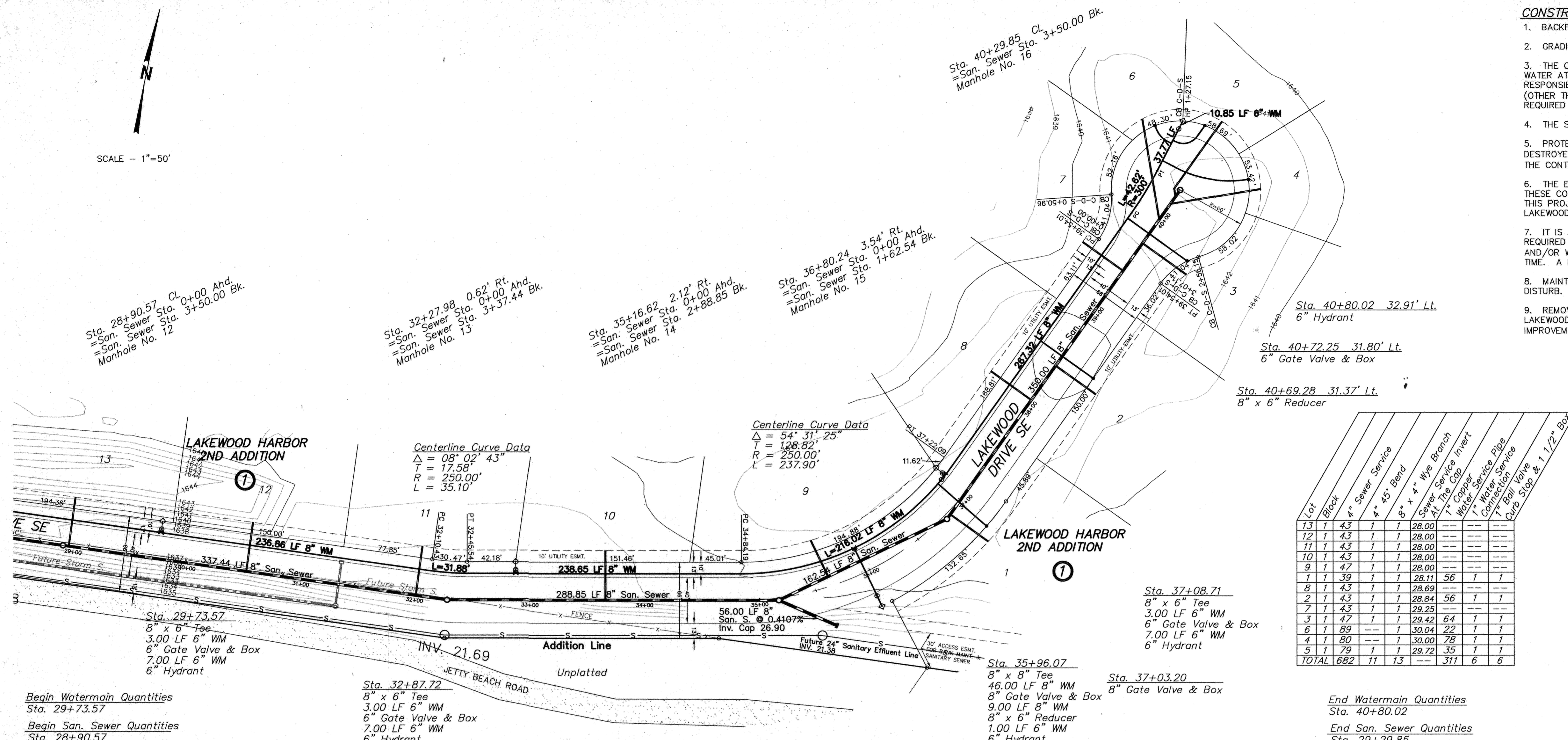


SCALE - 1"=50'

**CONSTRUCTION NOTES (THIS SHEET)**

- BACKFILL SHALL BE CLASS 'A'.
- GRADING SHALL BE BY OTHERS, PRIOR TO CONSTRUCTION.
- 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.
- THE STORM SEWER IS NOT PART OF THIS CONTRACT.
- PROTECT ALL SURVEY MONUMENTS. MONUMENTS DISTURBED OR DESTROYED SHALL BE REPLACED BY THE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
- THE EXISTING CONTOURS ARE SHOWN ALONG LAKEWOOD DRIVE SE. THESE CONTOURS WILL REMAIN LIKE THIS THROUGH THE DURATION OF THIS PROJECT. THIS MATERIAL WILL BE MOVED BY OTHERS TO BUILD UP LAKEWOOD DRIVE AT THE COMPLETION OF THIS PROJECT.
- IT IS ANTICIPATED THAT THERE WILL BE SOME TREES THAT MAY BE REQUIRED TO BE REMOVED IN ORDER TO CONSTRUCT SOME OF THE SEWER AND/OR WATER SERVICES. THE EXACT LOCATIONS ARE UNKNOWN AT THIS TIME. A BID ITEM HAS BEEN ADDED TO ACCOMMODATE THIS SITUATION.
- MAINTAIN ACCESS ON JETTY BEACH ROAD AT ALL TIMES. DO NOT DISTURB.
- REMOVE AND DISPOSE OF OFFSITE BARB WIRE FENCE ALONG LAKEWOOD DRIVE SE AS REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS INCIDENTAL TO THE "B" SANITARY SEWER" BID ITEM.



Station	Direction	Lot	Block	4" Sewer Service	4" x 45' Bend	8" x 4" Wye Branch At The Cap	Water Service Invert	1" Copper Water Service Connection	1" Ball Valve	1 1/2" Box
13	N	1	1	1	1	1	28.00			
11	N	1	1	1	1	1	28.00			
9	N	1	1	1	1	1	28.00			
10	N	1	1	1	1	1	28.00			
8	N	1	1	1	1	1	28.00			
7	N	1	1	1	1	1	28.00			
6	N	1	1	1	1	1	28.00			
5	N	1	1	1	1	1	28.00			
4	N	1	1	1	1	1	28.00			
3	N	1	1	1	1	1	28.00			
2	N	1	1	1	1	1	28.00			
1	N	1	1	1	1	1	28.00			
TOTAL		682	11	13		311	6	6		

**APPROXIMATE WYE LOCATIONS**

STATION	DIRECTION	LOT	BLOCK
FROM MANHOLE NO. 12 TO MANHOLE NO. 13			
0+05	N	1	1
1+61	N	1	1
3+10	N	1	1
FROM MANHOLE NO. 13 TO MANHOLE NO. 14			
1+38	N	1	1
FROM MANHOLE NO. 14 TO MANHOLE NO. 15			
0+47	NW	9	1
FROM MANHOLE NO. 15 TO MANHOLE NO. 16			
0+05	SE	1	1
1+27	NW	8	1
1+70	SE	2	1
2+64	NW	7	1
2+93	SE	3	1
3+19	N	6	1
3+36	E	4	1
3+43	NE	5	1

Manhole Number	13	14	15	16
Casting Elev.	37.97	39.27	40.01	42.30
Top P.C. Section	36.93	38.23	38.97	41.26
Invert Elev. (d)	25.31	26.57	27.35	28.83
Invert Elev. (c)	25.41	26.67	27.43	28.83
Invert Elev. (d)		26.67		
Length P.C. Section	11.62	11.66	11.64	12.43

Begin Watermain Quantities  
Sta. 29+73.57

Begin San. Sewer Quantities  
Sta. 28+90.57

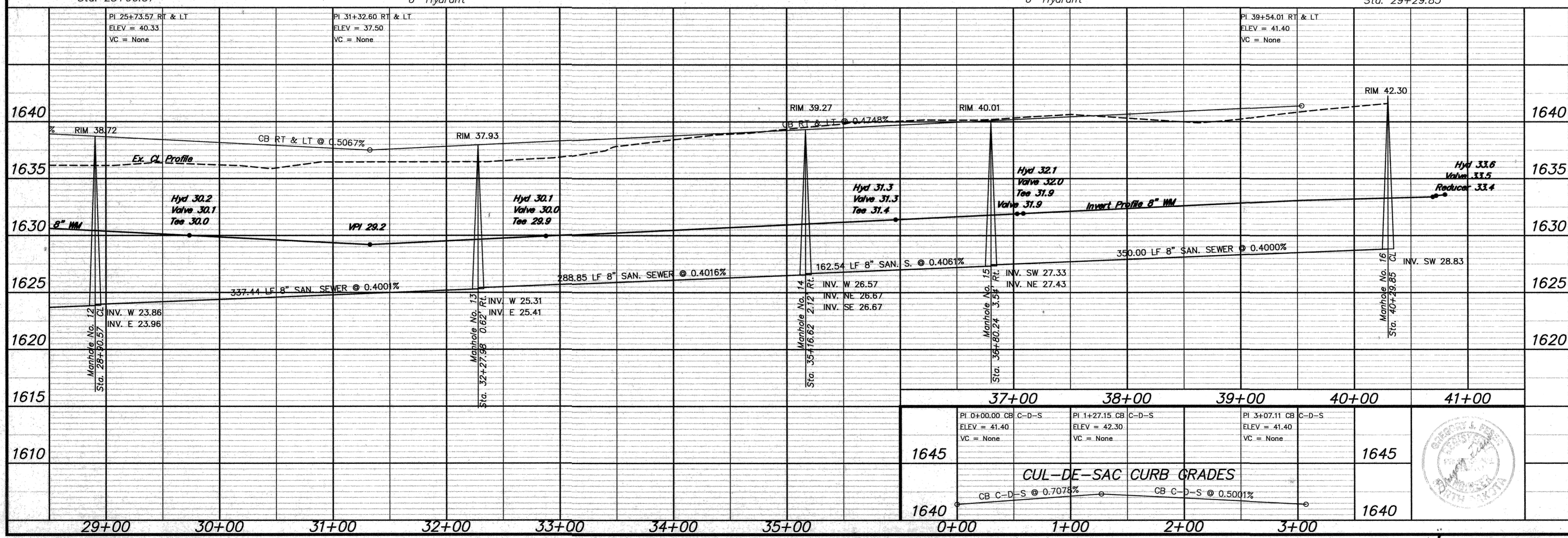
Sta. 32+87.72  
8" x 6" Tee  
3.00 LF 6" WM  
6" Gate Valve & Box  
7.00 LF 6" WM  
6" Hydrant

Sta. 35+96.07  
8" x 8" Tee  
46.00 LF 8" WM  
8" Gate Valve & Box  
9.00 LF 8" WM  
8" x 6" Reducer  
1.00 LF 6" WM  
6" Hydrant

Sta. 37+03.20  
8" Gate Valve & Box

End Watermain Quantities  
Sta. 40+80.02

End San. Sewer Quantities  
Sta. 29+29.85



**APPROXIMATE QUANTITIES**

**San. Sewer Items**

Item	Quantity
8" Sanitary Sewer	1,195 LF
8" x 4" Wye Branch	13 EA
Subcut Gravel	260 TON
Concrete Manhole	4 EA
4" Sewer Service Pipe	682 LF
4" 45' Bend	11 EA
Remove Trees	2 EA

**Watermain Items**

Item	Quantity
6" PVC Watermain	32 LF
8" PVC Watermain	1,126 LF
6" Hydrant	4 EA
6" Gate Valve & Box	3 EA
8" Gate Valve & Box	2 EA
Ductile Iron Fittings	(incidental)
1" Water Copper Serv. Pipe	311 LF
1" Water Serv. Connection	6 EA
1" Ball Valve Curb Stop	6 EA
And 1 1/2" Box	

**SWENSON, HAGEN & CO. P.C.**  
 PLANNING CIVIL ENGINEERING SURVEYING  
 SITE DESIGN CONSTRUCTION MANAGEMENT  
 809 BASKIN AVE. P.O. BOX 1105  
 BISMARCK, N.D. 58504 FAX (701) 223-2600  
 E-mail: shagen@swensons.com

**LAKWOOD DRIVE SE**  
 FROM STA. 29+40.57 NORTHEAST  
 TO THE CUL-DE-SAC

WATER AND SEWER IMPROVEMENT PROJECT 2002-15  
 SHEET NO. 7 OF 8  
 MANDAN, ND APRIL 25, 2003