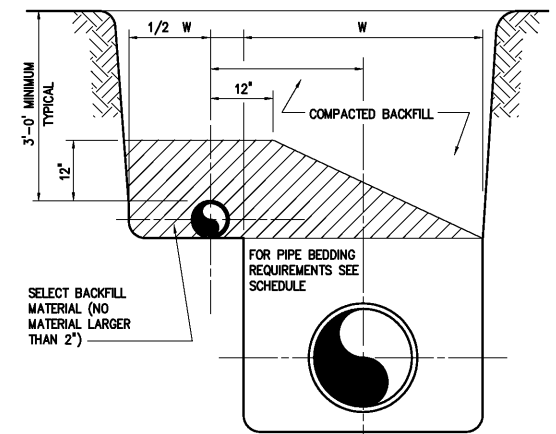
TYPE C  
0222103



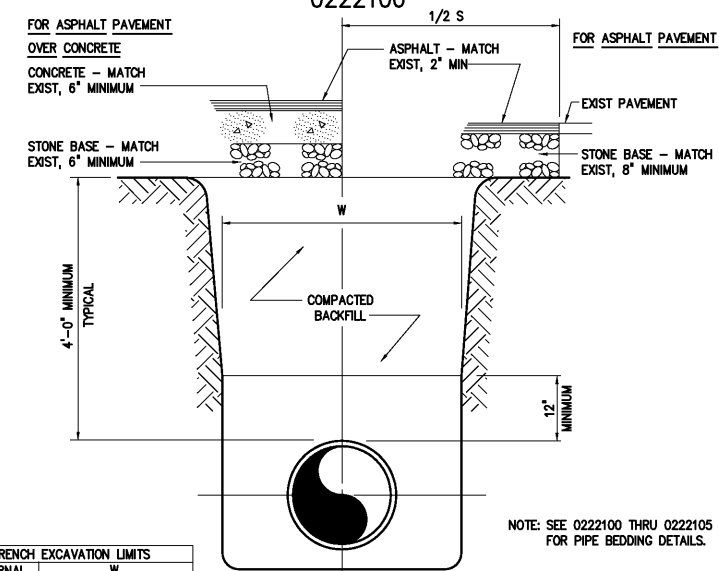
CONCRETE ENCASEMENT  
(SEE NOTE 1)  
0222104



CONCRETE ARCH  
(SEE NOTE 1)  
0222105



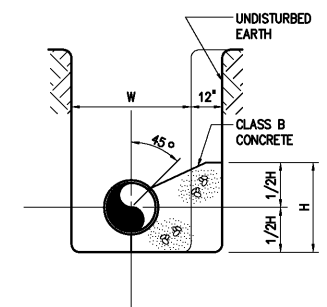
PARALLEL PIPES IN TRENCH  
0222106



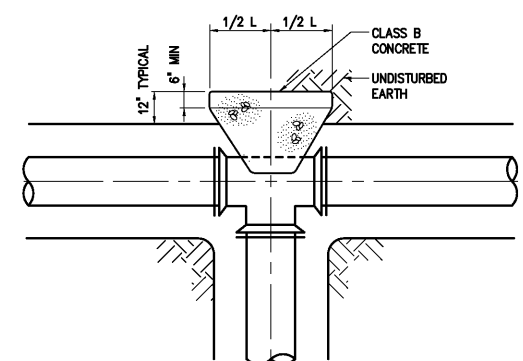
TYPICAL TRENCH  
0222107

TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	WIDTH OF TRENCH	W=MIN
4"-6"	3'-9"	2'-0"
8"-10"	3'-9"	2'-2"
12"	3'-9"	O.D.+2'
14"-16"	4'-2"	O.D.+2'
18"	4'-4"	O.D.+2'
20", 21"	4'-8"	O.D.+2'
24"	4'-11"	O.D.+2'
27"	5'-9"	O.D.+2'
30"	6'-7"	O.D.+2'
36"	7'-4"	O.D.+2'
42"	8'-2"	O.D.+2'
48"	8'-9"	O.D.+2'
54"	9'-4"	O.D.+2'
60"	9'-10"	O.D.+2'
72"	11'-0"	O.D.+2'
78"	11'-8"	O.D.+2'
84"	12'-0"	O.D.+2'
90"	12'-6"	O.D.+2'
96"	13'-0"	O.D.+2'
108"	14'-0"	O.D.+2'
DEPTH OF CUT	S	MAXIMUM PAVEMENT REPLACEMENT WIDTH
0-6'	S=W+4'	
>6-8'	S=W+8'	
>8-10'	S=W+12'	
>10-12'	S=W+16'	
>12-14'	S=W+20'	
>14-16'	S=W+24'	
>16-18'	S=W+28'	
>18'	S=W+32'	

W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.



TYPICAL SECTION  
TEE OR BEND

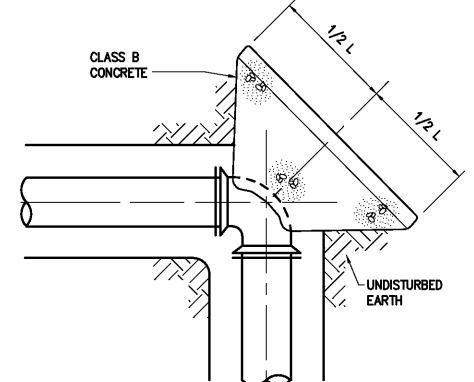


PLAN - TEE

CONCRETE THRUST BLOCK SCHEDULE*											
PIPE SIZE (IN)	90°/TEE		45°		BEND		22 1/2'		11 1/4'		DESIGN PRESSURE (PSI)
	H	L	H	L	H	L	H	L	H	L	
6	1.4	2.8	1.0	2.1	0.7	1.5	0.5	1.0	XXX	XXX	100
8	1.8	3.7	1.4	2.7	1.0	1.9	0.7	1.4	XXX	XXX	100
12	2.7	5.4	2.0	4.0	1.4	2.8	1.0	2.0	XXX	XXX	100
16	3.6	7.1	2.6	5.2	1.9	3.7	1.3	2.6	XXX	XXX	100
24	5.3	10.5	3.9	7.7	2.8	5.5	2.0	3.9	XXX	XXX	100
30	6.5	13.1	4.8	9.6	3.4	6.9	2.4	4.9	XXX	XXX	100
36	7.8	15.6	5.8	11.5	4.1	8.2	2.9	5.8	XXX	XXX	100
42	9.1	18.2	6.7	13.4	4.8	9.5	3.4	6.8	XXX	XXX	100
48	10.4	20.7	7.6	15.3	5.4	10.9	3.9	7.7	XXX	XXX	100
54	11.7	23.3	8.6	17.1	6.1	12.2	4.3	8.7	XXX	XXX	100

\* BASED ON AVERAGE SOIL PASSIVE BEARING STRENGTH OF 2000 PSF USING SF OF 1.5. DIMENSIONS FOR BLOCKS IN FEET

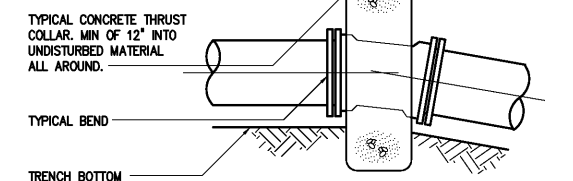
CONCRETE THRUST BLOCKING SHALL BE USED ONLY AS APPROVED BY ENGINEER.



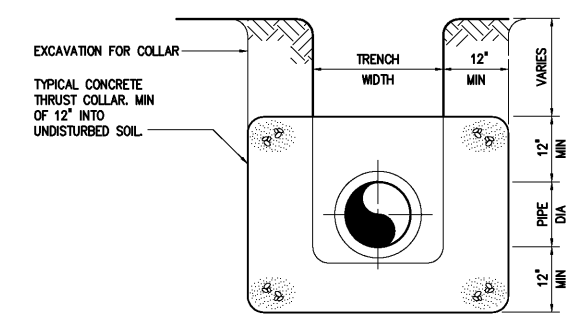
PLAN - BEND

THRUST BLOCKS  
(SEE NOTE 1)  
0222108

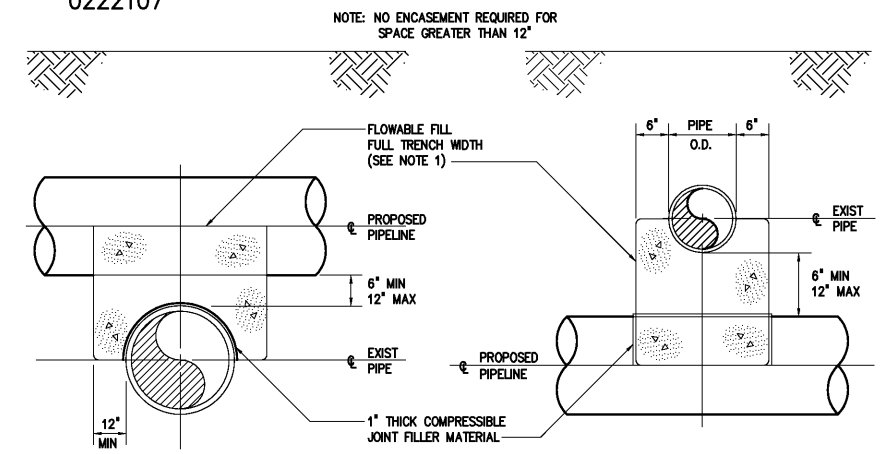
NOTE: FOR VERTICAL BEND (DOWN) IN EXCESS OF 11 1/4' ANCHORAGE SHALL BE AS RECOMMENDED BY THE ENGINEER.



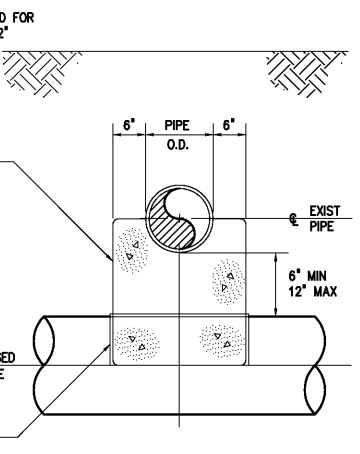
ELEVATION



THRUST COLLAR  
0222111



PROPOSED PIPELINE OVER EXIST PIPE



PROPOSED PIPELINE UNDER EXIST PIPE

0222118

DESIGNED	H & S
DRAWN	H & S
CHECKED	
PROJ. ENGR.	H & S
APPROVED	

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**HAZEN AND SAWYER**  
Environmental Engineers & Scientists  
4011 WestChase Blvd, Raleigh, North Carolina 27607

CITY OF ROANOKE  
VIRGINIA

REGIONAL WATER POLLUTION CONTROL PLANT  
PROCESS TRAIN IMPROVEMENTS

MISCELLANEOUS STANDARD DETAILS

THE SCALE BAR SHOWN BELOW MEASURES ONE INCH LONG ON THE ORIGINAL DRAWING.	DATE	MARCH 2004
	H & S JOB NUMBER	30788B
	CONTRACT NUMBER	B
	DRAWING NUMBER	D4