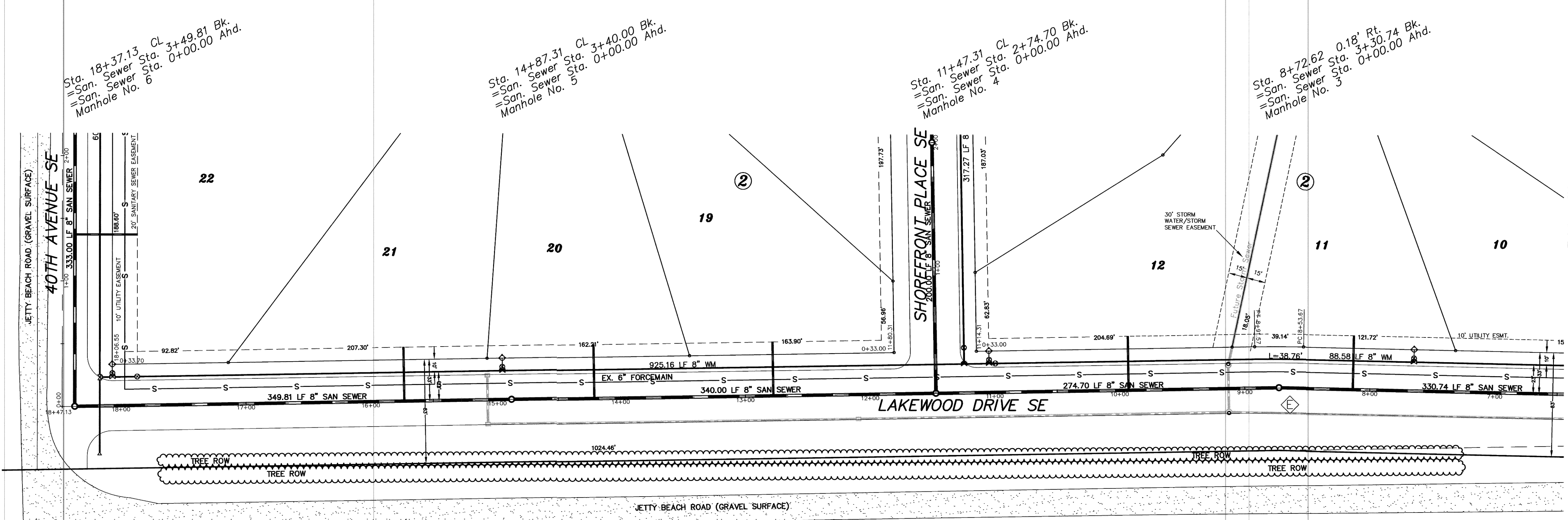
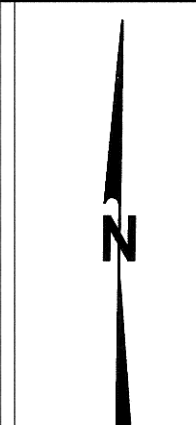


SCALE - 1"=50'



- CONSTRUCTION NOTES (THIS SHEET)**
- BACKFILL SHALL BE CLASS 'A'.
 - THE PROFILE SHOWS THE EXISTING GROUND CENTERLINE OF THE STREETS. THE PLAN VIEW SHOWS THE EXISTING GROUND CONTOURS. THIS WILL BE THE CONDITION AT THE TIME OF CONSTRUCTION. UPON COMPLETION OF THE CONSTRUCTION OF THE WATER/SEWER THE EARTHWORK CONTRACTOR WILL BUILD THE STREETS UP TO THE PROPOSED CURB GRADES.
 - 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. IT IS EXPECTED THAT DEWATERING WILL BE REQUIRED TO STABILIZE THE TRENCH FOR THE CONSTRUCTION OF THE DEEPER PORTIONS OF THE SEWERMAINS.
 - 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 CONTRACTOR SHALL PROVIDE ALL SIGNAGE AND TRAFFIC CONTROL AS NECESSARY TO CONSTRUCT THE SANITARY SEWER AND WATERMAIN. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE RESIDENCE SOUTHWEST OF THE PROJECT AT ALL TIMES. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS.
 - ALL HYDRANTS SHALL HAVE 8.5' BURY DEPTH AND THE HYDRANT NOZZLE SHALL BE 18" ABOVE THE FINAL PLAN GROUND ELEVATION.
 - THERE ARE A NUMBER OF CROSSINGS OF THE EXISTING 6" SANITARY SEWER FORCEMAIN. PROVIDE ADDITIONAL CAUTION NOT TO DAMAGE THIS LINE.
 - MOVE SOME OF THE EXCESS DIRT BETWEEN STA. 14+00 AND 17+00 TO PROVIDE A MINIMUM 6' OF COVER OVER THE WATERMAIN AND SANITARY SEWER AT THE INTERSECTION OF LAKEWOOD DRIVE SE AND 40TH AVENUE SE. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO THE "B" SANITARY SEWER AND "B" PVC WATERMAIN" BID ITEMS.

Sta. 18+37.13 Cl. 3+49.81 Bk. 0+00.00 Ahd.
 Sta. 14+87.31 Cl. 3+40.00 Bk. 0+00.00 Ahd.
 Sta. 11+47.31 Cl. 2+74.70 Bk. 0+00.00 Ahd.
 Sta. 8+72.62 Cl. 3+30.74 Bk. 0+00.00 Ahd.

Station Details:

- Sta. 18+06.55: 8" x 6" Tee, 3.00 LF 6" WM, 6" Gate Valve & Box, 7.00 LF 6" WM, 6" Hydrant
- Sta. 17+86.72: 8" Gate Valve & Box
- Sta. 14+94.31: 8" x 6" Tee, 3.00 LF 6" WM, 6" Gate Valve & Box, 7.00 LF 6" WM, 6" Hydrant
- Sta. 11+24.31: 8" x 8" Tee
- Sta. 11+04.31: 8" x 6" Tee, 3.00 LF 6" WM, 6" Gate Valve & Box, 7.00 LF 6" WM, 6" Hydrant
- Sta. 10+99.31: 8" Gate Valve & Box
- Sta. 7+65.10: 8" x 6" Tee, 3.00 LF 6" WM, 6" Gate Valve & Box, 7.00 LF 6" WM, 6" Hydrant

Watermain Quantities: Sta. 18+16.72

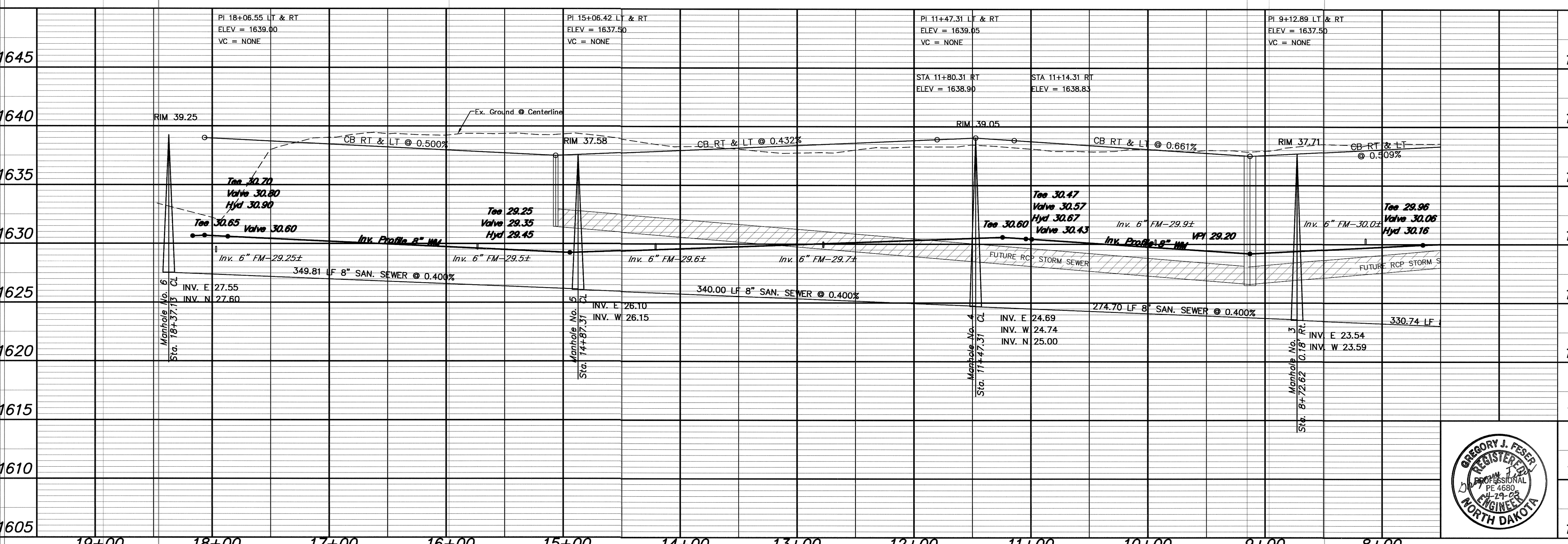
San. Sewer Quantities: Sta. 18+37.13

Lot	Block	# of Sewer Service	# of 2" 1/2" Bend	# of 45" Bend	# of 4" Wye Branch	# of 4" Wye Branch At The Cap	# of 1" Copper Water Service Invert	# of 1" Water Service Connection	# of 1" Ball Valve	# of 1 1/2" Box
12	2	43.0	1	1	29.00	---	---	---	---	---
19	2	43.0	1	1	29.00	---	---	---	---	---
20	2	43.0	1	1	29.00	---	---	---	---	---
21	2	43.0	1	1	29.00	---	---	---	---	---
TOTAL		172.0	4	4						

APPROXIMATE WYE LOCATIONS

STATION	DIRECTION	LOT	BLOCK
FROM MANHOLE 3 TO MANHOLE NO. 4	N	12	2
FROM MANHOLE NO. 4 TO MANHOLE NO. 5	N	19	2
FROM MANHOLE NO. 5 TO MANHOLE NO. 6	N	20	2
	N	21	2

Manhole Number	4	5	6
Casting Elev.	39.05	37.58	39.25
Top P.C. Section	38.01	36.54	38.21
Invert Elev. (a)	24.69	26.10	27.55
Invert Elev. (b)	24.74	26.15	27.60
Invert Elev. (c)	25.00	---	---
Length P.C. Section	13.32	10.44	10.66



CURVE DATA

CURVE	RADIUS	LENGTH	TANGENT	DELTA
E	1000.00'	37.89'	18.95'	02°10'16"

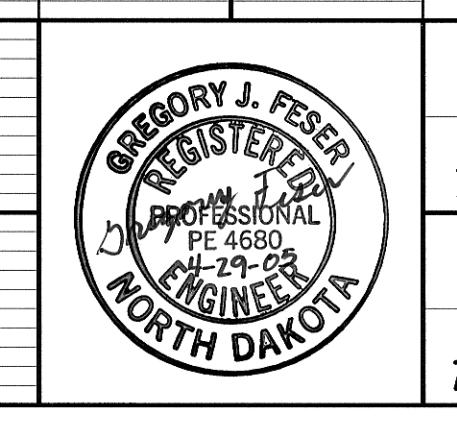
APPROXIMATE QUANTITIES

San. Sewer Items	Quantity
8" Sanitary Sewer	965 LF
8" x 4" Wye Branch	4 EA
Subcut Gravel	200 TON
Concrete Manhole	3 EA
4" Sewer Service Pipe	172 LF
4" 45" Bend	4 EA

Watermain Items	Quantity
6" PVC Watermain	30 LF
8" PVC Watermain	1053 LF
6" Hydrant	3 EA
6" Gate Valve & Box	3 EA
8" Gate Valve & Box	2 EA
Ductile Iron Fittings	(incidental)

SWENSON, HAGEN & COMPANY P.C.

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 Bismarck, North Dakota 58504
 sheng@swensonhagen.com
 Phone (701) 223-2600
 Fax (701) 223-2600



LAKWOOD DRIVE SE
 FROM 330' WEST OF BAYFRONT PLACE SE
 WEST TO 40TH AVENUE SE

WATER AND SEWER IMPROVEMENT PROJECT 2005-17
 SHEET NO. 3 OF 8
 MANDAN, ND APRIL 22, 2005