

SCALE - 1" = 50'

Sta. 45+32.99 CL 0+00.00 Ahd.  
=San. Sewer Sta. 0+00.00 Ahd.  
8" Cap/Connect

Sta. 46+63.79 CL 0+00 Ahd.  
=San. Sewer Sta. 1+33.14 Bk.  
Manhole No. 1

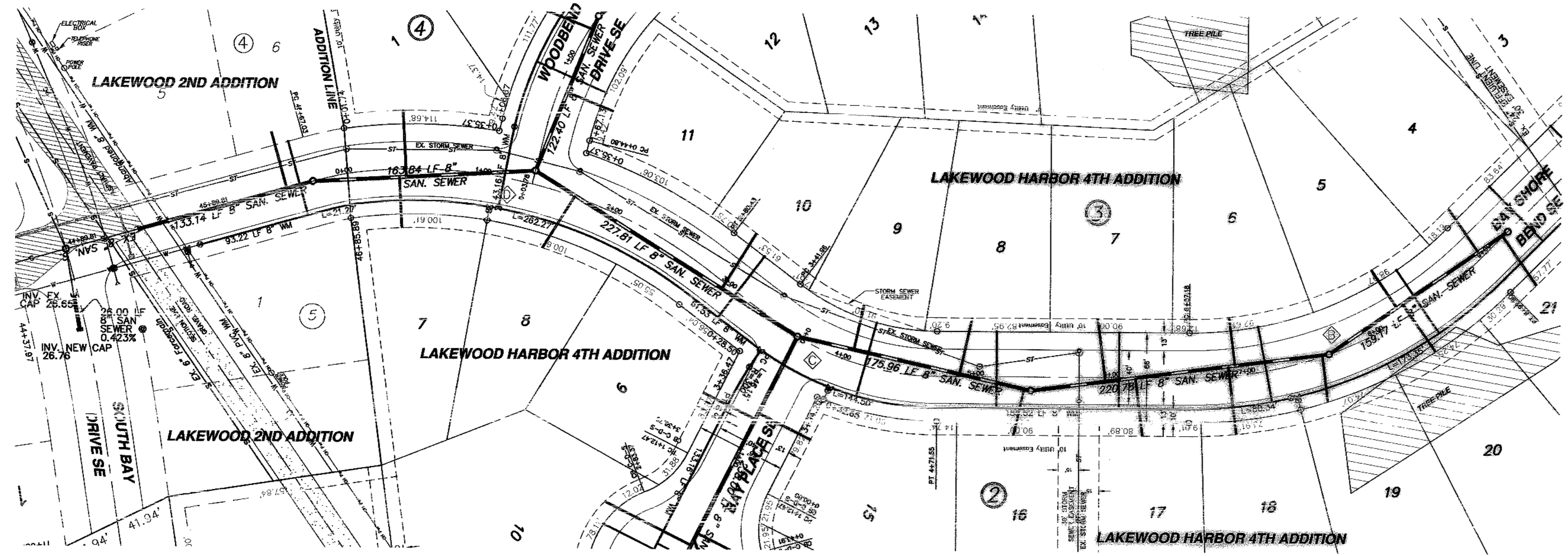
Sta. 1+36.90 10.00' Lt.  
=San. Sewer Sta. 0+00 Ahd.  
=San. Sewer Sta. 1+63.84 Bk.  
Manhole No. 2

Sta. 3+63.76 CL 0+00 Ahd.  
=San. Sewer Sta. 2+27.81 Bk.  
Manhole No. 3

Sta. 5+40.64 CL 0+00 Ahd.  
=San. Sewer Sta. 0+00 Ahd.  
=San. Sewer Sta. 1+76.96 Bk.  
Manhole No. 4

Sta. 7+61.73 CL 0+00 Ahd.  
=San. Sewer Sta. 2+20.78 Bk.  
Manhole No. 5

Sta. 9+22.52 CL 0+00 Ahd.  
=San. Sewer Sta. 1+59.17 Bk.  
Manhole No. 6



**CONSTRUCTION NOTES (THIS SHEET)**

1. BACKFILL SHALL BE CLASS 'A'.
2. THE PROFILE SHOWS THE EXISTING GROUND CENTERLINE OF THE STREETS. THIS WILL BE THE CONDITION AT THE TIME OF CONSTRUCTION.
3. 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 OR SOIL STABILIZATION (OTHER THAN USING SUBCUT GRAVEL) OF THE CONSTRUCTION SITE AS REQUIRED TO INSTALL THE PROPOSED UTILITIES.
4. PROTECT ALL SURVEY MONUMENTS. MONUMENTS DISTURBED OR DESTROYED SHALL BE REPLACED BY THE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL PROVIDE ALL SIGNAGE AND TRAFFIC CONTROL AS NECESSARY TO CONSTRUCT THE SANITARY SEWER. REMOVE AND DISPOSE OF OFFSITE PAVEMENT AS REQUIRED TO MAKE THE CONNECTION TO THE EXISTING SANITARY SEWER. MINIMIZE THE AMOUNT OF PAVEMENT REMOVED. PATCH THE AREA BACK IN WITH CLASS V GRAVEL. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO THE "S" SANITARY SEWER BID ITEM.
6. THE SEWER SERVICE LINE FOR LOT 10 BLOCK 3 WILL REQUIRE AN ADDITIONAL BEND TO GET ABOVE THE EXISTING STORM SEWER. CONSTRUCT THIS SERVICE LINE AS REQUIRED TO AVOID THE STORM SEWER.
7. ALL HYDRANTS SHALL HAVE 8.5' BURY DEPTH AND THE HYDRANT NOZZLE SHALL BE 18" ABOVE THE FINAL PLAN GROUND ELEVATION.
8. MOVE THE EXISTING TREE PILE AS REQUIRED TO CONSTRUCT THE PROPOSED WATERMAIN AND SEWER SERVICES. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO THE "MOVE TREES" BID ITEM.

Lot	Block	4" Sewer Service	4" x 2 1/2 Bend	4" x 45' Bend	8" x 4" Wye Branch	Sewer Service Invert	At The Cap	1" Copper Service	7" No. 10 Pipe	Water Service Connection	7" Ball Valve	1 1/2" Box
6	4	43.0	1	1	28.00	56.0	1	1				
7	2	37.0	1	1	28.00							
1	4	48.8	1	1	27.00							
8	2	45.1	1	1	28.00							
10	3	48.0	2	1	28.00	56.0	1	1				
9	3	34.2	1	1	29.00	56.0	1	1				
8	3	42.3	1	1	29.00	56.0	1	1				
16	2	33.9	1	1	28.00							
17	3	46.4	1	1	29.00	56.0	1	1				
18	2	50.2	1	1	29.00							
19	2	36.4	1	1	29.00	56.0	1	1				
8	3	35.2	1	1	29.00	56.0	1	1				
20	2	42.9	1	1	28.20							
4	3	38.9	1	1	28.99	56.0	1	1				
21	2	44.9	1	1	28.20							
TOTAL		703.8	18	17		448.0	8	8				

**APPROXIMATE WYE LOCATIONS**

STATION	DIRECTION	LOT	BLOCK
FROM 8" CAP TO MANHOLE NO. 1			
1+10	SE	6	4
FROM MANHOLE NO. 1 TO MANHOLE NO. 2			
0+64	NW	7	2
0+69	SE	1	4
FROM MANHOLE NO. 2 TO MANHOLE NO. 3			
1+62	NW	10	3
FROM MANHOLE NO. 3 TO MANHOLE NO. 4			
0+43	SE	8	3
1+22	SE	8	3
2+54+13.76	NW	18	2
FROM MANHOLE NO. 4 TO MANHOLE NO. 5			
0+55	SE	17	3
0+78	NW	17	2
1+46	NW	18	2
1+51+11.15	SE	6	4
FROM MANHOLE NO. 5 TO MANHOLE NO. 6			
0+60	E	5	3
0+65	W	20	2
1+33	E	4	3
1+52	W	21	2

**CURVE DATA**

CURVE	RADIUS	LENGTH	TANGENT	DELTA
B	300.00'	235.62'	124.26'	45°00'00"
C	200.00'	129.60'	67.16'	37°07'35"
D	355.00'	280.43'	147.99'	45°15'38"

Manhole Number	1	2	3	4	5	6
Castng Elev.	38.13	37.40	37.64	37.49	38.50	39.27
Top P.C. Section	37.09	36.36	36.60	36.45	37.46	38.23
Invert Elev. (a)	23.75	25.40	26.46	27.27	28.26	29.06
Invert Elev. (b)	23.85	25.60	26.56	27.37	28.36	29.16
Invert Elev. (c)		25.34	26.60			
Length P.C. Section	13.34	10.96	10.14	9.18	9.20	9.23

Sta. 45+71.47  
Remove Plug  
Connect  
8" Gate Valve & Box

Sta. 1+08.82  
3.00' LF 8" WM  
6" Gate Valve & Box  
7.00' LF 6" WM  
6" Hydrant

Sta. 3+47.72  
8" x 8" Tee

Sta. 3+99.41  
8" x 6" Tee  
3.00' LF 6" WM  
6" Gate Valve & Box  
7.00' LF 6" WM  
6" Hydrant

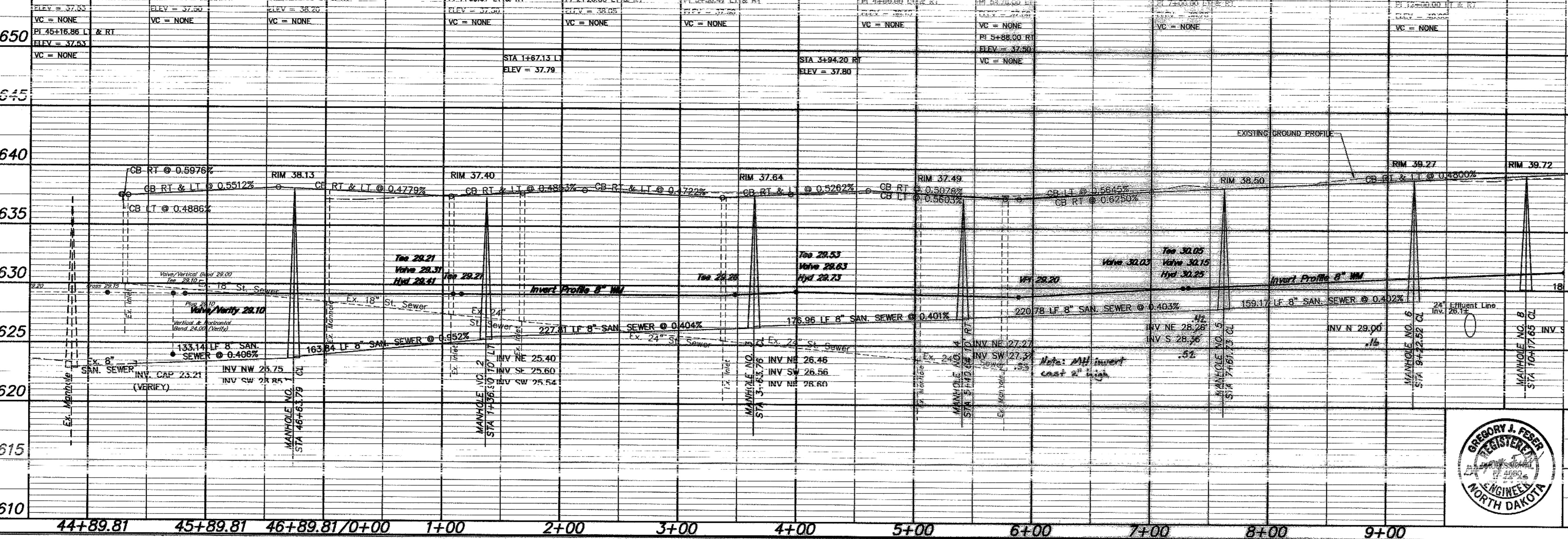
Sta. 7+31.79  
8" x 6" Tee  
3.00' LF 6" WM  
6" Gate Valve & Box  
7.00' LF 6" WM  
6" Hydrant

Sta. 7+27.15  
8" Gate Valve & Box

End Watermain Quantities  
Sta. 8+92.80

End San. Sewer Quantities  
Sta. 9+22.52

NOTE:  
ALL WATER MAINS  
IS 24.00' RIGHT  
OF CENTERLINE  
UNLESS OTHERWISE  
STATED



**APPROXIMATE QUANTITIES**

San. Sewer Items	Quantity
8" Sanitary Sewer	1107 LF
8" x 4" Wye Branch	17 EA
Subcut Gravel	170 TON
Concrete Manhole	6 EA
4" Sewer Service Pipe	704 LF
4" x 45' Bend	18 EA
Move Trees	1 LS

**Watermain Items**

Watermain Items	Quantity
6" PVC Watermain	30 LF
8" PVC Watermain	1022 LF
6" Hydrant	3 EA
6" Gate Valve & Box	3 EA
8" Gate Valve & Box	2 EA
Ductile Iron Fittings	(incidental)
1" Water Copper Serv. Pipe	448 LF
1" Water Serv. Connection	8 EA
1" Ball Valve Curb Stop And 1 1/2" Box	8 EA

**SWENSON, HAGEN & COMPANY P.C.**

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**BAY SHORE BEND SE**  
FROM SOUTH BAY DRIVE SE SOUTH TO  
550' NORTH OF BORDEN HARBOR DRIVE SE

WATER AND SEWER IMPROVEMENT PROJECT 2005 19  
SHEET NO. 2 OF 5  
MANDAN, ND APRIL 28, 2005  
Record Drawing COPYRIGHT 2005 SWENSON, HAGEN & CO.