✓ 9-11-06

VARIANCE REQUEST

Iowa Department of Natural Resources

12.4

1. Date	: 4/20/94	13. Decision:	Approved
2. Review Engineer	: Fred Evans	Date:	5/12/94
3. Date Received	: 4/12/94		
4. Facility Name	: Eldridge	14. Appeal:	
5. County Number	: 82	Date:	
6. Program Area	: CP		
7. Facility Type	: CO1		
8. Subject Area	: 355		
9. Rule Reference	: 64.2(9)		
10. Design Std. Ref.	: 12.4		
11. Consulting Engr.	: Shive-Hattery		
12. Variance Rule	: 64.2(9)c		

15. Description of Variance Request

The City of Eldridge desires to use High Density Polyethethylene (HDPE) pipe for construction of the South Slope Sewerage Improvements for which plans and specifications have been submitted to this office for approval and issuance of a construction permit. Since this pipe material is not included in the listing of acceptable sewer pipe materials in Chapter 12 of our design standards and the development of an ASTM for this pipe material is still under preparation the designing engineer is requesting a variance from our design standards to permit using HDPE pipe in the construction of the proposed sewers

16. Consulting Engineer's Justification

1. ADS N-12 HDPE sanitary sewer pipe has been approved for use on other gravity sanitary sewer projects in the State of Iowa. In addition, other states such as Missouri, Kansas and Minnesota have approved and used the ADS N-12 sanitary sewer pipe.

2. ADS N-12 HDPE sanitary sewer pipe use fittings and gaskets which are in compliance with ASTM D-3034, F-1336 and F-477.

16. Consulting Engineer's Justification (cont.)

3. ADS has given assurances to the City of Eldridge that the N-12 HDPE sanitary sewer pipe will not exceed an infiltration rate of 200 gallons per day per inch of pipe diameter per mile of pipe (gpdpipm).

4. A five percent mandrel test shall be performed on all ADS N-12 HDPE sanitary sewer pipe. This deflection test shall be conducted after the final backfill has been in place for at least 30 days. No pipe with deflections greater than five percent will be accepted. This test shall be run in accordance with Chapter 12 of the Iowa Department of Natural Resources Wastewater Facility Design Guide.

5. The American Society for Testing and Materials currently has a committee working on sanitary sewer standards for high density polyethylene pipe.

17. Department's Justification

It is recommended that the ~~requested~~ variance to use HDPE pipe for the proposed gravity sanitary sewers in the City of Eldridge be approved based upon the engineers justification and the acceptance of the use of HDPE pipe for such usage by other state regulatory agencies. The supplier of HDPE pipe in Iowa, Advanced Drainage Systems, Inc. has submitted info on several previous installations of HDPE for gravity sanitary sewers. Copies of this info are attached.

18. Precedents Used

Farmersburg - Approved 8/18/88

19. Staff Reviewer	:	Fred Evans	Date: 4/22/94
20. Supervisor	:	[signature]	Date: 4/25/94
21. Authorized by	:	[signature]	Date: 5/12/94

SHIVE-HATTERY
ENGINEERS AND ARCHITECTS, inc.

1830 Sixth Avenue • P.O. Box 11169 • Moline, IL 61265-8669 • 309/764-7650 • FAX 309/764-8616

April 6, 1994

Mr. Fred Evans
Iowa Department of Natural Resources
Wastewater Permit Division
900 East Grand
Des Moines, Iowa 50309

RE: Eldridge South Slope Sewerage Improvements

Dear Mr. Evans:

Per your telephone conversation with Matt Thompson, the City of Eldridge is requesting a variance to be allowed to install Advance Drainage Systems, inc. (ADS) N-12 HDPE gravity sanitary sewer pipe. This variance request is being made per Chapter 64, paragraph 64.2(9)c of the Iowa Administrative Code. This variance request is based on the following:

1. ADS N-12 HDPE sanitary sewer pipe has been approved for use on other gravity sanitary sewer projects in the State of Iowa. In addition, other states such as Missouri, Kansas and Minnesota have approved and used the ADS N-12 sanitary sewer pipe.

2. ADS N-12 HDPE sanitary sewer pipe use fittings and gaskets which are in compliance with ASTM D-3034, F-1336 and F-477.

3. ADS has given assurances to the City of Eldridge that the N-12 HDPE sanitary sewer pipe will not exceed an infiltration rate of 200 gallons per day per inch of pipe diameter per mile of pipe (gpdpipm).

4. A five percent mandrel test shall be performed on all ADS N-12 HDPE sanitary sewer pipe. This deflection test shall be conducted after the final backfill has been in place for at least 30 days. No pipe with deflections greater than five percent will be accepted. This test shall be run in accordance with Chapter 12 of the Iowa Department of Natural Resources Wastewater Facility Design Guide.

5. The American Society for Testing and Materials currently has a committee working on sanitary sewer standards for high density polyethylene pipe.

393218-9-102-01

If you require any additional information regarding this variance for the Eldridge South Slope Sanitary Sewer Improvements Project please feel free to call me or Matt Thompson at (309) 764-7650.

Sincerely,

SHIVE-HATTERY
ENGINEERS AND ARCHITECTS, inc.
City Engineer

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am duly registered professional engineer under the laws of the State of Iowa.

BY: Myron Scheibe DATE: 4-6-94
Myron K. Scheibe, P.E.
Iowa Registration No. 8807

My registration and renewal date is December 31, 1995.

MJT/chm

Copy: John McCleary, Advanced Drainage Systems, Inc.

393218-9-102-01

ADVANCED DRAINAGE SYSTEMS, INC.

2418 TOWNCREST DRIVE IOWA CITY, IOWA 52240-6622

(800) 733-1003 (319) 338-6950 FAX (319) 338-5603

3-21-94

Iowa Department of Natural Resources
Attn: Fred Evans

Fred:

In addition to projects installed in the Midwest, the following projects were specified in Iowa in 1992 - 1993 construction years. Deep River, Iowa; Lucas, Iowa; Fort Atkinson, Iowa; Bussey, Iowa; Ferguson-Haverhill project. All these projects included ADS Series 35 N12 P.E. pipe in their spcifications.

John McCleary
Sales Engineer

ADS
ADVANCED DRAINAGE SYSTEMS, INC.

2418 TOWNCREST DRIVE IOWA CITY, IOWA 52240-6622

(800) 733-1003 (319) 338-6950 FAX (319) 338-5603

TO: FRED EVANS
FROM: IGNACIO PEREZ
RE: SANITARY SEWER - ELDRIDGE IOWA

DEAR MR. EVANS.

AS PER JOHN MCCLEARY INSTRUCTIONS FIND THE ENCLOSED SHORT FORM SPECIFICATION FOR ADS N-12 S-35 PIPE WITH SDR 35 PVC FITTINGS.
I AM ALSO ENCLOSING A LETTER OF CERTIFICATION THAT WE USED WITH THE STATE OF MISSOURI, IF NECESSARY WE CAN CHANGE THE LETTER TO REFLECT THE IOWA DNR. INSTEAD OF MO DNR.
IF YOU SHOULD NEED ANY FURTHER INFORMATION PLEASE DO NOT HESITATE TO CONTACT ME.

SINCERELY

IGNACIO PEREZ

ADVANCED DRAINAGE SYSTEMS, INC.

2418 TOWNCREST DRIVE IOWA CITY, IOWA 52240-6622

(800) 733-1003 (319) 338-6950 FAX (319) 338-5603

LETTER OF CERTIFICATION

Date:

Project:

Subject: ADS N-12 Sanitary Sewer Pipe and Fittings

Gentlemen:

In accordance with the State of Missouri Department of Natural Resources Design Rule Interpretation - 10 CSR 20-8.120, "Design of Sewers High Density Polyethylene Corrugated Pipe with PVC SDR-35 Couplers and Fittings," and the 1990 Edition of "Recommended Standards for Wastewater Facilities, Section 33.7," Advanced Drainage Systems, Inc. certifies that N-12 sanitary sewer polyethylene pipe 6" through 24" complies with the requirements for test methods, dimensions and markings found in AASHTO Specification M-252 and M-294.

The fittings for this pipe meet the performance requirements of ASTM D-3034 and the mechanical property requirements of ASTM F-1336. The gasket material is manufactured in accordance with ASTM F-477. The embedment material classification and general placement of the materials should be in accordance with ASTM D-2321 "Underground Installation of Flexible Thermoplastic Sewer Pipe."

Sincerely,

Ignacio Perez
Midwest Regional Engineer
Advanced Drainage Systems, Inc.

SERIES 35 PIPE FOR SANITARY SEWERS

"FACT SHEET"

	NOMINAL DIAMETER (I.D.)							
	4" (100 mm)	6" (150 mm)	8" (200 mm)	10" (250 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)	24" (600 mm)
Weight: Kg/6 m	3.6	8.2	13.6	18.2	29.5	41.7	57.6	104.3
Pounds/20 Ft. Length	8.0	18.0	30.0	40.0	65.0	92.0	127.0	230.0
Inside Diameter: (Nominal)	4.10" (104 mm)	6.05" (154 mm)	7.94" (202 mm)	9.90" (251 mm)	12.15" (309 mm)	15.02" (381 mm)	18.15" (461 mm)	24.40" (620 mm)
Outside Diameter: (Nominal)	4.72" (120 mm)	6.95" (176 mm)	9.16" (233 mm)	11.31" (287 mm)	14.45" (367 mm)	17.65" (448 mm)	21.10" (536 mm)	28.30" (719 mm)
Wall Thickness: (Nominal)	.020" (.50 mm)	.020" (.50 mm)	.030" (.75 mm)	.042" (1.07 mm)	.050" (1.27 mm)	.070" (1.78 mm)	.080" (2.03 mm)	.115" (2.92 mm)
Pipe Stiffness: 5% Deflection	50 PSI 345 kpa	50 PSI 345 kpa	50 PSI 345 kpa	50 PSI 345 kpa	Min. 50 PSI 345 kpa	Min. 42 PSI 289 kpa	Min. 40 PSI 276 kpa	Min. 34 PSI 235 kpa
Water Inlet Area: (Nominal, Perf. Pipe)	2.95 sq. in./ft.	2.95 sq. in./ft	2.95 sq. in./ft.	1.75 sq. in./ft.	2.50 sq. in./ft.	1.58 sq. in./ft.	1.58 sq. in./ft.	3.00 sq. in./ft.
Marking:	ADS® 4" I.D. ASTM F405 AASHTO M252	ADS® 6" I.D. ASTM F405 AASHTO M252	ADS® 8" I.D. ASTM F667 AASHTO M252	ADS® 10" I.D. ASTM F667 AASHTO M252	ADS® 12" I.D. ASTM F667 AASHTO M294 Plant, Month Day, Year & Shift of Mfg.	ADS® 15" I.D. ASTM F667 AASHTO M294 Plant, Month Day, Year & Shift of Mfg.	ADS® 18" I.D. ASTM F667 AASHTO M294 Plant, Month Day, Year & Shift of Mfg.	ADS® 24" I.D. ASTM F667 AASHTO M294 Plant, Month Day, Year & Shift of Mfg.

SPECIFICATION FOR SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE FOR SANITARY SEWERS

This specification applies to high density polyethylene corrugated pipe with an integrally formed smooth interior for use as sanitary sewer pipe.

Pipe manufactured to this specification shall comply with the requirements for test methods, dimensions and markings found in AASHTO Specification M-252 and M-294, (ASTM F-405 and ASTM F-667). Pipe stiffness values shall be as follows:

Diameter	Pipe Stiffness	Diameter	Pipe Stiffness
4" (100 mm)	50 psi (345 kPa)	12" (300 mm)	50 psi (345 kPa)
6" (150 mm)	50 psi (345 kPa)	15" (375 mm)	42 psi (289 kPa)
8" (200 mm)	50 psi (345 kPa)	18" (450 mm)	40 psi (276 kPa)
10" (250 mm)	50 psi (345 kPa)	24" (600 mm)	34 psi (235 kPa)

The fittings shall not reduce or impair the overall integrity or function of the pipeline. Common fittings include in-line joint fittings, such as couplers and reducers, and branch or complimentary assembly fittings such as tees, wyes, and end caps. These fittings shall be molded from SDR 35 PVC pipe. They shall meet the performance requirements of ASTM D-3034 and the mechanical property requirements of ASTM F-1336. The gaskets for these fittings shall be manufactured in accordance with ASTM F-477.

Installation of this pipe shall be in accordance with ASTM Recommended Practice D-2321 as covered elsewhere in these specifications. Maximum allowable deflection shall be 7.5% (per ASTM D-3034), measured not less than 30 days following completion of installation.

Pipe and fittings shall be ADS Series 35 or approved equal.

APPLICATION	-	Intended to be used for all gravity sanitary sewers and those storm sewers which require pressure testable couplings and fittings
FITTINGS	-	Meet or exceed performance requirements of ASTM D-3034
	-	Meet or exceed mechanical property requirements of ASTM F-1336
GASKETS	-	Meet or exceed requirements of ASTM F-477
LENGTHS	-	Standard 20' and 13' lengths (Custom lengths also available)
TESTING	-	Pipe and fittings will pass standard air and hydrostatic pressure tests for gravity lines
	-	ADS recommends maximum allowable deflection of 7.5% as suggested in ASTM D-3034