

APPROXIMATE WYE LOCATIONS

STATION	DIRECTION	LOT	BLOCK
FROM EX. MANHOLE TO MANHOLE NO. 1			
1+85	W	11	1
1+90	E	1	3
2+52	W	10	1
2+67	E	2	3
FROM MANHOLE NO. 1 TO MANHOLE NO. 2			
0+37	NE	3	3
1+02	NE	4	3
1+22	SW	5	1
1+81	NE	9	3
FROM MANHOLE NO. 2 TO MANHOLE NO. 3			
0+05	NE	6	3
0+78	SW	8	1
0+83	NE	7	3
1+65	NE	8	3
FROM MANHOLE NO. 3 TO MANHOLE NO. 4			
0+57	SW	5	9
0+99	NE	6	2
1+34	NE	9	3
1+67	W	7	2

CURVE DATA

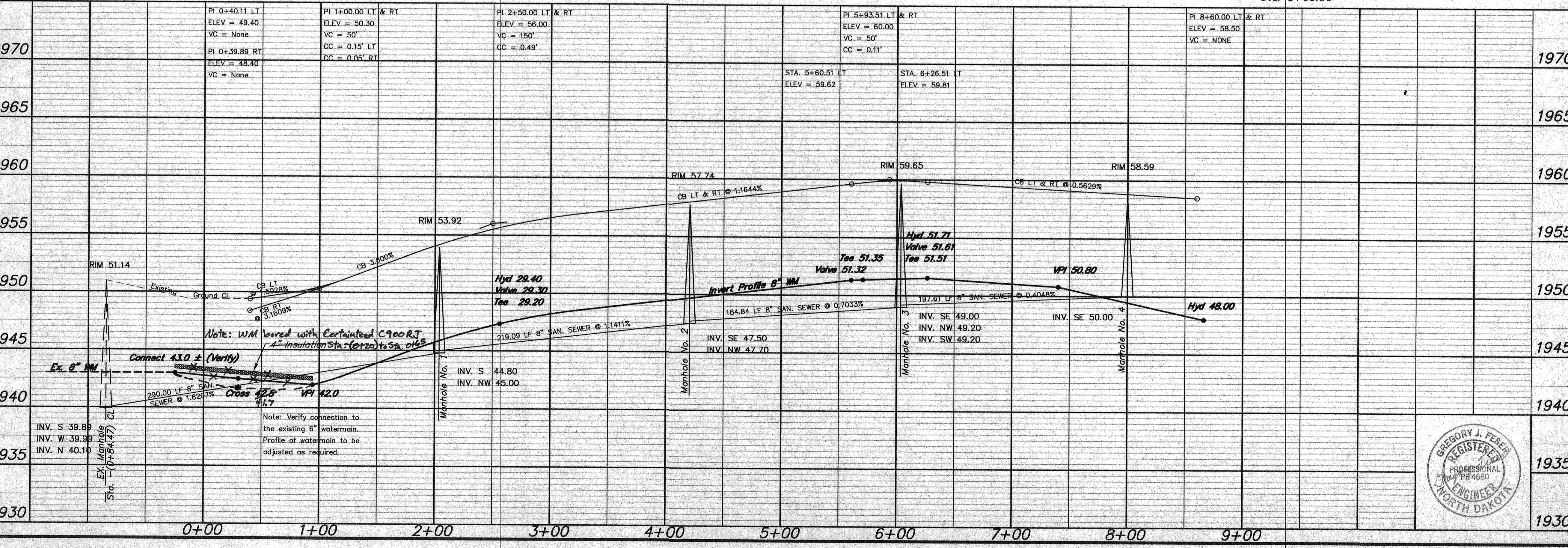
CURVE	DELTA	LENGTH	TANGENT	RADIUS
B	68°11'55"	238.06'	135.41'	200.00'
C	71°48'43"	376.01'	217.21'	300.00'

Lot	Block	4" Sewer Service	4" x 4.5" Bend	8" x 4" Wye Branch	Sewer Service Invert	1" Copper Water Service Pipe	1" Water Service Pipe Connection	1" Ball Valve	Curb Stop & 1 1/2" Box
11	1	43	1	1	43.95	---	---	---	---
1	3	43	1	1	44.03	56	1	1	---
10	1	48	1	1	46.00	---	---	---	---
2	3	39	1	1	45.20	57	1	1	---
3	3	45	1	1	46.30	57	1	1	---
4	3	53	1	1	47.15	56	1	1	---
9	1	33	1	1	47.09	---	---	---	---
5	3	46	1	1	47.95	57	1	1	---
6	3	36	1	1	48.47	56	1	1	---
8	1	38	1	1	49.02	---	---	---	---
7	3	49	1	1	49.21	56	1	1	---
8	3	52	1	1	49.84	56	1	1	---
5	2	53	1	1	50.43	---	---	---	---
9	3	29	1	1	50.24	56	1	1	---
6	2	55	1	1	50.50	---	---	---	---
7	2	40	---	---	51.00	---	---	---	---
TOTAL	699	15	16	507	9	9			

- 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 THE ASPHALT ON 34TH AVENUE NW AND OLD RED TRAIL AS REQUIRED TO CONSTRUCT THE 8" SANITARY SEWER. REPLACE THE ASPHALT AS SOON AS POSSIBLE TO REOPEN OLD RED TRAIL IN PARTICULAR.
 - THE CONTRACTOR SHALL REMOVE AND DISPOSE OF OFFSITE THE ASPHALT ON OLD RED TRAIL AS REQUIRED TO CONSTRUCT THE 8" WATERMAIN. REPLACE THE ASPHALT AS SOON AS POSSIBLE TO REOPEN OLD RED TRAIL.
 - THE CONTRACTOR SHALL CUT INTO THE EXISTING MANHOLE ON 34TH AVENUE NW AND CUT IN A NEW FLOW LINE AS REQUIRED TO CONSTRUCT THE 8" SANITARY SEWER. GROUT IN A NEW FLOW LINE AND THE ANNULAR SPACE BETWEEN THE MANHOLE AND THE PIPE. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR "B" SANITARY SEWER".
 - THE 12" X 8" CROSS SHALL BE CONSTRUCTED AND THRUST BLOCKED IN ORDER TO PROVIDE EASE OF CONNECTION TO A FUTURE 12" C900 PVC WATERMAIN.
 - THE LOCATION OF THE EXISTING 6" PVC WATERMAIN IS APPROXIMATE. THE CONTRACTOR SHALL LOCATE THE WATERMAIN AND CONSTRUCT A 8" X 6" CUT IN CROSS WITH A 6" GATE VALVE CONSTRUCTED ON THE EAST AND WEST SIDES OF THE CROSS AND AN 8" GATE VALVE CONNECTED TO THE NORTH SIDE OF THE CROSS. THE VALVES AND CROSS SHALL HAVE MECHANICAL JOINTS IN ORDER FOR THEM TO BE BOLTED TOGETHER AND MINIMIZE THE SPACE TAKEN UP BETWEEN THE CURB AND GUTTER AND SIDEWALK.
 - THE CONTRACTOR SHALL LOCATE THE EXISTING 6" WATERMAIN AT THE LOCATION OF THE 8" SANITARY SEWER CROSSING IN ORDER TO VERIFY HORIZONTAL AND VERTICAL LOCATION. THE ENGINEER SHALL BE PROVIDED 48 HOURS AFTER THE LINE IS EXPOSED IN ORDER TO MAKE MODIFICATIONS TO THE WATER OR SEWER PROFILES AS REQUIRED. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR "B" SANITARY SEWER".
 - THE HYDRANT AT STA. 8+66.10 SHALL HAVE A 2 FOOT EXTENSION INSTALLED ON A 8 1/2" BURY DEPTH HYDRANT. THIS WILL ALLOW FOR THE REMOVAL OF THE EXTENSION AND RESETTING OF THE HYDRANT AT A TYPICAL BURY DEPTH AS 34TH AVENUE NW IS EXTENDED. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR "6" HYDRANT".
 - THE CONTRACTOR SHALL PROVIDE ADDITIONAL CAUTION WHEN CROSSING THE VARIOUS EASEMENTS ON THE NORTH SIDE OF OLD RED TRAIL. THERE ARE A NUMBER OF EXISTING UTILITIES.
 - CONSTRUCT 4" X 4" X 8" INSULATION BOARDS PERPENDICULAR TO THE 8" WATERMAIN FROM STA. -(0+25) TO STA. 0+95. PLACE THE INSULATION 6" ABOVE THE WATERMAIN. JOINTS SHALL BE STAGGERED OR OVERLAPPED BY A MINIMUM OF 6".

Manhole Number	1	2	3	4
Casting Elev.	53.92	57.74	59.65	58.59
Top P.C. Section	52.88	56.70	58.61	57.55
Invert Elev. (a)	44.80	47.50	49.00	50.00
Invert Elev. (b)	45.00	47.70	49.20	50.00
Invert Elev. (c)	---	---	49.20	---
Length P.C. Section	8.08	9.20	9.61	7.53

- Station Notes:**
- Sta. 0+65.00: Connect (Verify Location) 8" x 6" Cut in Cross, 1 EA 8" Gate Valve & Box, 2 EA 6" Gate Valve & Box
 - Sta. -(0+24.68) 31.00' Lt.: Remove Cap/ Connect, Installed new Gate Valve
 - Sta. 0+30.00 24.47' Lt.: 12" x 8" Cross
 - Sta. 2+56.21: 8" x 6" Tee, 3.00 LF 6" WM, 6" Gate Valve & Box, 7.00 LF 6" WM, 6" Hydrant
 - Sta. 5+60.51: 8" Gate Valve & Box
 - Sta. 5+70.51: 8" x 8" Tee
 - Sta. 6+26.51: 8" x 6" Tee, 3.00 LF 6" WM, 6" Gate Valve & Box, 7.00 LF 6" WM, 6" Hydrant
 - Sta. 8+66.10: 8" x 6" Reducer, 1 LF 6" WM, 6" Hydrant
- End Watermain Quantities:** Sta. 8+66.10
- End San. Sewer Quantities:** Sta. 8+00.00



APPROXIMATE QUANTITIES

San. Sewer Items	Quantity
8" Sanitary Sewer	892 LF
8" x 4" Wye Branch	16 EA
Subcut Gravel	10 TON
Pitrun Gravel	215 TON
Concrete Manhole	4 EA
4" Sewer Service Pipe	699 LF
Remove & Replace Asphalt-Sewer	1 LS
Rock Excavation	20 CY

Watermain Items	Quantity
6" PVC Watermain	21 LF
8" PVC Watermain	890 LF
6" Hydrant	3 EA
6" Gate Valve & Box	4 EA
8" Gate Valve & Box	2 EA
8" x 6" Cut in Cross	1 EA
Pitrun Gravel	300 TON
Rock Excavation	10 CY
Ductile Iron Fittings (incidental)	---
1" Water Copper Serv. Pipe	507 LF
1" Water Serv. Connection	9 EA
1" Ball Valve Curb Stop	9 EA
And 1 1/2" Box	---
Remove and Replace Asphalt-Water	1 LS
4" Insulation Board	960 SF



SWENSON, HAGEN & CO. P.C.
 PLANNING CIVIL ENGINEERING SURVEYING
 SITE DESIGN CONSTRUCTION MANAGEMENT

34TH AVENUE NW
 FROM OLD RED TRAIL TO THE NORTH ADDITION LINE

WATER AND SEWER IMPROVEMENT PROJECT 2004-07
 SHEET NO. 2 OF 3
 MANDAN, ND APRIL 21, 2004

Record Drawing