

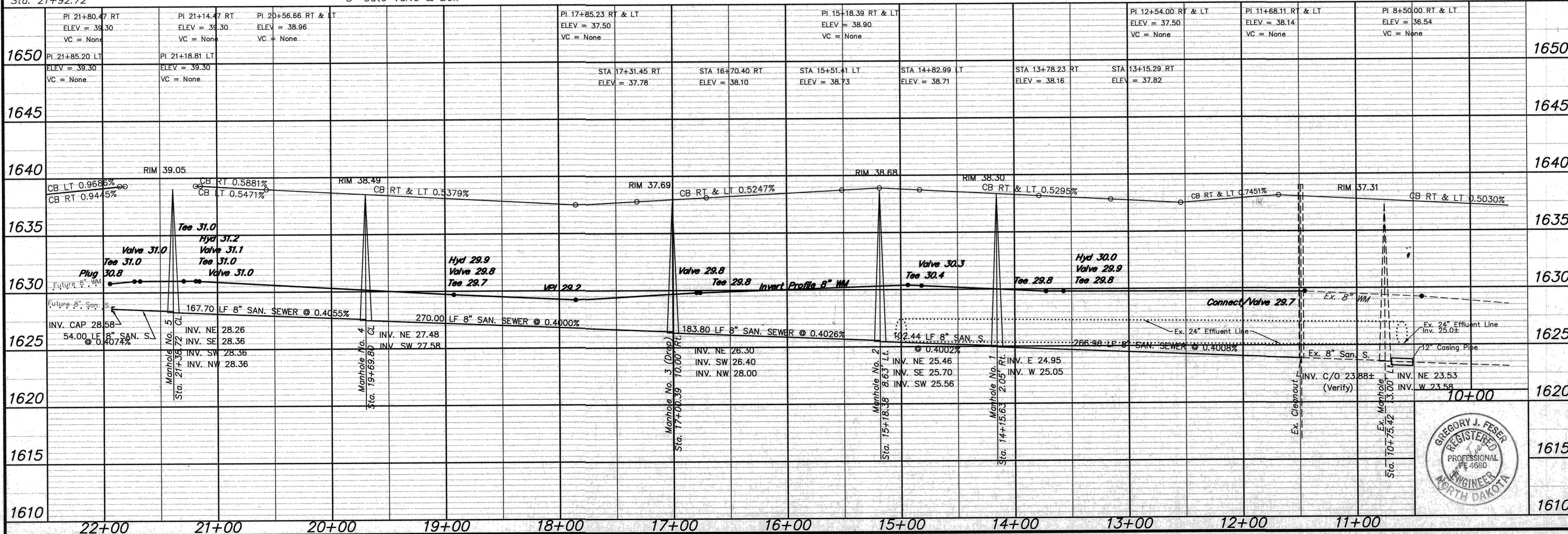
- ### CONSTRUCTION NOTES (THIS SHEET)
- BACKFILL SHALL BE CLASS "A".
 - GRADING SHALL BE BY OTHERS, PRIOR TO CONSTRUCTION.
 - THE CONTRACTOR SHALL TAKE ALL APPROPRIATE PROTECTIVE MEASURES WHEN CROSSING AND EXCAVATING ADJACENT TO THE EXISTING 24" RCP SANITARY SEWER EFFLUENT LINE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES AND ASSOCIATED REPAIR TO THE EFFLUENT LINE AT THE CONTRACTOR'S EXPENSE.
 - 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 CONTRACTOR SHALL SALVAGE THE 6" HYDRANT FROM STA. 21+77.83 ON THE SOUTH END OF BAY SHORE BEND SE AND RESET IT AT STA. 6+51.38 ON WOODBEND DRIVE SE AS REQUIRED. ALL WORK AND MATERIALS REQUIRED TO SALVAGE AND RESET HYDRANT SHALL BE CONSIDERED INCIDENTAL TO THE "SALVAGE AND RESET HYDRANT" BID ITEM.
 - THE CONTRACTOR SHALL REMOVE AND DISPOSE OF OFFSITE THE EXISTING 8" CLEANOUT AT STA. 11+48.76. SAID WORK SHALL BE CONSIDERED INCIDENTAL TO THE "8" SAN. SEWER" BID ITEM.
 - PROTECT ALL SURVEY MONUMENTS. MONUMENTS DISTURBED OR DESTROYED SHALL BE REPLACED BY THE OWNER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
 - 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.
 - SEE SHEET 3 FOR EXTERIOR DROP DETAIL FOR MANHOLE NO. 3.
 - 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.

APPROXIMATE WYE LOCATIONS

STATION	DIRECTION	LOT	BLOCK
FROM EX. CLEANOUT TO MANHOLE NO. 1	SW	43	1
0+24	SW	43	1
1+31	SW	42	1
FROM MANHOLE NO. 2 TO MANHOLE NO. 3	N	1	3
0+17	N	1	3
1+06	N	2	3
FROM MANHOLE NO. 3 TO MANHOLE NO. 4	SE	30	4
0+44	SE	30	4
0+59	NW	1	2
1+30	SE	29	1
1+59	NW	2	1
2+41	SE	28	1
2+45	NW	3	1
4+2	N	4	2
FROM MANHOLE NO. 4 TO MANHOLE NO. 5	N	4	2
0+79	N	4	2

Sta. 21+94.17 8" Plug	Sta. 21+18.81 8" x 6" Tee 3.00 LF 6" WM 6" Gate Valve & Box 7.00 LF 6" WM 6" Hydrant	Sta. 18+92.47 8" x 6" Tee 3.00 LF 6" WM 6" Gate Valve & Box 7.00 LF 6" WM 6" Hydrant	Sta. 16+76.23 8" x 8" Tee	Sta. 14+81.94 8" Gate Valve & Box	Sta. 13+57.08 8" x 6" Tee 3.00 LF 6" WM 6" Gate Valve & Box 7.00 LF 6" WM 6" Hydrant From Salvage	Sta. 11+44.48 Salvage Hydrant Connect 8" Gate Valve & Box
End Watermain Quantities Sta. 21+94.17	Sta. 21+72.69 8" x 8" Tee	Sta. 21+29.57 8" x 8" Tee	Sta. 21+24.57 8" Gate Valve & Box	Sta. 21+15.81 8" Gate Valve & Box	Begin Watermain Quantities Sta. 11+44.48	Begin San. Sewer Quantities Sta. 11+48.76

Manhole Number	1	2	3	4	5
Casting Elev.	38.30	38.68	37.69	38.49	39.05
Top P.C. Section	37.26	37.64	36.65	37.45	38.01
Invert Elev. (a)	24.95	25.46	26.30	27.48	28.26
Invert Elev. (b)	25.05	25.70	26.40	27.58	28.36
Invert Elev. (c)		25.56	28.00		28.36
Invert Elev. (d)					28.36
Length P.C. Section	12.31	12.18	10.35	9.97	9.75



APPROXIMATE QUANTITIES

San. Sewer Items	Quantity
8" Sanitary Sewer	1,045 LF
8" x 4" Wye Branch	11 EA
Subcut Gravel	100 TON
Concrete Manhole	4 EA
Concrete Drop Manhole	1 EA
4" Sewer Service Pipe	469 LF
4" 45" Bend	11 EA
Remove Tree	3 EA

Watermain Items	Quantity
6" PVC Watermain	30 LF
8" PVC Watermain	1,098 LF
6" Hydrant	3 EA
6" Gate Valve & Box	3 EA
8" Gate Valve & Box	5 EA
Ductile Iron Fittings	(incidental)
1" Water Copper Serv. Pipe	392 LF
1" Water Serv. Connection	7 EA
1" Ball Valve Curb Stop	7 EA
And 1 1/2" Box	
Salvage & Reset Hydrant	1 EA

SWENSON, HAGEN & CO. P.C.
PLANNING CIVIL ENGINEERING SURVEYING
SITE DESIGN CONSTRUCTION MANAGEMENT
909 BASIN AVE. P.O. BOX 1188
MANDAN, N.D. 58004 FAX (701) 228-2800
E-mail: shagen@swensonhagen.com

BORDEN HARBOR DRIVE SE
FROM THE NORTHEAST ADDITION LINE TO
BAYSHORE BEND SE

1615 WATER AND SEWER IMPROVEMENT PROJECT 2002-15
SHEET NO. 2 OF 8
1610 MANDAN, ND APRIL 25, 2003