

# VARIANCE REQUEST

12.5.1

Iowa Department of Natural Resources

- 12-18-06
1. Date : 8/14/97
  2. Review Engineer : Fred Evans
  3. Date Received : 5/13/97
  4. Facility Name : City of Cherokee
  5. County Number : 18
  6. Program Area : CP
  7. Facility Type : C01
  8. Subject Area : 305
  9. Rule Reference : 64.2(9)
  10. Design Std. Ref. : 12.5.1
  11. Consulting Engr. : L & H Engineers
  12. Variance Rule : 64.2(9)c
  13. Decision: Approved
  - Date: 8/19/97
  14. Appeal:
  - Date:

## 15. Description of Variance Request

The City of Cherokee is proposing to construct sanitary sewers in an unsewered area within the City which includes 14 residences and one business. It is proposed to use some 6" diameter sewers for portions of the proposed sewer extensions which will be dead end lines and have a limited number of service connections. Inasmuch as our design standards require a minimum diameter of 8" for sewer communities, a variance has been requested. See attached plat for locations of proposed 6" sewers.

## 16. Consulting Engineer's Justification

1. The predicted peak flow for the entire system is 29,500 gpd.
2. There is a local sewer cleaning contractor available, so if problems should arise, they (the problems) can be addressed.

16. Consulting Engineer's Justification (cont.)

17. Department's Justification

Approval of the variance request is recommended based upon the above justification and the following additional considerations:

1. The wastewater carrying capacities of the proposed 6" sewers are considerably in excess of the anticipated flows from the lots to be served.
2. The minimum proposed sewer grade for any of the 6" sewers is 0.6074%. This is the minimum slope required for 6" sewers to provide a flowing full velocity of 2.0 fps. See attached Manhole Data for information on proposed sewer grades.

18. Precedents Used

Variances for use of 6-inch diameter sewers in several communities have been previously approved for the following cities: Albion, Clermont, Fairfield, Keokuk, Leon, Lisbon, McGregor, Pleasantville, University Park, Waucoma, Corning and Peosta.

19. Staff Reviewer

: Ed M. Evans

Date: 8/15/97



597-266  
L and H Engineers & Surveyors

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Fred Evans  
Iowa Department of Natural Resources  
900 East Grand  
Des Moines, Iowa  
50319-0034

May 9, 1997

Re: Proposed Sanitary Sewer Extension

Dear Mr. Evans,

Enclosed are two sets of plans & specifications for a proposed sanitary sewer extension for the City of Cherokee. The extension is extensive in area, but only serves 14 residences and one business. The City has been required to provide service to these locations by the Cherokee County Board of Health. Several alternatives were presented and the decision was made for this alternate.

The extension has several non-standard conditions that are outlined as follows:

1. An inverted siphon with one barrel. *(Variance not required - standard state "Inverted siphons should have not less than 2 barrels"*
2. Steep sewer line grades and use of 6" diameter pipe.

The City asks that these non-standard conditions be accepted and approved for the following reasons:

The situation which applies to both nonstandard conditions is the predicted peak flow for this entire system is 29,500 gpd, which is .046 cfs. This flow does not create a specific velocity in any portion of the pipe. Therefore, no standard practice can apply. The City understands the circumstances and will monitor the system regularly. There is a local sewer cleaning contractor available, so if problems should arise they (the problems) can be addressed. This system can be completely cleaned by his equipment, including elbows in siphon. 6" diameter pipe only used in dead end lines with no future expansion.

Monitoring will be set up at the inception of the sewer line use and will continue until a predictable cleaning cycle can be worked out.

Sincerely,

Dan Hingtgen



# Proposed 6" Sewers

DIVISION	MANHOLE DATA							
	STATION	MANHOLE TYPE	RIM ELEVATION	INLET ELEVATION	OUTLET ELEVATION	"D"	LENGTH	GRADE
I	0+00	Existing	500.0	488.00	487.8			
	0+95	Standard	499.8	488.65	488.55	8"	95'	0.6044%
	1+85	Standard	496.5	490.80	490.70	6"	90'	Siphon
	3+82.8/14+00	Standard	503.7	492.95	492.85	8"	197.8'	1.0578%
II								
	11+70	Cleanout	501.1	---	494.76			
	14+00/3+82.8	Standard	503.7	492.95	492.85	6"	230'	0.8009%
	15+00/25+00	Standard	503.2	493.65	493.55	8"	100'	0.6250%
	17+62.6	Standard	501.1	495.32	495.22	8"	262.6'	0.6064%
	21+02/30+00	Standard	509.0	497.46	497.36	8"	340.4'	0.6064%
III								
	20' Northeast	Stub Out	---	---	497.90			
	29+55	Standard	505.0	497.81	497.71	8"	20'	0.6000%
	30+00/21+02	Standard	509.0	497.46	497.36	8"	45'	0.6098%
	31+04	Standard	511.7	506.10	506.00	6"	100'	8.5400%
	31+57	Standard	538.5	532.10	532.00	6"	53'	52.8571%
	32+34	Standard	551.0	545.10	545.00	6"	77'	17.6713%
	40' Southwest	Cleanout	554.9	---	545.50	6"	40'	1.2500%
	40' Northeast	Cleanout	555.6	---	545.50	6"	40'	1.2500%
IV								
	25+00/15+00	Standard	503.2	493.65	493.55	8"	100'	15.3125%
	26+00	Standard	515.0	508.40	508.30	8"	160'	26.9231%
	27+58	Standard	556.0	550.50	550.40	8"	68'	3.9532%
	28+28/40+00	Standard	563.5	553.13	553.03			
V								
	40+00/28+28	Standard	563.5	553.13	553.03	8"	192'	0.6011%
	41+92	Standard	564.56	554.36	554.26	6"	26'	0.6071%
	42+18	Cleanout	564.2	---	554.55	8"	135'	0.8045%
	135' North	Standard	565.0	---	555.43			