

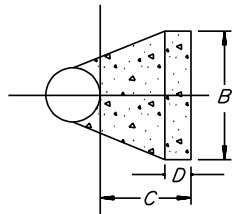
METROPOLITAN UTILITIES DISTRICT	Construction Standard	No: 1.8.11
	Prepared by: Bill Travnicek	Page: 1 of 3
Approved by: Jeff Loll	Typical Backing Blocks for Water Mains	<u>Supersedes:</u> 2-1-06
		Effective: 7-11-11

General

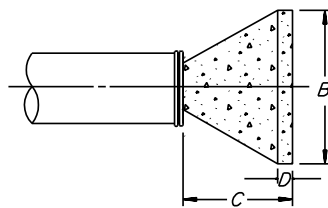
This Construction Standard specifies the materials and installation of concrete backing blocks for common fittings for 6" through 16" pipe. Backing blocks shall cure a minimum of 72 hours before subjected to water main pressure. If mains need to be pressurized within 72 hours of placing a backing block, immediate support backing shall be used (see Construction Standard 1.8.12).

HORIZONTAL BACKING BLOCKS

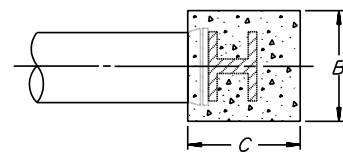
SIDE VIEW FOR TEE OR BEND



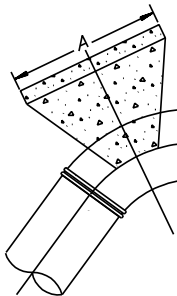
SIDE VIEW FOR PLUG OR CAP (6" & 8")



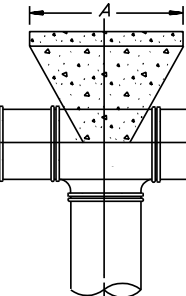
SIDE VIEW FOR PLUG OR CAP (12" & 16")



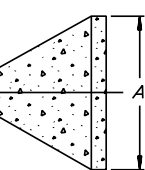
TOP VIEW FOR BEND



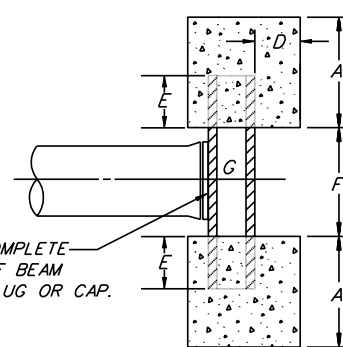
TOP VIEW FOR TEE



TOP VIEW FOR PLUG OR CAP (6" & 8")

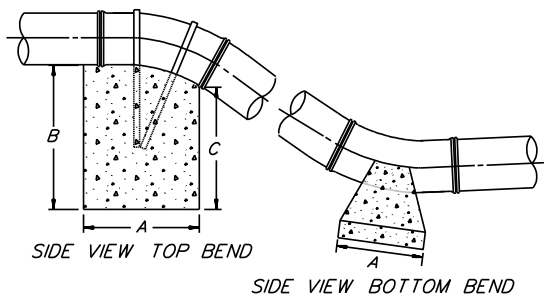


TOP VIEW FOR PLUG OR CAP (12" & 16")



ENSURE COMPLETE BEARING OF BEAM AGAINST PLUG OR CAP.

VERTICAL BACKING BLOCKS



SIDE VIEW TOP BEND

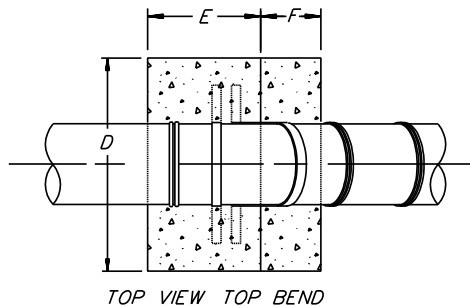
SIDE VIEW BOTTOM BEND

NOTES

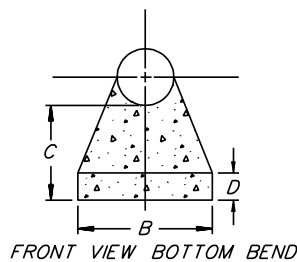
WRAP ALL JOINTS WITH POLYWRAP PRIOR TO PLACING CONCRETE BACKING BLOCKS.

COVER ALL STRAPS AND BEAMS OUTSIDE OF CONCRETE W/ POLYWRAP OR TAPE.

STRAPS SHALL CONFORM TO ASTM A575 (AISI M-1020) STEEL

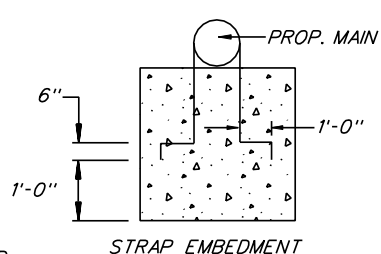


TOP VIEW TOP BEND



FRONT VIEW BOTTOM BEND

FRONT VIEW



STRAP EMBEDMENT



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Approved by: Jeff Loll		Effective: 7-11-11

TABLE 1 - BACKING BLOCKS FOR FITTINGS								
FITTING	DIMENSION						BEAM	VOLUME
	A	B	C	D	E	F	G	CU. YD.
16" x 16" Tee	5'-6"	4'-6"	4'-0"	1'-0"				2.31
16" x 12" Tee	3'-6"	3'-6"	4'-0"	1'-0"				1.18
16" x 8" Tee	2'-6"	2'-6"	3'-0"	0'-6"				.37
16" x 6" Tee	2'-0"	2'-0"	2'-6"	0'-6"				.22
12" x 12" Tee	3'-6"	3'-6"	4'-0"	1'-0"				1.18
12" x 8" Tee	2'-6"	2'-6"	3'-0"	0'-6"				.37
12" x 6" Tee	2'-0"	2'-0"	2'-6"	0'-6"				.22
8" x 8" Tee	2'-6"	2'-6"	3'-0"	0'-6"				.37
8" x 6" Tee	2'-0"	2'-0"	2'-6"	0'-6"				.22
6" x 6" Tee	2'-0"	2'-0"	2'-6"	0'-6"				.22
16" Plug or Cap	3'-6"	3'-6"	4'-0"	2'-0"	1'-6"	5'-0"	W 14 x 34 8' L	3.63
12" Plug or Cap	2'-6"	2'-6"	3'-6"	1'-6"	1'-0"	5'-0"	W 14 x 22 7' L	1.62
8" Plug or Cap	2'-6"	2'-6"	3'-0"	0'-6"				.37
6" Plug or Cap	2'-0"	2'-0"	2'-6"	0'-6"				.22
End of Main Hydt. For 8" Main	2'-6"	2'-6"	3'-0"	0'-6"				.37
End of Main Hydt. For 6" Main	2'-0"	2'-0"	2'-6"	0'-6"				.22

TABLE 2 - BACKING BLOCKS FOR HORIZONTAL BENDS					
HORIZONTAL BENDS:	DIMENSION				VOLUME
	A	B	C	D	CU. YD.
16" x 90°	6'-6"	5'-0"	4'-6"	1'-0"	3.79
16" x 45°	4'-6"	4'-0"	4'-0"	1'-0"	1.73
16" x 22-1/2°	3'-6"	3'-6"	3'-6"	1'-0"	1.26
16" x 11-1/4°	2'-3"	2'-3"	3'-3"	1'-0"	.46
12" x 90°	4'-0"	4'-0"	4'-0"	1'-0"	1.63
12" x 45°	3'-0"	3'-0"	3'-0"	1'-0"	.81
12" x 22-1/2°	2'-6"	2'-6"	3'-0"	1'-0"	.53
12" x 11-1/4°	1'-9"	1'-9"	2'-9"	1'-0"	.24
8" x 90°	3'-0"	3'-0"	3'-6"	0'-6"	.59
8" x 45°	2'-0"	2'-0"	2'-6"	0'-6"	.22
8" x 22-1/2°	1'-6"	1'-6"	2'-0"	0'-6"	.11
8" x 11-1/4°	1'-3"	1'-3"	1'-9"	0'-6"	.07
6" x 90°	2'-0"	2'-0"	2'-6"	0'-6"	.22
6" x 45°	1'-6"	1'-6"	2'-0"	0'-6"	.10
6" x 22-1/2°	1'-0"	1'-0"	1'-6"	0'-6"	.04
6" x 11-1/4°	1'-0"	1'-0"	1'-6"	0'-6"	.04

* Revised Entire Table

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Approved by: Jeff Loll		

TABLE 3 - BACKING BLOCKS FOR VERTICAL BENDS											
VERTICAL BENDS:	DIMENSION						VOLUME CU. YD.	STOCK NUMBERS (STRAPS)	STRAPS – STRUCTURAL QUALITY STEEL FLATS AISI M1020 (43 KSI YIELD)		
	A	B	C	D	E	F			NO.	SIZE	EMBED.
16" x 45° Top	6'-0"	6'-0"	3'-0"	7'-0"	3'-0"	3'-0"	9.33	56-780-04	2	2" x 3/8"	30"
16" x 45° Bottom	4'-6"	4'-0"	4'-0"	1'-0"			1.73				
12" x 45° Top	6'-0"	5'-0"	2'-0"	5'-0"	3'-0"	3'-0"	4.72	56-760-05	2	2" x 1/4"	24"
12" x 45° Bottom	3'-0"	3'-0"	4'-0"	1'-0"			.81				
8" x 45° Top	4'-0"	4'-0"	2'-0"	4'-6"	2'-0"	2'-0"	2.33	56-760-02	2	1" x 1/4"	18"
8" x 45° Bottom	2'-0"	2'-0"	2'-0"	0'-6"			.22				
6" x 45° Top	3'-6"	3'-0"	1'-6"	3'-6"	2'-0"	1'-6"	1.43	56-760-02	2	1" x 1/4"	18"
6" x 45° Bottom	1'-6"	1'-6"	1'-6"	0'-6"			.10				
16" x 22-1/2° Top	5'-6"	5'-6"	4'-6"	4'-6"	3'-0"	2'-6"	5.13	56-780-04	2	2" x 3/8"	30"
16" x 22-1/2° Bottom	3'-6"	3'-6"	3'-6"	1'-0"			1.26				
12" x 22-1/2° Top	4'-6"	5'-0"	4'-2"	3'-6"	2'-6"	2'-0"	2.88	56-760-05	2	2" x 1/4"	24"
12" x 22-1/2° Bottom	2'-6"	2'-6"	3'-0"	1'-0"			.53				
8" x 22-1/2° Top	3'-0"	4'-0"	3'-6"	3'-0"	1'-6"	1'-6"	1.33	56-760-02	2	1" x 1/4"	18"
8" x 22-1/2° Bottom	1'-6"	1'-6"	2'-0"	0'-6"			.11				
6" x 22-1/2° Top	2'-0"	3'-3"	3'-0"	3'-0"	1'-3"	0'-9"	.72	56-760-02	2	1" x 1/4"	18"
6" x 22-1/2° Bottom	1'-0"	1'-0"	1'-6"	0'-6"			.04				
16" x 11-1/4° Top	4'-0"	4'-0"	3'-6"	4'-0"	2'-0"	2'-0"	2.37	56-780-04	2	2" x 3/8"	30"
16" x 11-1/4° Bottom	2'-3"	2'-3"	3'-3"	1'-0"			.46				
12" x 11-1/4° Top	3'-0"	3'-0"	2'-9"	3'-6"	2'-0"	1'-0"	1.17	56-760-05	2	2" x 1/4"	24"
12" x 11-1/4° Bottom	1'-9"	1'-9"	2'-9"	1'-0"			.24				
8" x 11-1/4° Top	3'-0"	2'-0"	1'-9"	3'-0"	2'-0"	1'-0"	.56	56-760-02	2	1" x 1/4"	18"
8" x 11-1/4° Bottom	1'-3"	1'-3"	1'-9"	0'-6"			.07				
6" x 11-1/4° Top	2'-0"	2'-0"	1'-9"	2'-8"	1'-0"	1'-0"	.40	56-760-02	2	1" x 1/4"	18"
6" x 11-1/4° Bottom	1'-0"	1'-0"	1'-6"	0'-6"			.04				

* Revised Entire Table 

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