

# VARIANCE REQUEST

Iowa Department of Natural Resources

|                      |   |                               |               |          |
|----------------------|---|-------------------------------|---------------|----------|
| 1. Date              | : | 1/29/92                       | 13. Decision: | Approved |
| 2. Review Engineer   | : | Fred Evans                    | Date:         | 1-30-92  |
| 3. Date Received     | : | 1/2/92                        |               |          |
| 4. Facility Name     | : | City of Burlington            | 14. Appeal:   |          |
| 5. County Number     | : | 29                            | Date:         |          |
| 6. Program Area      | : | CP                            |               |          |
| 7. Facility Type     | : | C04                           |               |          |
| 8. Subject Area      | : | 369                           |               |          |
| 9. Rule Reference    | : | 64.2(9)                       |               |          |
| 10. Design Std. Ref. | : | 15.2.4.6                      |               |          |
| 11. Consulting Engr. | : | Robert Carhoff, City Engineer |               |          |
| 12. Variance Rule    | : | 64.2(9)c                      |               |          |

## 15. Description of Variance Request

The City of Burlington is proposing to replace existing comminutors which have failed in the Market Street Lift Station with a single mechanical screening unit. Since there is not presently a bypass channel at the lift station and since the bar screen equipment selected by the City is the Climber Screen by Infilco Degremont, Inc., the city is requesting a variance from our design standards requirement for a bypass screening channel where a single mechanically cleaned screen is used.

## 16. Consulting Engineer's Justification

1. SERVICING: By design the Climber Screen can be serviced without entering the flow channel, thus eliminating the need for an alternate flow route.
2. MAINTENANCE: The drive mechanism is not below the water level and isolation of the screen channel is not required for maintenance of the equipment.
3. BY-PASS: The design of the Infilco Climber Screen is such that failure of the rake mechanism still permits the bar rack to be manually cleaned. The removal of the Screen's bottom most "dead plates" above the top of the flow channel) will allow personnel to stand between the screen's side frames and manually rake accumulated screenings from the bar rack in the same way it is currently done. Screenings will be containerized as they are now and removed from the wet well using the already existing overhead hoist. A feature of this system allows for the removal of the mechanical cleaning mechanism allowing hand cleaning of the screen any shutdown periods.

16. Consulting Engineer's Justification (cont.)

4. UNIQUE CIRCUMSTANCES: The flow channel into which the bar screen is to be installed is an existing structure and considered to be a deep well application. The floor of the existing channel is 21 ft. below the outside grade. There is no existing by-pass screening channel. The pumping station is located on the shore of the Mississippi River (high water table). To design and construct a by-pass screening channel outside of the existing structure would be very expensive, and would be a questionable use at best of the taxpayers money given the design features of the Climber Screen.

5. CONCLUSION: The Infilco Climber Screen has the equivalent effectiveness of a mechanical bar screen with a drive mechanism below the water level, while significantly reducing costs compared to a mechanical bar screen requiring (the design and construction of) a by-pass channel for servicing and maintenance purposes.

17. Department's Justification

It is recommended that the requested variance be approved based upon the engineer's justification and the following additional considerations:

1. Inasmuch as the bar screen portion of the screening equipment will remain in place whenever the mechanical cleaning mechanism is removed for servicing, manually cleaned screening will be provided during such periods, and, therefore, the proposed equipment will meet the requirements of the design standards in this regard.
2. The City is presently removing screenings with a manually cleaned bar rack which has been fabricated by plant personnel; therefore, provisions for hand raking of screenings and removal of such screenings from the lift station are presently available.
3. The spacing of the bars in the proposed screening equipment meets the requirements of our design standards for manually cleaned screens. The standards require a minimum opening of 1 inch and a maximum opening of 1 3/4 inches for manually cleaned screens. The equipment proposed has an opening of 1 1/2 inches between bars.

18. Precedents Used

None

|                    |                 |               |
|--------------------|-----------------|---------------|
| 19. Staff Reviewer | : Fred M. Evans | Date: 1/30/92 |
| 20. Supervisor     | : [Signature]   | Date: 1/30/92 |
| 21. Authorized by  | : [Signature]   | Date: 1/30/92 |



TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

LARRY J. WILSON, DIRECTOR

February 5, 1992

City of Burlington  
420 Washington  
Burlington, IA 52601

Project No.: S91-266  
File: Burlington - Sewage  
Subject: Market Street Bar Screen

The Iowa Department of Natural Resources in accordance with subrule 567--64.2(9)c of the Iowa Administrative Code has approved your request for a variance from Iowa Wastewater Facilities Design Standard 15.2.4.6 which requires a bypass screening channel where a single mechanically cleaned screen is used.

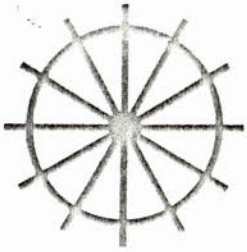
The engineering justification submitted and the type of mechanically cleaned screen equipment to be used (Climber Screen by Infilco Degremont, Inc.) substantially demonstrate that this variance will result in at least equivalent effectiveness while significantly reducing costs.

Sincerely,

DARRELL MCALLISTER, CHIEF  
SURFACE AND GROUNDWATER PROTECTION BUREAU

bkp/S&GWW034P08.01

cc: Robert Carhoff, City Engineer Department  
Field Office 6



CITY OF BURLINGTON, IOWA  
CITY HALL

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400 WASHINGTON STREET  
BURLINGTON, IOWA 52601

December 31, 1991

Mr. Fred Evans  
Department of Natural Resources  
Henry A. Wallace Building  
900 East Grand  
Des Moines, IA 50319

RE: Market Street Lift Station Improvements

Dear Sir:

Please find enclosed further justification in support on our request for a variance to the department standards requiring a by-pass screening channel.

Very truly yours,

Robert Carhoff

jab

enclosure



We are asking the State to grant a variance to the City from the department design standards requiring a by-pass screening channel.

The mechanical bar screen selected by the City is the Climber Screen by Infilco Degremont, Inc.

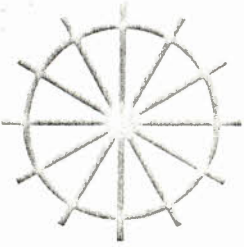
SERVICING: By design the Climber Screen can be serviced without entering the flow channel, thus eliminating the need for an alternate flow route.

MAINTENANCE: The drive mechanism is not below the water level and isolation of the screen channel is not required for maintenance of the equipment.

BY-PASS: The design of the Infilco Climber Screen is such that failure of the rake mechanism still permits the bar rack to be manually cleaned. The removal of the Screen's bottom most "dead plates" above the top of the flow channel) will allow personnel to stand between the screen's side frames and manually rake accumulated screenings from the bar rack in the same way it is currently done. Screenings will be containerized as they are now and removed from the wet well using the already existing overhead hoist.

UNIQUE CIRCUMSTANCES: The flow channel into which the bar screen is to be installed is an existing structure and considered to be a deep well application. The floor of the existing channel is 21 ft. below the outside grade. There is no existing by-pass screening channel. The pumping station is located on the shore of the Mississippi River (high water table). To design and construct a by-pass screening channel outside of the existing structure would be very expensive, and would be a questionable use at best of the taxpayers money given the design features of the Climber Screen.

CONCLUSION: The Infilco Climber Screen has the equivalent effectiveness of a mechanical bar screen with a drive mechanism below the water level, while significantly reducing costs compared to a mechanical bar screen requiring (the design and construction of) a by-pass channel for servicing and maintenance purposes.



# CITY OF BURLINGTON, IOWA

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ENGINEER'S OFFICE  
513 N. MAIN RM B-11  
BURLINGTON, IA 52601

November 8, 1991

Mr. Fred Evans  
Department of Natural Resources  
Henry A. Wallace Building  
900 East Grand  
Des Moines, Iowa 50319

RE: Market Street Lift Station Improvements.

Dear Sir;

Please find enclosed one set of the Design Data for a Type IIS Climber Screen Mechanism and the required Schedule A and I forms.

We wish to request at this time a variance of the requirement to have a by-pass capability around the screen. A feature of this system allows for the removal of the mechanical cleaning mechanism allowing hand cleaning of the screen any shutdown periods.

We hope to have the mechanism installed by January 1, 1992.

If you have any questions please contact this office at 319-753-8171.

Very truly yours,

*Robert Carhoff*

Robert Carhoff



**Notes**

[illegible][illegible]

## IOWA DEPARTMENT OF WATER, AIR AND WASTE MANAGEMENT

| WATER QUALITY<br>PROGRAM  |                                                              | CONSTRUCTION PERMIT APPLICATION<br>SCHEDULE 1, SCREENING, GRIT REMOVAL & FLOW MEASUREMENT |  | WAWM USE    |  |
|---------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------------|--|-------------|--|
| DATE PREPARED<br>April 88 | PROJECT IDENTITY<br>Market Street Lift Station<br>Bar Screen |                                                                                           |  | PROJECT NO. |  |
| DATE REVISED              |                                                              |                                                                                           |  | PERMIT NO.  |  |

Screening Facilities:

- Location of Unit Market Street Lift Station
- Type of screen: Manually cleaned \_\_\_\_\_ Mechanically cleaned X Comminution \_\_\_\_\_

| Unit | Area                     |                                   | Opening<br>Size<br>Inches | Slope<br>Degrees | Velocity<br>fps | Head<br>Loss<br>Ft. | Capacity<br>MGD |
|------|--------------------------|-----------------------------------|---------------------------|------------------|-----------------|---------------------|-----------------|
|      | Total<br>Ft <sup>2</sup> | Effec-<br>tive<br>Ft <sup>2</sup> |                           |                  |                 |                     |                 |
| #1   | 28                       | 22.4                              | 1½                        | 70               | 2.0             |                     | 14.11           |
|      |                          |                                   |                           |                  |                 |                     |                 |
|      |                          |                                   |                           |                  |                 |                     |                 |
|      |                          |                                   |                           |                  |                 |                     |                 |

- Have the following been provided for? Describe.
  - Lighting Yes X No \_\_\_\_\_ White Surface Mount UL Damp location (1-F40T 12/CW)
  - Ventilation Yes X No \_\_\_\_\_ 360 CFM 1/2s HP 115V 1Ø 1600 rpm
  - Means for removing screenings Yes X No \_\_\_\_\_
  - Entrances Yes X No \_\_\_\_\_
- Screen channel invert is 6 inches below incoming sewer.
- Is auxiliary screen provided? No Describe: \_\_\_\_\_
- Method of screening disposal Des Moines County Landfill by Dempster

7. Is a service bypass provided? Yes Discharge to To Market Street Lift Station Wet Well

Grit Removal Facilities:

- Location of Unit \_\_\_\_\_
- Type \_\_\_\_\_ No. of Units \_\_\_\_\_
- Dimensions \_\_\_\_\_ Volume \_\_\_\_\_ gal. Detention time \_\_\_\_\_ minutes
- Type of velocity control \_\_\_\_\_
- Linear velocity (fps) \* Average \_\_\_\_\_ Maximum \_\_\_\_\_ Minimum \_\_\_\_\_
- Method of dewatering \_\_\_\_\_
- Is a service bypass provided? \_\_\_\_\_ Discharge to \_\_\_\_\_
- Method of grit removal \_\_\_\_\_
- Location of grit removal \_\_\_\_\_

Flow Measurement Facilities:

- Location of Unit \_\_\_\_\_
- Type of measurement \_\_\_\_\_ Maximum capacity \_\_\_\_\_ MGD.
- Type of recording \_\_\_\_\_ Maximum capacity \_\_\_\_\_ MGD.
- Is a service bypass provided? \_\_\_\_\_ Discharge to \_\_\_\_\_