

Centerline Curve Data
 $\Delta = 26^\circ 04' 34''$
 $T = 208.41'$
 $R = 900.00'$
 $L = 409.60'$

Stationing and Manhole Details:

- Sta. 9+82.53 8" Cap
- Sta. 9+47.61 8" San. Sewer
- Sta. 9+47.61 8" San. Sewer
- Sta. 0+00 Ahd. 3+12.49 Bk.
- Sta. 6+35.37 8" San. Sewer
- Sta. 10.88' Lt. 0+00 Ahd. 2+30.00 Bk.
- Sta. 4+05.37 8" San. Sewer
- Sta. 10.88' Lt. 0+00 Ahd. Remove Cap/Connect

Manhole Quantities:

- Sta. 9+80.07 8" Plug
- Sta. 9+70.39 8" x 8" Cross
- Sta. 8+00.00 30.94' Lt. 8" Gate Valve & Box 8" Vertical Bend
- Sta. 7+76.88 32.33' Lt. 8" Vertical Bend 8" 11 1/4" Horizontal Bend (At Fittings)
- Sta. 7+34.78 8" x 6" Vertical Tee 6" WM (Vertical Rise) 6" 90° Bend 5.15 LF 6" WM 6" Gate Valve & Box 7.00 LF 6" WM 6" Hydrant

Watermain Quantities:

- Sta. 7+76.88 8" Vertical Bend
- Sta. 4+05.37 6" Hydrant

San. Sewer Quantities:

- Sta. 9+82.53 8" San. Sewer

CONSTRUCTION NOTES (THIS SHEET)

- BACKFILL SHALL BE CLASS 'A'.
- GRADING SHALL BE BY OTHERS, PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF OFFSITE ALL ASPHALT AND CURB AND GUTTER AS REQUIRED TO MAKE CONNECTIONS TO THE EXISTING UTILITIES. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS.
- THE CONTRACTOR SHALL VERIFY THE ELEVATION OF THE GROUND WATER AT THE TIME OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DEWATERING OF THE CONSTRUCTION SITE AS REQUIRED TO INSTALL THE PROPOSED UTILITIES.
- PROTECT ALL SURVEY MONUMENTS. MONUMENTS DISTURBED OR DESTROYED SHALL BE REPLACED BY THE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
- CONNECTION TO THE EXISTING 8" SANITARY SEWER LINE SHALL BE CONSIDERED INCIDENTAL TO THE "B" SANITARY SEWER BID ITEM
- THE LOCATION OF THE EXISTING 8" WATERMAIN IS APPROXIMATE AND IS RECOMMENDED THAT THE CONTRACTOR VERIFY ITS LOCATION PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL LIMIT THE DOWN TIME ON THE EXISTING 8" WATERMAIN WHICH PROVIDES SERVICE TO THE CITY OF MANDAN WASTE WATER TREATMENT PLANT TO ONE (1) DAY. THE CONTRACTOR MAY ELECT TO USE RESTRAINED JOINT FITTINGS TO AID IN TESTING AND TURNING ON THE WATER SOONER. THE NEW WATERMAIN SHALL BE PRESSURE TESTED AND CHLORINATED PRIOR TO MAKING THE CONNECTIONS. THE CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE TO THE CITY OF MANDAN WASTE WATER TREATMENT PLANT PRIOR TO SHUTTING DOWN THE WATER. ABANDON THE EXISTING 8" WATERMAIN BETWEEN THE CONNECTION POINTS. PLUG ENDS OF ABANDONED WATERMAIN. CONNECTIONS TO THE EXISTING 8" WATERMAIN SHALL BE CONSIDERED INCIDENTAL TO THE "B" PVC WATERMAIN BID ITEM.
- EXERCISE CAUTION WHEN CROSSING THE SEWER SERVICES WITH THE 8" WATERMAIN OR CROSSING THE WATERMAIN WITH THE SEWER SERVICES.
- THE STORM SEWER IS NOT PART OF THIS CONTRACT.
- EXISTING CONTOURS AND SURVEY POINTS ARE SHOWN. NO ADDITIONAL GRADING WILL BE COMPLETED PRIOR TO THE START OF THE WATER/SEWER PROJECT. THE CONTRACTOR DOES NOT HAVE TO SALVAGE GRAVEL ON SOUTH BAY DRIVE SE OR RESTORE THE ROADWAY AND DITCHES AT COMPLETION OF THIS PROJECT.
- IN ORDER FOR THE CONTRACTOR TO MAKE THE CONNECTION FROM THE EXISTING 8" WATERMAIN TO THE PROPOSED HYDRANT AT STA. 7+34.78 THE CONTRACTOR SHALL INSTALL AN 8" X 6" CUT IN TEE AND SECTION OF 6" PVC WATERMAIN VERTICALLY SO THAT THE 6" GATE VALVE ON THE HYDRANT LEAD AND 6" HYDRANT CAN BE CONSTRUCTED WITH A TYPICAL 8 1/2' BURY DEPTH.

Lot	Block	4" Sewer Service	4" 45° Bend	4" 22 1/2° Bend	8" x 4" Wye Branch	Sewer Service Invert	Water Copper At Tee Cap	1" Water Serv. Connection	1" Ball Valve Curb Stop	1 1/4" Box
27	2	51	1	1	28.00	65	1	1		
1	4	29	1	1	28.00					
26	2	51	1	1	28.00	65	1	1		
2	4	29	1	1	28.00					
25	2	51	1	1	28.00	65	1	1		
3	4	39	1	1	28.00					
24	2	36	1	1	28.00	69	1	1		
4	4	47	1	1	27.60					
5	4	47	1	1	27.60					
TOTAL		380	9	9		264	4	4		

APPROXIMATE WYE LOCATIONS

STATION	DIRECTION	LOT	BLOCK
FROM CONNECTION TO MANHOLE NO. 1			
0+59	N	27	2
1+34	S	1	4
7+39	N	26	2
2+07	S	2	4
2+22	N	25	2
FROM MANHOLE NO. 1 TO MANHOLE NO. 2			
0+55	SW	3	4
1+00	NE	24	2
1+30	SW	4	4
2+36	SW	5	4

Manhole Number

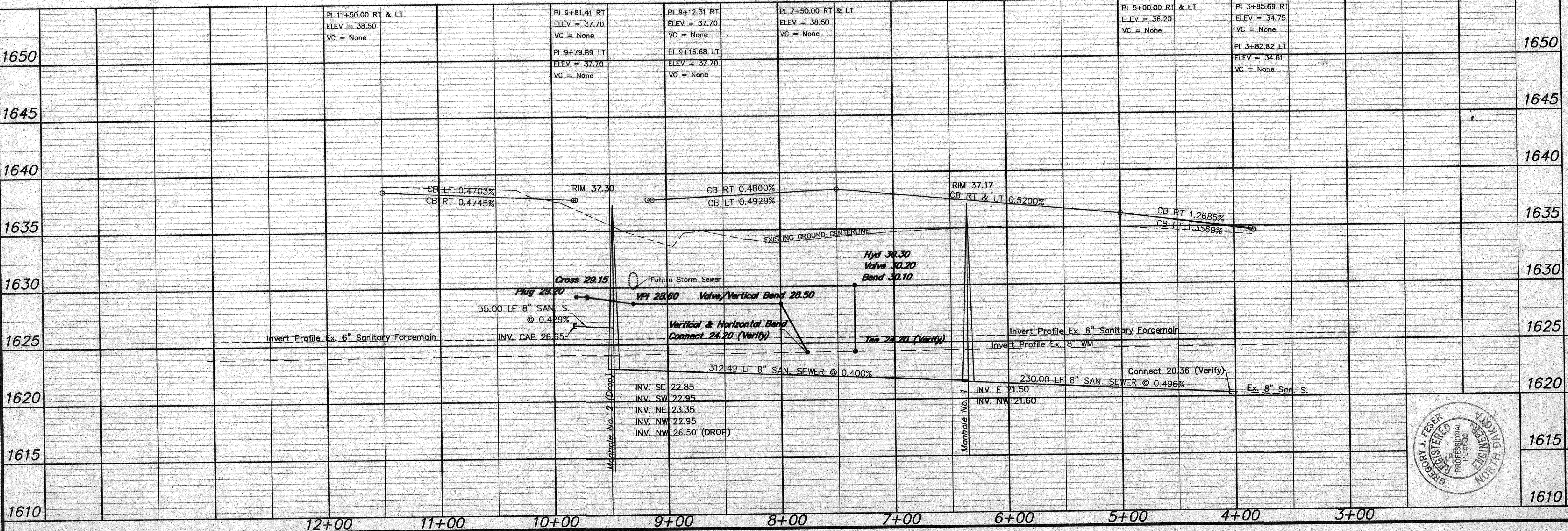
Manhole Number	1	2
Casting Elev.	37.17	37.30
Top P.C. Section	36.13	36.26
Invert Elev. (a)	21.50	22.85
Invert Elev. (b)	21.60	22.95
Invert Elev. (c)		22.95/26.50
Invert Elev. (d)		23.35
Length P.C. Section	14.63	13.41

Begin Watermain Quantities

- Sta. 7+76.88

Begin San. Sewer Quantities

- Sta. 4+05.37



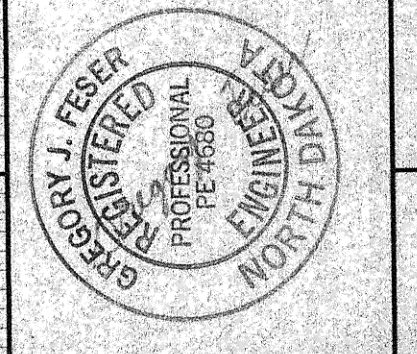
APPROXIMATE QUANTITIES

San. Sewer Items	Quantity
8" Sanitary Sewer	577 LF
8" x 4" Wye Branch	9 EA
Subcut Gravel	280 TON
Concrete Manhole	1 EA
Concrete Drop Manhole	1 EA
4" Sewer Service Pipe	380 LF

Watermain Items

Watermain Items	Quantity
Subcut Gravel	20 TON
8" PVC Watermain	12 LF
8" PVC Watermain	210 LF
6" Hydrant	1 EA
6" Gate Valve & Box	1 EA
8" Gate Valve & Box	1 EA
Ductile Iron Fittings	(Incidental)
1" Water Copper Serv. Pipe	264 LF
1" Water Serv. Connection	4 EA
1" Ball Valve Curb Stop	4 EA
And 1 1/4" Box	

SWENSON, HAGEN & CO. P.C.
 PLANNING CIVIL ENGINEERING SURVEYING
 SITE DESIGN CONSTRUCTION MANAGEMENT
 909 BASH AVE. P.O. BOX 1186
 BISMARCK, N.D. 58504 PAX (701) 888-8806
 E-mail: shang@swensonhagen.com



SOUTH BAY DRIVE
 FROM 40' WEST OF SANDPIPER TRAIL
 TO STA. 9+82.53

WATER AND SEWER IMPROVEMENT PROJECT 2004-09
 SHEET NO. 2 OF 4
 MANDAN, ND MARCH 26, 2004

Record Drawing