



TECHNICAL NOTE

HDPE Connections to Manholes and Structures

TN 5.04
March 2008

Introduction

A full line of pipe jointing options is available to fit the requirements of nearly any storm drain or gravity flow project specifications. The joints available range from soil tight split couplers to gasketed soil-tight (ST) and watertight (WT) pipe. When connecting pipe to drainage structures it is important to make those connections with a joint performance at least equal to that of the piping system.

Connection Options

Soil-Tight Performance

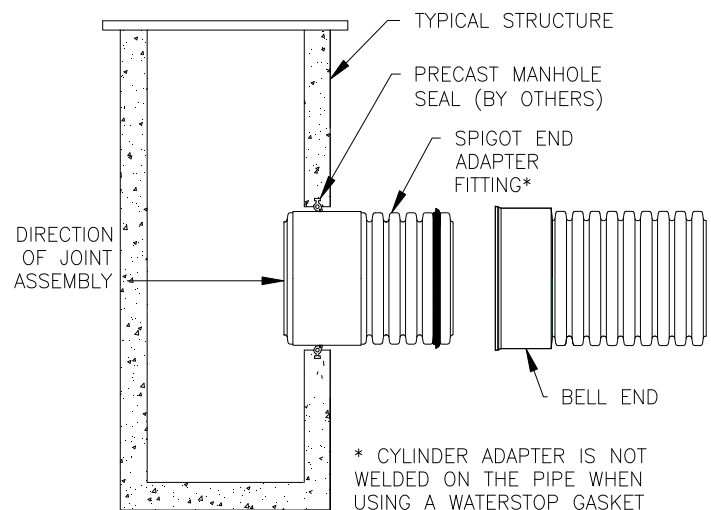
When using soil-tight pipe in non-watertight applications, it may be acceptable to grout the void space between the HDPE pipe and drainage structure. Installation recommendations are outlined in Standard Details 201 and 202.

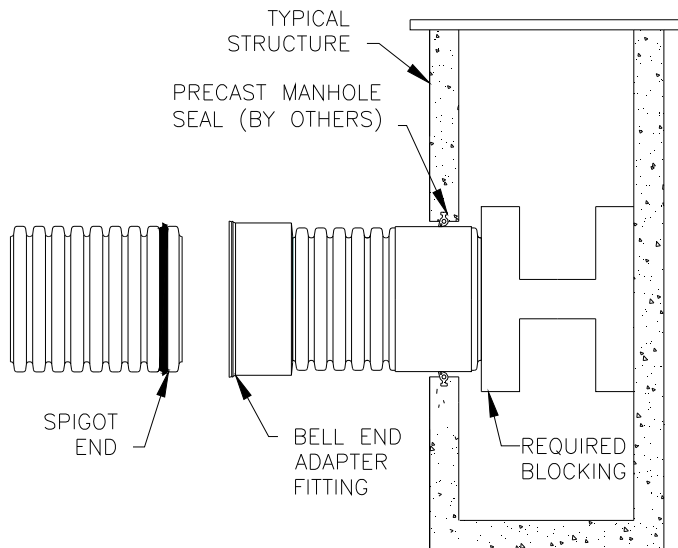
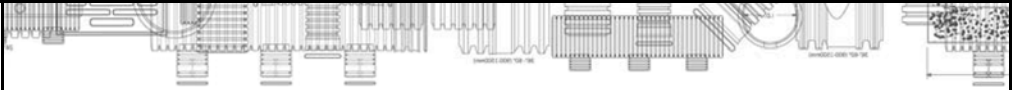
Watertight Performance

When using watertight pipe for testable systems, requiring some degree of watertight performance, it is necessary to provide additional measures to insure a watertight connection between the pipe and structure. ASTM F2510/F 2510M, "Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Corrugated High Density Polyethylene Drainage Pipes," is the governing standard for corrugated HDPE pipe-manhole connections, but specific performance/installation requirements should be verified for each specific project. Along with a full line of adapter fittings available, including the Waterstop® Gasket, are flexible boot fittings provided by other manufactures. Fitting dimensions should be supplied to the manufacturer to insure the proper fitting size and manhole boot connector are supplied. Installation recommendations and product details are outlined in Standard Details 201, 203, and 204(A-E).

Installation Recommendations

When installing a manhole adapter on the upstream end, the fitting may be over inserted into the structure temporarily while the adjoining pipe is laid. The spigot piece is then pushed back through the structure and connected to the bell end when pushing the joint together, as shown to the right.

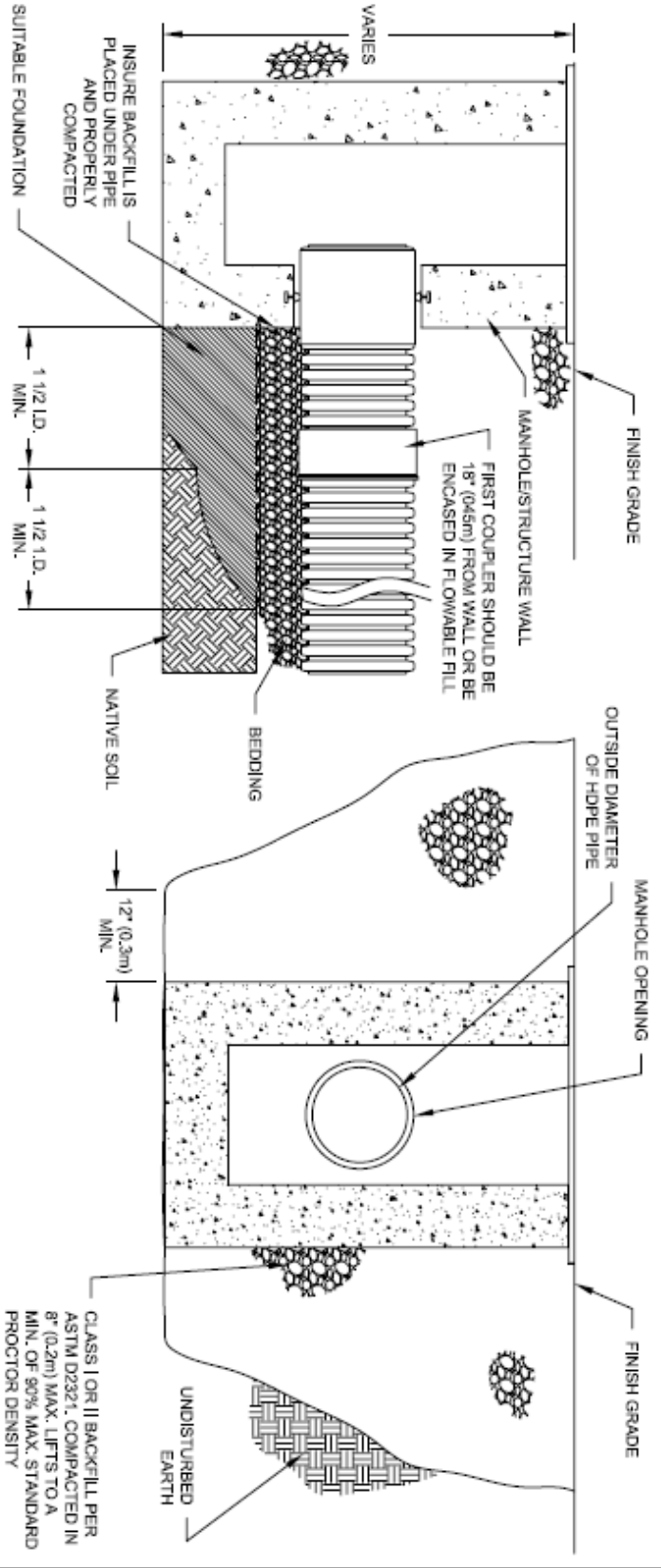




Alternately, when using the adapter fitting in the downstream end of the structure, before pushing the bell and spigot together from inside the structure, it is necessary to provide blocking at the structure to prevent the fitting from moving in the structure, as shown to the left.

Summary

The selection of which manhole connection is best suited for a project is based on the joint and connection requirements along with preferred manhole connection method for the region. It is imperative that prevailing regulations be consulted before selecting a manhole connection. Other options may be available for watertight manhole connections. Refer to Standard Details 201 through 204 (A-E) for installation and connection-specific details. Contact your Regional Engineer or Application Engineering for further assistance.

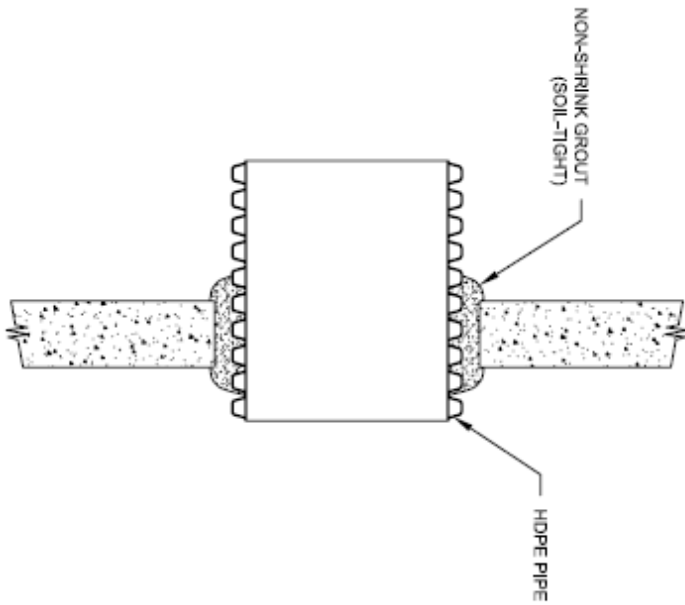
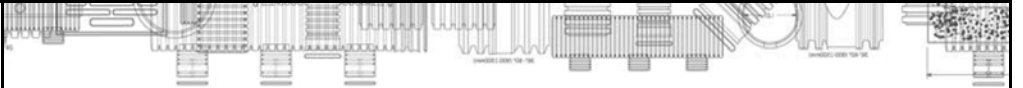


- NOTES:
1. MAXIMUM INSERTION ANGLE SHALL NOT EXCEED REQUIREMENTS AS SPECIFIED BY THE MANUFACTURER.
 2. SEE STANDARD DETAILS STD-202 (A-B) THROUGH STD-204 (A-E) FOR STRUCTURE CONNECTIONS, PRODUCT INFORMATION AND DIMENSIONAL PIPE DATA. INSTALLATION RECOMMENDATIONS ARE ALSO SPECIFIED IN TECHNICAL NOTE 5.04: HDPE CONNECTIONS TO MANHOLES AND STRUCTURES.
 3. PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

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4	UPDATED DRAWING	TJR	02/25/07	CKS
REV.	DESCRIPTION	BY	DATE	CHKD
STRUCTURE CONNECTION INSTALLATION DETAIL				
DRAWING NUMBER: STD-201				
ADS 4640 TRUEMAN BLVD HILLIARD, OHIO 43026				
ADVANCED DRAINAGE SYSTEMS, INC.				
DESIGNED BY: CKS DATE: 10/1/06 CHECKED BY: NIS DATE: 1/2/07				













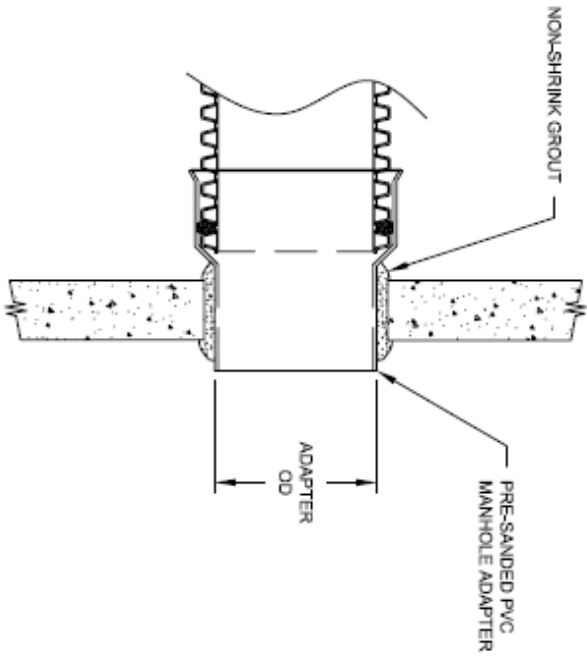
TYPE 1: SOIL-TIGHT USING NON-SHRINK GROUT AND CORRUGATED PIPE

SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE: 5.04 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

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1	REV.	UPDATED DRAWING	TAR	02/20/07	CXS	DATE	REV.
		DESCRIPTION	BY	WADDY	CHKD		BY
DRAWING NUMBER:		STD-202A			4640 TRUEMAN BLVD HILLIARD, OHIO 43026		
SOIL-TIGHT STRUCTURE CONNECTION TYPE 1 DETAIL				4640 TRUEMAN BLVD HILLIARD, OHIO 43026			
DRAWING NUMBER:		STD-202A			4640 TRUEMAN BLVD HILLIARD, OHIO 43026		
DATE		02/20/07			4640 TRUEMAN BLVD HILLIARD, OHIO 43026		
BY		TAR			4640 TRUEMAN BLVD HILLIARD, OHIO 43026		
CHKD		WADDY			4640 TRUEMAN BLVD HILLIARD, OHIO 43026		
SCALE		NIS			4640 TRUEMAN BLVD HILLIARD, OHIO 43026		
SHEET		1 OF 1			4640 TRUEMAN BLVD HILLIARD, OHIO 43026		



TYPE 2: SANDED PVC MANHOLE ADAPTER GROUDED INTO MANHOLE WALL

SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE: 504 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

PIPE SIZE (IN)	ADAPTER OD (IN)	HANICOR PRODUCT CODES
12	12.5	1277AG
15	15.3	1577AG
18	18.7	1877AG
24	24.8	2477AG
30	32.0	3077AG

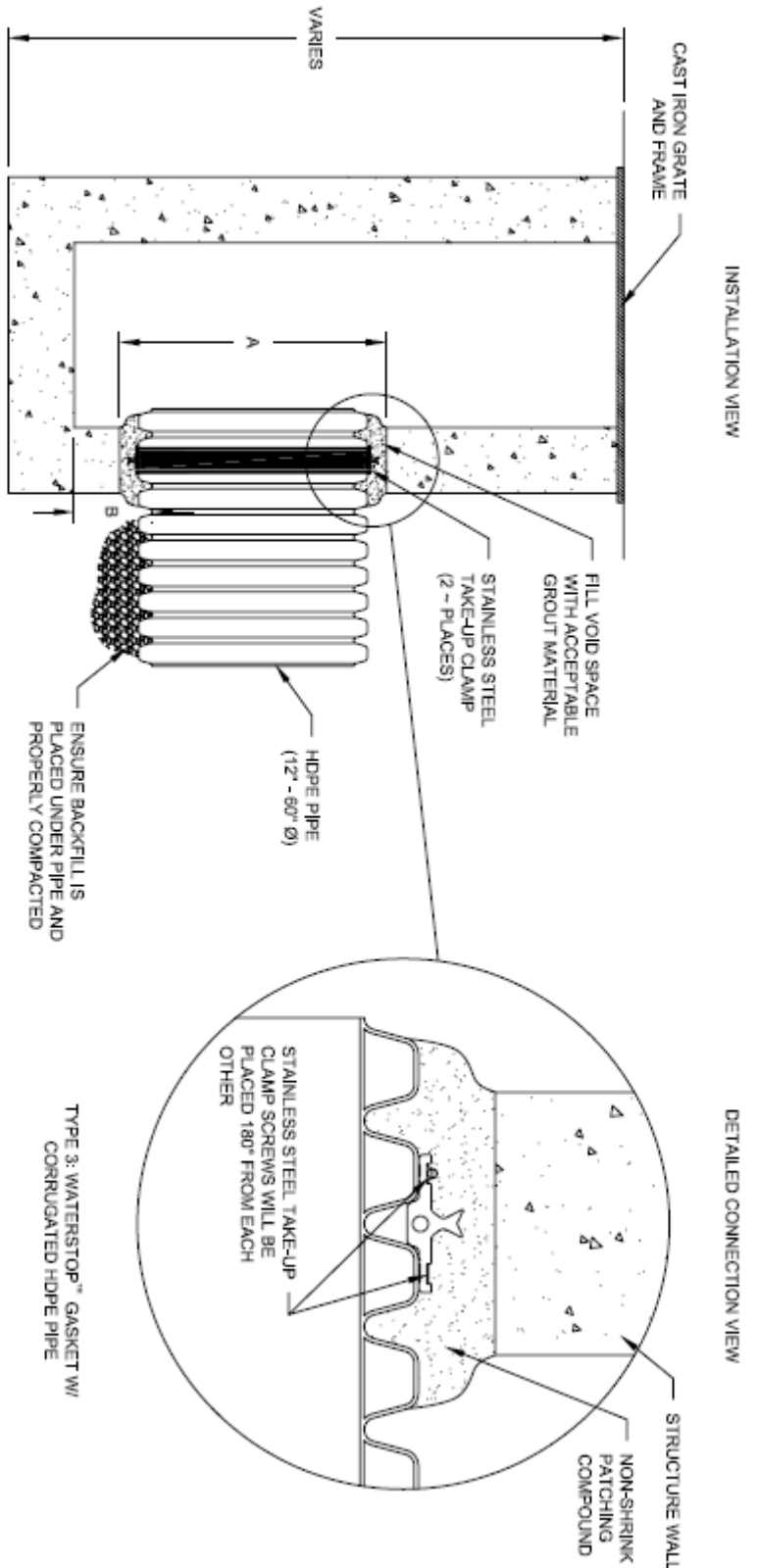
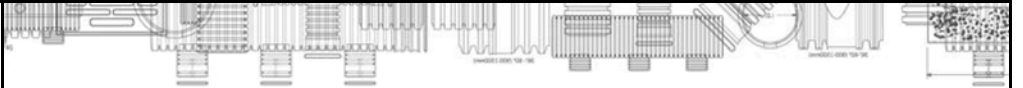
** FOR USE WITH A PROFILE PIPE ONLY **

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

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1	REV. A	UPDATED DRAWING	TAR	02/20/07	CKS
DESCRIPTION			BY	MAAD/YY	CHKD
SOIL-TIGHT STRUCTURE CONNECTION TYPE 2 DETAIL					
DRAWING NUMBER: STD-202B			4640 TRUEMAN BLVD HILLIARD, OHIO 43088		
			DATE	10/1/08	CKS
			SCALE	1" = 1'-0"	NTS
			REV	1 OF 1	



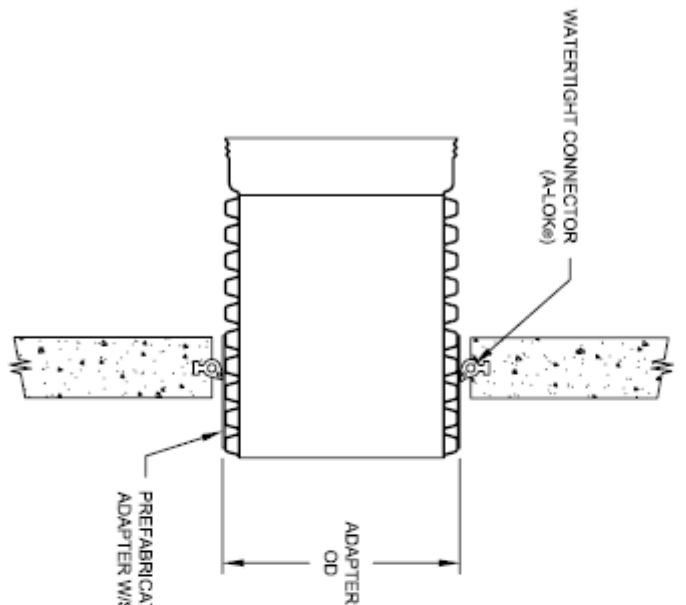
INSTALLATION RECOMMENDATIONS ARE ALSO SPECIFIED IN
INSTALLATION GUIDE 105: WATERSTOP INSTALLATION

PIPE SIZE (IN)	PIPE OD (IN)	"A" MIN. HOLE Ø (IN)	"S" MIN. DISTANCE PIPE INVERT TO STRUCTURE INVERT (IN)	MANUFACTURER'S PRODUCT CODE
12	14.5	14.2	19.50	1202PS
15	17.6	17.8	23.00	1502PS
18	21.2	21.5	26.50	1802PS
24	27.8	28.4	33.25	2402PS
30	35.1	35.5	40.50	3002PS
36	41.1	41.4	47.00	3602PS
42	47.7	48.0	53.00	4202PS
48	53.6	54.0	59.00	4802PS
60	66.3	67.3	72.00	6002PS

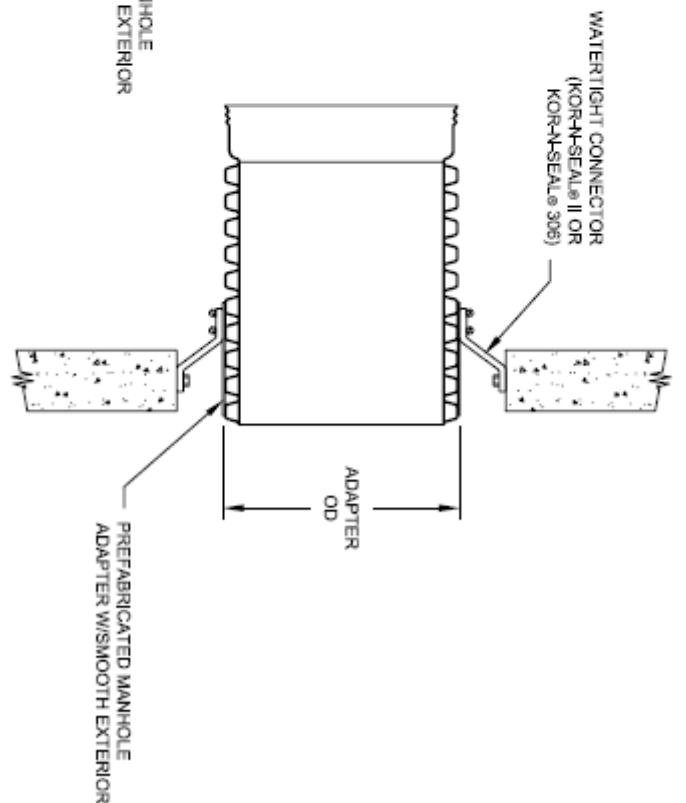
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1	UPDATED DRAWING	TJR	02/21/07	CKS
REV.	DESCRIPTION	BY	DATE	CHKD
WATERSTOP STRUCTURE CONNECTION DETAIL				
DRAWING NUMBER: STD-203				
		4640 TRUEMAN BLVD HILLIARD, OHIO 43026		
CDS	10/10/08			
NTS	1 OF 1			



TYPE 1A: A-LOK GASKET (PRE-CAST)
WHIDPE PREFABRICATED MANHOLE
ADAPTER W/ SMOOTH EXTERIOR



TYPE 1B: KOR-N-SEAL (CORED HOLE OR
PRE-CAST) W/ FIELD INSTALLED MANHOLE
BOOT W/ HDPE PREFABRICATED
MANHOLE ADAPTER W/ SMOOTH
EXTERIOR

SEE STANDARD DETAIL STD-204 AND TECHNICAL NOTE: 5.04 HDPE CONNECTIONS TO
MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

PIPE SIZE (IN)	A-PROFILE H-PROFILE	PRODUCT CODES	KOR-N-SEAL® **	A-LOK RING® **
12	14.73	1222ANB 1222ANBH	S106-20BWS N/A	480 475
15	17.96	1822ANB 1822ANBH	S106-20WS S306-22	580 580
18	21.71	2220ANB 2220ANBH	S206-28 S306-28	710 710
24	28.52	2422ANB 2422ANBH	S206-32 S306-32	915 930
30	35.92	3022ANB 3022ANBH	S206-40 S306-40	1180 1180
36	42.06	3622ANB 3622ANBH	S206-46 S306-46	1390 1390
42	48.34	4222ANB 4222ANBH	S206-52L S306-52L	1560 1570
48	54.53	54.75 4822ANB	S206-58L S306-58L	1745 1790
54	N/A	61.75 N/A	S206-64L N/A	1940 1940
60	67.3	68.05 6022ANB	S206-72 N/A	2160 2170

NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION.
CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY
SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST
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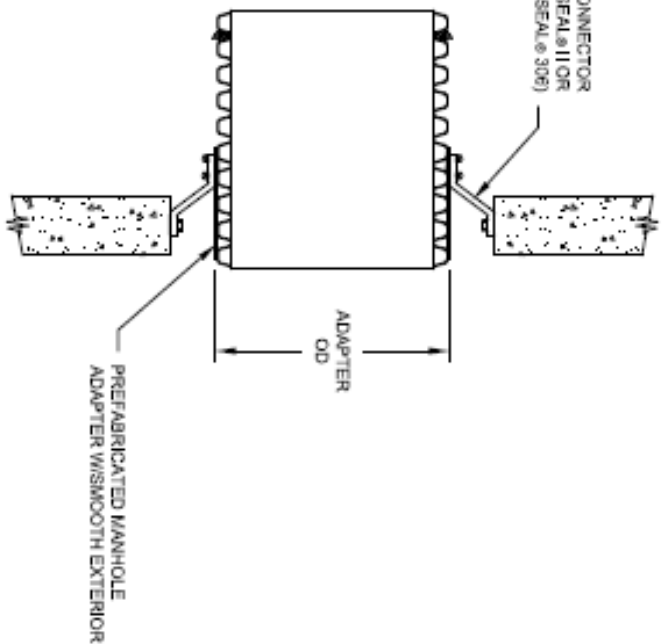
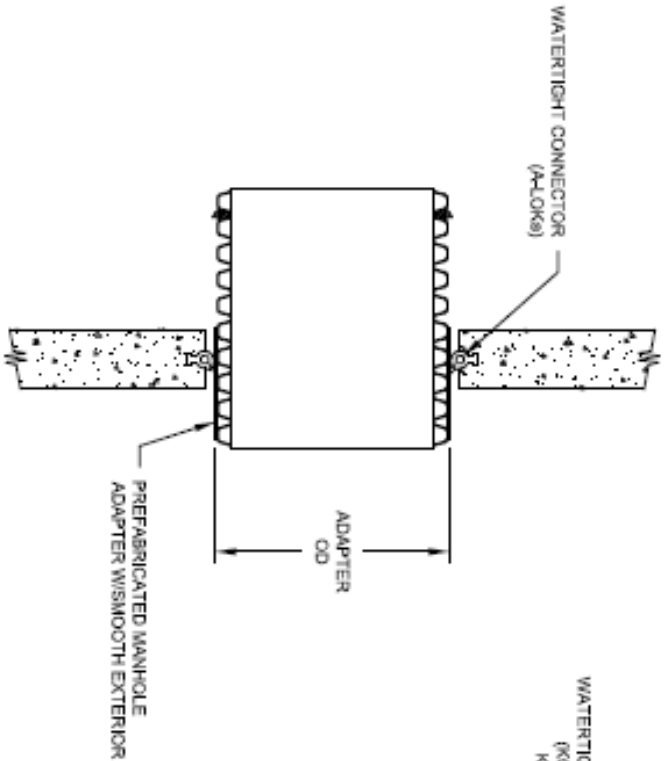
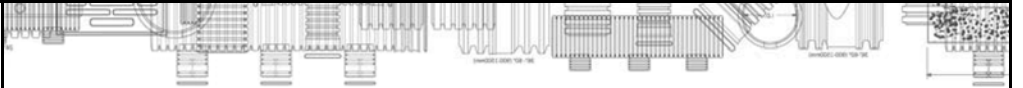
** THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

KOR-N-SEAL is a registered trademark of NPC, Inc. (www.npc.com)
A-LOK is a registered trademark of A-LOK Products, Inc. (www.a-lok.com)

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2	REV.	UPDATED ADAPTER OD & PRODUCT CODES	CKS	8/3/07		
		DESCRIPTION	BY	MAADYV	CHKD	
WATER TIGHT STRUCTURE CONNECTION TYPE 1 DETAIL						
DRAWING NUMBER: STD-204A		4640 TRUEMAN BLVD HILLIARD, OHIO 43026 ADVANCED DRAINAGE SYSTEMS, INC.				
			CKS			
			DATE	10/10/08		
			DATE	NTS		
			SCALE	1 OF 1		



TYPE 2A: A-LOK GASKET (PRE-CAST) WINDPIPE PREFABRICATED MANHOLE ADAPTER W/ SMOOTH EXTERIOR

TYPE 2B: KOR-A-SEAL (CORED HOLE OR PRE-CAST) W/ FIELD INSTALLED MANHOLE BOOT W/ HOOP PREFABRICATED MANHOLE ADAPTER W/ SMOOTH EXTERIOR

SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE: ELM HDPE CONNECTIONS TO MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

PIPE SIZE (IN)	ADAPTER OD (IN)	H-PROFILE	H-PROFILE	PRODUCT CODES	SERIES I OR II	KOR-A-SEAL® **	A-LOK RING® **	H-PROFILE
12	14.73	14.45	1222AN	CUSTOM	S705-20BWS	N/A	480	475
15	17.48	18.05	1522AN	CUSTOM	S108-20WS	S306-52	580	580
18	21.71	22.0	1822AN	CUSTOM	S206-26	S306-56	710	710
24	28.52	28.5	2422AN	CUSTOM	S206-32	S306-52	915	890
30	36.32	36.0	3022AN	CUSTOM	S206-40	S306-40	1180	1180
36	42.06	42.15	3622AN	CUSTOM	S206-46	S306-46	1350	1360
42	48.54	48.75	4222AN	CUSTOM	S206-52L	S306-52L	1580	1570
48	54.53	55.75	4822AN	CUSTOM	S206-58L	S306-58L	1745	1780
54	N/A	61.75	N/A	CUSTOM	S206-64L	N/A	1940	1940
60	67.3	68.05	6022AN	CUSTOM	S206-72	N/A	2150	2170

NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

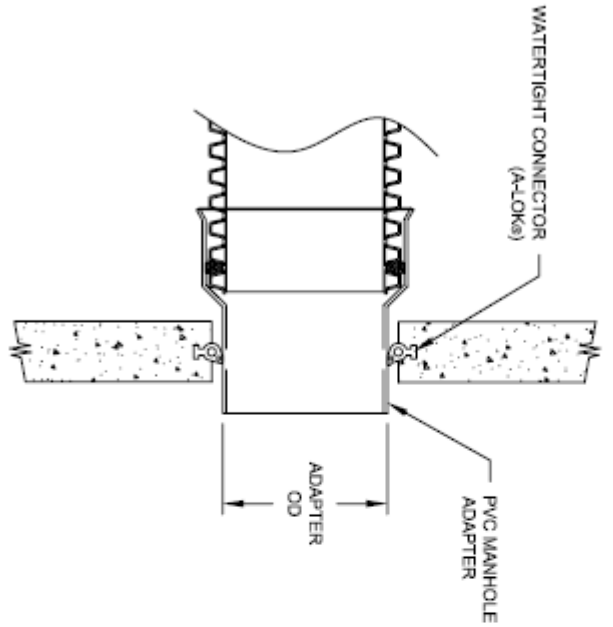
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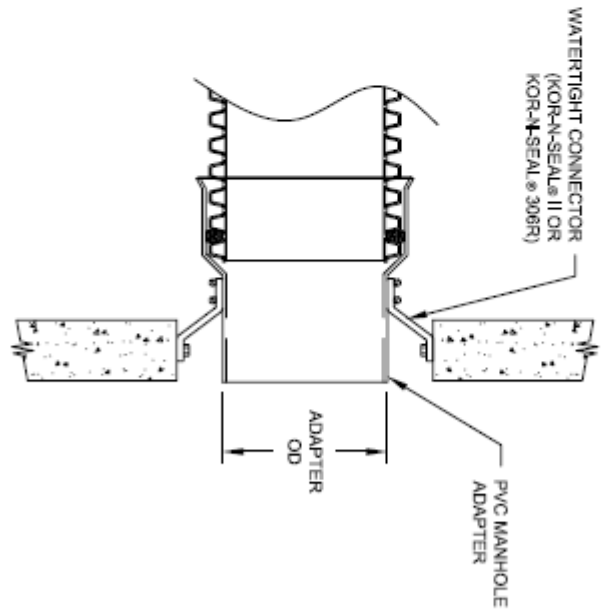
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3	UPDATED A-LOK PRODUCT CODES	CNS	3/11/08	CHGO
REV.	DESCRIPTION	BY	DATE	CHKD
WATER TIGHT STRUCTURES CONSTRUCTION TYPE & DETAIL				
4640 TRUAMAN BLVD HILLIARD, OH 43026 (800) 821-6710				
DRAWING NUMBER: STD-20-4B				
ADVANCED DRAINAGE SYSTEMS, INC.				
1 OF 1				



TYPE 3A: A-LOK (PRE-CAST) MANHOLE GASKET w/ PVC MANHOLE ADAPTER



TYPE 3B: KOR-N-SEAL (CORED HOLE OR PRE-CAST) w/ FIELD INSTALLED MANHOLE BOOT w/ PVC MANHOLE ADAPTER

REFER TO STANDARD DETAIL STD-201. INSTALLATION RECOMMENDATIONS ARE ALSO SPECIFIED IN TECHNICAL NOTE 5.04 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES

PIPE SIZE (IN)	ADAPTER OD	HANCOR PRODUCT CODES	KOR-N-SEAL® ** SERIES I OR II	SERIES 306	A-LOK RING® **
12	12.5	1268AG	S106-16AMP	N/A	410
15	15.3	1568AG	S106-20BWS	N/A	490
18	18.7	1868AG	S206-24A	S306-22	610
24	24.8	2468AG	S206-28	S306-28	800

NOTES:

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** THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

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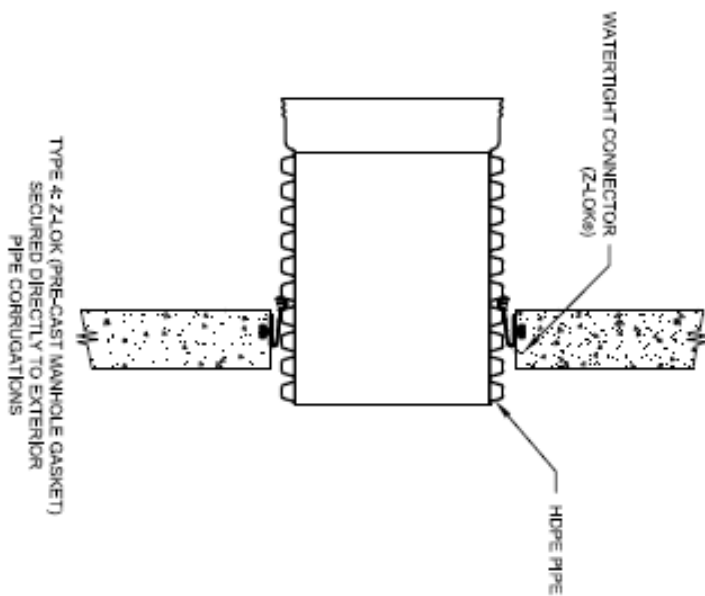
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REV.	DESCRIPTION	TJR	DATE	CHKD
1	UPDATED DRAWING		02/20/07	CMS

WATERTIGHT STRUCTURE CONNECTION TYPE 3 DETAIL
DRAWING NUMBER: STD-204C

ADS
ADVANCED ORANGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DATE: 10/10/08
SCALE: NTS
SHEET: 1 OF 1



SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE: SO4 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

PIPE SIZE (IN)	PIPE OD (IN)	Z-LOK® RING
12	14.6	8016
15	17.9	8019
18	21.2	8022
24	27.8	8029
30	35.1	8039
36	41.1	8045

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** THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

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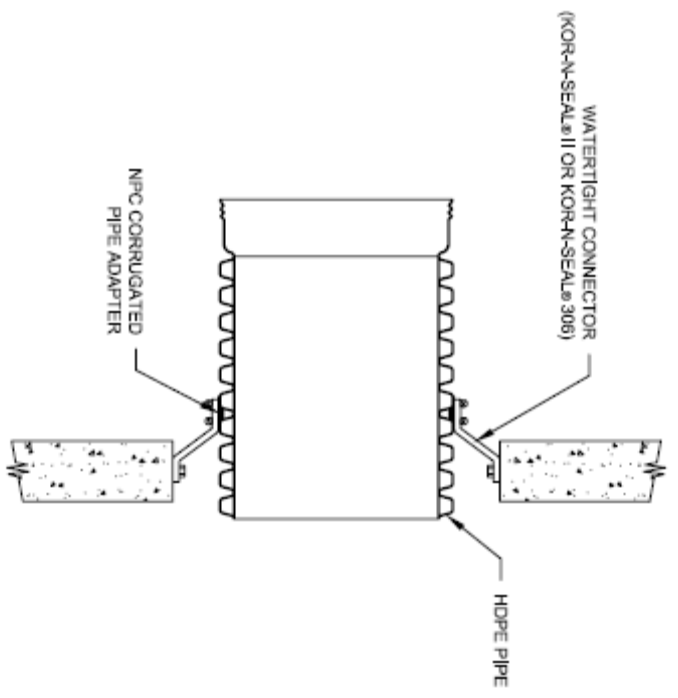
3	REV.	UPDATED Z-LOK PRODUCT CODES	CNS	2/1/08
		DESIGNED BY	WALDOBY	CHNO

WATERTIGHT STRUCTURES CONNECTION TYPE 4 DETAIL



4440 TRUUMAN BLVD
HILLIARD, OH 43026

DATE: 10/3/08
SCALE: NTS
1 OF 1



TYPE 3: KOR-N-SEAL (CORED HOLE OR PRE-CAST GASKET) W/ FIELD
INSTALLED MANHOLE BOOT W/RUBBER CORRUGATED
PIPE ADAPTER

SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE: 5.04 HDPE CONNECTIONS TO
MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

PIPE SIZE (IN)	PIPE OD (IN)	APPROFILE	HAPROFILE	NPC ADAPTER *	KOR-N-SEAL® **	SERIES I OR II	SERIES 306
12	14.5	14.2	CGA-12	CGA-12	CGA-12	S106-20BWS	NA
15	17.8	17.8	CGA-15	CGA-15	CGA-15	S106-20BWS	NA
18	21.2	21.3	CGA-18	CGA-18	CGA-18H	S206-24L	S306-24L
24	27.8	28.4	CGA-24	CGA-24H	CGA-24H	S206-32	S306-32
30	35.1	35.3	CGA-30	CGA-30H	CGA-30H	S206-40	S306-40
36	41.1	41.4	CGA-36	CGA-36H	CGA-36H	S206-44L	S306-44L
42	47.7	48.0	CGA-42	CGA-42H	CGA-42H	S206-52L	S306-52L
48	53.6	54.0	CGA-48	CGA-48H	CGA-48H	S206-58L	S306-58L
54	61.0	61.5	NA	CGA-54H	CGA-54H	S206-64L	NA
60	68.3	67.3	CGA-60	CGA-60H	CGA-60H	S206-72	NA

* 12-24" DIAMETER ASSEMBLIES ARE RATED WATERTIGHT, 30-60"
DIAMETER ASSEMBLIES SHALL BE RATED SOIL-TIGHT.

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NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION.
CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY
SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST
BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE
PIPE AND MANHOLE.

** THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

KOR-N-SEAL is a registered trademark of NPC, Inc. (www.npc.com)

REV.	DESCRIPTION	TAR	DATE	CHKD
1	UPDATED DRAWING		02/20/07	OKS

WATERTIGHT STRUCTURE CONNECTION TYPE 3 DETAIL

DRAWING NUMBER: STD-204E

4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

ADVANCED DRAINAGE SYSTEMS, INC.

DATE: 10/10/06
SCALE: NTS
APP: 1 OF 1