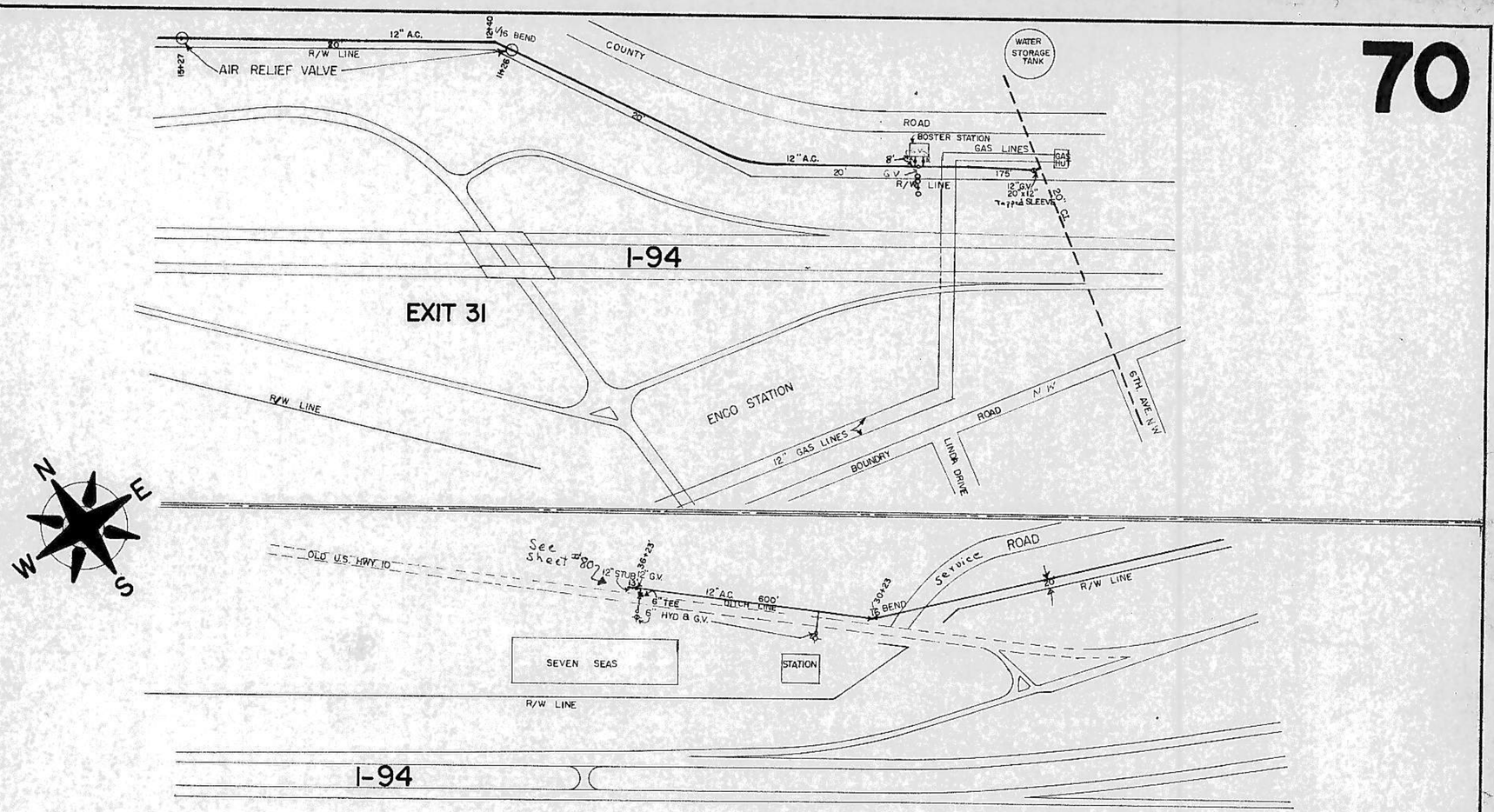
70



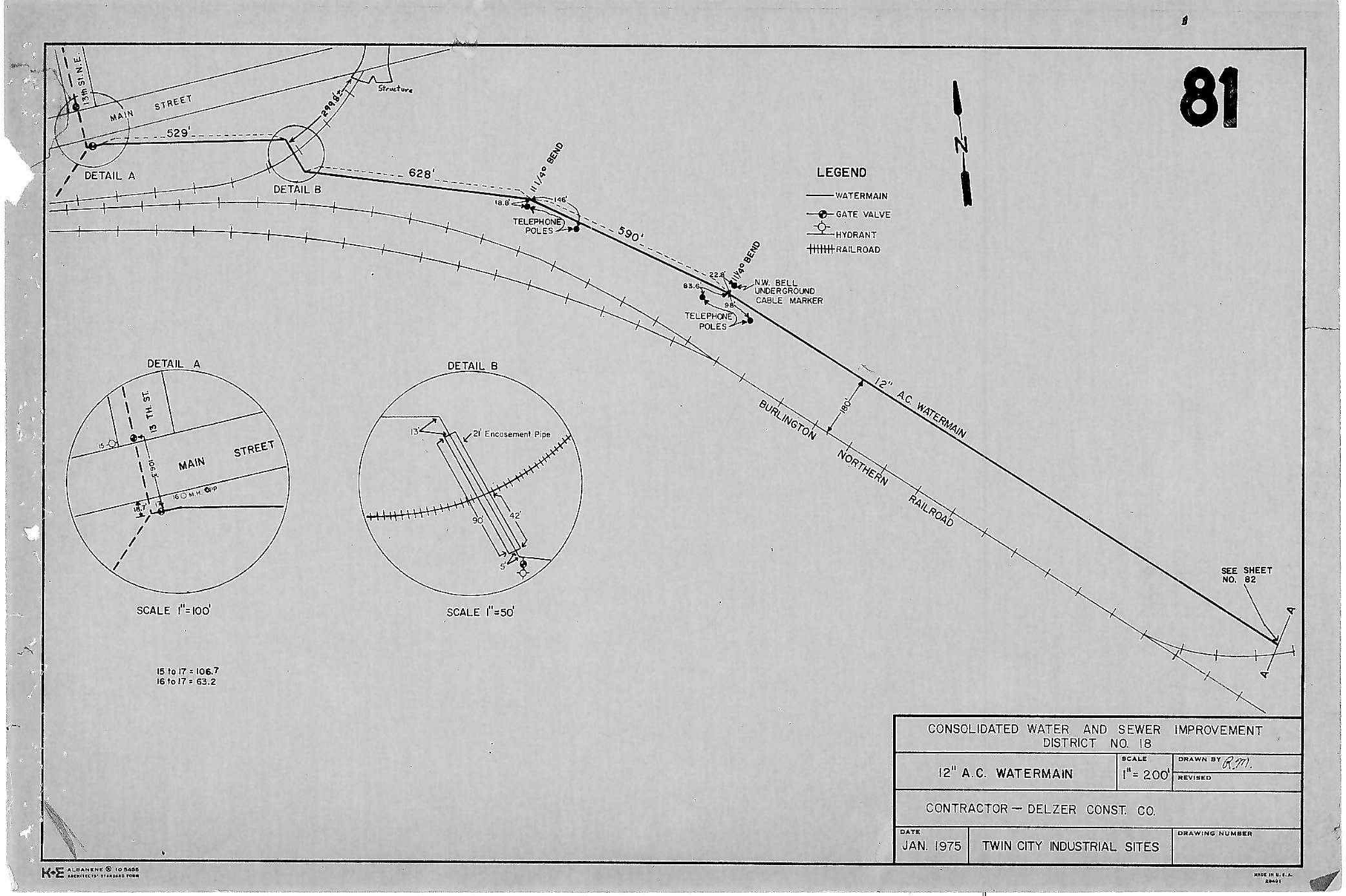
CONSOLIDATED WATER AND SEWER IMPROVEMENT DIST. NO 13

SCALE: NONE	APPROVED BY:	DRAWN BY
DATE: 11-71		REVISED

CONTRACTOR- WESTERN ENG. CO.

12" WATER TO SEVEN SEAS — DRAWING NUMBER

12X15 PRINTED ON NO. 1000H CLEARPRINT


81
MAIN STREET
529'
DETAIL A
DETAIL B
628'
Structure
11 1/4° BEND
146'
18.8'
TELEPHONE POLES
590'
22.8'
63.6'
98'
11 1/4° BEND
N.W. BELL UNDERGROUND CABLE MARKER
TELEPHONE POLES
LEGEND
WATERMAIN
GATE VALVE
HYDRANT
RAILROAD
N
12" A.C. WATERMAIN
180'
BURLINGTON NORTHERN RAILROAD
SEE SHEET NO. 82
A
A
DETAIL A
13TH ST.
MAIN STREET
15
106.7'
16 M.H. Grip
16
18.7'
SCALE 1"=100'
DETAIL B
13'
2" Encasement Pipe
90°
42'
5'
SCALE 1"=50'
15 to 17 = 106.7
16 to 17 = 63.2
CONSOLIDATED WATER AND SEWER IMPROVEMENT DISTRICT NO. 18
12" A.C. WATERMAIN
SCALE 1"= 200'
DRAWN BY R.M.
REVISED
CONTRACTOR — DELZER CONST. CO.
DATE JAN. 1975
TWIN CITY INDUSTRIAL SITES
DRAWING NUMBER
K+E ALBANENE ® 10 5455
MADE IN U.S.A.

TWIN CITY INDUSTRIAL SITES

80

AS BUILT

8.0' MANHOLE
INVERT 1631.50

9.4' MANHOLE
INVERT 1630.65

11.1' MANHOLE
INVERT 1628.95

12.8' MANHOLE
INVERT 1627.25

14.5' MANHOLE
INVERT 1625.55

16.2' MANHOLE
W. INVERT 1623.90
E. INVERT 1625.00
N. INVERT 1627.70

10.5' MANHOLE
INVERT 1628.35

8.0' MANHOLE
INVERT 1630.0

10.1' MANHOLE
INVERT 1629.35

8.0' MANHOLE
INVERT 1631.00

LIFT STATION
SUMP 1619.50

400' 8" PVC

SECTION LINE

INTERSTATE

R/W

94

WILL BROS.

WHEY-TO-GO

BURLINGTON NORTHERN RIGHT-OF-WAY
FORCE MAIN ABANDONED

BURLINGTON NORTHERN RAILROAD MAINLINE

WELK STEEL

BISMAN AVENUE

TWIN CITY DRIVE

SECTION LINE

Forcee Main
Dist No
18

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

1 2 3 4 5 6 7 8

9 19

(1) (2)

2605

10'

190'

INV. 1630.15

313 L.F. FORCE MAIN CONNECTED INTO MANHOLE NO. 2

306 L.F. 8" V.C. SEWER MAIN
INV. 1631.52

INV. 1630.84

72 L.F. 16" CASING PIPE

398 L.F. 12" P.V.C.

INV. 1629.30

94 L.F. 16" C.P.

BREAK IN INV. 1629.00

MANHOLE NO. 3 IS A MONITORING MANHOLE FOR THE PURPOSE OF ANALYSING THE WHEY PLANT SEWERAGE ONLY.

INSTALLED BY SORNSIN CONST. FARGO, N.D. NOVEMBER 1978

SEE SHEET 1 FOR THIS AREA

D 18 D 26

5

LIFT STATION INFORMATION

TYPE —— SUBMERSIBLE PUMP
MODEL NO.— HYDROMATIC SH500
H.P. EACH— 5
VOLTS—— 220
CYCLE—— 60
PHASE—— 3
SERIAL NO.—
R.P.M.—— 1750
G.P.M.—— 100 G.P.M., EACH PUMP

LEGEND

SEWER MAIN
MANHOLE
4" FORCE MAIN

CONSOLIDATED WATER AND SEWER IMPROVEMENT DISTRICT NO. 18 & 26

8" P.V.C. SEWERMAIN AND 4" P.V.C. FORCEMAIN	SCALE 1"=200'	DRAWN BY ROBERT MINDT
		REVISED NOVEMBER 29, 1978
CONTRACTOR— DELZER CONST. CO.		
DATE DEC. 1974	APPROVED BY	DRAWING NUMBER

K·E ALBANENE ® 10 5465 ARCHITECTS' STANDARD FORM

MADE IN U.S.A. 28491

TWIN CITY INDUSTRIAL SITES

82

1	TO	2	= 10.7'
1	TO	3	= 19.1'
2	TO	3	= 20.3'
2	TO	4	= 56.6'
3	TO	4	= 73.3'
5	TO	6	= 13'
5	TO	7	= 35.8'
6	TO	7	= 41.3'
6	TO	8	= 46.1'
7	TO	8	= 21.6'
9	TO	10	= 16.5'
10	TO	11	= 23.1'
12	TO	14	= 53.1'
13	TO	14	= 28.5'

SECTION LINE

TWIN CITY INTERSTATE 1469' L.F. 6" A.C.

94 R/W

DRIVE

NOTE: ON DEAD ENDS THERE IS A 13' LENGTH OF PIPE FROM G.V.

DETAIL "A"

DETAIL "B"

SEE DETAIL B

SEE SHEET NO. 81

WHEY-TO-GO & CAPITAL CITY CHEESE

BURLINGTON NORTHERN RAILROAD MAINLINE

B.N. R/W

DIST NO 18

12" A.C. 1545 L.F.

180'

WELK STEEL

SEE SHEET NO. 98D FOR THIS AREA

72 L.F. 20" CASING PIPE

8" CASING

WATER MAIN WAS LOWERED AT THIS POINT FOR SEWERMAIN CROSSING

SEE DETAIL "A"

INSTALLED BY SORNSIN CONST. FARGO, N.D. NOVEMBER 1978

HWY. NO. 10

BISMAN AVE.

6" A.C. 882 L.F.

Prop. Corner

6" A.C. 1190' L.F.

M.H.

SECTION LINE

LEGEND

WATERMAIN

GATE VATE

HYDRANT

CONSOLIDATED WATER AND SEWER IMPROVEMENT DISTRICT NO. 18 & (26)	
6", 8" & 12" A.C. WATERMAIN	SCALE 1" = 200'
DRAWN BY R.M. ROBERT MINOT	REVISED NOVEMBER 29, 1978
CONTRACTOR — DELZER CONST. CO.	
DATE DEC. 1974	APPROVED BY
DRAWING NUMBER	

K-E ALBANENE ® 10 5455 ARCHITECTS' STANDARD FORM

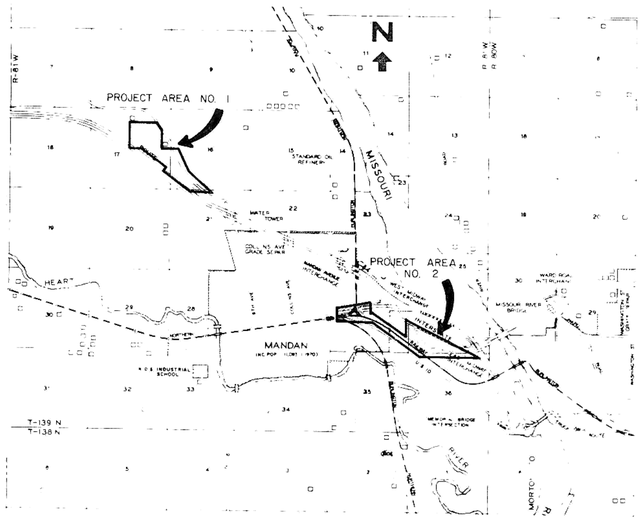
MADE IN U.S.A. 28481

CONSOLIDATED WATER AND SEWER IMPROVEMENT DISTRICT NO. 18

CITY OF MANDAN, NORTH DAKOTA

INDEX

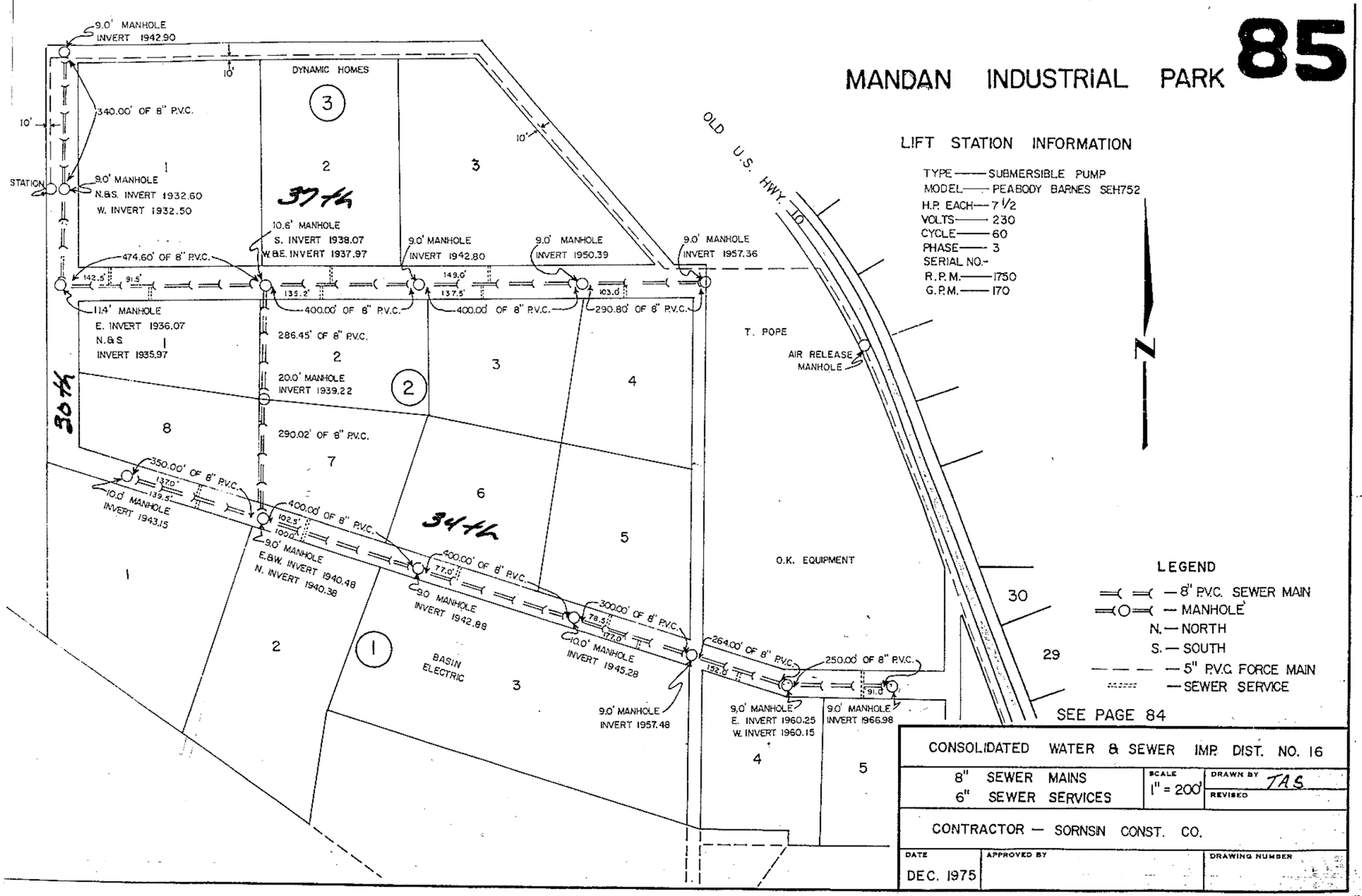
ROLF HERBST
REGISTERED
PROFESSIONAL
ENGINEER
NORTH DAKOTA



TOMAN ENGINEERING CO.
CONSULTING ENGINEERS

SEPTEMBER 1974

MANDAN INDUSTRIAL PARK 85



LIFT STATION INFORMATION

TYPE —— SUBMERSIBLE PUMP
MODEL —— PEABODY BARNES SEH752
H.P. EACH —— 7 1/2
VOLTS —— 230
CYCLE —— 60
PHASE —— 3
SERIAL NO.-
R.P.M. —— 1750
G.P.M. —— 170

LEGEND

— 8" P.V.C. SEWER MAIN
— MANHOLE
N. — NORTH
S. — SOUTH
— 5" P.V.C. FORCE MAIN
— SEWER SERVICE

SEE PAGE 84

CONSOLIDATED WATER & SEWER IMP. DIST. NO. 16

8" SEWER MAINS
6" SEWER SERVICES

SCALE 1" = 200'

DRAWN BY TAS

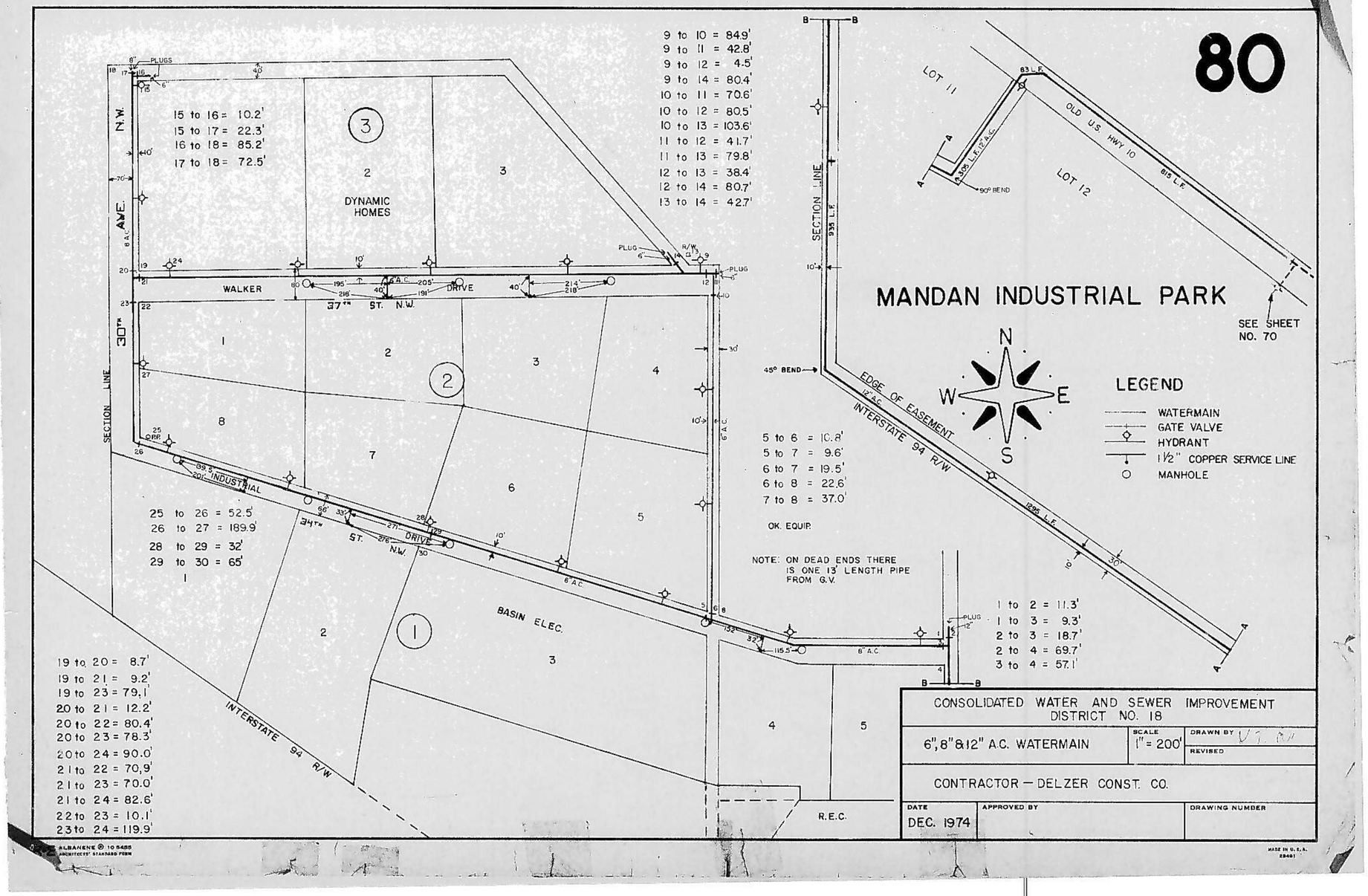
REVISED

CONTRACTOR — SORNSIN CONST. CO.

DATE DEC. 1975

APPROVED BY

DRAWING NUMBER


80
MANDAN INDUSTRIAL PARK
SEE SHEET NO. 70
LEGEND
WATERMAIN
GATE VALVE
HYDRANT
1½" COPPER SERVICE LINE
MANHOLE
N
S
E
W
9 to 10 = 84.9'
9 to 11 = 42.8'
9 to 12 = 4.5'
9 to 14 = 80.4'
10 to 11 = 70.6'
10 to 12 = 80.5'
10 to 13 = 103.6'
11 to 12 = 41.7'
11 to 13 = 79.8'
12 to 13 = 38.4'
12 to 14 = 80.7'
13 to 14 = 42.7'
15 to 16 = 10.2'
15 to 17 = 22.3'
16 to 18 = 85.2'
17 to 18 = 72.5'
5 to 6 = 10.8'
5 to 7 = 9.6'
6 to 7 = 19.5'
6 to 8 = 22.6'
7 to 8 = 37.0'
OK. EQUIP.
NOTE: ON DEAD ENDS THERE IS ONE 13' LENGTH PIPE FROM G.V.
1 to 2 = 11.3'
1 to 3 = 9.3'
2 to 3 = 18.7'
2 to 4 = 69.7'
3 to 4 = 57.1'
25 to 26 = 52.5'
26 to 27 = 189.9'
28 to 29 = 32'
29 to 30 = 65'
19 to 20 = 8.7'
19 to 21 = 9.2'
19 to 23 = 79.1'
20 to 21 = 12.2'
20 to 22 = 80.4'
20 to 23 = 78.3'
20 to 24 = 90.0'
21 to 22 = 70.9'
21 to 23 = 70.0'
21 to 24 = 82.6'
22 to 23 = 10.1'
23 to 24 = 119.9'
DYNAMIC HOMES
WALKER
DRIVE
37TH ST. N.W.
34TH ST. N.W.
DRIVE
INDUSTRIAL
BASIN ELEC.
R.E.C.
INTERSTATE 94 R/W
EDGE OF EASEMENT
INTERSTATE 94 R/W
SECTION LINE
30TH AVE. N.W.
LOT 11
LOT 12
OLD U.S. HWY 10
83 L.F.
335 L.F.
615 L.F.
90° BEND
45° BEND
935 L.F.
1295 L.F.
CONSOLIDATED WATER AND SEWER IMPROVEMENT DISTRICT NO. 18
6", 8" & 12" A.C. WATERMAIN
SCALE 1" = 200'
DRAWN BY
REVISED
CONTRACTOR — DELZER CONST. CO.
DATE DEC. 1974
APPROVED BY
DRAWING NUMBER

Install 20 L.F. 8" A.C. W.M. & 8" Plug
Install 8" Gate Valve
Install 6" Gate Valve, 23 L.F. 6" A.C. & 6" Plug
Install 8" Tee, 6" Reducer
Install Hydrant Type 'B'
Install 523 L.F. 8" A.C. Watermain
Install Hydrant Type 'B'
Install 8" Tee, 8" Gate Valve, 8" to 6" Reducer, & 6" Gate Valve
Install Hydrant Type 'A'
Install Hydrant Type 'A'
Install Hydrant Type 'A'
Install Hydrant Type 'A'
Install 391 L.F. 6" A.C. W.M. & 6" Plug
Install 6" Tee, 6"-45° Bend & 6" Gate Valve
Install Hydrant Type 'A'
Install 6" Tee & 2-6" Gate Valves
Install 20 L.F. 6" A.C. W.M. & 6" Plug
11' Cover 140'
10' Cover 140'
9' Cover 140'
8' Cover
Install 1519 L.F. 6" A.C. Watermain
WALKER DRIVE
Install 6" Gate Valve
Install 8" Gate Valve
Scale 1"=100'
Install Hydrant Type 'B'
Install 435 L.F. 8" A.C. Watermain
Install Hydrant Type 'A'
Install 8" Gate Valve, 8"-45° Bend, & 8"-22½° Bend
Install Hydrant Type 'B'
11' Cover 100'
10' Cover 100'
9' Cover 100'
8' Cover
Install Hydrant Type 'B'
Install Hydrant Type 'B'
Install 8" Gate Valve
INDUSTRIAL DRIVE
Install 1581 L.F. 8" A.C. Watermain
Install Hydrant Type 'B'
8' Cover
9' Cover 100'
10' Cover 140'
Install Hydrant Type 'B'
11' Cover 220'
Install 109 L.F. 8" A.C. Pipe
Install Hydrant Type 'A'
Install Hydrant Type 'A'
Install 8" Tee, 8" to 6" Reducer, 6"-22½° Bend
8" Gate Valve & 6" Gate Valve
Install 251 L.F. 8" A.C. Watermain
10' Cover 80'
9' Cover 80'
8' Cover
Install Hydrant Type 'B'
Install 8"-22½° Bend
Install 393 L.F. 8" A.C. Watermain
Install Hydrant Type 'B'
Install 27 L.F. 12" A.C. W.M. 12" Gate Valve & 12" Plug
Install 12" Tee, 12" to 8" Reducer & 8" Gate Valve
Install 330 L.F. 12" A.C. Pipe
Install 1285 L.F. 12" A.C. Watermain
Existing 12'x48' Billboard
Existing 12'x48' Billboard
Install Hydrant Type 'C'
Exact Location to be provided by Field Engineer
I-94 Right of Way
MDU 2" Gas Main
Northwestern Bell Underground Communications Cable (200 Pair)
MDU 2" Gas Main
N.E. Corner Lot 12 of Lot A (Sunview Heights)
Jack Hophaat Residence
Hwy. R/W
Hwy. R/W
Install 2-12"-45° Bends & 83 L.F. 12" A.C. W.M.
77 S.Y. Asphalt Removal & Replacement
Hedge (To Remain)
Remove & Replace 8" Trees
Install 305 L.F. 12" A.C. W.M.
Install Hydrant Type 'C'
Install 70 L.F. 12" A.C. W.M.
Install 2-12"-45° Bends
Underground Communications Cable
Mor-Gran-Sou 7200 V. 3φ Underground Cable (4' Depth)
Driveway Crossing - Remove & Relay 31 L.F. C.M.P.
55 S.Y. Asphalt Removal & Replacement
Old U.S. Hwy. 10
13' Center Line
Use Section Line Road Allowance For Topsoil & Excavation Storage Area
40'
Sec. Line
33'
20' Const. Ease.
Install 818.7 L.F. 12" A.C. W.M.
Begin Project 13' North of Existing Gate Valve
Existing Hydrant in Front of Seven Seas Inn
Scale 1"=100'
Small Underground Waterline
Install Hydrant Type 'C'
REC Asphalt Driveway
55 S.Y. Asphalt Removal & Replacement
Install 12" Tee, 12" Gate Valve, 27 L.F. 12" A.C. Pipe & 12" Plug
Install 935 L.F. 12" A.C. Watermain
Scale 1"=100'
Northwestern Bell Underground Communications Cable
S.E. Property Corner REC Property
Mor-Gran-Sou 7200 V. 3φ Underground Cable (4' Depth)
Install 12"-45° Bend & 12"-11¼° Bend
Small Underground Waterline
Install 330 L.F. 12" A.C. Pipe
B
B
A
A
ROLF HERBST
REGISTERED
PROFESSIONAL
ENGINEER
NORTH DAKOTA

PROJECT AREA NO. 1

United Printing

Break Into Existing Manhole
Install 601 L.F. 4" Forcemain
Install 4"-45° Bend
Remove & Replace Fence As Req'd
See Highway Crossing Detail
Remove & Replace Fence As Req'd
Install 165 L.F. 4" Forcemain
Underground Communications Cable
Hwy R/W
Install 4"-11¼° Bend
Barbed Wire Fence
Install 510 L.F. 4" Forcemain
Install 4"-45° Bend & 4"-11¼° Bend
Trees To Be Removed As Req'd Maximum Trunk Dia 6"
Install 1752 L.F. 4" Forcemain
Install 1753 L.F. 12" AC Watermain
Burlington Northern R/W
Burlington Northern Tracks
Install 2-4"-45° Bends & 14 L.F. 4" Forcemain

13th Ave NE
Mandan Ave.
East Main Street
Install 529 L.F. 12" AC. Watermain
See Hookup Detail
See Railroad Crossing Detail This Sheet
Install 12"-45° Bend & 11¼° Bend
Install 72 L.F. 12" AC
Install 12"-45° Bend
Install Hydrant Type 'C'
Abandoned Sewer Main
Install 628 L.F. 12" AC. Watermain
Install 12"-11¼° Bend
Install 590 L.F. 12" AC Watermain
Install 12"-11¼° Bend

Scale 1"=100'

Notes:

1. All A.C. Watermain to be Class 150
2. All Pipe installation lengths shown on plans are from center to center of fittings
3. Fence Removal & Replacement and Tree Removal on Sheets 2 & 3 to be considered incidental to pipeline installation
4. Gate Valves for Hydrants to be placed approx. 3' from Hydrant
5. The following quantities are to be included for the various Hydrant Installations
   - Hydrant Type 'A' - 6" Tee, 10 L.F. 6" A.C. Watermain, 6" Gate Valve & 5" Hydrant w/ 6" Hub
   - Hydrant Type 'B' - 8" Tee, 10 L.F. 8" A.C. Watermain, 8" Gate Valve & 6" Hydrant w/ 8" Hub
   - Hydrant Type 'C' - 12" Tee, 12" to 8" Reducer, 10 L.F. 8" A.C. Watermain, 8" Gate Valve & 6" Hydrant w/ 8" Hub
6. 6' Min. Cover for Forcemain
7. 8' Min. Cover for Watermain

Existing 12" A.C. Pipe
Install 12" Tapping Sleeve similar to Clow F 5205
12" Tapping Valve similar to Clow F 5093,
& 12"-11¼° Bend

Hookup Detail

8'
8'
8'
Install 70 L.F. 21" Encasement Pipe
Material & Installation of Encasement Pipe to Meet Burlington Northern Specifications

Railroad Crossing Detail

Scale 1"=10'

6' Min
Install 4" M.J. to PVC Adapter
Install 183 L.F. 4" Cement Lined Cast Iron M.J. Pipe (To be Bored)
Inspection Pit
6' Min
Install 4" M.J. to PVC Adapter

Highway Crossing Detail

Scale 1"=10'

PROJECT AREA NO. 2

Install Manhole
Approx Depth 8.0'
E.Inv. 31.50

Install 200 L.F. 8" San. Sewermain

Install Manhole
Approx Depth 9.8'
W.Inv. 30.10 E.Inv. 30.40

Install 6" Gate Valve & 6' Plug

Install Hydrant Type 'A'

Install 400 L.F. 8" San. Sewermain

Install Hydrant Type 'A'

Install Manhole
Approx Depth 11.1'
W.Inv. 29.00 E.Inv. 28.80

Install Hydrant Type 'A'

Install 400 L.F. 8" San. Sewermain

Install 1148 L.F. 6" A.C. Watermain

Install Manhole
Approx Depth 12.8'
W.Inv. 27.30 E.Inv. 27.20

Install Hydrant Type 'A'

Install 400 L.F. 8" San. Sewermain

Install Manhole
Approx Depth 14.5'
W. Inv. 25.60 E.Inv. 25.50

Install Hydrant Type 'A'

Install 400 L.F. 8" San. Sewermain

Install Lift Station
Inside Height 22' Min. Inside Dia. 6' Min.
S. Inv. 23.50 Floor Elev. 19.50
Install Manhole
Approx Depth 14.2'
W.Inv. 23.90 E.Inv. 23.80

Install 35 L.F. 4" Forcemain

Railroad Crossing
See Detail this Sheet

Install 2-45° Bends & 14 L.F. 4" Forcemain

Install Hydrant Type 'A'

Install 6" Gate Valve

Install Hydrant Type 'A'

Install 32 L.F. 8" San. Sewermain

Install 8" to 6" Reducer, 6" Tee & 6" Gate Valve

Install 400 L.F. 8" San. Sewermain

Install Hydrant Type 'B'

Install Manhole
Approx. Depth 13.0'
E. Inv. 26.70 W. Inv. 26.40

Farm Type Woven Wire Fence

Install 1440 L.F. 4" Forcemain

Install 1348 L.F. 12" A.C. Watermain

Burlington Northern Tracks

Install Hydrant Type 'C'

Property Line

Install 820 L.F. 4" Forcemain

Install 400 L.F. 8" San. Sewermain

Install 812 L.F. 8" A.C. Watermain

Install 400 L.F. 8" San. Sewermain

Install 1190 L.F. 8" A.C. Watermain

Install Hydrant Type 'B'

Install Manhole
Approx. Depth 10.1'
S. Inv. 29.40 N. Inv. 29.30

Install Hydrant Type 'B'

Install Manhole
Approx. Depth 8.0'
N. Inv. 31.00

Install 8" Gate Valve

Install 12" Tee & 12" to 8" Reducer

Install 4"-90° Bend

Install 12" Gate Valve, 87 L.F. 12" A.C. Watermain & 12" Plug

Install Manhole
Approx Depth 10.5'
E.Inv. 28.40 W.Inv. 28.30

Install 400 L.F. 8" San. Sewermain

Install Manhole
Approx Depth 8.0'
W.Inv. 30.00

Install Hydrant Type 'A'
Install 6" Gate Valve & 6" Plug

Remove & Replace Fences As Req'd

Fence

Fence

8'

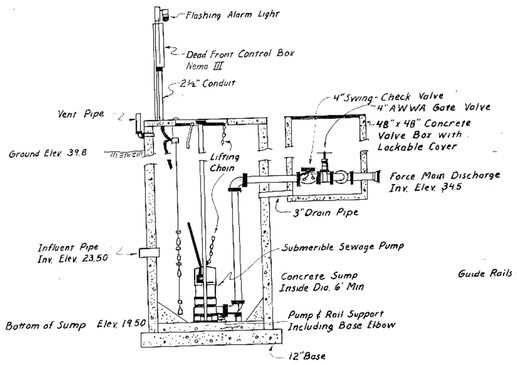
8' 7' 8'

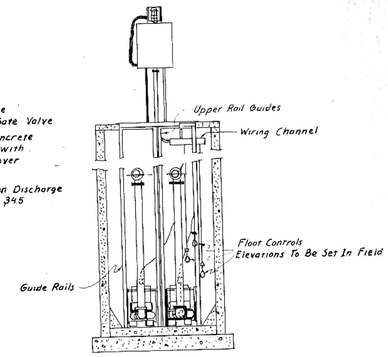
Install 23 L.F. 27" Encasement Pipe
Material & Installation of Encasement Pipe
To Meet Burlington Northern Specifications

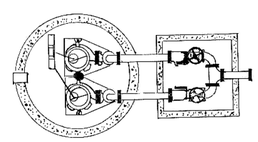
Railroad Crossing Detail

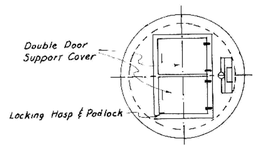
Scale 1"=10'

Scale 1"=100'





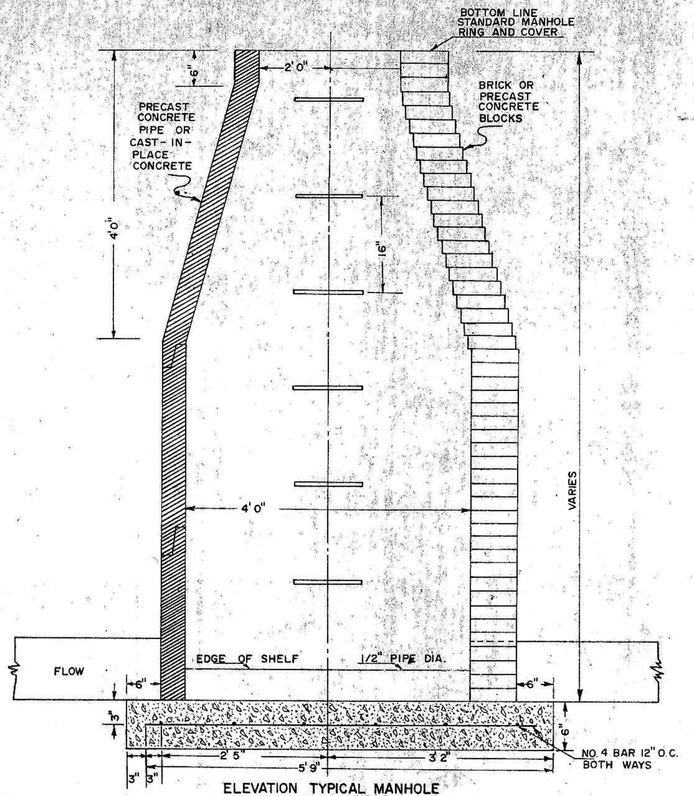




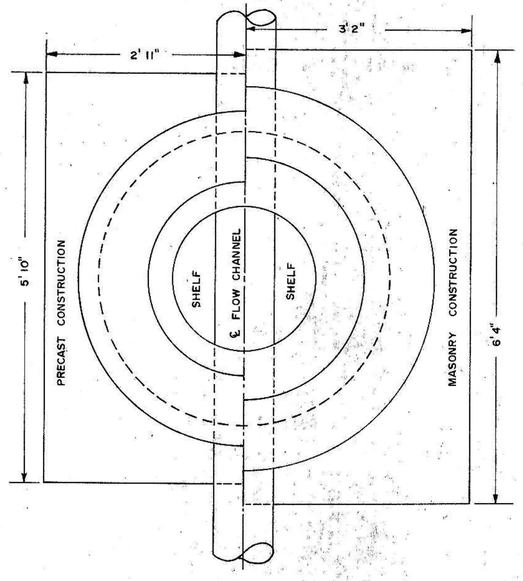
Lift Station Detail

No Scale

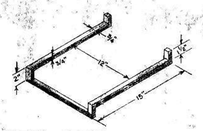
PROJECT AREA NO. 2



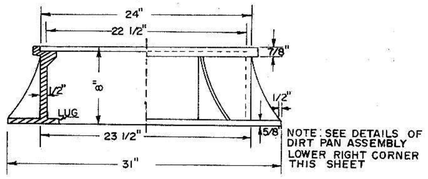
ELEVATION TYPICAL MANHOLE
SCALE : 1" = 1'0"



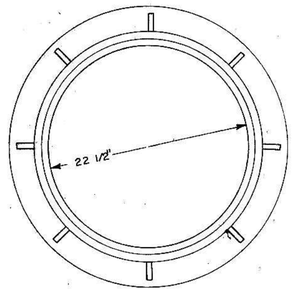
PLAN —TYPICAL MANHOLE
SCALE : 1" = 1'0"



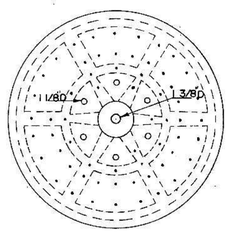
STEP DETAIL
SCALE : 1" = 1'0"



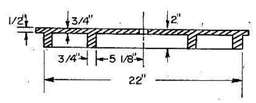
ELEVATION
STANDARD MANHOLE RING
SCALE : 1 1/2" = 1' 0"



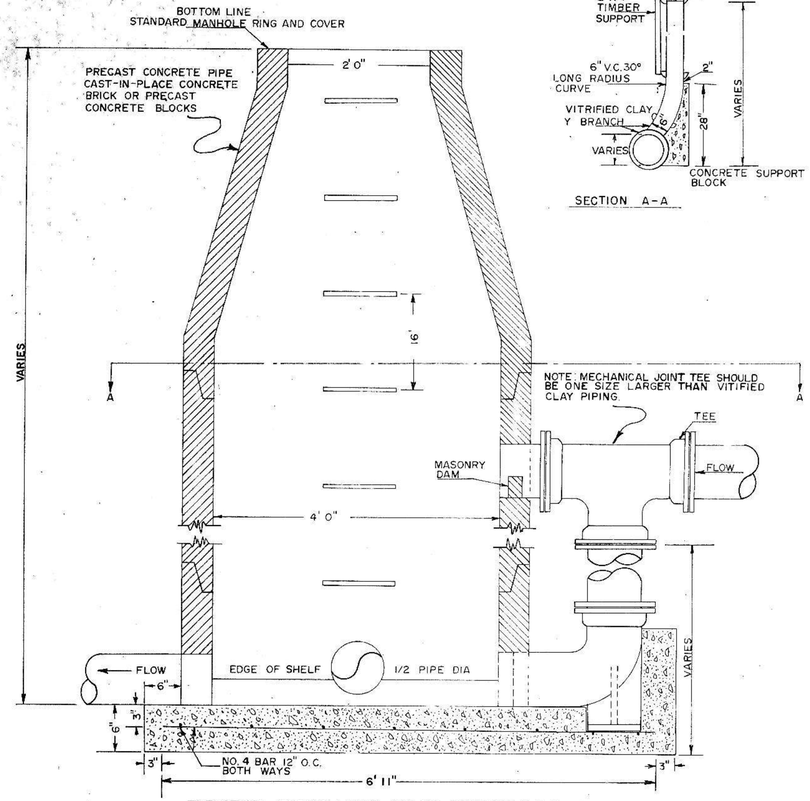
PLAN
STANDARD MANHOLE RING
SCALE : 1 1/2" = 1' 0"



PLAN
STANDARD MANHOLE COVER
SCALE : 1 1/2" = 1' 0"

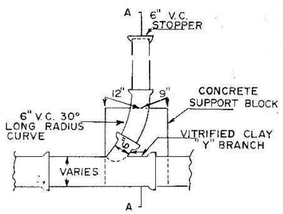


ELEVATION
STANDARD MANHOLE COVER
SCALE : 1 1/2" = 1' 0"

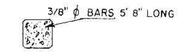


ELEVATION - TYPICAL DROP AND/OR JUNCTION MANHOLE
SCALE : 1" = 1' 0"

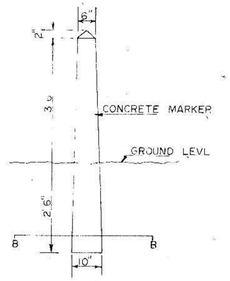
SECTION A-A



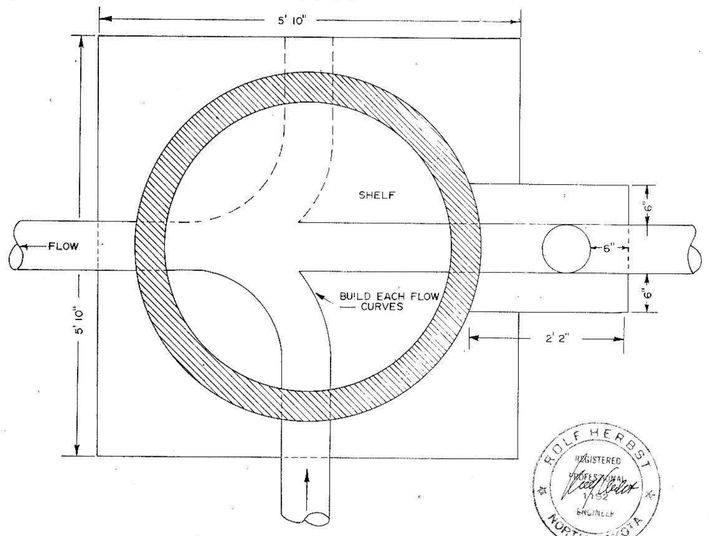
SIDE ELEVATION
PISER DETAILS
SCALE : 1/2" = 1' 0"



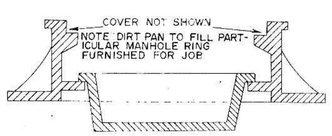
SECTION B - B
SCALE : 1" = 2'0"



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



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



ELEVATION MANHOLE DIRT PAN
NO SCALE

ROLF HERBST
REGISTERED
PROFESSIONAL
ENGINEER
NORTH DAKOTA

MANHOLE DETAILS

File No.

Date SEPTEMBER 1974

Revised

Scale: AS SHOWN

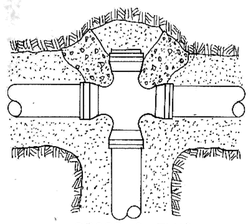
DRAWN BY: CO

CHECKED BY:

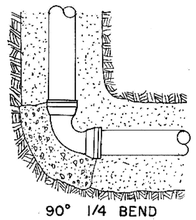
Toman Engineering Co.
Box 708

Engineering Consultants
Minot, North Dakota

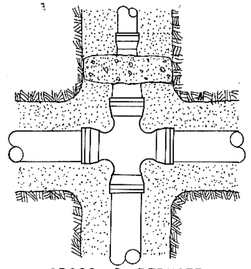
THRUST BLOCK DETAILS



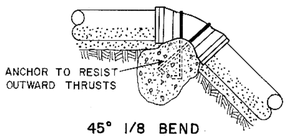
CROSS & PLUG



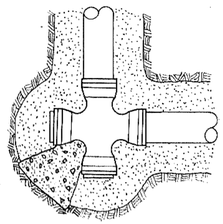
90° 1/4 BEND



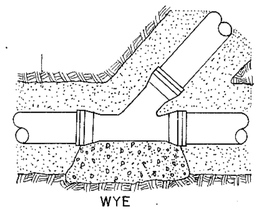
CROSS & REDUCER



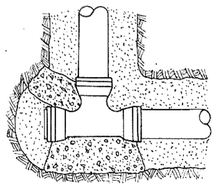
45° 1/8 BEND
22 1/2° 1/16 BEND



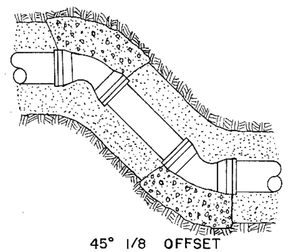
CROSS & PLUGS



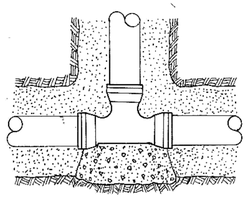
WYE



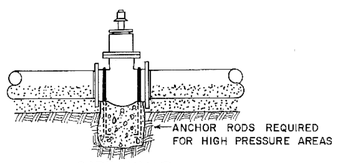
TEE & PLUG



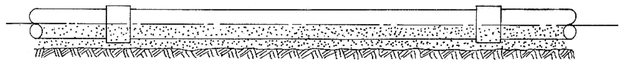
45° 1/8 OFFSET



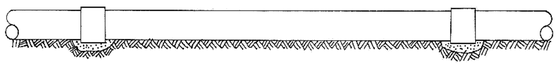
TEE



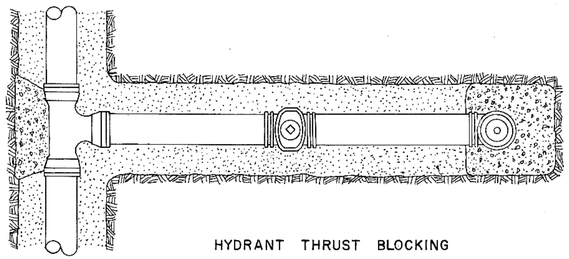
GATE VALVE



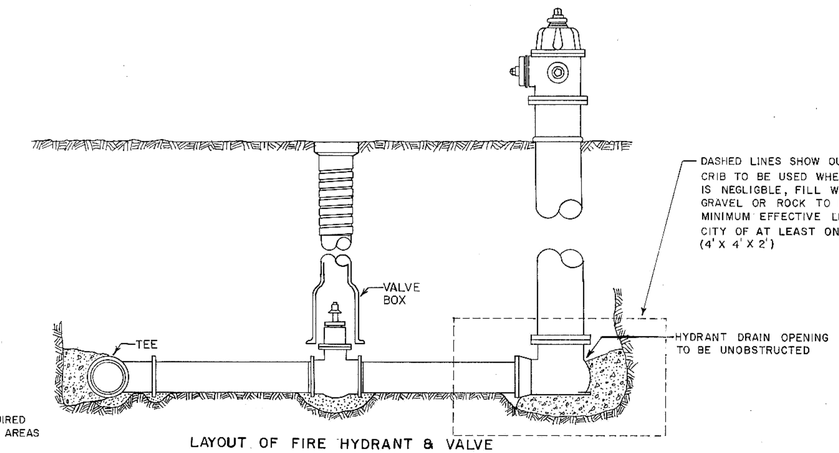
SAND CUSHION BEDDING - SUPPORT ENTIRE LENGTH OF PIPE
SPECIAL COMPACTION REQUIRED TO PIPE SPRING LINE



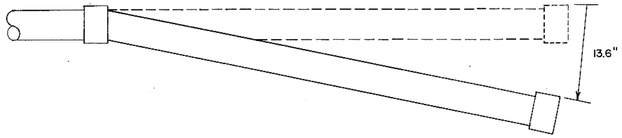
TYPICAL BEDDING TREATMENT USING APPROVED
OR SITE MATERIAL SHAPED FOR PIPE



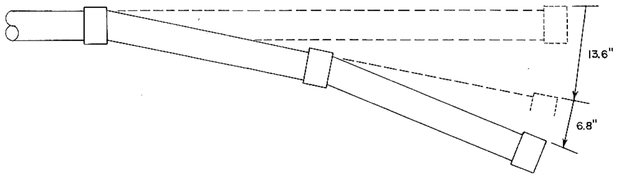
HYDRANT THRUST BLOCKING



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

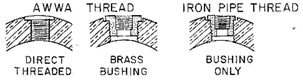
SITE SOIL

SELECT BACKFILL

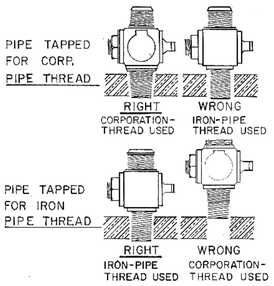
MAXIMUM SIZE OF OUTLET
RECOMMENDED WITH SERVICE CLAMPS
(INCHES)

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

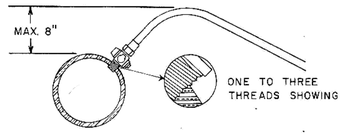
SADDLES FOR ASBESTOS CEMENT PIPE



THREAD TREATMENT
A-C PIPE



CORPORATION COCK TAPPING



SERVICE LINE CORPORATION COCK
DIRECT TAP POSITION

ROLF HERBST
REGISTERED PROFESSIONAL ENGINEER
NORTH DAKOTA

WATERMAIN DETAILS