

RECORD COPY				DATE ENTERED		DATE		INITIALS	
File Name <u>Keokuk - Sewage</u>						<u>6/2/87</u>		<u>JME</u>	
DATE RECEIVED	SENDER'S NAME	COUNTY NO.	PROGRAM AREA CODE	FACILITY TYPE CODE		SUBJECT AREA CODE			
<u>5/12/87</u>	<u>City of Keokuk</u>	<u>56</u>	<u>CP</u>	<u>CO1</u>		<u>305</u>			
RULE REFERENCE	DESIGN STANDARD REFERENCE		DECISION			APPEAL ACTION			
<u>9</u>	<u>12.5.1</u>		<u>11 Approved</u>			<u>12</u>			
			<u>6/2/87.</u>						
ENGINEER			VARIANCE RULE						
<u>13 Shoemaker & Haaland</u>			<u>14 64.2 (9) C</u>						

15. DESCRIPTION OF VARIANCE REQUESTED: _____

Engineer proposes to extend an existing 6" diameter sewer a distance of 12 feet with 6" diameter pipe to a proposed manhole in Main Street. From this manhole a sanitary sewer extension of 190' of 8" diameter sewer will be extended to serve two new office buildings with an additional office building to be served by the sewer extension in the future. The design standards require a minimum sewer diameter of 8"; however, a 6" diameter extension is proposed to connect to the proposed 8" sewer since the present sewer is 6" diameter.

16. ENGINEERS JUSTIFICATION:

1. The connection will be made to an existing 6" sewer
2. The existing 6" line is laid on a sewer grade of 12% for the 180 ft length and the 12% grade will be continued for the proposed 12' extension. This sewer line should very adequately carry the flow
3. The proposed 8" sanitary sewer extension is in such a location that future extension would not be necessary since the surrounding area is already sewered
4. The City of Keokuk sewer maintenance crew has a sewer jet machine which is capable of cleaning 6" diameter sewer lines.

17. DEPARTMENTS JUSTIFICATION: We agree with the engineers reasons for justification. Our calculations indicate the following flowing full capacities and velocities for the proposed 6" and 8" sewer extensions

Sewer Diameter	Sewer Grade	Capacity - full	Velocity - full
6"	12%	1.89 MGD	8 f.p.s.
8"	2.32%	1.10 MGD	4.3 f.p.s.

Design flows for area when totally developed (1997)
Rated Flow = 750 GPD & Peak Hourly Flow = 3150 GPD

Since the carrying capacity and velocity in the 6" sewer are considerably greater than the 8" sewer carrying capacity and velocity and the design flows, and cleaning equipment is available we recommend approval.

18. PRECEDENTS USED: City of Mystic - Approved 7/16/86
City of Delta - Approved 11/10/86
City of Shambaugh - Approved 2/10/87

1. STAFF REVIEWER:

Fred M. Evans 6/2/87

20. SUPERVISOR:

Larry Hage approved 6/3/87

21. AUTHORIZED BY:

Daniel G. Hall approved 6/3/87

STATE OF IOWA
DEPARTMENT OF NATURAL RESOURCES
HENRY A. WALLACE BUILDING
DES MOINES, IOWA 50319

(short extension
of existing 6" sewer)

CONSTRUCTION PERMIT

RECORD COPY

File Name Keokuk - Sewage
Senders Initials FME

Shoemaker & Haaland
Professional Engineer
11 South 11th Street
Keokuk, Iowa 52632

PERMIT NO.: 87-161-S

FILE: Keokuk - Sewage

RE: Office Building Sewer

PROJECT NO: 587-132

In accordance with the provisions of Section 455B.173.9 and 455B.174.4, Code of Iowa, and Rule 567--64.2(455B) or Rule 567--65.5(455B), or Rule 567--41.12(455B) of the Iowa Administrative Code, the Director of the Department of Natural Resources does hereby issue a permit for the construction of:

190 feet of 8-inch and 12 feet of 6-inch sanitary sewer (P.V.C.) and appurtenance,
Professional Office Building Sanitary Sewer Extension, City of Keokuk, Iowa.

The requested variance from our design standards to permit the use of 6-inch diameter sewer for connection to the existing sanitary sewer system is hereby granted.

The construction of the project shall be initiated within one year of issuance of this permit or this permit is no longer valid. Within thirty days after completion of construction, the permit holder shall submit a certification by a registered professional engineer that the project was completed in accordance with the approved project documents.

Pursuant to Section 455B.174.4, Code of Iowa, you have the right to appeal any condition of this permit by filing with the Director of the Department of Natural Resources a notice of appeal and request for administrative hearing within thirty days of receipt of this permit.

Contact Fred M. Evans at 515/281-5917 with any questions or comments.

For the Department of Natural Resources

Larry J. Wilson, Director

By:

Larry Hoge
ENVIRONMENTAL PROTECTION DIVISION

Date:

June 8, 1987

cc: City Clerk, Keokuk, IA
Scott R. Fehseke, Director of Public Works
Field Office 6

FME:pla/KEO

Plan Distribution

1 Engineer; 1 DNR File

CITY OF KEOKUK

P. O. BOX 20
KEOKUK, IA 52602

KENNETH C. HENKE JR. — MAYOR

ALDERMEN

CHARLES S. ABELL — AT LARGE
JOHN KULL — AT LARGE
KENNETH A. FOARD — 1ST WARD
JEFFREY JEFFERS — 2ND WARD
ROBERT GALLOWAY — 3RD WARD

DAVID HARMON — 4TH WARD
JANET FIFE — 5TH WARD
GORDON GUSTAVSON — 6TH WARD
BEN RICHARDSON — 7TH WARD

J. A. FINERTY — CITY CLERK
TELEPHONE 319-524-2080

May 8, 1987

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

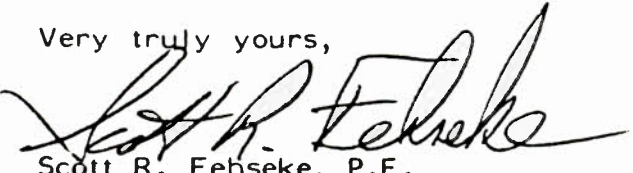
Attn: Lavoy Haage - Waste Water Permit Section

RE: Sanitary Sewer Extension for 2021 & 2025 Main Street

Dear Mr. Haage:

Enclosed, please find two sets of applications, specifications and drawings for a sanitary sewer extension for 2021 and 2025 Main Street. We are forwarding this on behalf of Shoemaker-Haaland, Professional Engineers, who are the applicants as well as the engineers. The sewer extension will serve three lots to be used for commercial purposes, and will only have a minor amount of flow as shown on the applications. Please note that the amount of 6" line that is being installed as part of the extension is only approximately 12', which will extend from the clean-out of an existing 6" sewer to the proposed new manhole. This 6" line will be at an approximate 12% slope, which will very adequately carry the flow. Our sewer crew also has a sewer jet machine which is capable of cleaning 6" lines. This 6" line then discharges into a 5' x 4' concrete box main combined sewer. The additional flow into this main combined sewer as a result of this extension will be negligible. Also, the sewer extension is in such a location that future extension would not be practical or necessary since the surrounding area is already sewered. Therefore, the City recommends approval of this sewer extension.

Very truly yours,


Scott R. Fehseke, P.E.
Director of Public Works

kd

encl.

cc: Shoemaker-Haaland

WATER QUALITY PROGRAM		CONSTRUCTION PERMIT APPLICATION SCHEDULE C, LATERAL SEWER EXTENSION		WAWM USE	
DATE PREPARED 4 May 1987		PROJECT IDENTITY Professional Office Building Sewer Extension		PROJECT NO.	
DATE REVISED				PERMIT NO.	

1. Design Basis	Initial		Design Year ()	
Residential service area	0	Acres	0	Acres
Population		Persons		Persons
Flow (100 GPCD)		GPD		GPD
BOD ₅ (0.17 #/d/cap)		#/day		#/day
Industrial service area		Acres		Acres
Rated Flow		GPD		GPD
BOD ₅		#/day		#/day
Other <u>Commercial</u>	0.4	Acres	0.7	Acres
Rated Flow	500	GPD	750	GPD
BOD ₅	3.4	#/day	5.1	#/day
Total BOD ₅	3.4	#/day	5.1	#/day
Total Flow	500	GPD	750	GPD
Peak Hourly Flow	2100	GPD	3150	GPD (4.2 factor)

2. Pipe	8 Inch	6" XXXX 12 Inch	12 Inch
Diameter			
Material	PVC-SDR 35	PVC-SDR 35	
Joint	gasket	gasket	
Minimum Slope	-2.32 %	-12 %	%
Maximum Manhole Space	190 Ft.	192 * Ft.	Ft.
Total Sewer Length	202 Ft.	192 * Ft.	Ft.
Maximum Cover	10 Ft.	8 Ft.	Ft.
Minimum Cover	4 Ft.	2 Ft.	Ft.

* An existing C.O. shall be removed and 12 ft. of 6" ϕ P.V.C. extended to new manhole (see attached drawing)

3. Construction specifications (Indicate ASTM No. or other standard included in the specifications). A brief description is required in each part.

A. Bedding class Class C envelope as per IES-AGC-APWA Joint Committee Std.Specs.

B. Pipe laying As per IES-AGC-APWA Joint Committee Std. Specs.

C. Compaction Std.Proctor; 95% below paving; 90% below other indicated areas

D. Manhole ASTM C-478

E. Specified maximum infiltration/exfiltration rate 200 GPD/MPF

As per specs. Part 10, para.15 or air test

F. Infiltration/exfiltration test procedures per same paragraph

G. Alignment & grade test procedures

(1) During construction: Stake & batter board Laser X

(2) After construction: Lamping X or Other Laser

H. Deflection test procedures Rigid ball or mandrel, with less than 5% deflection.

4. Are detailed manhole drawings included? Yes Per No Std. Typical frame and cover assembly Neenah R-1394. Are manhole covers nonvented? Yes X No . Manhole diameter 48 in. Manhole opening diameter 24 in. Material R.C.P.

5. Minimum sewer & water main separation: Horizontal 10 ft. Vertical 18 in.

Are specifications included? Yes-in standard specifications

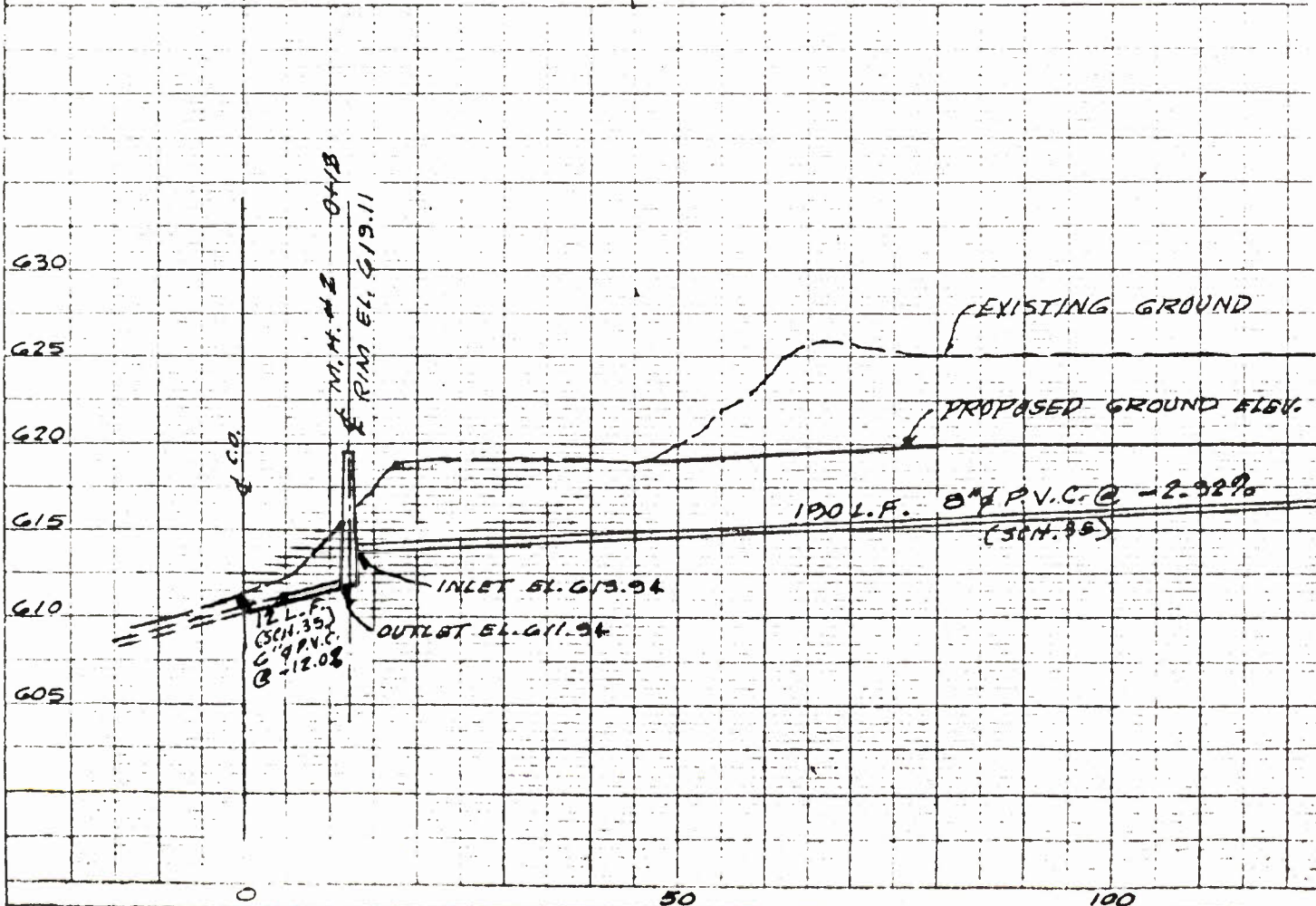
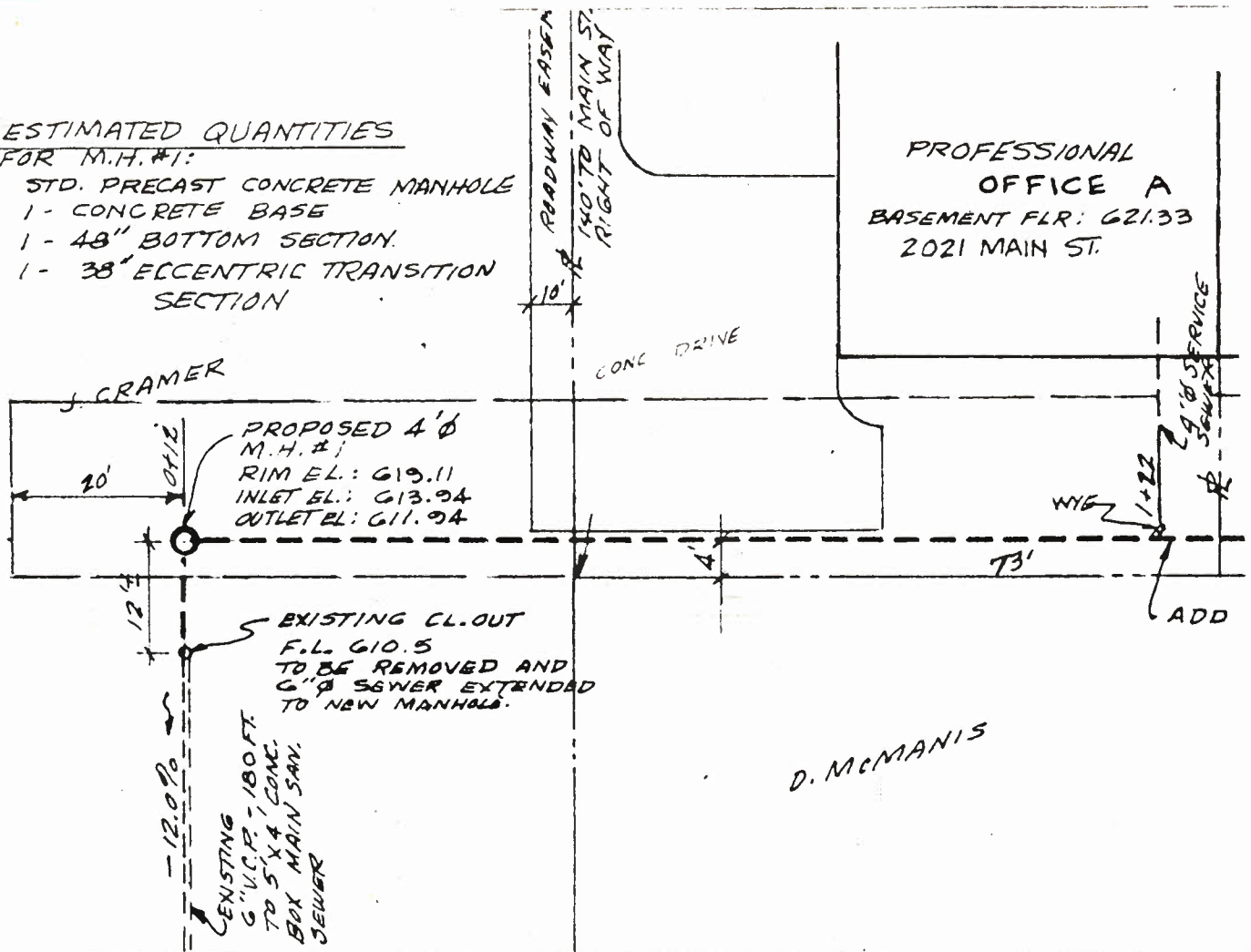
6. Stream, road, or railroad crossing protection N/A

Are specifications included?

ESTIMATED QUANTITIES
FOR M.H. #1:

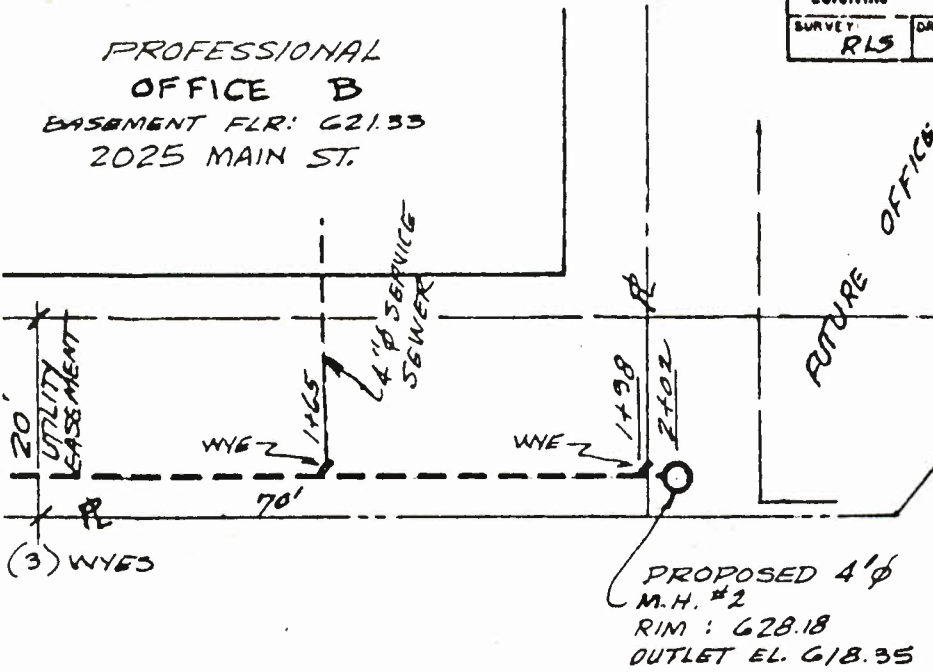
- STD. PRECAST CONCRETE MANHOLE
- 1 - CONCRETE BASE
- 1 - 48" BOTTOM SECTION
- 1 - 38" ECCENTRIC TRANSITION SECTION

PROFESSIONAL
OFFICE A
BASEMENT FLR: 621.33
2021 MAIN ST.



Shoemaker & Haaland Professional Engineers				Shoemaker & Haaland	
Corollaries Keokuk Cedar Rapids				SANITARY SEWER	
SURVEY	DRAWN	CHECKED	APPROVED	DATE	SCALE
RLS	FMB			26 MAR 07	AS SHOWN

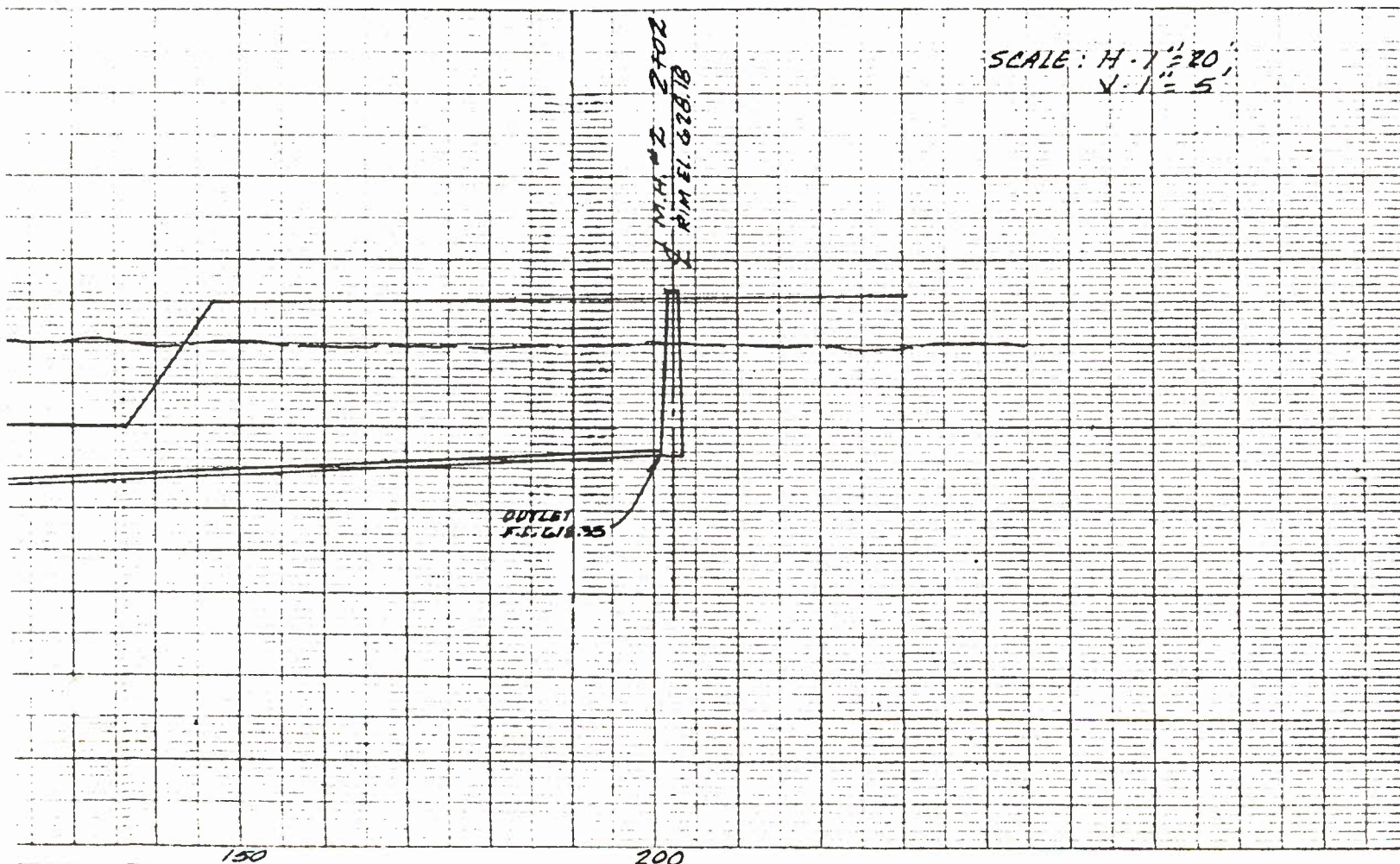
PROFESSIONAL
OFFICE B
BASEMENT FLR: G21.33
2025 MAIN ST.



CITY OF KEOKUK
T65N - R5W - 5th P.M.
Lee County - Iowa

- ESTIMATED QUANTITIES
FOR M.H. #2.
- STD. PRECAST CONCRETE MANHOLE
 - 1- CONCRETE BASE
 - 1- 48" BOTTOM SECTION
 - 1- 32" BARREL SECTION
 - 1- 38" ECCENTRIC TRANSITION SEC

SCALE: 1" = 20'



SCALE: H - 1" = 20'
V - 1" = 5'

Keokuk - S.S.E.

6/1/87

Project received 5/12/87 - 2 sets P&S
S.S.E. to serve proposed new office
buildings @ 2021 and 2025 Main Street
for Shoemaker-Husland Professional Engineer.

S.S.E. to serve 1997 design year
business area of 0.7A and flow
of 750 GPD (PHWW flow = 3150 GPD)

Proposes new 8" S.S.E. in Main St. @
2.32% slope - connection from MTH#
to existing 6" sewer is proposed
as 6" diameter sewer - length = 12 ft.
and slope = 12%

Existing 6" sewer has length of 180 ft.
- discharges into a 5 ft x 4 ft concrete
box main combined sewer. Engineer
advises that the sanitary sewer
extension is in such a location that
future extension would not be practical
or necessary since the surrounding
area is already sewered. Engineer
advises that City has a sewer jet
machine which is capable of cleaning 6" line.

($V = 4.3$ fps)
Flowing full capacity of 8" sewer @ 2.32% = 1.10 MGID
Flowing full capacity of 6" sewer @ 12.0% = 1.89 MGID