

# CONSOLIDATED WATER AND SEWER IMPROVEMENT DIST. NO. 24 CITY OF MANDAN, NORTH DAKOTA



North Dakota State Department of Health  
Bismarck, North Dakota  
APPROVAL OF PLANS

City: Mandan, N.D. Date: 10-19-1976

Type of System: Consolidated water & sewer

Checked by: Jeffrey Hargel Title: Env. Eng.

Approved: Willis Van Heuvelen  
Chief, Environmental Health and Engineering Services

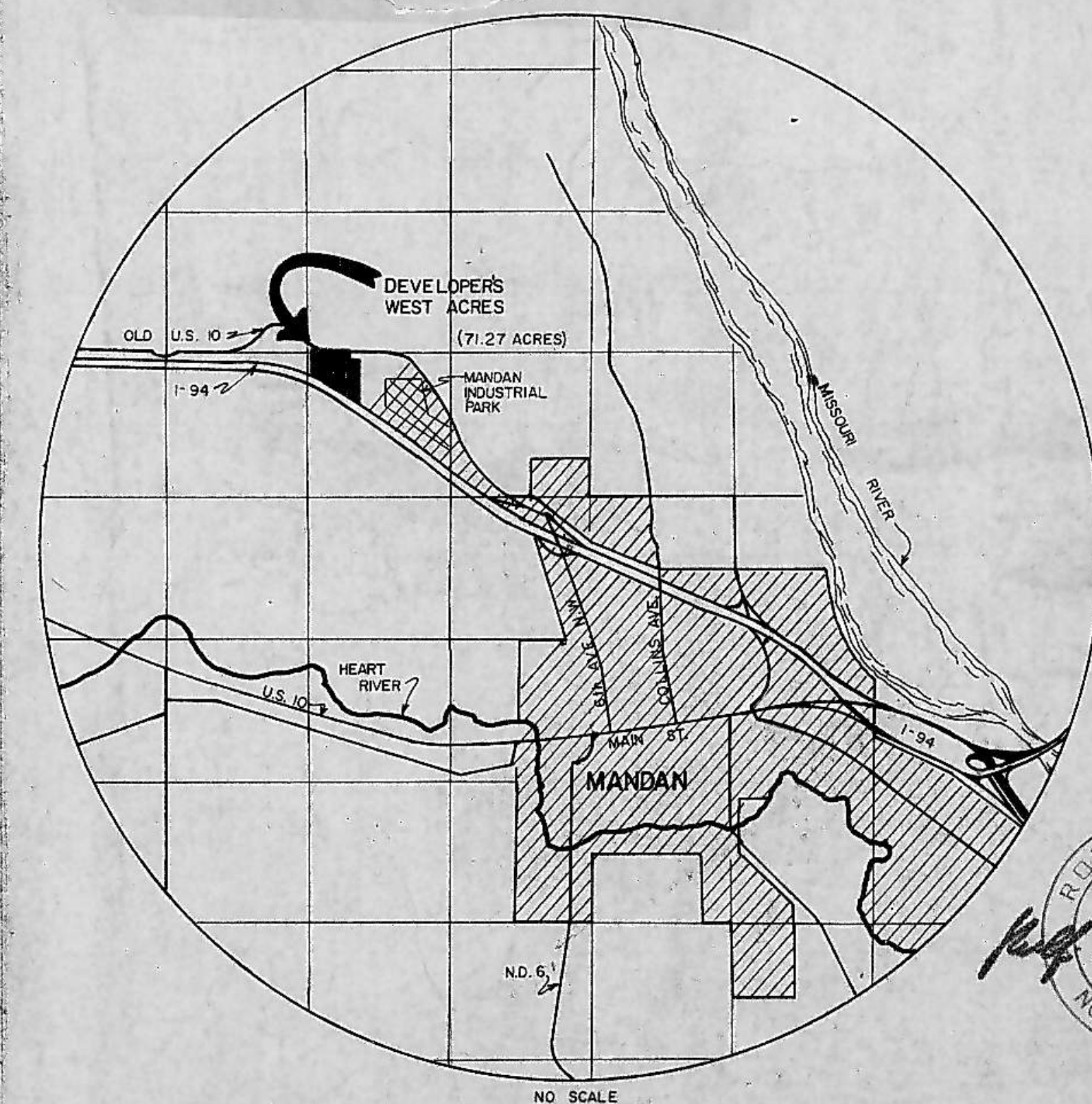
This approval is null and void three years from above date in the event bids have not been let or construction started.

North Dakota State  
Water Conservation Commission  
By: Deanna Sahy  
Secretary & Chief Engineer

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5.	SCOTT AVENUE 37 <sup>th</sup> Ave NW MICHEALA AVENUE 36 <sup>th</sup> Ave NW
6.	KEMBERLY AVENUE 35 <sup>th</sup> Ave NW BRANDON AVENUE 33 <sup>rd</sup> Ave NW
7.	GWEN AVENUE 34 <sup>th</sup> Ave NW CAMERON STREET 42 <sup>nd</sup> St NW
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LOCATION MAP



TOMAN ENGINEERING CO.

OCTOBER 1976

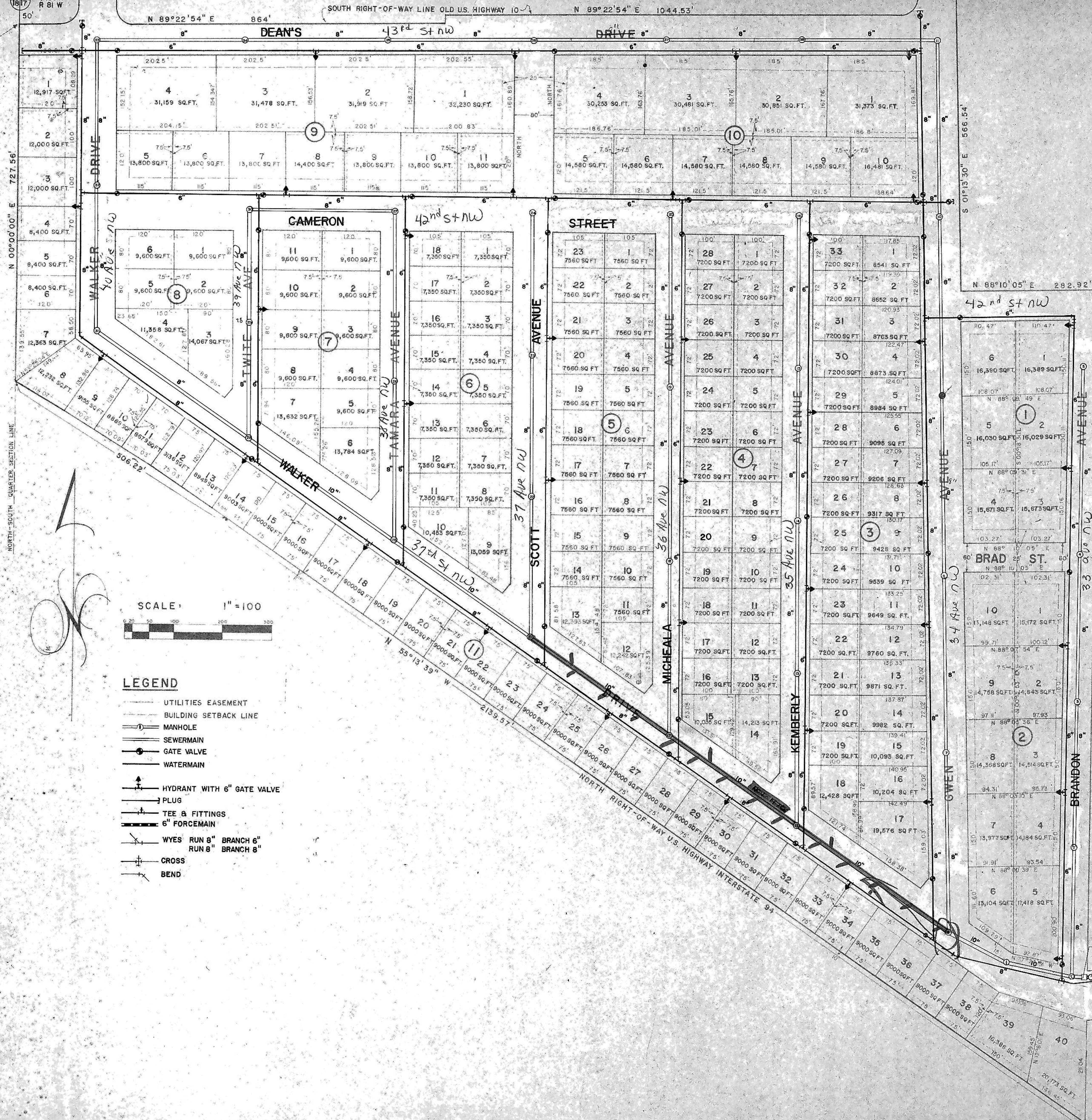
CONSULTING ENGINEERS

5

D 24  
Copy #



# DEVELOPER'S WEST ACRES WATER & SEWER DISTRICT NO. 24 PROJECT LAYOUT



**LEGEND**

- UTILITIES EASEMENT
- BUILDING SETBACK LINE
- MANHOLE
- SEWERMAIN
- GATE VALVE
- WATERMAIN
- ↑ HYDRANT WITH 6" GATE VALVE
- ⊥ PLUG
- TEE & FITTINGS
- 6" FORCEMAIN
- WYES RUN 8" BRANCH 6"  
RUN 8" BRANCH 8"
- ⊥ CROSS
- ⤵ BEND

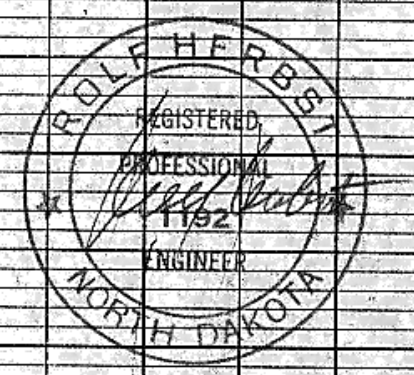
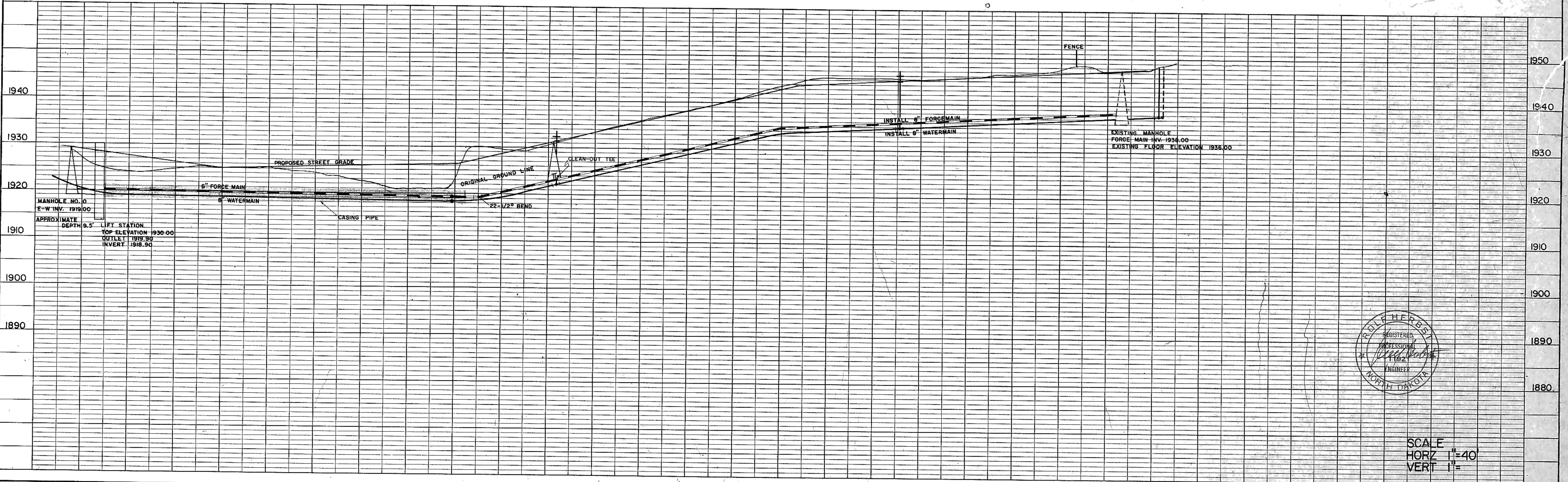
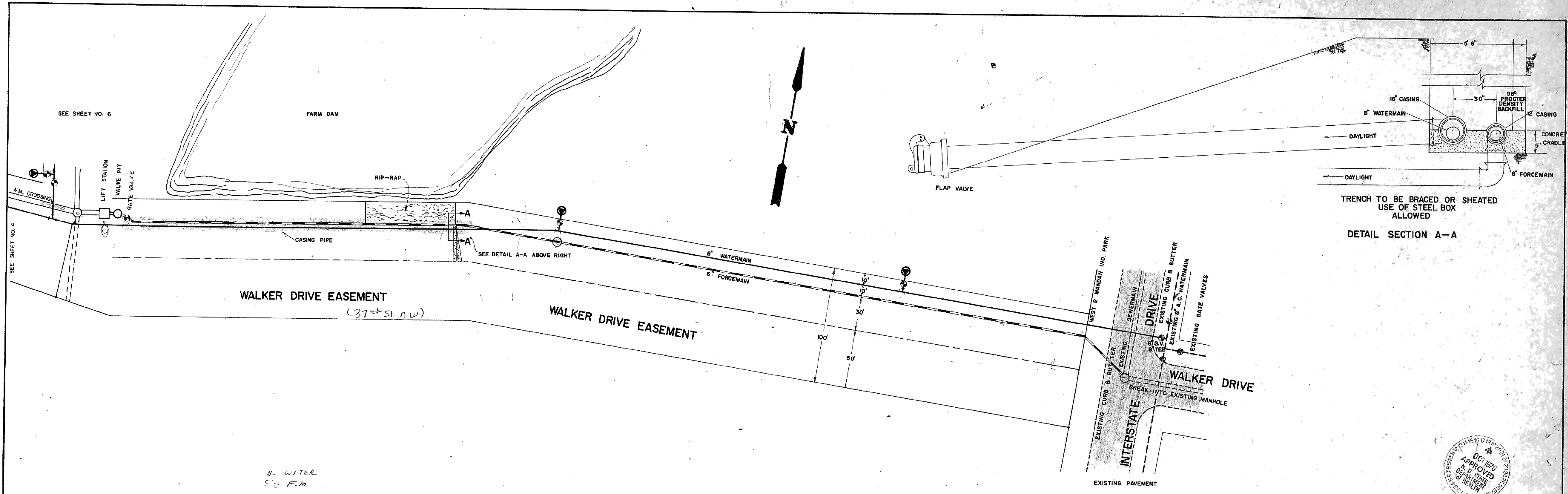


Tomman Engineering Company  
Civil & Environmental Consultants  
P. O. Box 708 P. O. Box 852  
Mandan, ND 58040



PLAN	SURVEYED	DATE
	PLOTTED	BY
	NOTE BOOK	NO.
	GRADES CHECKED	
	RT. OF WAY CHECKED	

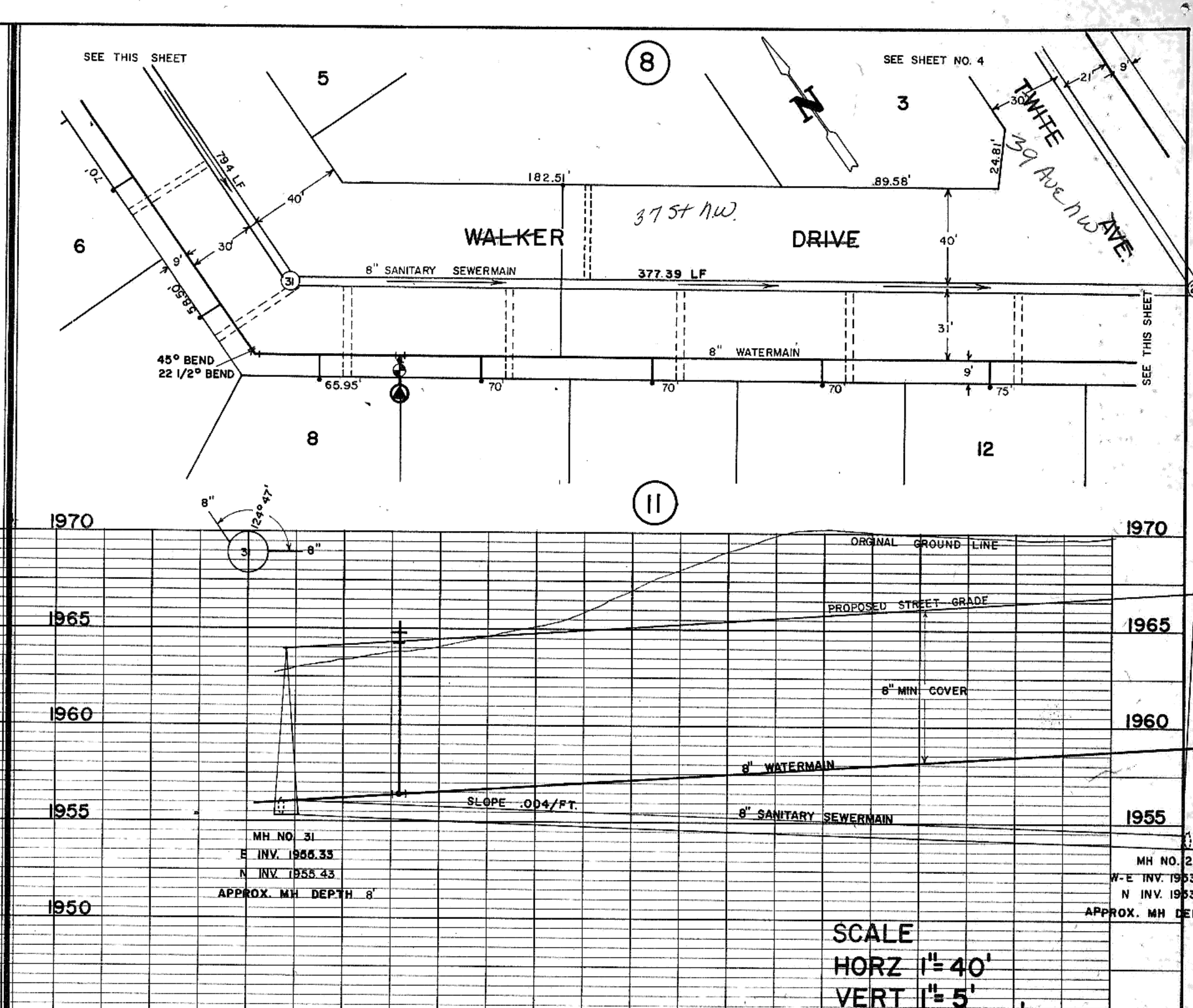
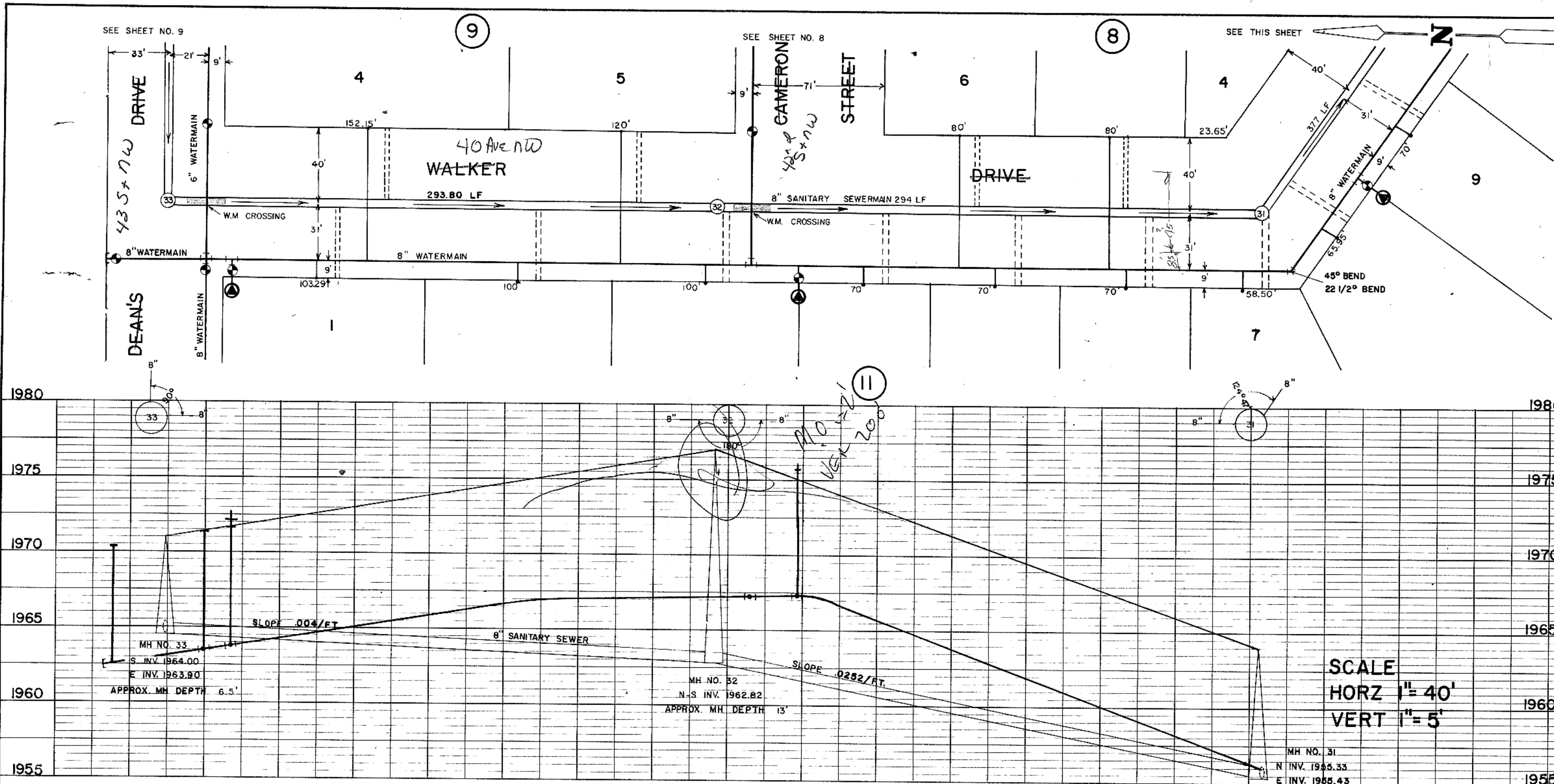
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	NOTE BOOK	NO.
	STRUCTURE NOTATIONS CHECKED	



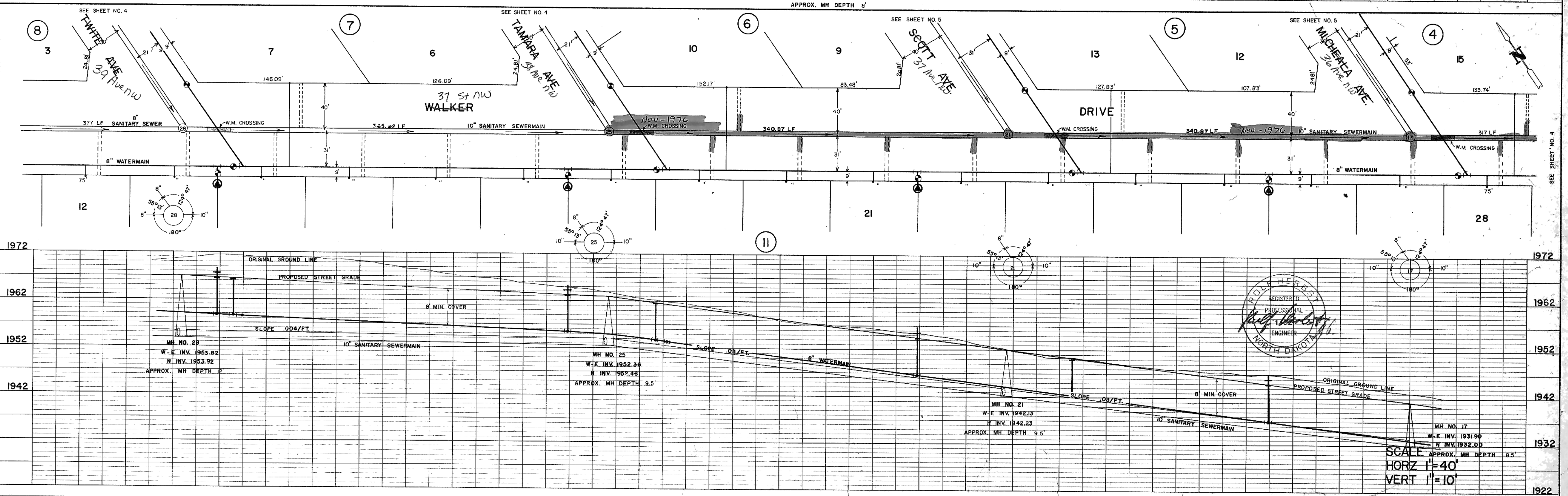
SCALE  
 HORZ 1"=40'  
 VERT 1"=



DATE  
BY  
SUPERVISOR  
PLAN  
NOTE BOOK  
NO. OF WAY CHECKED  
NO.



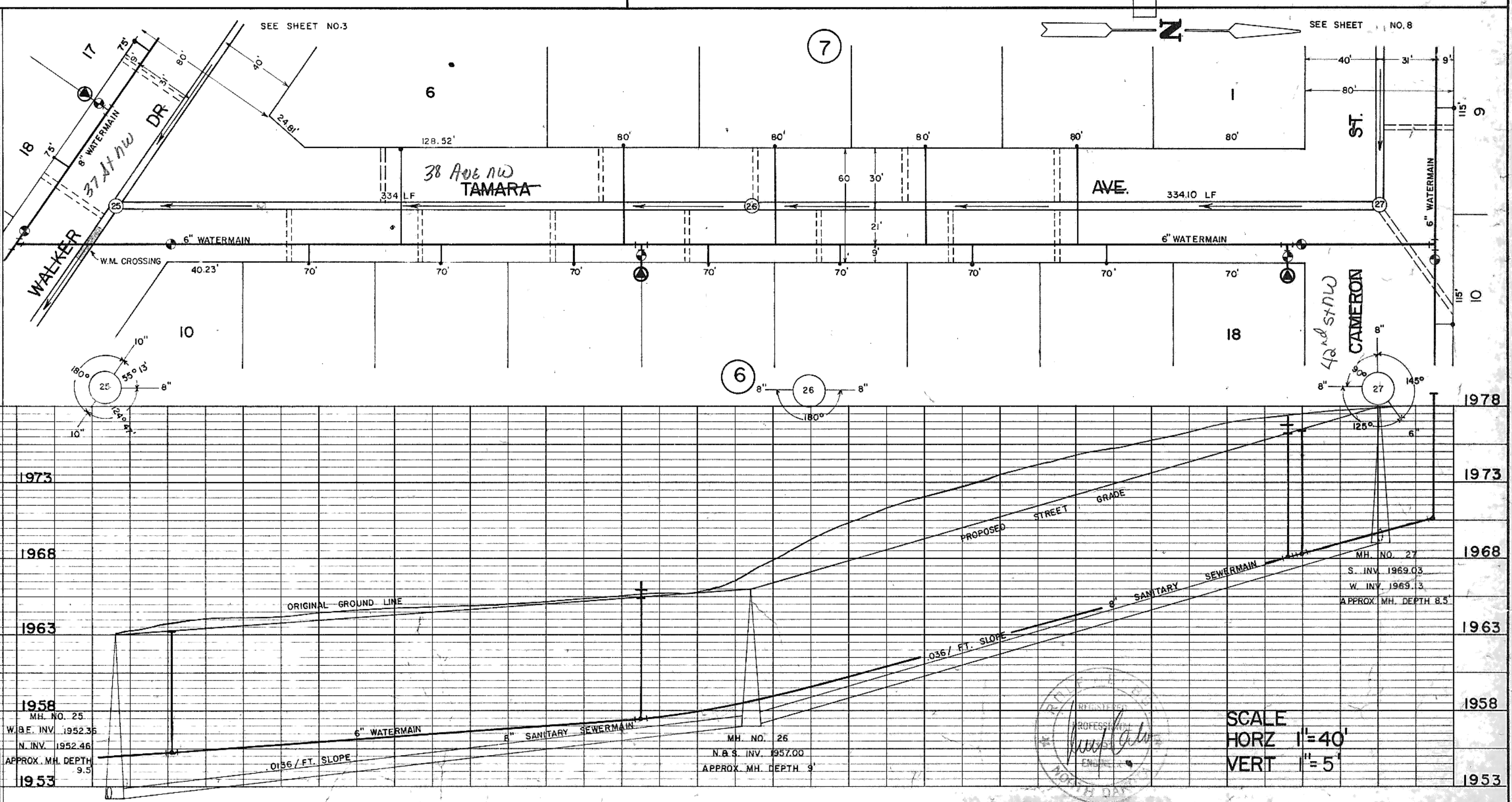
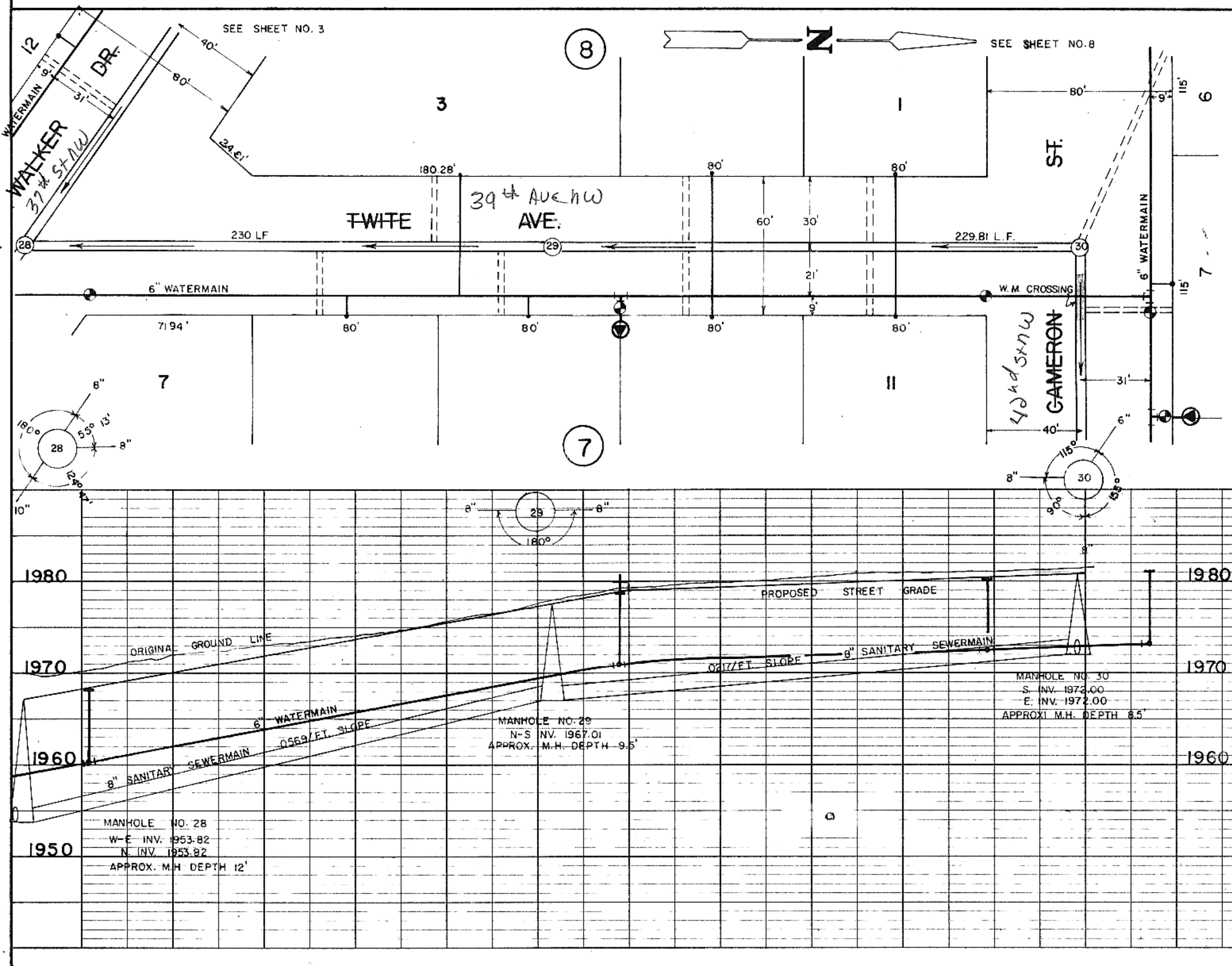
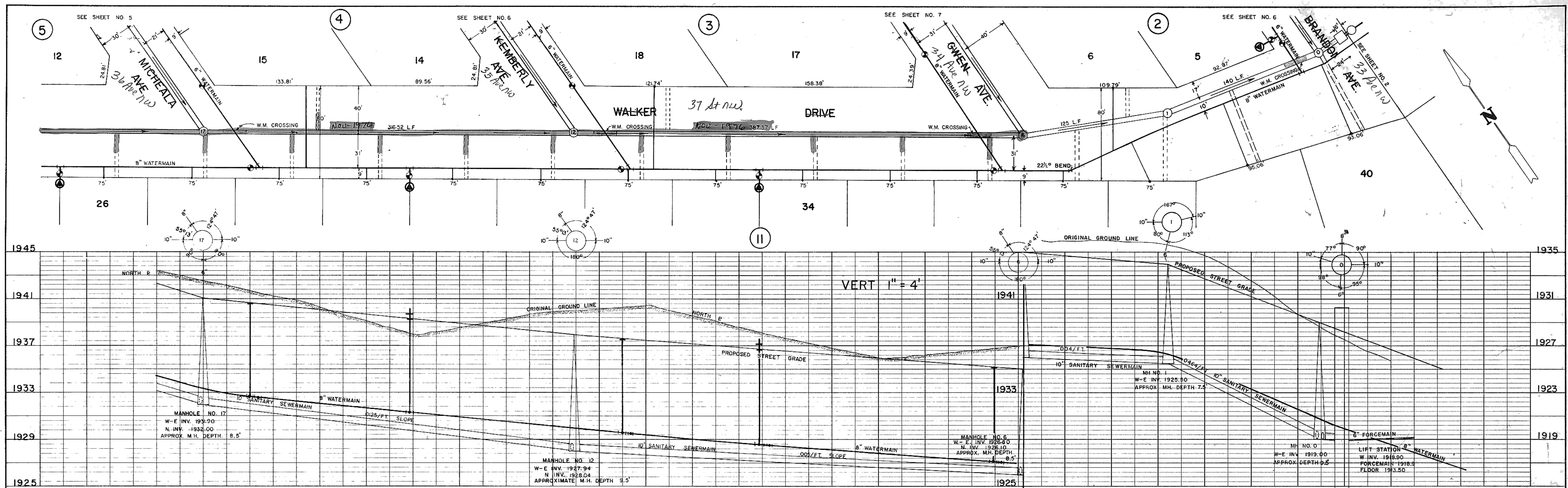
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BY  
SUPERVISOR  
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NO. OF WAY CHECKED  
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 CHECKED BY: [ ]  
 DATE: [ ]

**PROFILE**  
 DRAWN BY: [ ]  
 CHECKED BY: [ ]  
 DATE: [ ]



**KE** PLATE 2, FLAT PLAN-PROFILE  
 KEUFFEL & ESSER CO.  
 48 7032 MADE IN U.S.A.

Toman Engineering Company  
 Civil & Environmental Consultants  
 P. O. Box 708 P. O. Box 852  
 Manders, MD - Bozoesville, Man RICO GEO

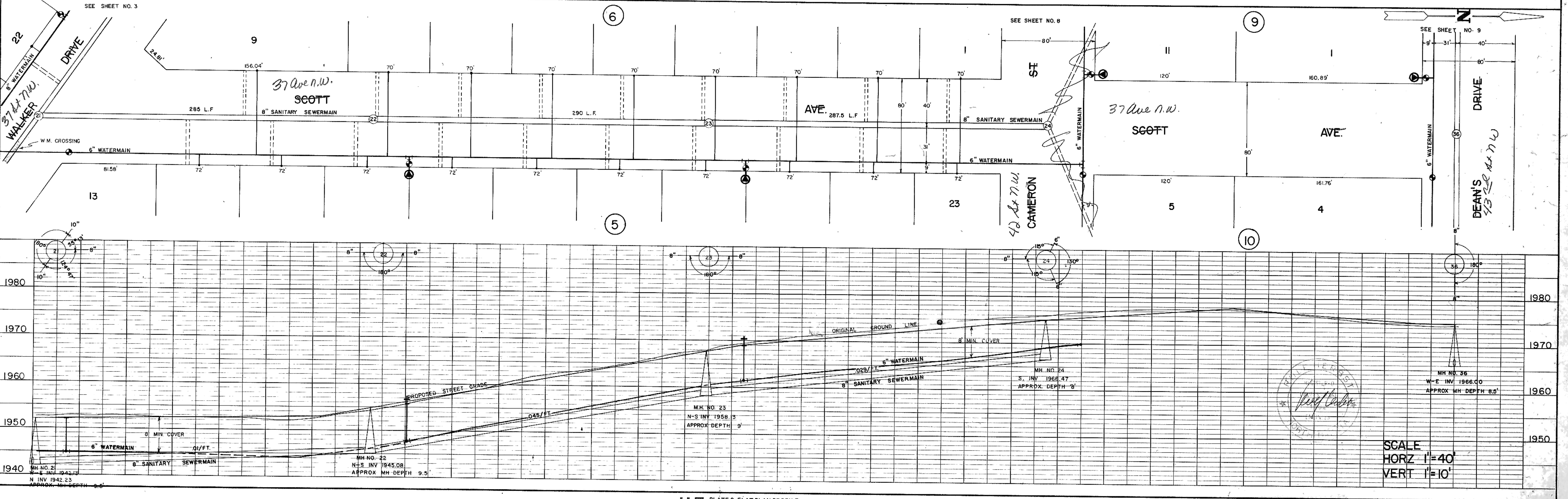
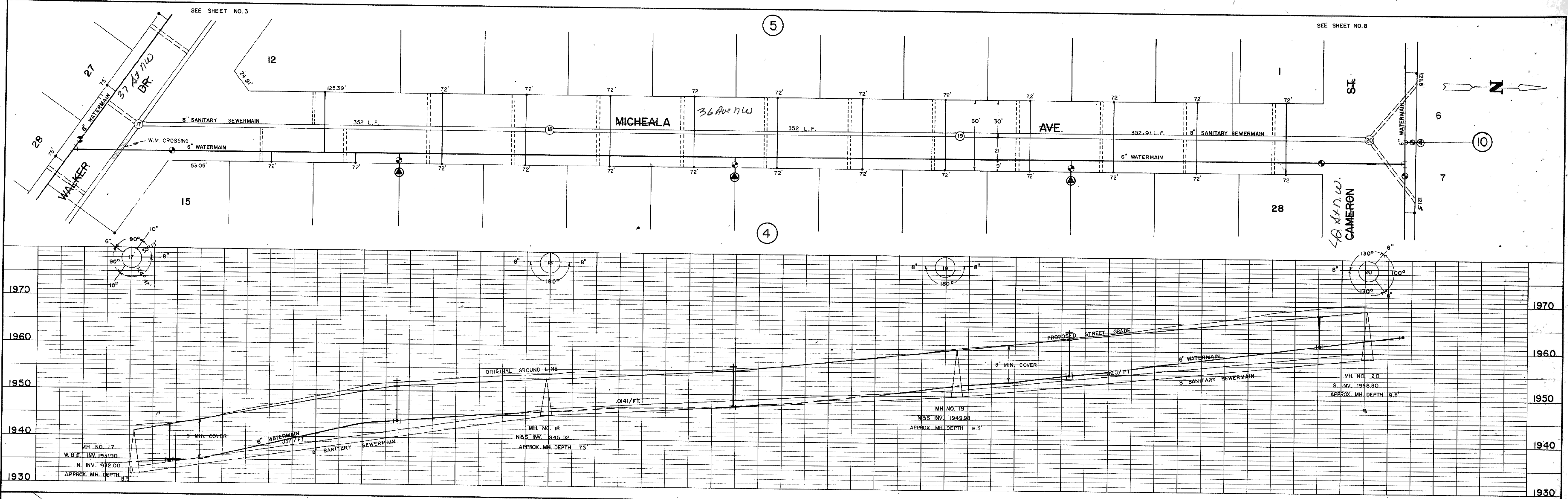
SHEET NO. 4 OF 12 SHEETS





PLAN  
NOTE BOOK  
No.

NOTE BOOK  
No.



SCALE  
HORIZ 1"=40'  
VERT 1"=10'



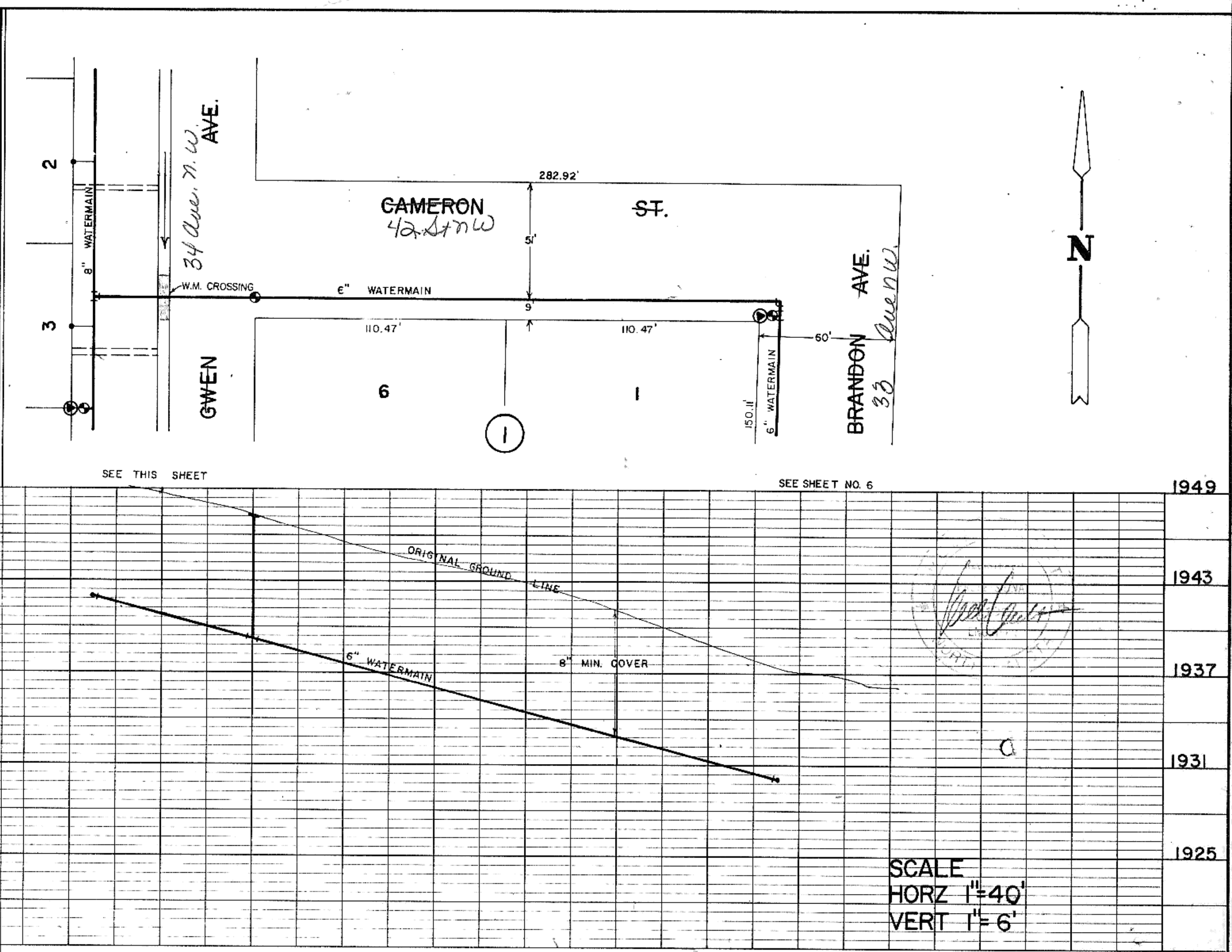
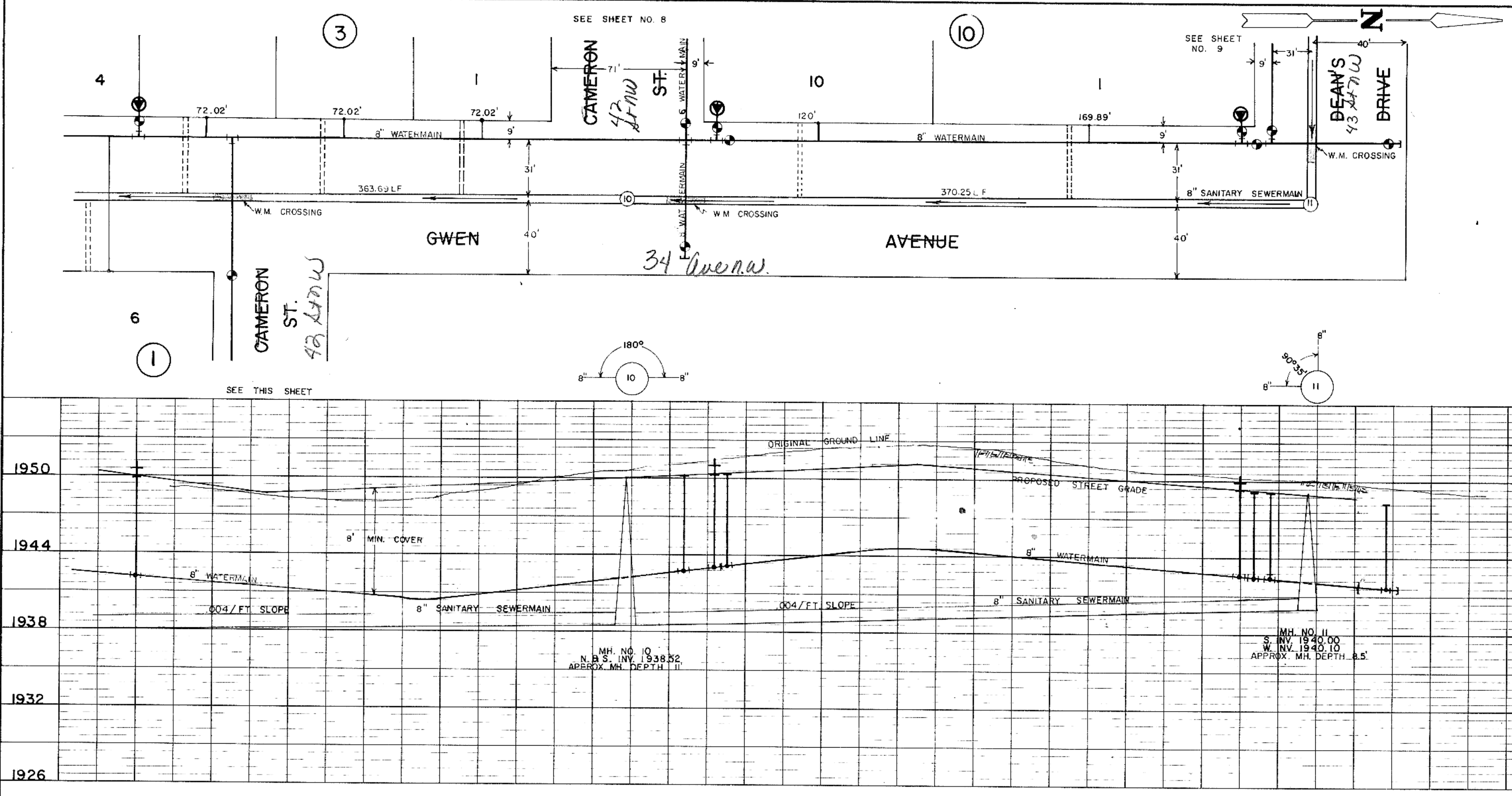
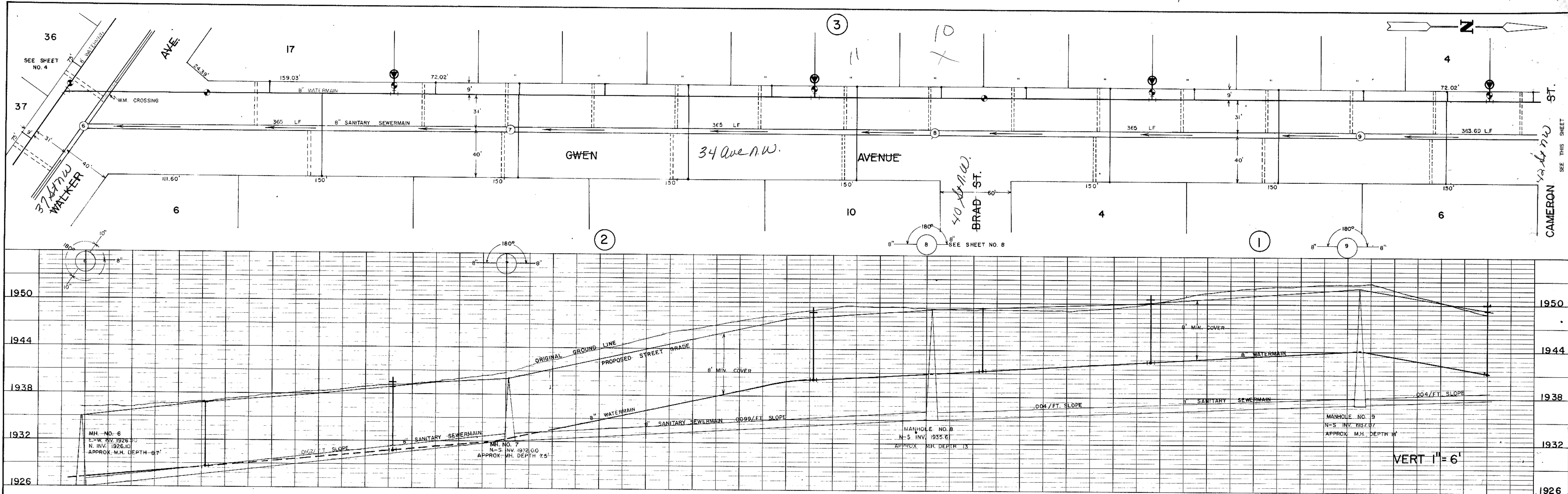






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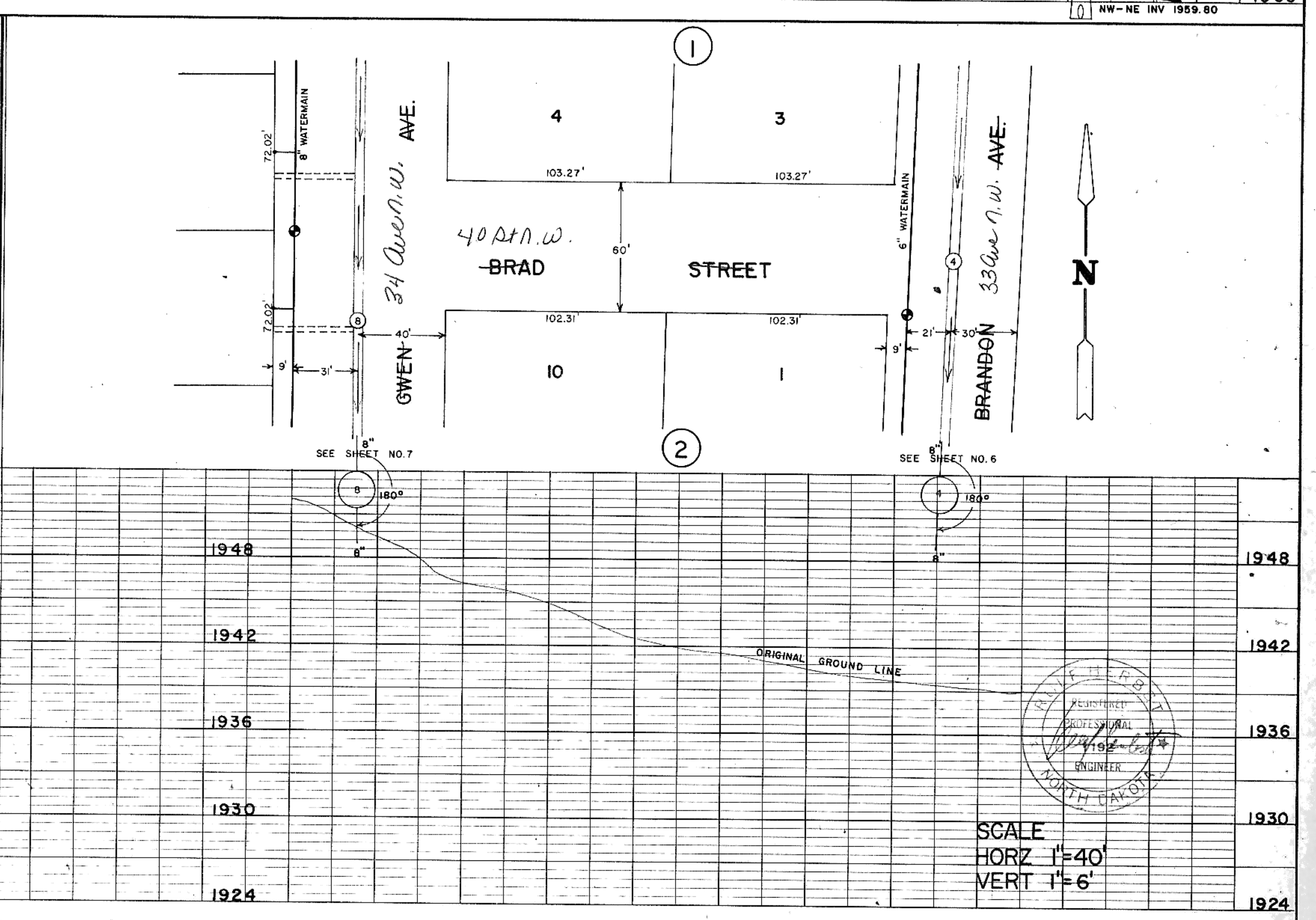
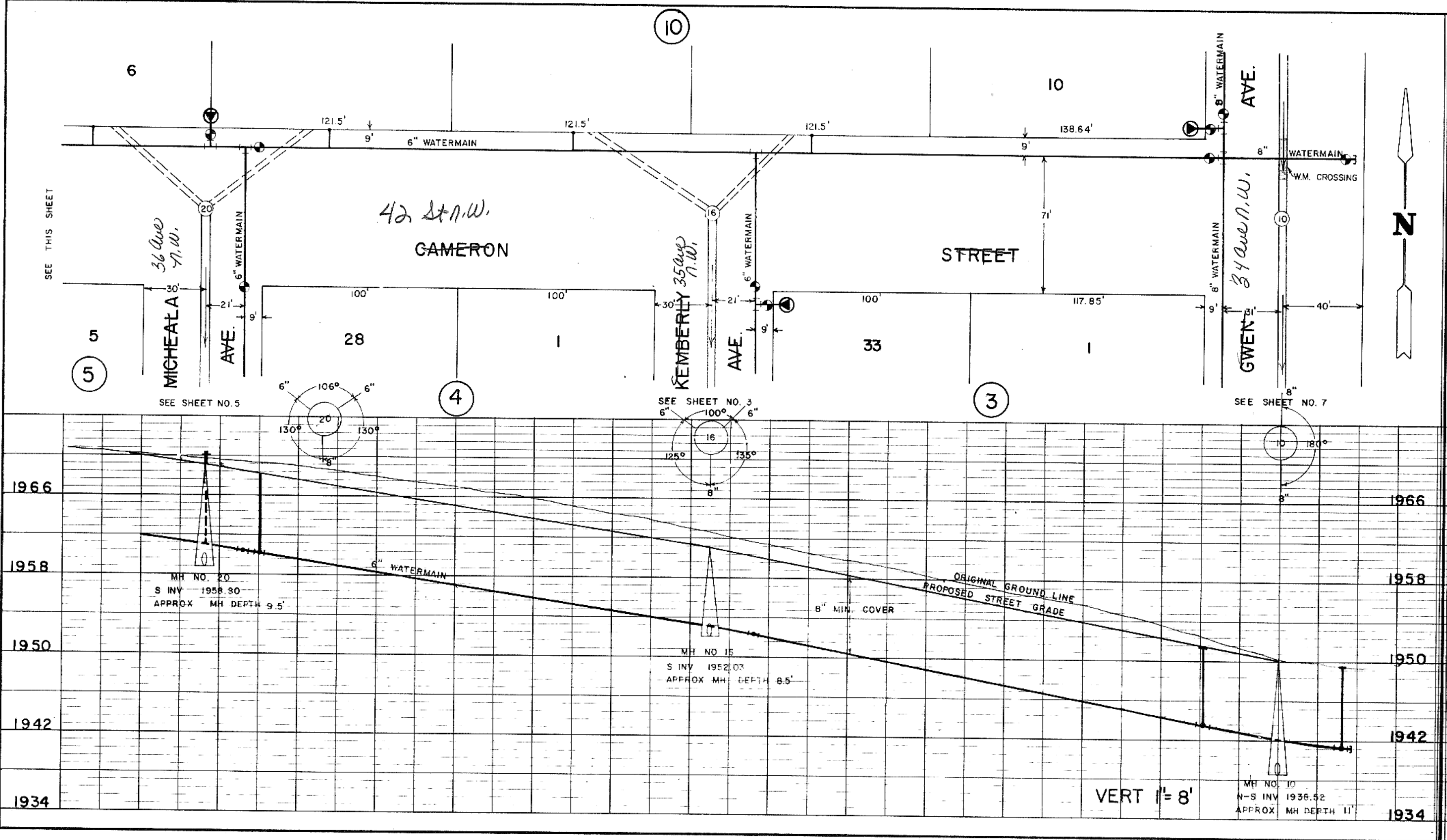
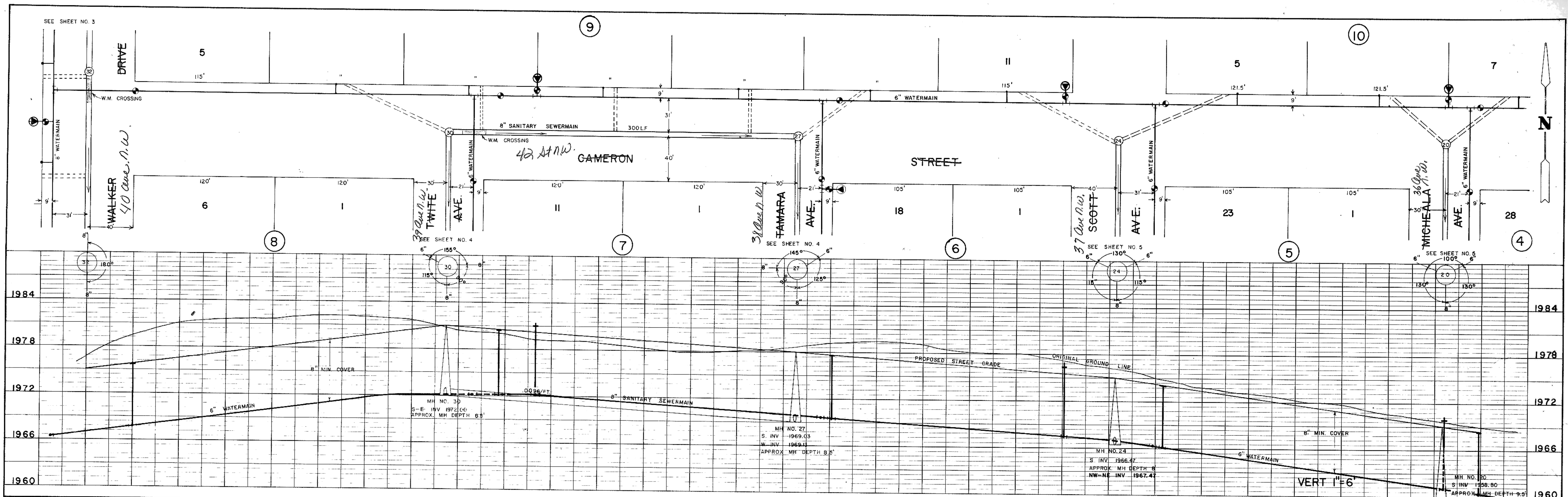
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NOTE BOOK ALIGNMENT CHECKER  
No. of W.M. CHECKED

NOTE BOOK STRUCTURE NOTATIONS CHECKED  
No.



K&E PLATE 2, FLAT PLAN-PROFILE  
KUFFEL & ESSER CO.  
48 7032 MADE IN U.S.A.

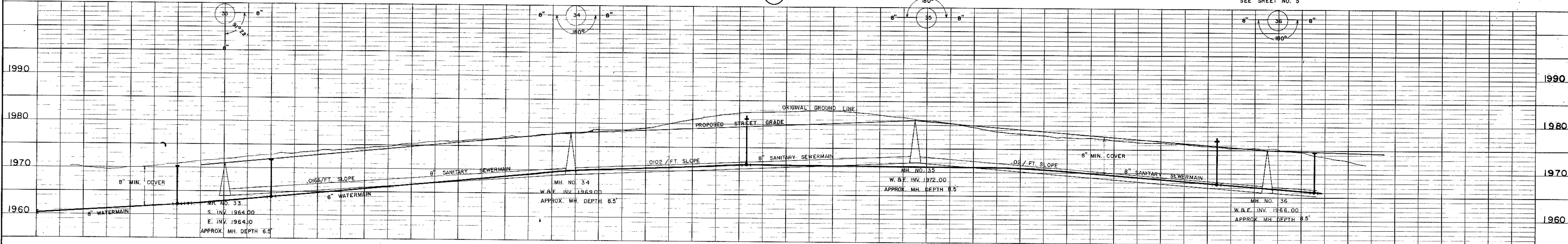
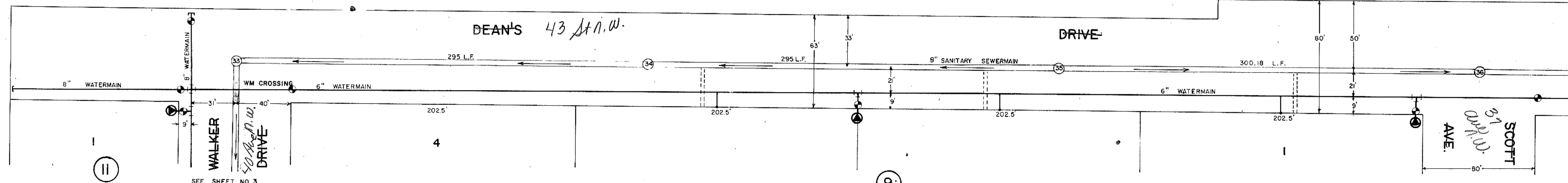
Toman Engineering Company  
Civil & Environmental Consultants  
P. O. Box 708 P. O. Box 852  
Mandan, ND Boissevain, Man RKO OEO

SHEET NO. 8 OF 12 SHEETS

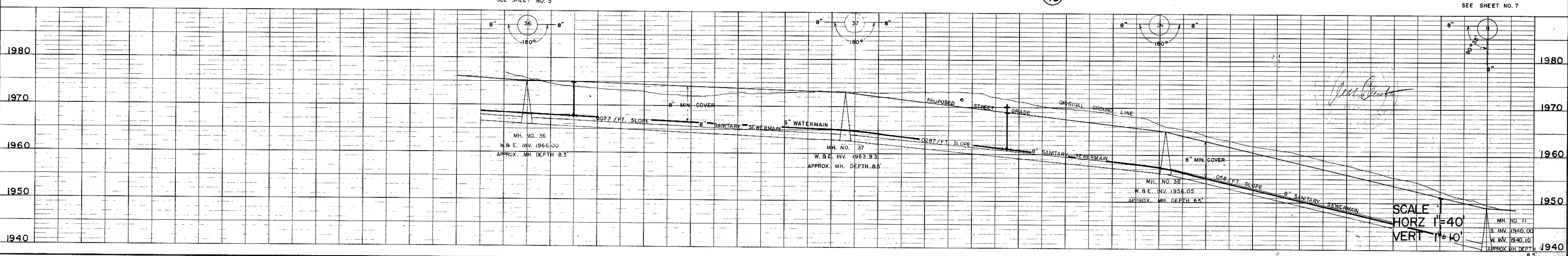
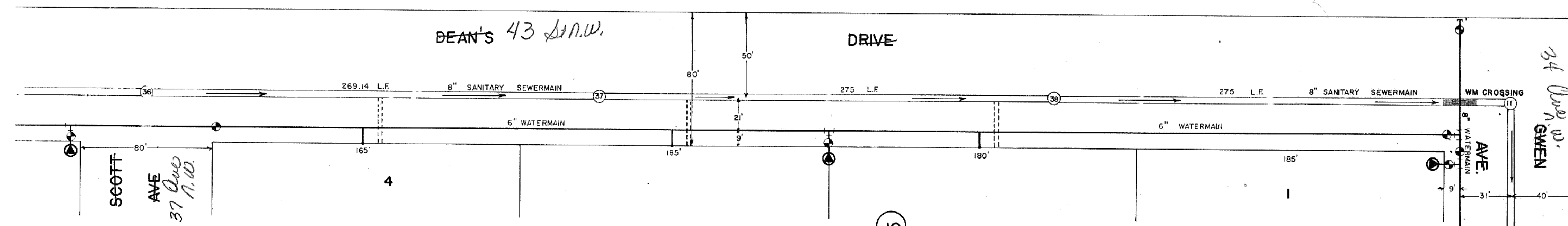




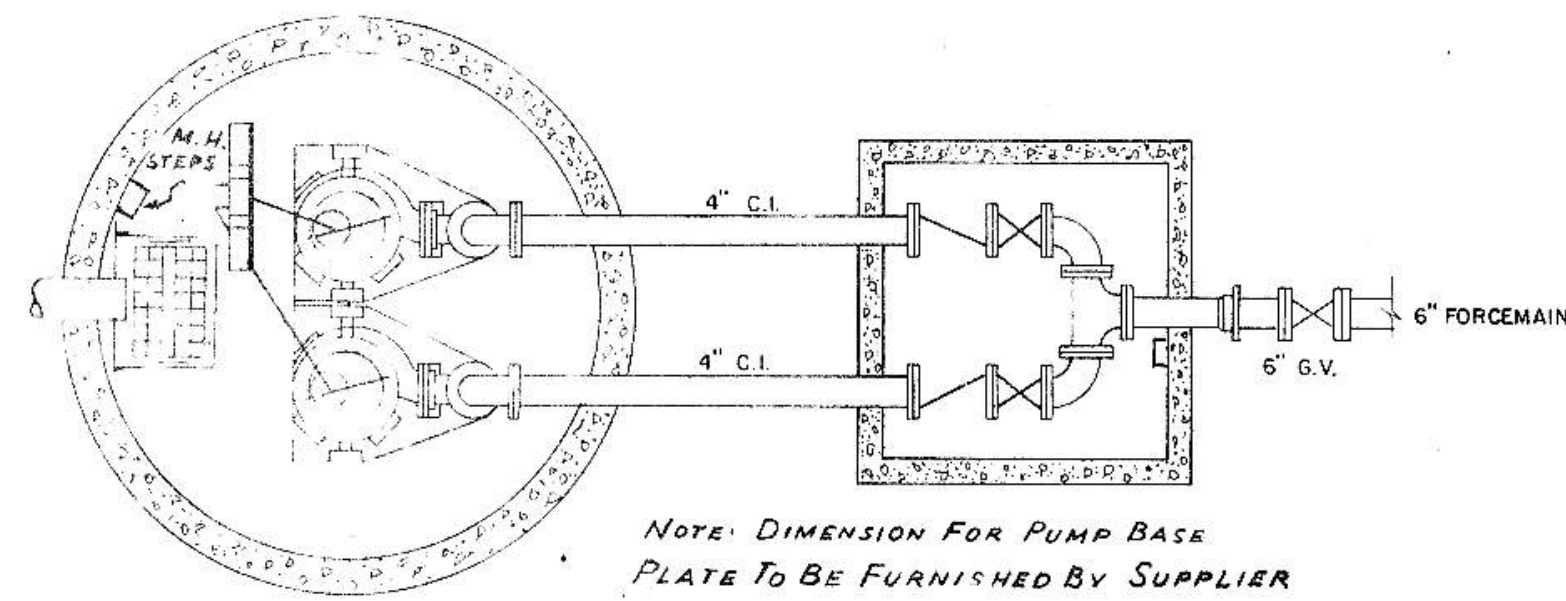
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 PLOTTED: \_\_\_\_\_  
 NOTE BOOK: \_\_\_\_\_  
 NO. \_\_\_\_\_  
 PLAN  
 SURVEYED, PLOTTED, & W. NOTES.  
 ALIGNMENT CHECKED.  
 ALL OF WAY CHECKED.



DATE: \_\_\_\_\_ BY: \_\_\_\_\_  
 SURVEYED: \_\_\_\_\_  
 PLOTTED: \_\_\_\_\_  
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 SURVEYED, PLOTTED, & W. NOTES.  
 STRUCTURE LOCATIONS CHECKED.







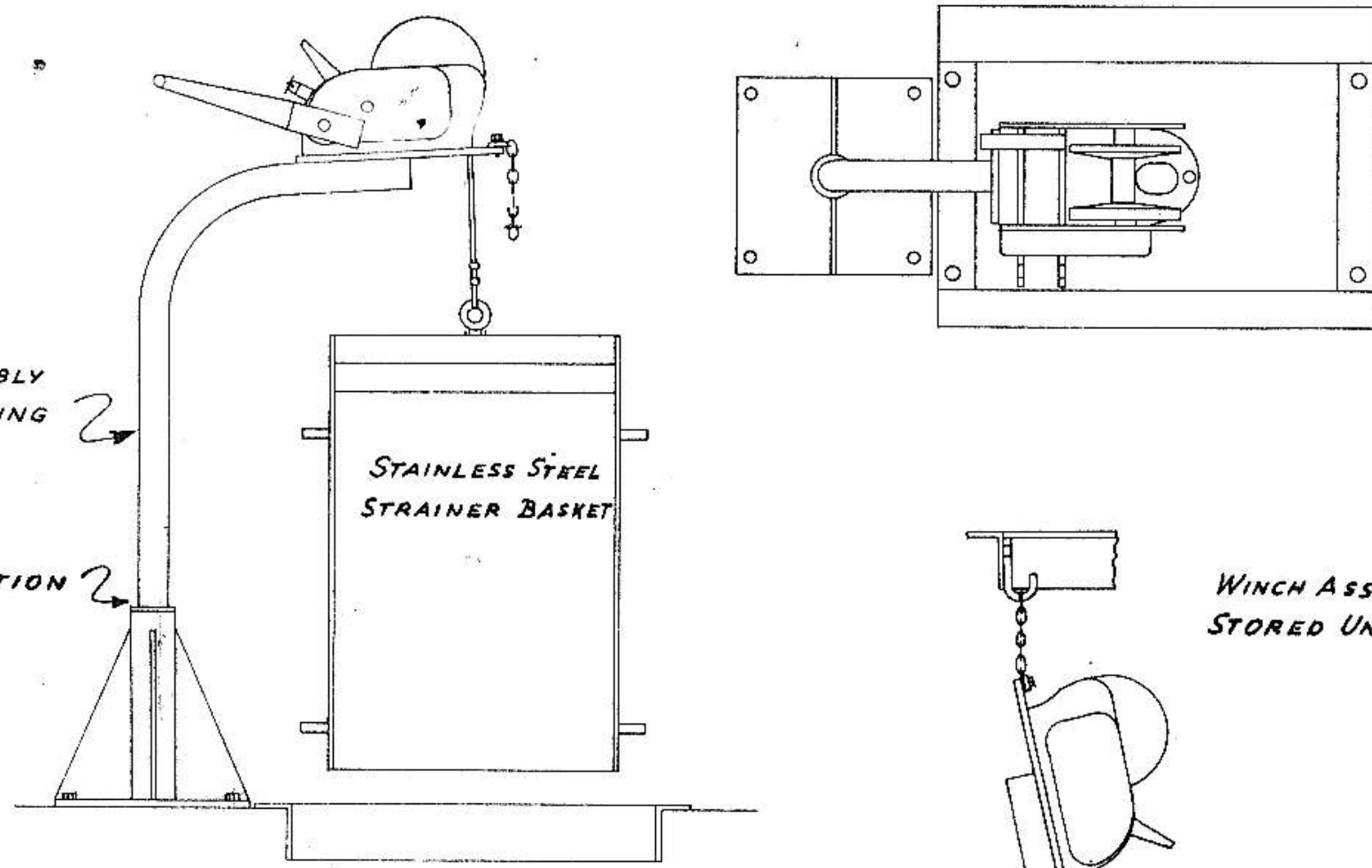
PLAN VIEW  
No SCALE

NOTE: DIMENSION FOR PUMP BASE PLATE TO BE FURNISHED BY SUPPLIER

- CHECK VALVE
- GATE VALVE

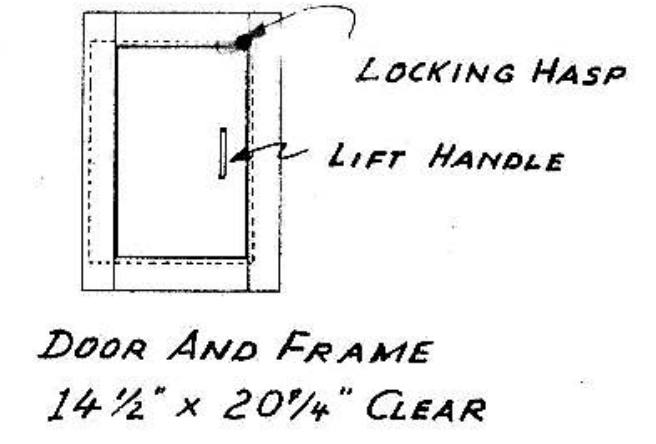
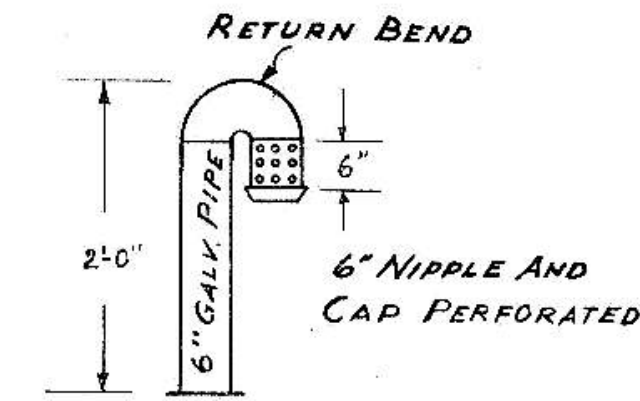
WINCH ASSEMBLY  
200 LB. RATING

360° ROTATION

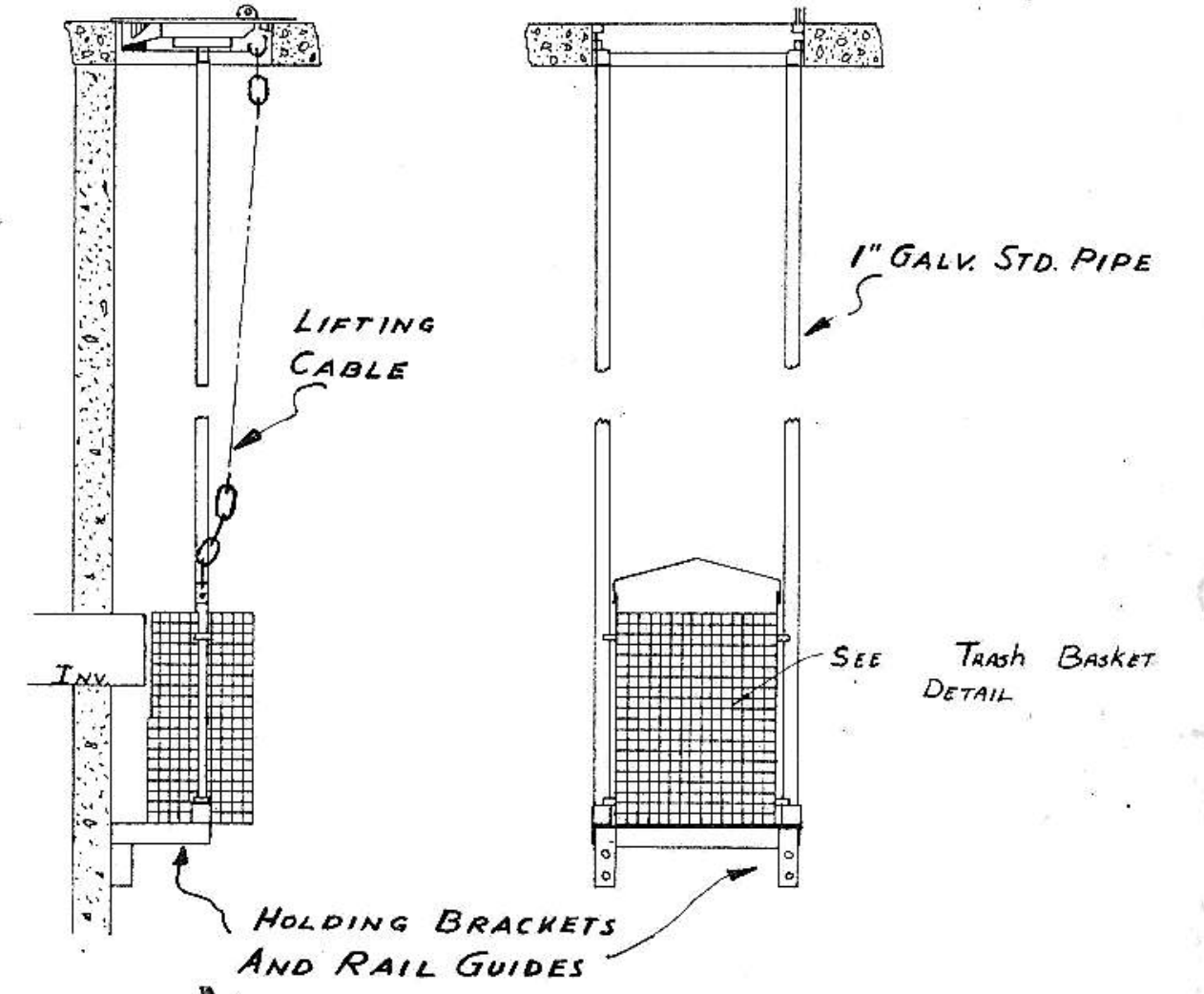


BASKET WINCH DETAIL  
No SCALE

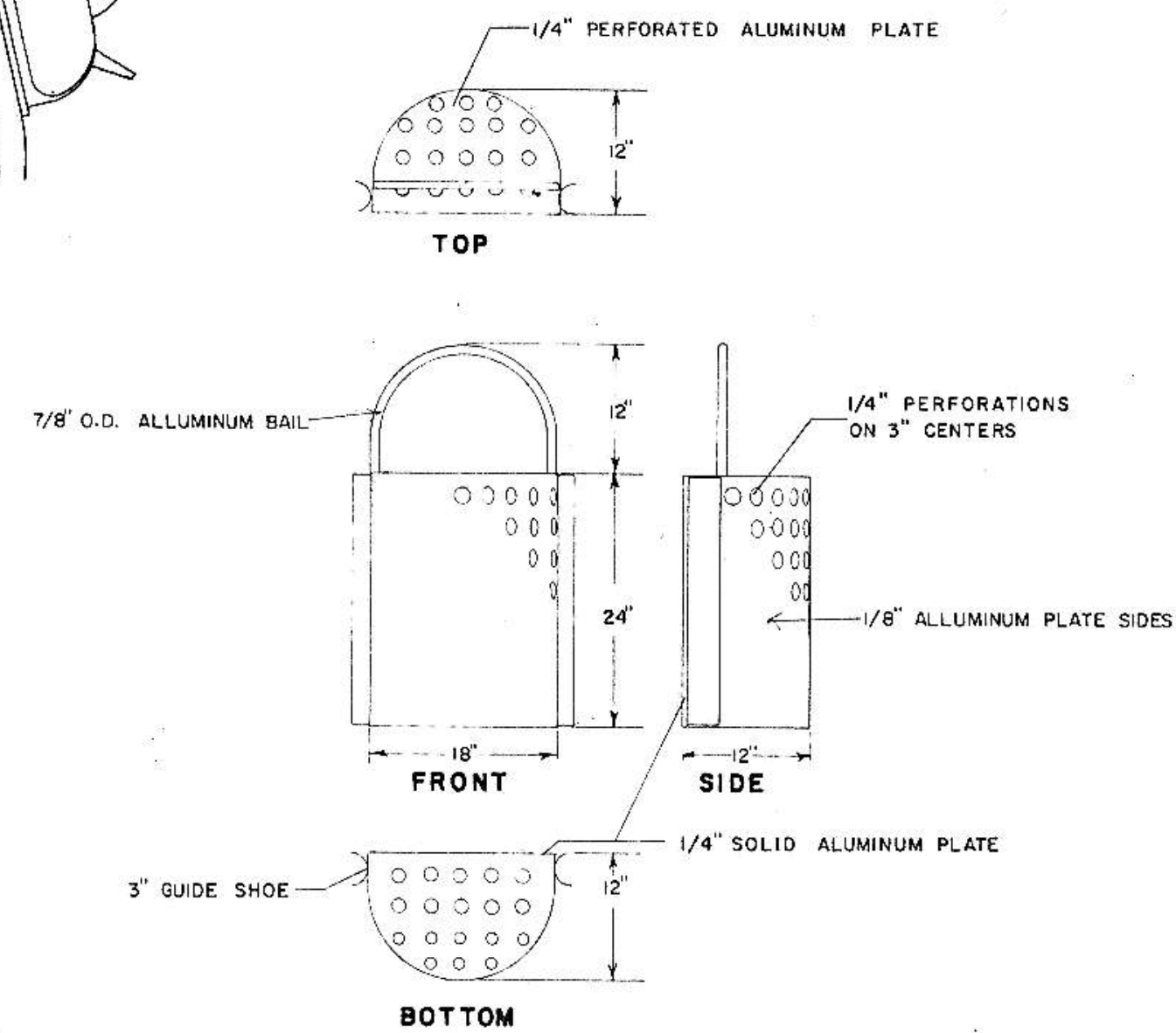
6" VENT DETAIL



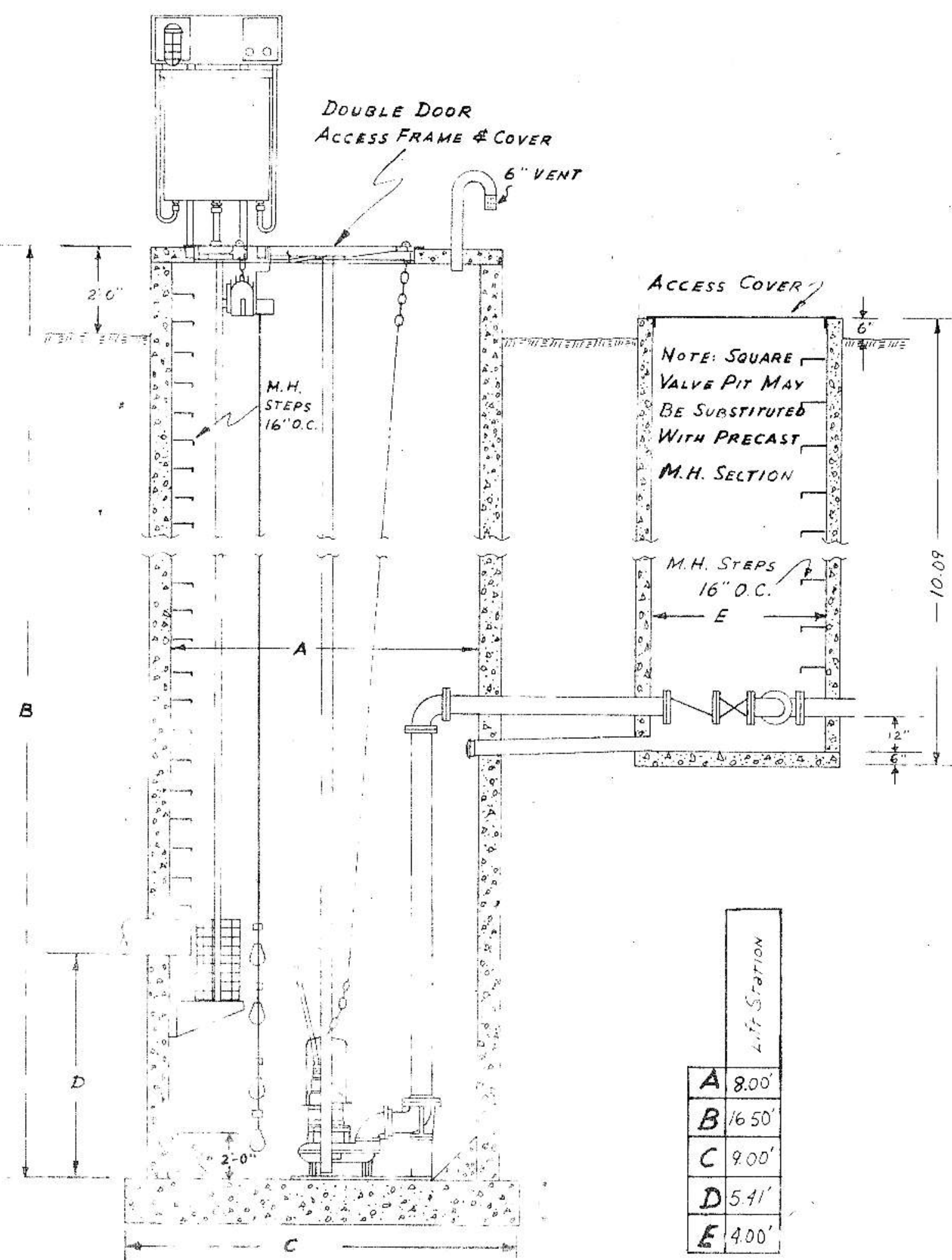
DOOR AND FRAME  
14 1/2" x 20 1/4" CLEAR



STRAINER BASKET MOUNTING DETAIL



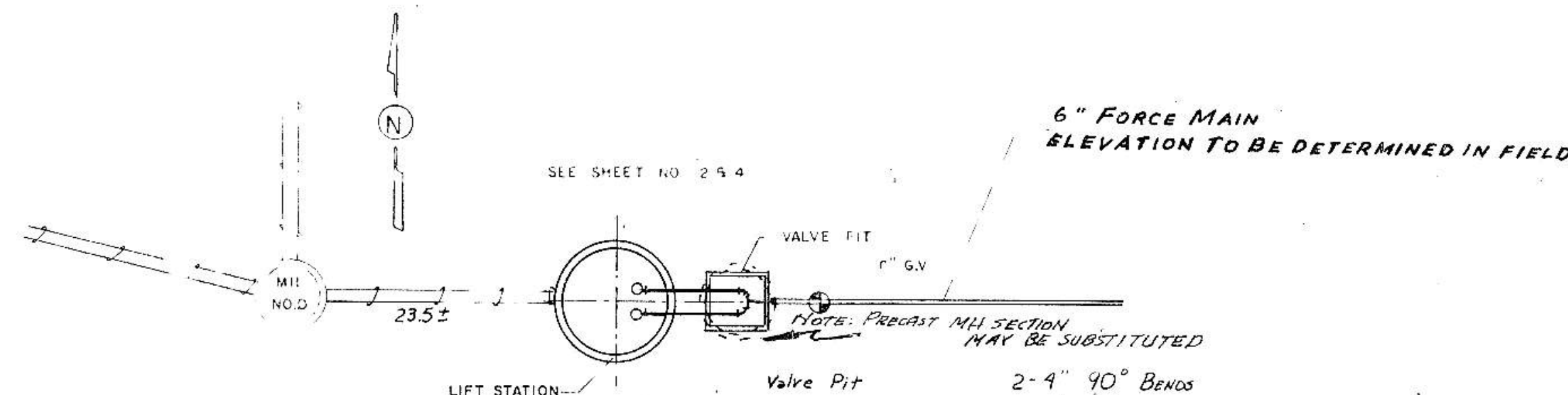
TRASH BASKET DETAIL



SIDE SECTION  
No SCALE

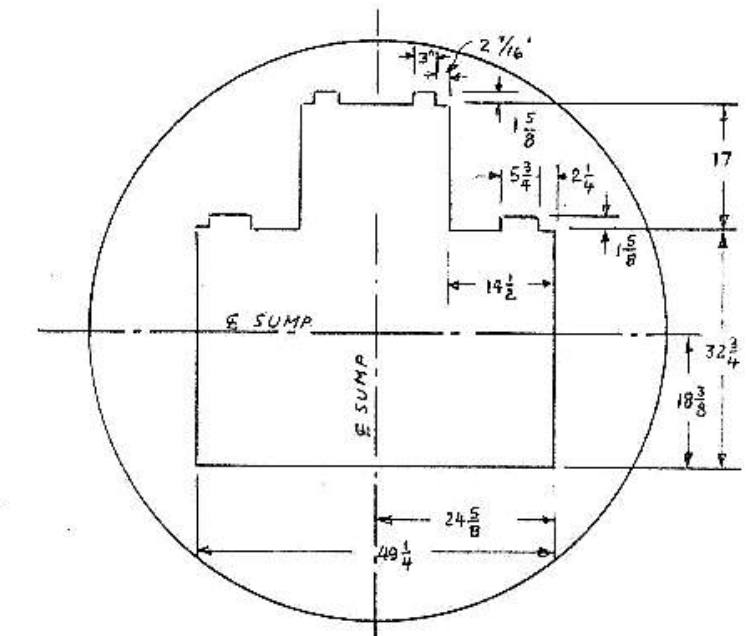
DIMENSIONS

LETTER	LENGTH
A	8.00'
B	16.50'
C	9.00'
D	5.41'
E	4.00'



PLAN VIEW SATELLITE STATION 1

- 2-4" 90° Bends
- 1-4" to 6" Tee
- 2-4" Check Valve
- 2-4" Gate Valve
- 1-0" Gate Valve

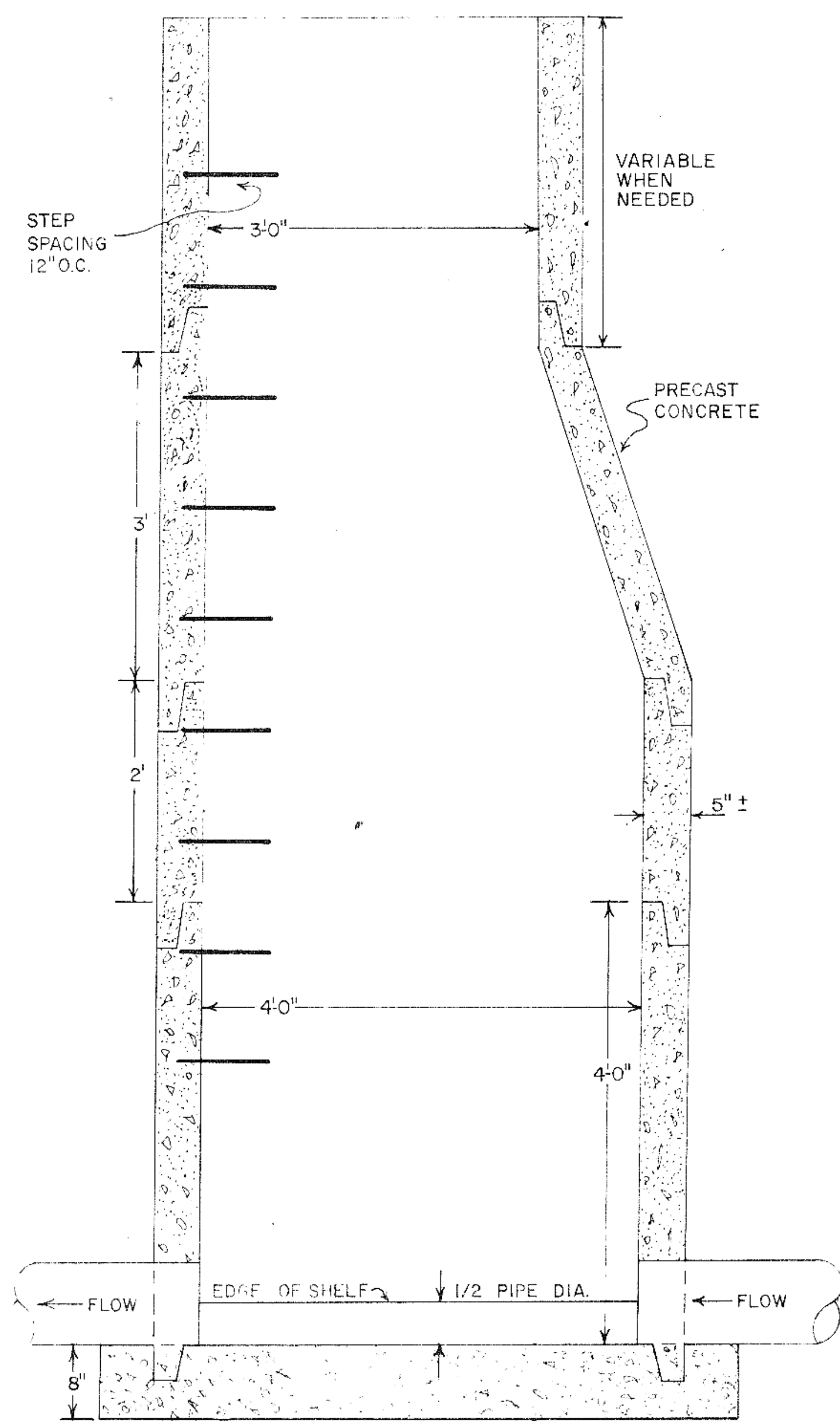


CUT OUT DETAIL FOR SUMP COVER

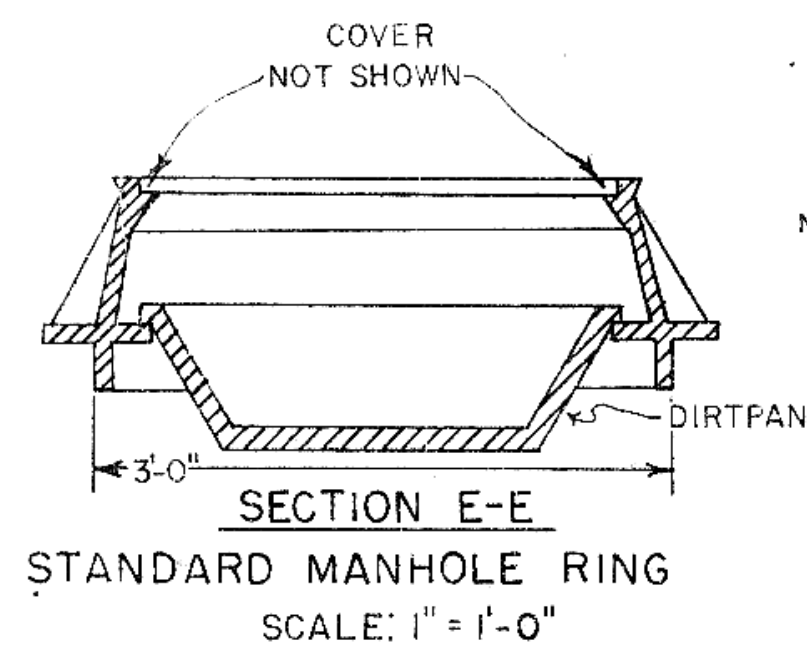


Project <b>CONSOLIDATED W&amp;S Impr. Dist. # 24</b>			
Detail	SCALE	DRAWN BY	REVIEWED
<b>SATELLITE LIFT STATION</b>	NONE	<b>R.S.</b>	
<b>TOMAN ENGINEERING CO.</b>			
Engineering and Environmental Consultants - Mandan, N.D. - Bismarck, Manitoba			
DATE	APPROVED BY	DRAWING NUMBER	
<b>SEPT. 76</b>			





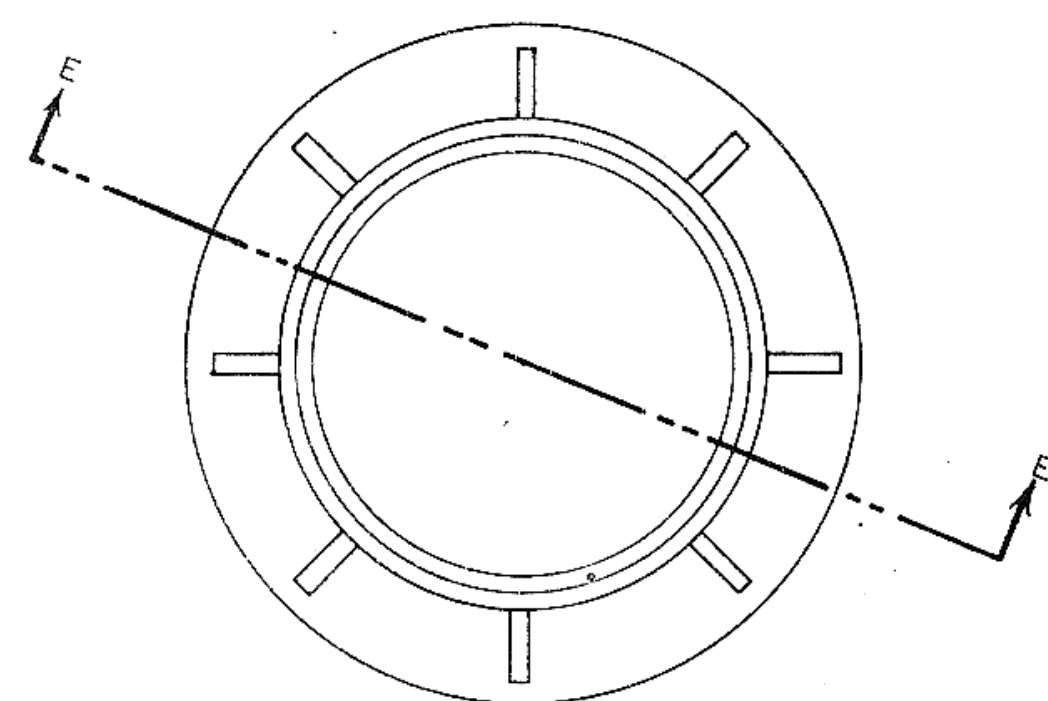
TYPICAL MANHOLE ELEVATION VIEW  
SCALE: 1" = 1'-0"



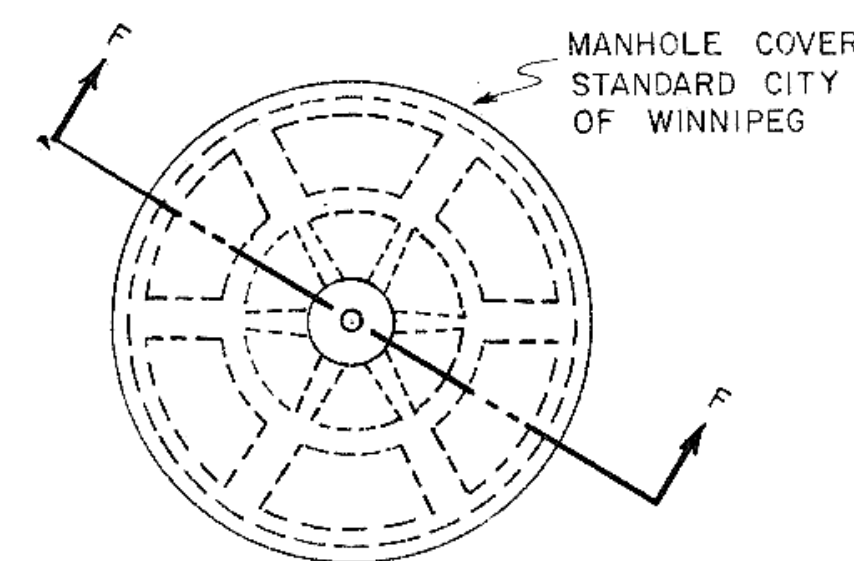
SECTION E-E  
STANDARD MANHOLE RING  
SCALE: 1" = 1'-0"

NOTE: DIRT PAN TO FIT PARTICULAR MANHOLE RING FURNISHED FOR JOB.

DIRT PAN FOR MANHOLE WHEN CALLED FOR IN EITHER THE PLANS OR SPECIFICATIONS.



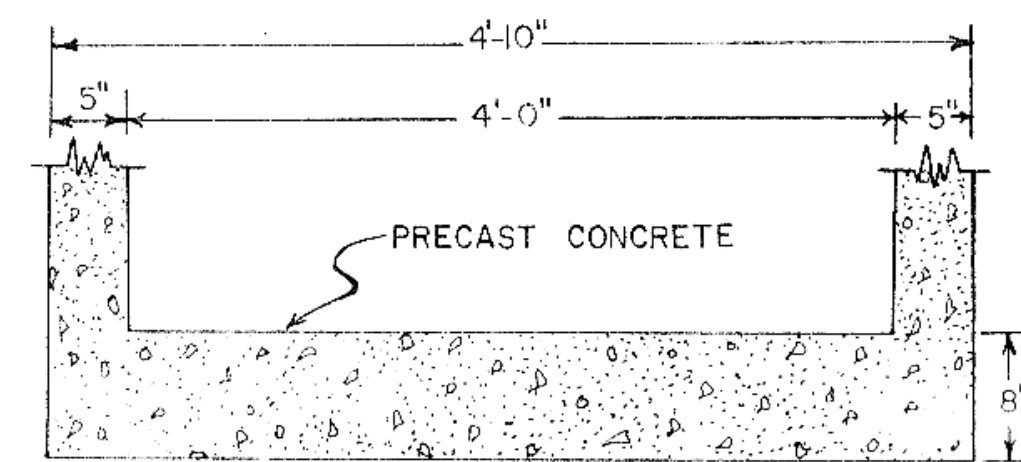
STANDARD MANHOLE RING  
PLAN VIEW  
SCALE: 1" = 1'-0"



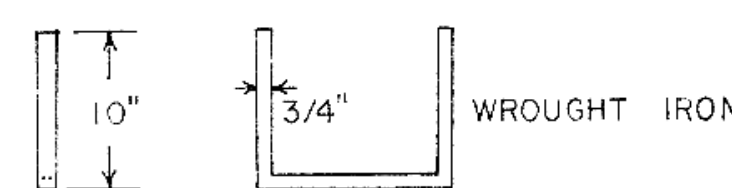
STANDARD MANHOLE COVER  
PLAN VIEW  
SCALE: 1" = 1'-0"



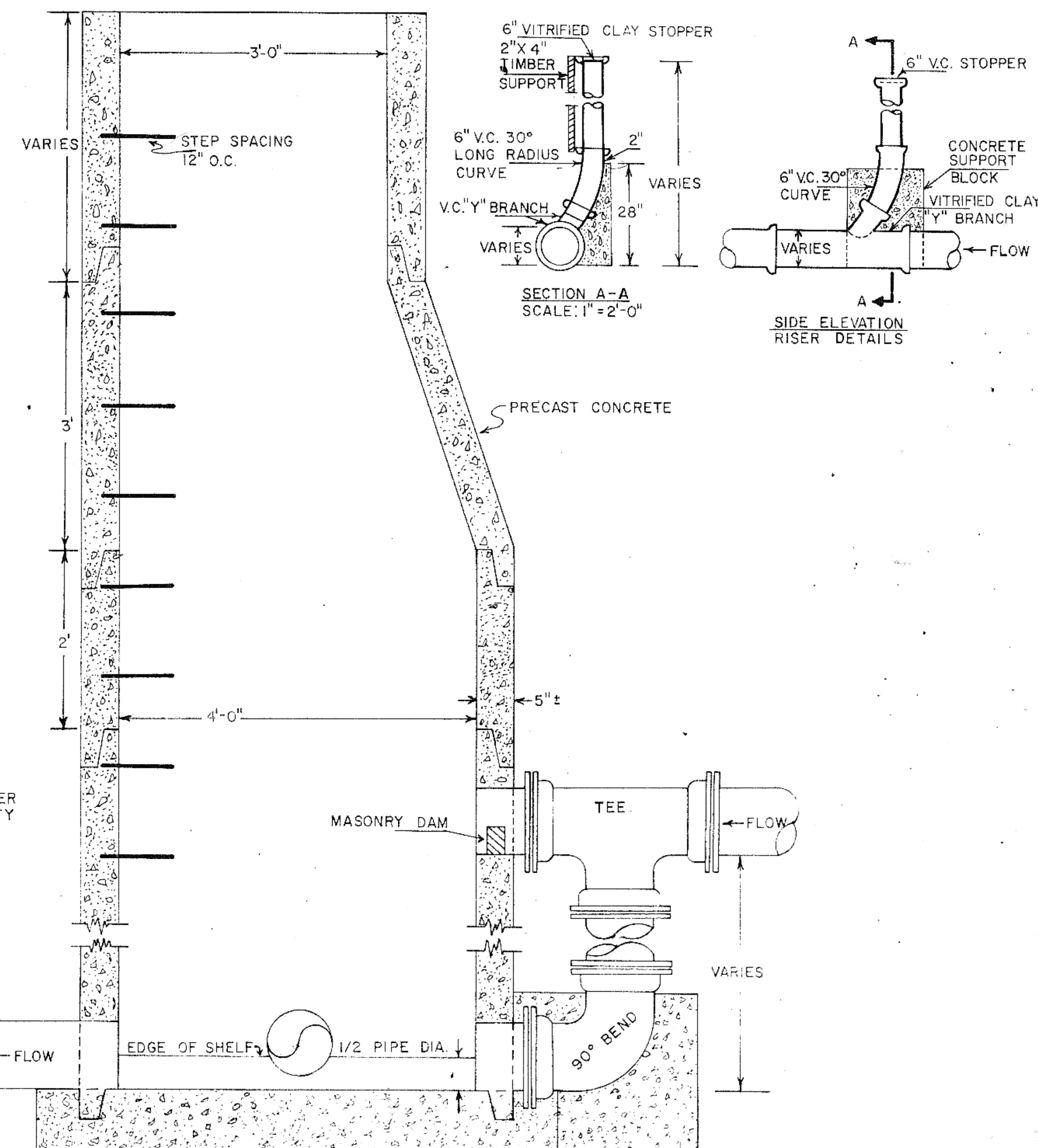
SECTION F-F  
STANDARD MANHOLE COVER  
SCALE: 1" = 1'-0"



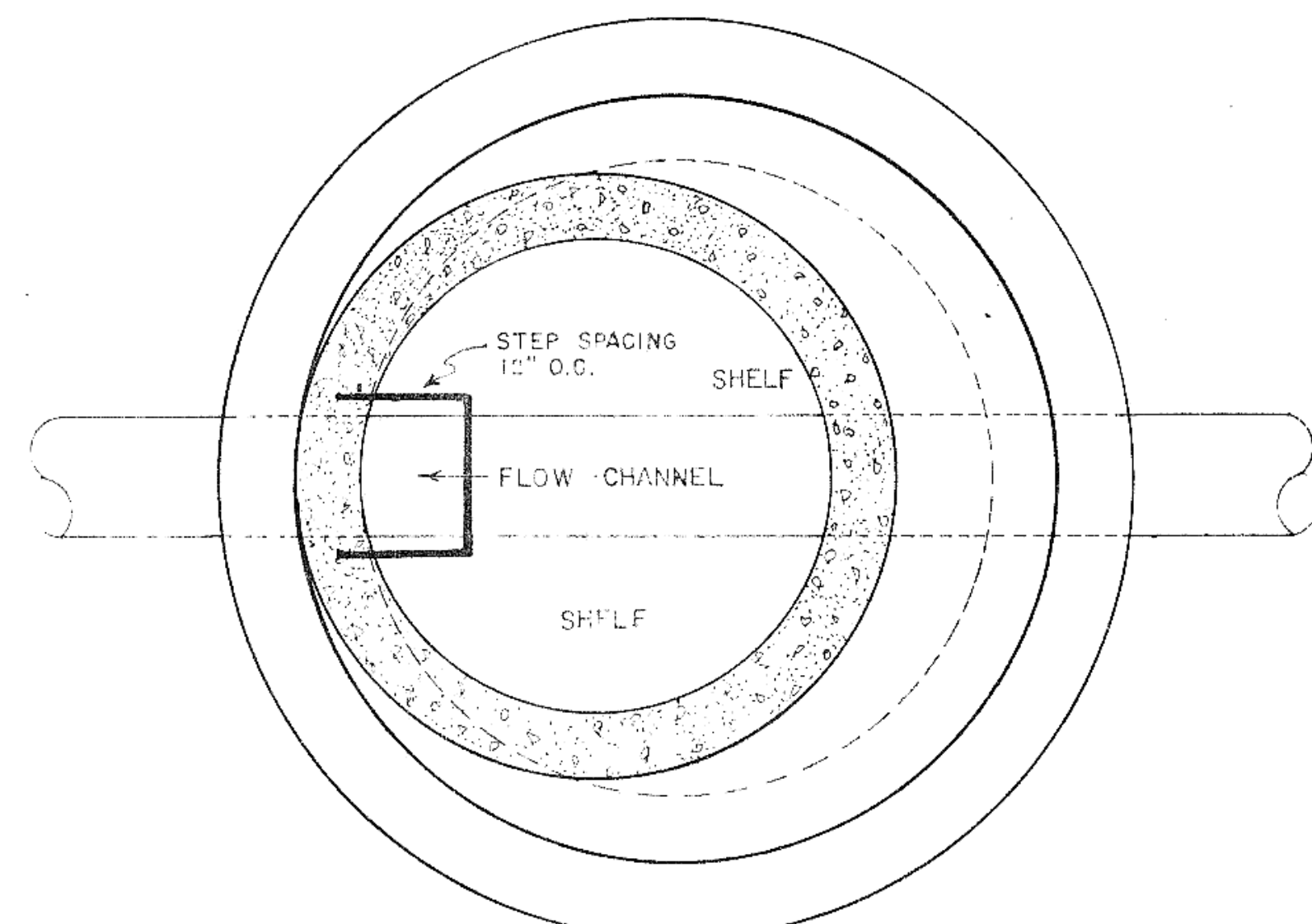
PRECAST MANHOLE FLOOR DETAIL  
SCALE: 1" = 1'-0"



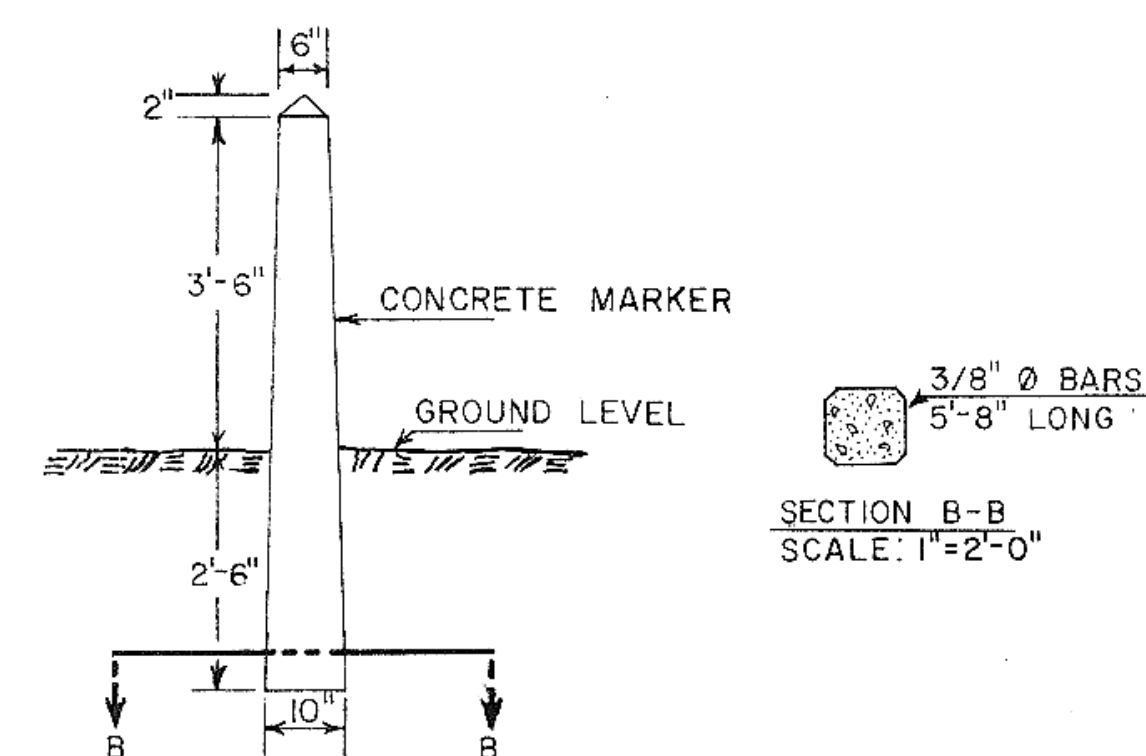
STEP DETAILS  
SCALE: 1" = 1'-0"



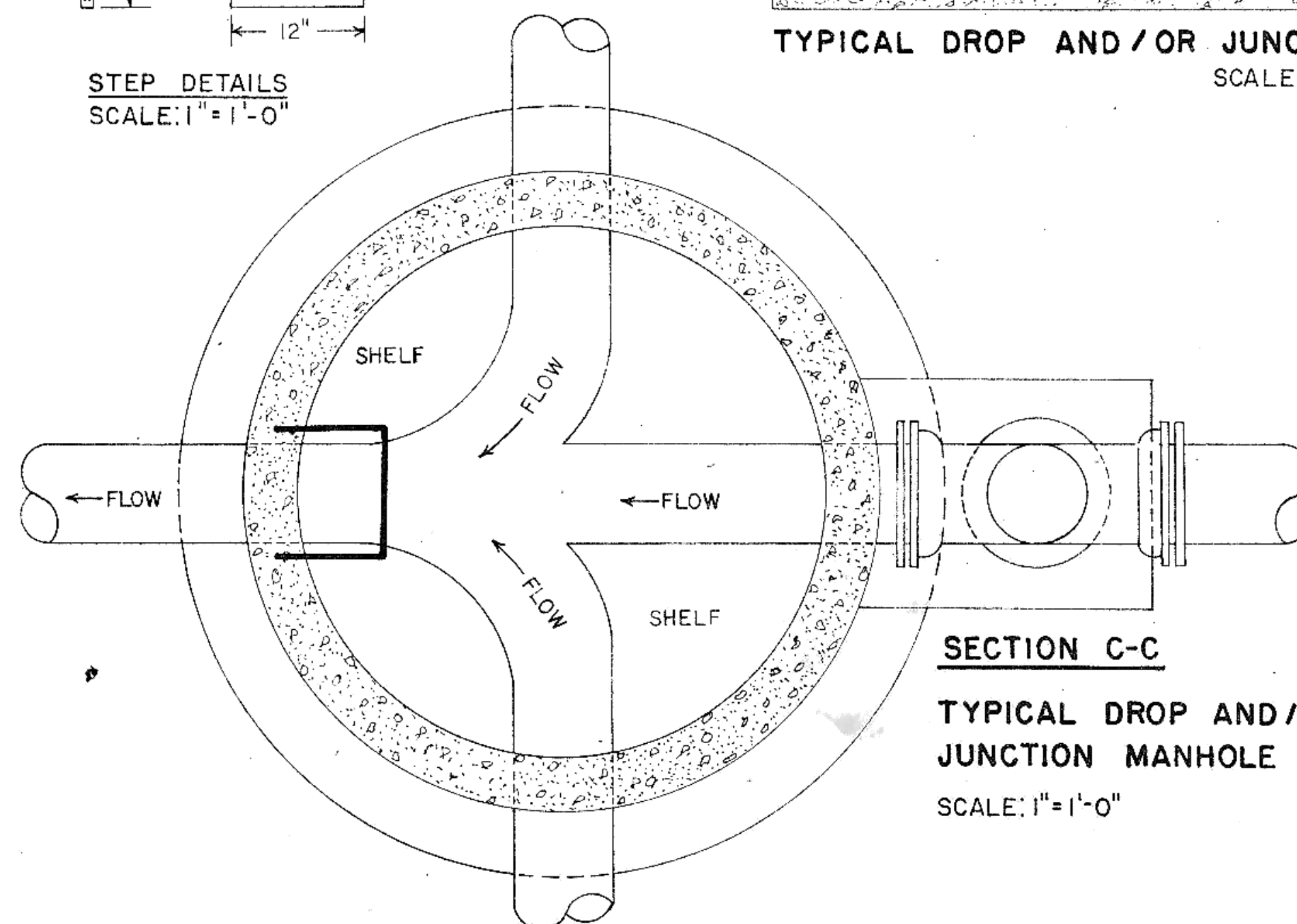
TYPICAL DROP AND/OR JUNCTION MANHOLE ELEVATION  
SCALE: 1" = 1'-0"



TYPICAL MANHOLE SECTION D-D  
SCALE: 1" = 1'-0"



ELEVATION-TYPICAL REFERENCE MARKER  
SCALE: 1" = 2'-0"

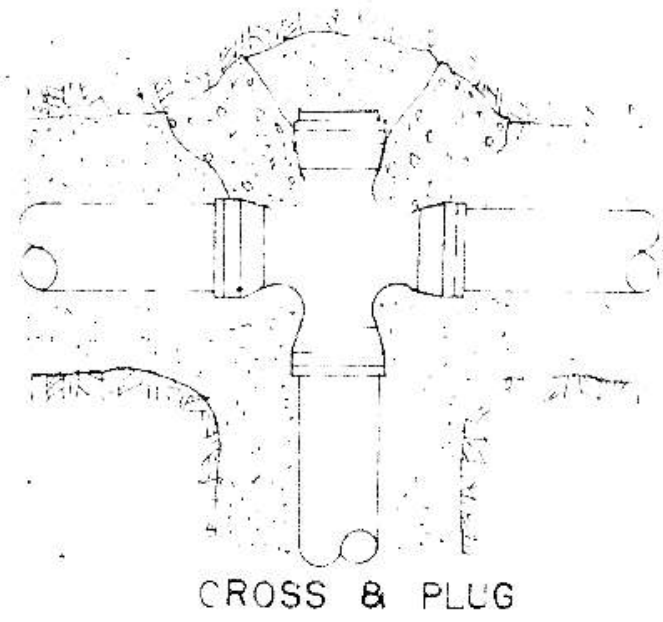


SECTION C-C  
TYPICAL DROP AND/OR JUNCTION MANHOLE  
SCALE: 1" = 1'-0"

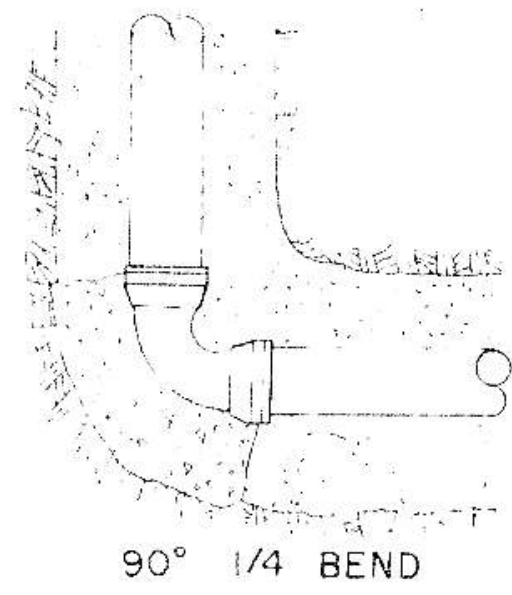




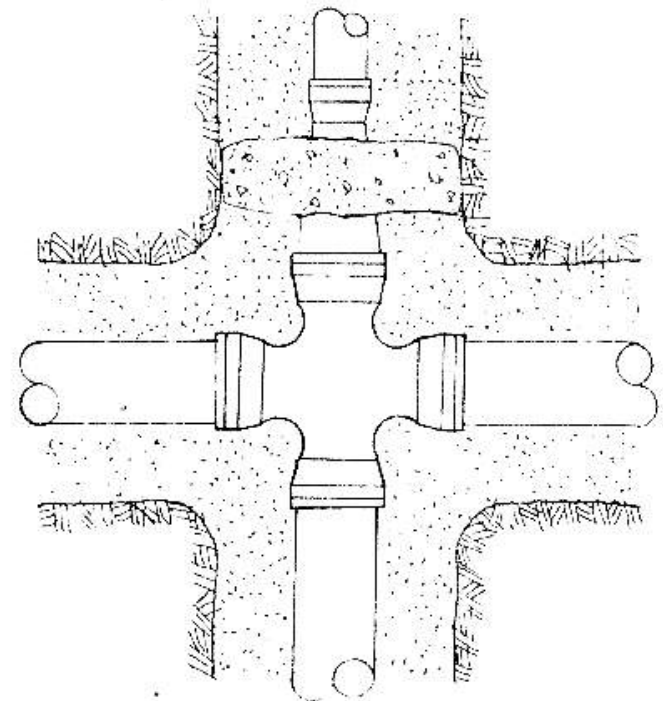
THRUST BLOCK DETAILS



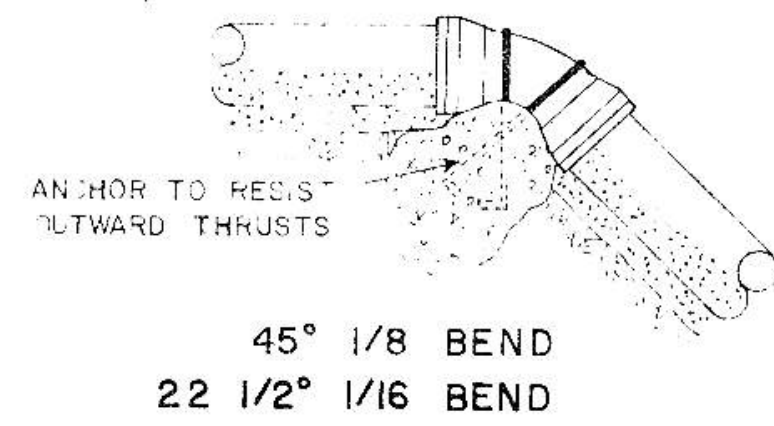
CROSS & PLUG



90° 1/4 BEND

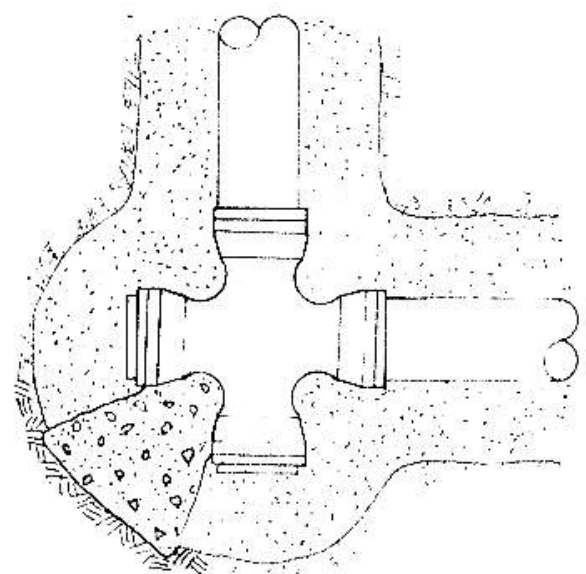


CROSS & REDUCER

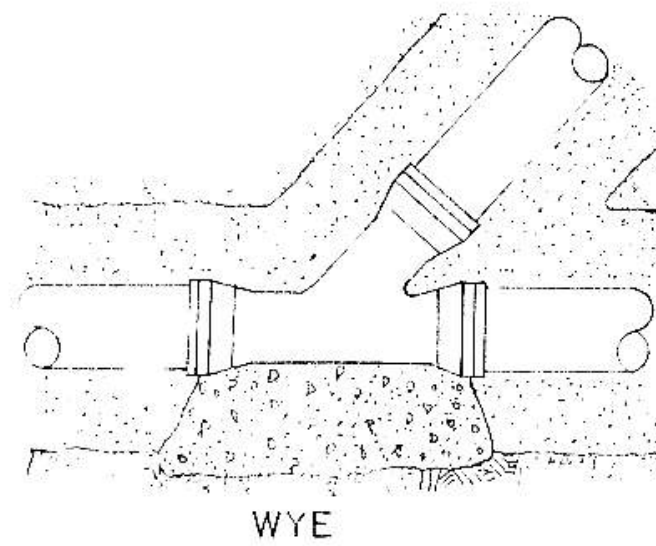


ANCHOR TO RESIST  
OUTWARD THRUSTS

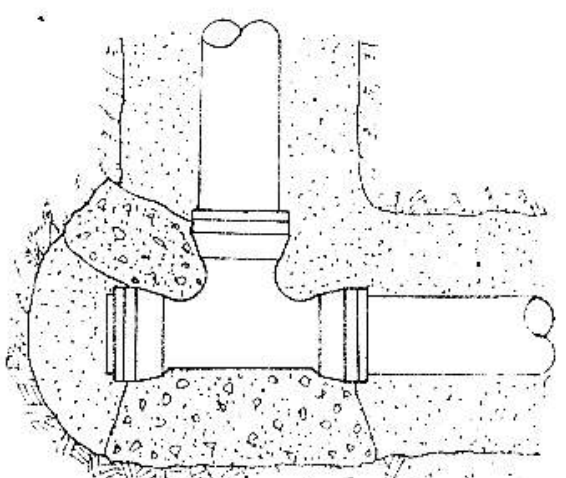
45° 1/8 BEND  
22 1/2° 1/16 BEND



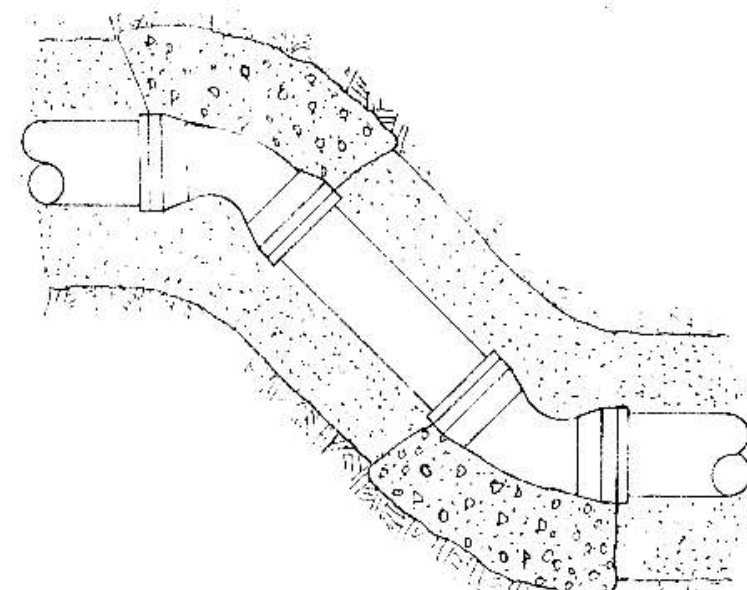
CROSS & PLUGS



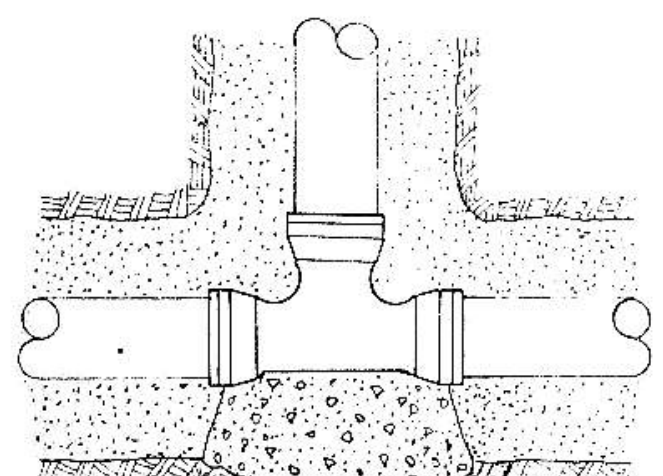
WYE



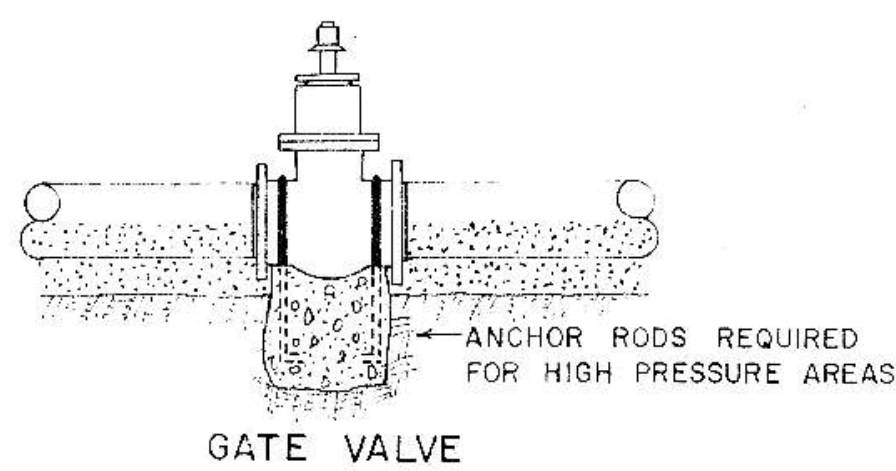
TEE & PLUG



45° 1/8 OFFSET



TEE



GATE VALVE

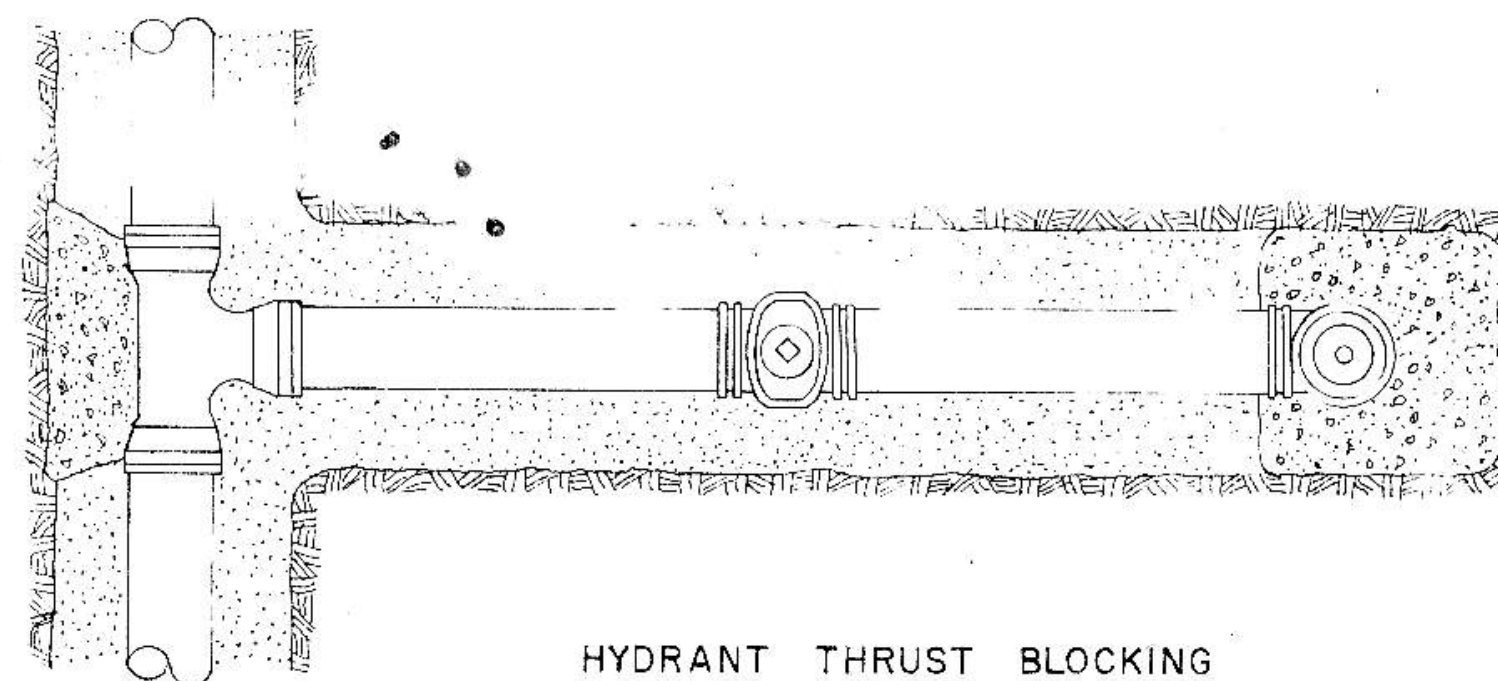
ANCHOR RODS REQUIRED  
FOR HIGH PRESSURE AREAS



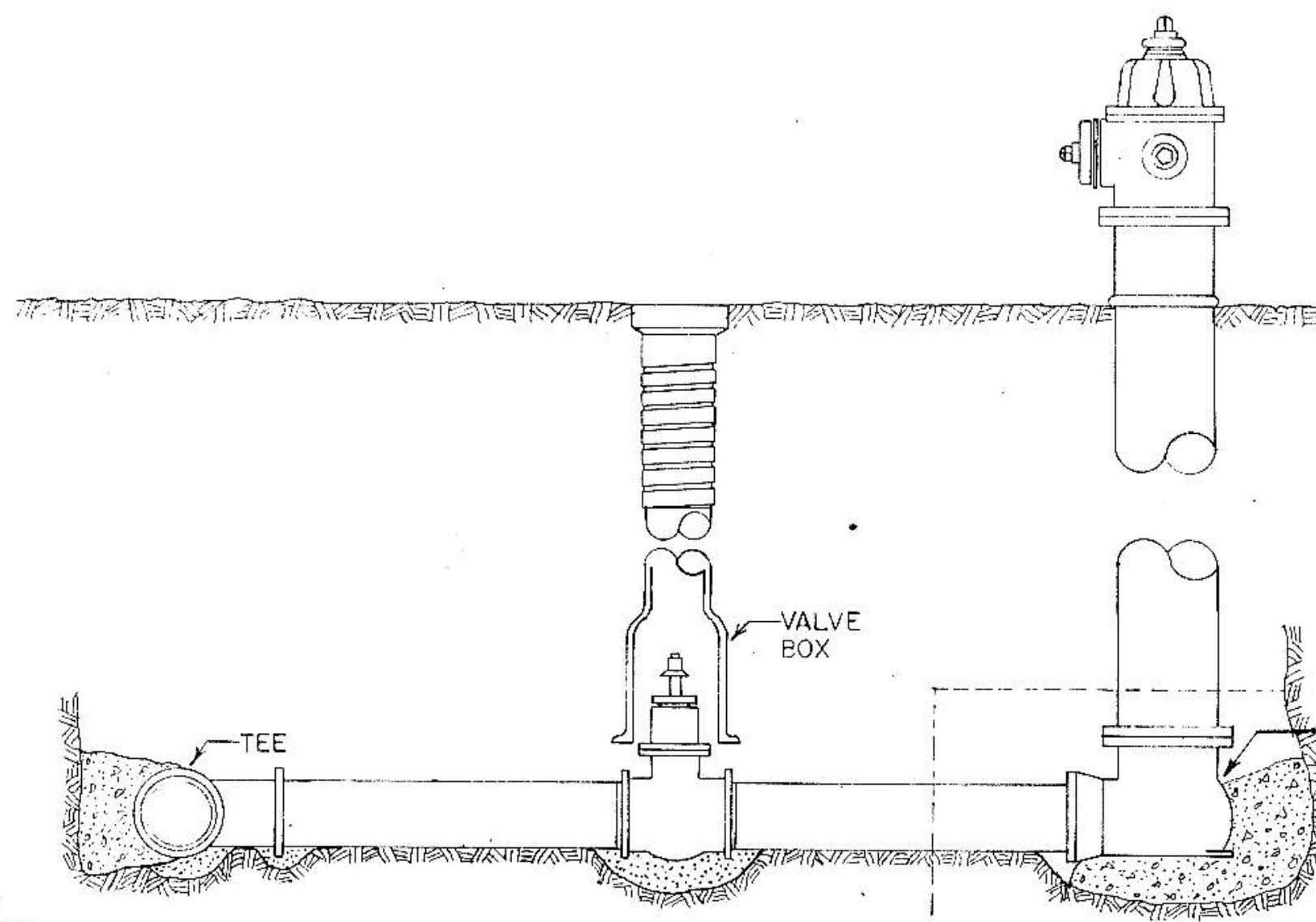
SAND CUSHION BEDDING-SUPPORT ENTIRE LENGTH OF PIPE  
SPECIAL COMPACTION REQUIRED TO PIPE SPRING LINE



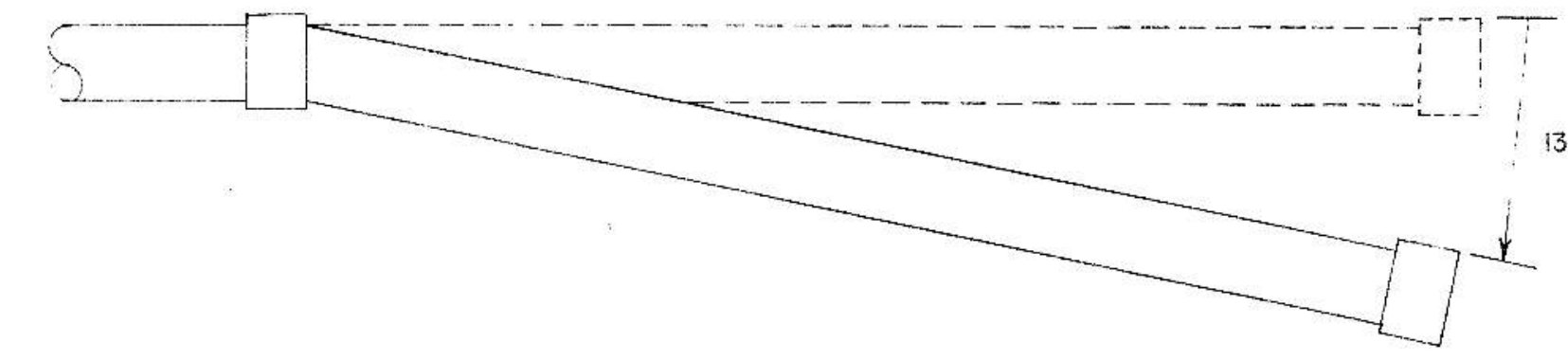
TYPICAL BEDDING TREATMENT USING APPROVED  
OR SITE MATERIAL SHAPED FOR PIPE



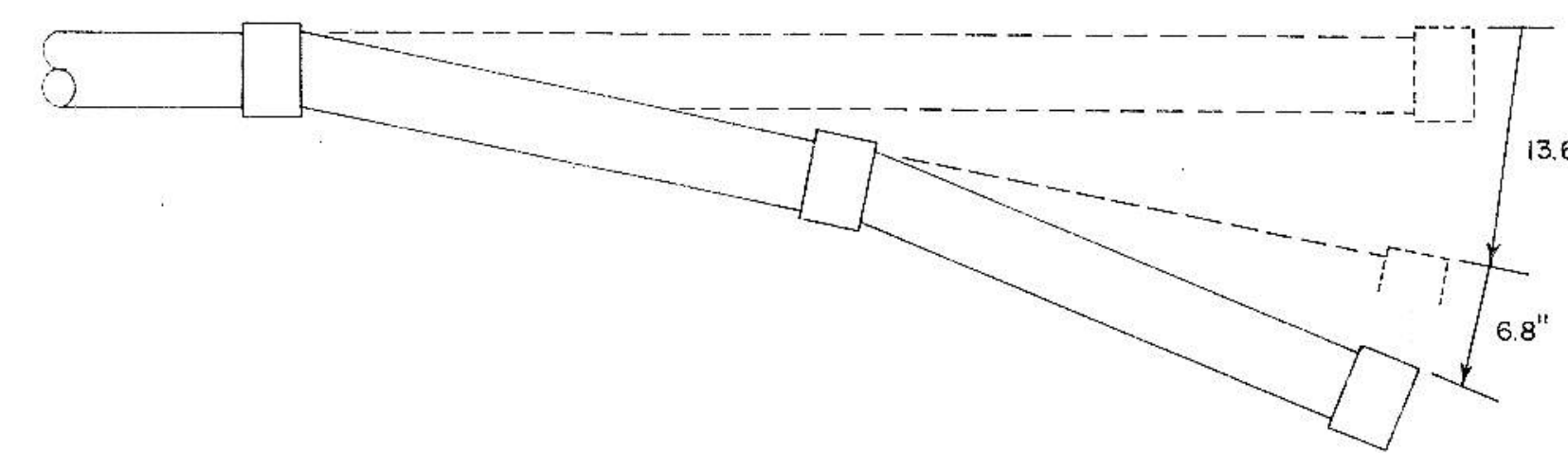
HYDRANT THRUST BLOCKING



LAYOUT OF FIRE HYDRANT & VALVE



MAX. OFFSET PER 13' LENGTH  
ASBESTOS CEMENT PIPE



USING TWO HALF LENGTHS  
ASBESTOS CEMENT PIPE

- NOTE: (1) ALL TYPES OF PIPE TO BE TREATED IN THE SAME GENERAL MANNER AS ASBESTOS CEMENT PIPE FOR DEFLECTIONS.
- (2) BEDDING REQUIREMENTS SHALL BE AS INDICATED HEREON UNLESS MODIFIED IN THE SPECIFICATIONS.
- (3) CONCRETE FOR THRUST BLOCKS SHALL HAVE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI, AND MAX. SLUMP OF 3 INCHES AT TIME OF PLACEMENT.

LEGEND

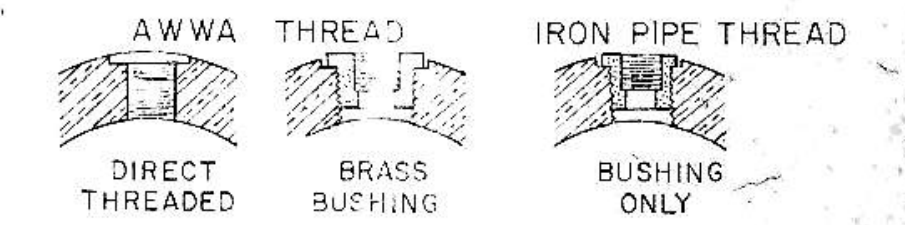
- CONCRETE
- SITE SOIL
- SELECT BACKFILL



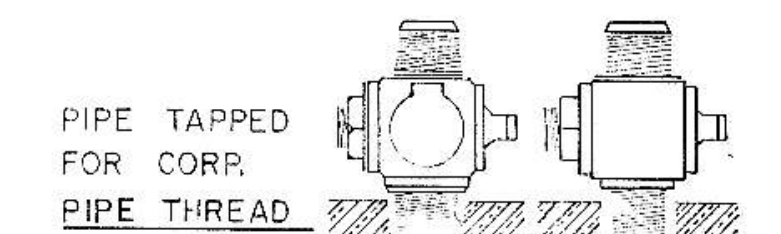
MAXIMUM SIZE OF OUTLET RECOMMENDED WITH SERVICE CLAMPS (INCHES)

NOMINAL PIPE SIZE	OUTLET SIZE (CLASSES 100-150-200)	
	SINGLE STRAP	DOUBLE STRAP
4"	1 1/2"	1 1/2"
6"	2"	2"
8"	2"	2"
10"	2"	2"
12"	2"	2"
14"	2"	2"
16"	2"	2"

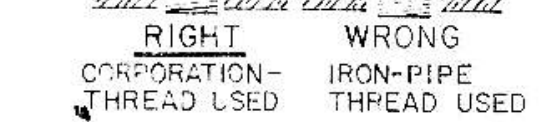
SADDLES FOR ASBESTOS CEMENT PIPE



THREAD TREATMENT  
A-C PIPE



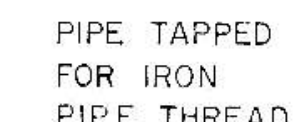
PIPE TAPPED FOR CORP. PIPE THREAD



RIGHT CORPORATION-THREAD USED



WRONG IRON-PIPE-THREAD USED

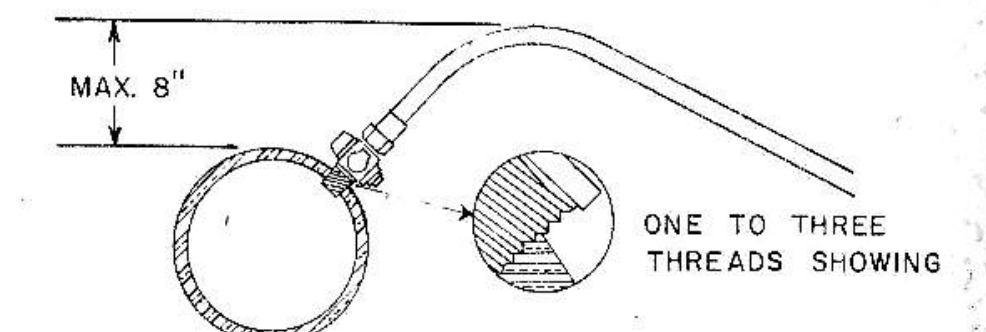


PIPE TAPPED FOR IRON PIPE THREAD

RIGHT IRON-PIPE-THREAD USED

WRONG CORPORATION-THREAD USED

CORPORATION COCK TAPPING



SERVICE LINE CORPORATION COCK  
DIRECT TAP POSITION



W&S IMP. DIST. NO. 24

Toman Engineering Company  
Civil & Environmental Consultants  
P. O. Box 708 P. O. Box 852  
Mandan, ND Bozeman, MN RPO OEO