MW BROWN ENGINEERING, INC

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Introduction

Traverse Mountain was granted 4,500 additional units above the original 3,500 units in the Fox Ridge area plan per the Cabella's Development agreement. The developer and the city have agreed upon a total of 5,812 residential units in the development. The additional 2,312 units created a need to determine how the additional sewer demand would be routed the sanitary sewer system to the outfall line to the TSSD trunk sewer line in 1900 south.

The original area plan sewer flows (both commercial, civic, park and residential) were included in the 1997 Lehi City sewer master plan. The purpose of this study is to determine a route for the additional sewer demand through the city to the existing TSSD sewer outfall line. The existing 36" outfall line (2700 west) does not have any unallocated capacity for the additional units that were granted to the development.

Summary

The analysis determined that a feasible option was to construct the master plan sewer along 1700 west from 1900 south to SR-92. Figure 1 – Offsite sanitary sewer option Shows the location of the proposed sewer. The master plan sewer would need to be up-sized from the 15" sewer to a 15", 24", and 30" depending on the location on 1700 west.

The following report details the analysis and the route of the proposed sewer outfall line. Sections of the sewer have already been installed and upsized to meet required size for the additional Traverse Mountain flows. These sections are shown on Figure 1.

The following is a summary of the required piping, location and footage.

	Master Plan	New Sewer	TM Required Size	Length
1900 So. to 300 No.	18"	30"	24"	9500
300 No. to 900 No.	12"	30"	24"	2700
900 No. to 1500 No.	10" & 8"	Existing 24"	24"	2672
1500 No. (1700 W. to Rail Road)	10"	24"	24"	800
1500 No. to 2100 No.	New Pipe	24"	24"	3650
2100 No. (1650 W. to Frontage Road)	12"	21"	18"	1600
W. Frontage Rd. (2100 No. to 2300 No.)	New Pipe	21"	18"	3100
W. Frontage Rd. (2300 No. to Exit Bore)	New Pipe	18"	18"	2980
E. Frontage Road (Exit Bore to SR-92)	21"	24"	24"	1970

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The analysis and the future design of the sanitary sewer system will be based upon the following criteria:

Onsite Design

DESCRIPTION	ASSUMPTION
Minimum Pipe Size	8-inch
Average Daily Flow	100 Gallons Per Day Per Person
Residential Unit	3.8 Persons Per Unit
Commercial	0.1 Gallons Per Day Per Square Foot (assume 25% Building Coverage)
Civic	0.25 Gallons Per Day Per Square Foot (assume 25% Building Coverage
Recreational	Per State Regs
Peaking Factor	$1+\frac{14}{(4+\sqrt{p})}$

Offsite Design

DESCRIPTION	ASSUMPTION
Minimum Pipe Size	8-inch
Average Daily Flow	100 Gallons Per Day Per Person
Residential Unit	3.8 Persons Per Unit
Commercial	0.2 Gallons Per Day Per Square Foot (assume 25% Building Coverage)
Civic	0.25 Gallons Per Day Per Square Foot (assume 25% Building Coverage
Recreational	Per State Regs
Peaking Factor	$1+\frac{14}{(4+\sqrt{p})}$

The existing system onsite was evaluated for the new design flows from the additional units. The system has the capacity to carry the new flows to the offsite sanitary sewer system with the exception of a section of 10" pipe that will need to have the grade increased to carry the proposed flows from the western canyon area. The pipe is located at the intersection of Traverse Mountain Boulevard and Holmstead drive into the Winterhaven development.

NOV 2 2 2011

Traverse Mountain Area Plan
Sanitary Sewer Calculations

November 23, 2011

LAND USE	ACREAGE	SQ. FT.	ERU	RESIDENTIAL UNITS	Total Units		Average Flow GPD	Peak Flow GPM
RESIDENTIAL								
Existing [1]	474.2							
Single Family				1434	1434		544,920	1514
TownHomes				122	122		46,360	129
Apartments				344	344		130,720	363
HDR (6.1-20)	48.6			510	510		193,800	538
MDR (1-6)	58.6			108	108		41,040	114
Perry Homes	153.6			968	968		367,840	1022
East Canyon	113			826	826		313,880	872
Central Canyon	134.8			900	900		342,000	950
West Canyon	72.1			600	600		228,000	633
Total Residential				5812				6135
Open Space								
Open Space	26.3							
Canyon Open Space [2]	971.4							
RECREATIONAL USES								
Existing Active Parks	18.5		50.9		3.8	5	185,000	514
Future Active Parks	28.1		77.3		3.8	5	281,000	781
COMMERCIAL								
Commercial	269.5	3,700,000	919		3.8	5	370,000	1028
TOTAL DEVELOPMEI	2368.7						3,044,560	8,458

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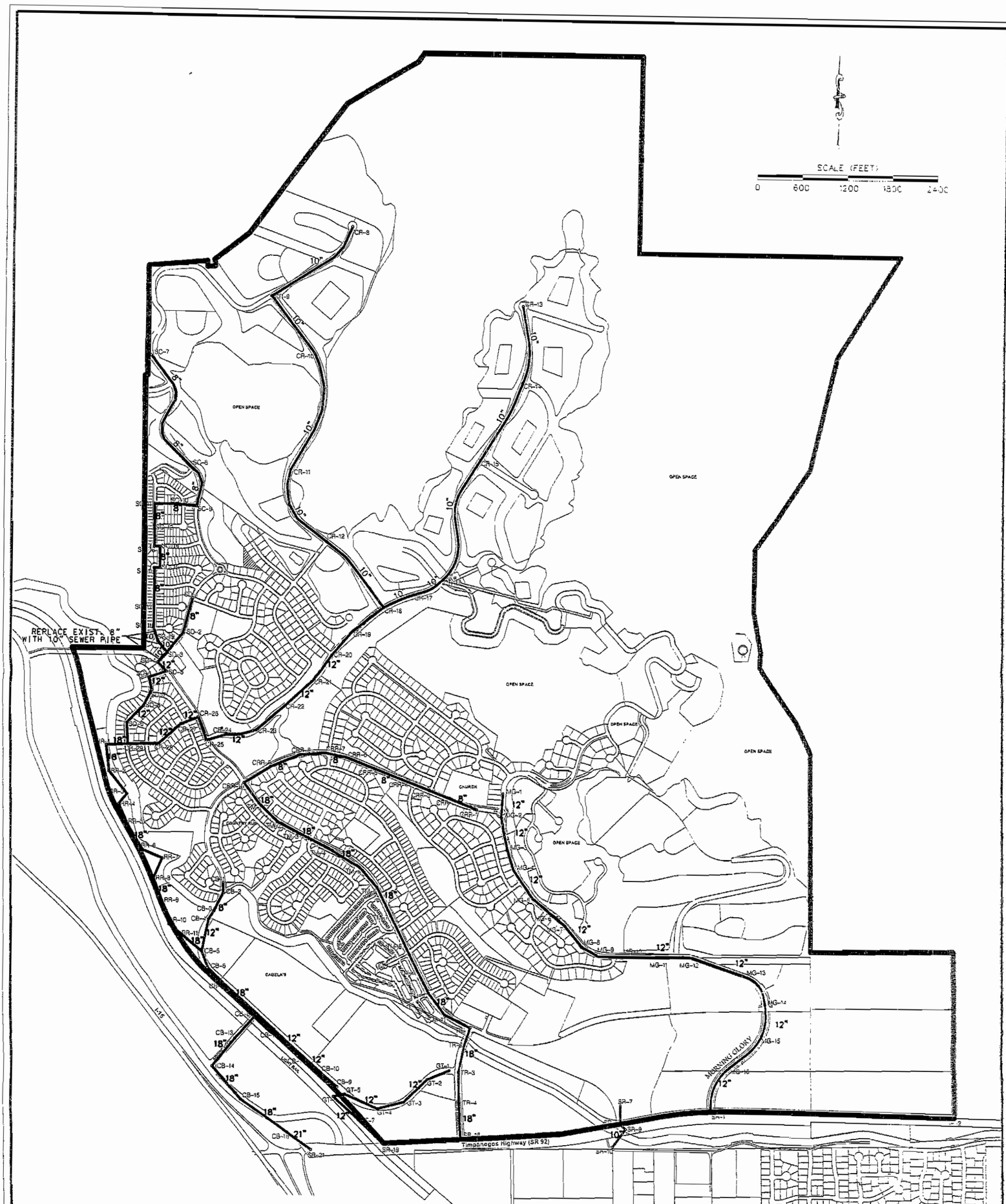

MW BROWN ENGINEERING, INC

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Title: SEWER PLAN

Client: TRAVERSE MOUNTAIN, LEHI UTAH

Drawing Name: ONSITE SEWER PIPE SIZES

PROJECT NO. 2010.037.004

SWR-1

DATE: 11-23-11

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WEST CANYON SEWER COMPUTATIONS

FROM	TO	LENGTH (ft)	Number of units introduced	Comm sq. ft introduced	Civic/Park Church int (acres)	Total ERU Introduced	Average Flow Introduced	Total Average Flow	Peak Flow Introduced	Total Units Served	Total Comm Sq. Ft.	Total Civ/Park Church	REQUIRED CAPACITY (GPM)	REQUIRED CAPACITY (ft³/s)	PIPE SIZE (in)	PIPE SIZE (ft)	MANNING'S NUMBER	HYDRAULIC RADIUS	SLOPE	VELOCITY (ft/s)	CAPACITY (ft³/s)	Designed Capacity vs. required	FALL (ft)	UPPER END	LOWER END
SC-7	SC-8	631	134		0	134	35	35	140	134	0	0	140	0.312	8	0.667	0.013	0.167	5.00%	7.758	2.71	OK	31.550	5060.41	5028.86
SC-8	SC-9	500	80		0	80	21	56	84	214	0	0	224	0.499	8	0.667	0.013	0.167	8.00%	9.813	3.43	OK	40.000	5028.66	4988.66
SC-9	SC-10	178	0			0	0	56	0	214	0	0	224	0.499	8	0.667	0.013	0.167	3.89%	6.843	2.39	OK	6.924	4988.46	4981.54
SC-10	SC-11	378	0			0	0	56	0	214	0	0	224	0.499	8	0.667	0.013	0.167	6.35%	8.743	3.05	OK	24.003	4981.34	4946.00
SC-11	SC-12	296	36			36	10	66	40	250	0	0	264	0.588	8	0.667	0.013	0.167	5.24%	7.942	2.77	OK	15.510	4945.80	4929.73
SC-12	SC-13	272	33			33	9	75	36	283	0	0	300	0.668	8	0.667	0.013	0.167	4.87%	7.656	2.67	OK	13.246	4929.53	4916.28
SC-13	SC-14	153	15			15	4	79	16	298	0	0	316	0.704	8	0.667	0.013	0.167	1.35%	4.031	1.41	OK	2.066	4916.08	4914.01
SC-14	SC-15	276	48			48	13	92	52	346	0	0	368	0.820	8	0.667	0.013	0.167	4.95%	7.719	2.69	OK	13.662	4913.81	4900.14
SC-15	SC-16	153	23			23	6	98	24	369	0	0	392	0.873	8	0.667	0.013	0.167	8.01%	9.819	3.43	OK	12.255	4899.94	4887.53
SC-16	SC-17	520	10			10	3	101	12	379	0	0	404	0.900	8	0.667	0.013	0.167	6.80%	9.047	3.16	OK	35.360	4887.33	4851.14
SC-17	SC-18	290	55			55	15	116	60	434	0	0	464	1.034	8	0.667	0.013	0.167	6.69%	8.974	3.13	OK	19.401	4850.94	4831.52
SC-18	SC-19	178	22			22	6	122	24	456	0	0	488	1.087	10	0.833	0.013	0.208	0.50%	2.847	1.55	OK	0.890	4831.32	4826.93
SC-19	SD-3	188	8			8	2	124	8	464	0	0	496	1.105	10	0.833	0.013	0.208	0.50%	2.847	1.55	OK	0.940	4826.73	4825.79

SHADOW RIDGE SEWER COMPUTATIONS

FROM	TO	LENGTH (ft)	Number of units introduced	Comm sq. ft introduced	Civic/Park Church int (acres)	Total ERU Introduced	Average Flow Introduced	Total Average Flow	Peak Flow Introduced	Total Units Served	Total Comm Sq. Ft.	Total Civ/Park Church	REQUIRED CAPACITY (GPM)	REQUIRED CAPACITY (ft³/s)	PIPE SIZE (in)	PIPE SIZE (ft)	MANNING'S NUMBER	HYDRAULIC RADIUS	SLOPE	VELOCITY (ft/s)	CAPACITY (ft³/s)	Designed Capacity vs. required	FALL (ft)	UPPER END	LOWER END
SD-1	SD-2	473	53			53	14	14	56	53	0	0.0	56	0.125	8	0.667	0.013	0.167	11.45%	11.714	4.089	OK	54.159	4908.99	4854.75
SD-2	SD-3	324	0		6.7	18	5	19	20	53	0	6.7	76	0.169	8	0.667	0.013	0.167	7.90%	9.730	3.396	OK	25.596	4854.55	4829.79
SC-19	SD-3	188	461		0.0	461	122	141	483	514	0	6.7	559	1.245	10	0.833	0.013	0.208	7.09%	10.696	5.834	OK	13.329	0	0
SD-3	SD-4	177	0			0	0	141	0	514	0	6.7	559	1.245	10	0.833	0.013	0.208	2.98%	6.935	3.782	OK	5.275	-0.2	4816.23
SD-4	SD-5	165	0			0	0	141	0	514	0	6.7	559	1.245	12	1.000	0.013	0.250	1.00%	4.536	3.563	OK	1.650	4816.03	4811.23
SD-5	SD-6	264	0		5.0	14	4	145	16	514	0	11.7	575	1.281	12	1.000	0.013	0.250	0.39%	2.833	2.225	OK	1.030	4811.03	4803.3
SD-6	SD-7	213	18			18	5	150	20	532	0	11.7	595	1.326	15	1.250	0.013	0.313	0.40%	3.329	4.086	OK	0.852	4803.1	4802.54
SD-7	SD-8	227	5			5	1	151	4	537	0	11.7	599	1.335	15	1.250	0.013	0.313	0.33%	3.024	3.711	OK	0.749	4802.34	4801.44
SD-8	SD-9	312	10			10	3	154	12	547	0	11.7	611	1.361	15	1.250	0.013	0.313	0.36%	3.158	3.876	OK	1.123	4801.24	4800.32
SD-9	CR-29	273	8			8	2	156	8	555	0	11.7	619	1.379	15	1.250	0.013	0.313	0.34%	3.069	3.767	OK	0.928	4800.12	4799

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WEST CANYON AND CENTRAL CANYON ROAD SEWER COMPUTATIONS

FROM	TO	LENGTH (ft)	Number of units Introduced	Comm sq. ft. Introduced	Civic/Park Church Int (acres)	Total ERU Introduced	Average Flow Introduced	Total Average Flow	Peak Flow Introduced	Total Units Served	Total Comm Sq. Ft	Total Civ/Park Church	REQUIRED CAPACITY (GPM)	REQUIRED CAPACITY (ft^3/s)	PIPE SIZE (in)	PIPE SIZE (ft)	MANNING'S NUMBER	HYDRAULIC RADIUS	SLOPE %	VELOCITY (ft/s)	CAPACITY (ft^3/s)	Designed Capacity vs. required	FALL (ft)	UPPER END	LOWER END
CR-8	CR-9	0	279		3.0	287	76	76	304	279	0	3.0	76	0.169	10	0.833	0.013	0.208	6.20%	10.000	5.454	OK	0.000	5055.551	5055.551
CR-9	CR-10	0	161		7.0	180	48	124	192	440	0	10.0	124	0.276	10	0.833	0.013	0.208	6.20%	10.000	5.454	OK	0.000	5055.351	5055.351
CR-10	CR-11	0	26			26	7	131	28	466	0	10.0	131	0.292	10	0.833	0.013	0.208	6.20%	10.000	5.454	OK	0.000	5055.151	5055.151
CR-11	CR-12	0	100		2.0	106	28	159	110	566	0	12.0	159	0.354	10	0.833	0.013	0.208	6.20%	10.000	5.454	OK	0.000	5054.951	5054.951
CR-12	CR-18	0	150		3.5	160	42	201	163	716	0	15.5	201	0.448	10	0.833	0.013	0.208	6.20%	10.000	5.454	OK	0.000	5054.751	5054.751
CR-13	CR-14	0	66		8.0	88	23	224	89	66	0	8.0	224	0.499	10	0.833	0.013	0.208	6.20%	10.000	5.454	OK	0.000	5054.551	5054.551
CR-14	CR-15	0	143		3.5	153	40	264	152	209	0	11.5	264	0.588	10	0.833	0.013	0.208	6.20%	10.000	5.454	OK	0.000	5054.351	5054.351
CR-15	CR-16	0	199		2.5	206	54	318	203	408	0	14.0	318	0.709	10	0.833	0.013	0.208	6.20%	10.000	5.454	OK	0.000	5054.151	5054.151
CR-16	CR-17	385	423		2.5	430	113	431	412	831	0	16.5	431	0.960	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	18.709	5053.951	5035.242
CR-17	CR-18	481	35			35	9	440	33	866	0	16.5	440	0.980	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	23.374	5035.042	5011.668
CR-18	CR-19	342	751		8.0	773	204	644	718	1617	0	24.5	644	1.435	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	16.620	5011.468	4994.848
CR-19	CR-20	374	35			35	9	653	32	1652	0	24.5	653	1.455	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	18.175	4994.648	4976.473
CR-20	CR-21	331	59			59	16	669	56	1711	0	24.5	669	1.491	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	16.085	4976.273	4960.188
CR-21	CR-22	487	51			51	13	682	46	1762	0	24.5	682	1.520	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	23.666	4969.988	4936.322
CR-22	CR-23	492	0			0	0	682	0	1762	0	24.5	682	1.520	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	23.909	4936.122	4912.213
CR-23	CR-24	442	0			0	0	682	0	1762	0	24.5	682	1.520	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	21.479	4912.013	4890.534
CR-24	CR-25	320	102		11.3	133	35	717	122	1864	0	35.8	717	1.597	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	15.551	4890.334	4874.784
CR-25	CR-26	326	66			66	17	734	59	1930	0	35.8	734	1.635	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	15.842	4874.584	4858.741
CR-26	CR-27	441	14			14	4	738	14	1944	0	35.8	738	1.644	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	21.431	4858.541	4837.111
CR-27	CR-28	241	10			10	3	741	10	1954	0	35.8	741	1.651	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	11.712	4836.911	4825.199
CR-28	CR-29	419	125		1.3	129	34	775	117	2079	0	37.1	775	1.727	12	1.000	0.013	0.250	4.86%	10.000	7.854	OK	20.361	4824.999	4804.638
SD-9	CR-29	273	555	0	11.7	587	155	930	524	2634	0	48.8	930	2.072	15	1.250	0.013	0.313	3.61%	10.000	12.272	OK	9.852	4804.438	4794.585
CR-29	RR-1	250	0		0.0	0	0	930	0	2634	0	48.8	930	2.072	18	1.500	0.013	0.375	2.83%	10.000	17.671	OK	7.075	4794.385	4787.31

RAIL ROAD SEWER COMPUTATIONS

FROM	TO	LENGTH (ft)	Number of units Introduced	Comm Acres Introduced	Civic/Park Church Int (acres)	Total ERU Introduced	Average Flow Introduced	Total Average Flow	Peak Flow Introduced	Total Units Served	Total Comm Sq. Ft	Total Civ/Park Church	REQUIRED CAPACITY (GPM)	REQUIRED CAPACITY (ft^3/s)	PIPE SIZE (in)	PIPE SIZE (ft)	MANNING'S NUMBER	HYDRAULIC RADIUS	SLOPE %	VELOCITY (ft/s)	CAPACITY (ft^3/s)	Designed Capacity vs. required	FALL (ft)	UPPER END	LOWER END
CR-29	RR-1	250	2634	0	48.8	2768	730	730	2533	2634	0	48.8	730.000	1.626	18	1.500	0.013	0.375	2.83%	10.000	17.671	OK	7.075	0	0
RR-1	RR-2	399	0	1.18	9.6	26	8	738	28	2634	1	58.4	738.000	1.644	18	1.500	0.013	0.375	2.29%	8.995	15.896	OK	9.137	-0.2	4778.18
RR-2	RR-3	396	0	1.18		0	1	739	3	2634	2	58.4	739.000	1.647	18	1.500	0.013	0.375	4.69%	12.873	22.749	OK	18.572	4777.98	4774.05
RR-3	RR-4	166	0	1.18		0	1	740	3	2634	4	58.4	740.000	1.649	18	1.500	0.013	0.375	2.29%	8.995	15.896	OK	3.801	4773.85	4772.99
RR-4	RR-5	284	0	1.18		0	1	741	3	2634	5	58.4	741.000	1.651	18	1.500	0.013	0.375	1.04%	6.062	10.712	OK	2.954	4772.79	4769.6
RR-5	RR-6	393	0	1.18		0	1	742	3	2634	6	58.4	742.000	1.653	18	1.500	0.013	0.375	0.94%	5.763	10.184	OK	3.694	4769.4	4763.73
RR-6	RR-7	283	0	1.18		0	1	743	3	2634	7	58.4	743.000	1.655	18	1.500	0.013	0.375	1.02%	6.003	10.609	OK	2.887	4763.53	4762.42
RR-7	RR-8	280	0	1.18		0	1	744	3	2634	8	58.4	744.000	1.658	18	1.500	0.013	0.375	0.98%	5.884	10.399	OK	2.744	4762.22	4759.71
RR-8	RR-9	334	0	1.18		0	1	745	3	2634	9	58.4	745.000	1.660	18	1.500	0.013	0.375	1.08%	6.177	10.916	OK	3.607	4759.51	4756.43
RR-9	RR-10	301	0	2.43		0	2	747	7	2634	12	58.4	747.000	1.664	18	1.500	0.013	0.375	1.06%	6.120	10.815	OK	3.191	4756.23	4753.36
RR-10	RR-11	300	0	2.43		0	2	749	7	2634	14	58.4	749.000	1.669	18	1.500	0.013	0.375	1.04%	6.062	10.712	OK	3.120	4753.16	4750.39
RR-11	CB-5	258	0	2.43		0	2	751	7	2634	17	58.4	751.000	1.673	18	1.500	0.013	0.375	1.17%	6.430	11.362	OK	3.019	4750.19	4747.97

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CHAPEL RIDGE ROAD, TRAVERSE MOUNTAIN BLVD., & TRIUMPH BLVD. SEWER COMPUTATIONS

FROM	TO	LENGTH (ft)	Number of units Introduced	Comm Acres Introduced	Civic/Park Church Int (acres)	Total ERU Introduced	Average Flow Introduced	Total Average Flow	Peak Flow Introduced	Total Units Served	Total Comm Sq. Ft.	Total Civ/Park Church	REQUIRED CAPACITY (GPM)	REQUIRED CAPACITY (ft^3/s)	PIPE SIZE (in)	PIPE SIZE (ft)	MANNING'S NUMBER	HYDRAULIC RADIUS	SLOPE	VELOCITY (ft/s)	CAPACITY (ft^3/s)	Designed Capacity vs. required	FALL (ft)	UPPER END	LOWER END
CRR-1	CRR-2	390	0		4.7	1	0	0	0	0	0	4.7	0.000	0.000	8	0.667	0.013	0.167	4.80%	7.585	2.647	OK	18.720	5082.5	5036.6
CRR-2	CRR-3	295	0			0	0	0	0	0	0	4.7	0.000	0.000	8	0.667	0.013	0.167	4.10%	7.010	2.447	OK	12.095	5036.4	5051.5
CRR-3	CRR-4	395	77			8	2	2	8	77	0	4.7	2.000	0.004	8	0.667	0.013	0.167	4.30%	7.179	2.506	OK	16.985	5051.3	5034.4
CRR-4	CRR-5	395	0			0	0	2	0	77	0	4.7	2.000	0.004	8	0.667	0.013	0.167	3.70%	6.659	2.324	OK	14.615	5034.2	5019.6
CRR-5	CRR-6	395	0			0	0	2	0	77	0	4.7	2.000	0.004	8	0.667	0.013	0.167	9.00%	10.386	3.625	OK	35.550	5019.4	4984.2
CRR-6	CRR-7	290	0			0	0	2	0	77	0	4.7	2.000	0.004	8	0.667	0.013	0.167	7.60%	9.544	3.331	OK	22.040	4984	4916.8
CRR-7	CRR-8	340	152			15	4	6	16	229	0	4.7	6.000	0.013	8	0.667	0.013	0.167	5.80%	8.337	2.910	OK	19.720	4916.8	4938.55
CRR-8	CRR-9	355	45			5	1	7	4	274	0	4.7	7.000	0.016	8	0.667	0.013	0.167	8.41%	10.039	3.504	OK	29.856	4938.35	4890
CRR-9	CRR-10	393	0			0	0	7	0	274	0	4.7	7.000	0.016	8	0.667	0.013	0.167	1.70%	4.514	1.576	OK	6.681	4889.8	4885.3
CRR-10	TM-1	423	0			0	0	7	0	274	0	4.7	7.000	0.016	18	1.500	0.013	0.375	0.20%	2.658	4.698	OK	0.846	4885.1	4884.55
TM-1	TM-2	411	53			5	1	8	4	327	0	4.7	8.000	0.018	18	1.500	0.013	0.375	0.20%	2.658	4.698	OK	0.822	4884.35	4883.95
TM-2	TM-3	360	0			0	0	8	0	327	0	4.7	8.000	0.018	18	1.500	0.013	0.375	0.20%	2.658	4.698	OK	0.720	4883.75	4883.3
TM-3	TM-4	449	56			6	2	10	8	383	0	4.7	10.000	0.022	18	1.500	0.013	0.375	0.20%	2.658	4.698	OK	0.898	4883.1	4882.82
TM-4	TM-5	529	0			0	0	10	0	383	0	4.7	10.000	0.022	18	1.500	0.013	0.375	0.20%	2.658	4.698	OK	1.058	4882.62	4882.08
TM-5	TM-6	350	0			0	0	10	0	383	0	4.7	10.000	0.022	18	1.500	0.013	0.375	0.39%	3.712	6.560	OK	1.365	4881.88	4878.02
TM-6	TM-7	410	48		5.1	6	2	12	8	431	0	9.8	12.000	0.027	18	1.500	0.013	0.375	4.05%	11.963	21.140	OK	16.605	4877.82	4816.12
TM-7	TM-8	400	47			5	1	13	4	478	0	9.8	13.000	0.029	18	1.500	0.013	0.375	4.60%	12.749	22.529	OK	18.400	4815.92	4844.56
TM-8	TM-9	402	48			5	1	14	4	526	0	9.8	14.000	0.031	18	1.500	0.013	0.375	4.10%	12.036	21.270	OK	16.482	4844.36	4828.09
TM-9	TM-10	153	0			0	0	14	0	526	0	9.8	14.000	0.031	18	1.500	0.013	0.375	3.43%	11.009	19.454	OK	5.248	4827.89	4822.84
TM-10	TM-11	352	51			5	1	15	4	577	0	9.8	15.000	0.033	18	1.500	0.013	0.375	2.72%	9.803	17.324	OK	9.574	4822.64	4811.51
TM-11	TR-1	373	0			0	0	15	0	577	0	9.8	15.000	0.033	18	1.500	0.013	0.375	1.50%	7.280	12.865	OK	5.595	4811.31	4801.12
TR-1	TR-2	274	509	5	4	52	18	33	72	1086	5	13.8	33.000	0.074	18	1.500	0.013	0.375	5.50%	13.940	24.635	OK	15.070	4800.92	4783.04
TR-2	TR-3	368	0			0	0	33	0	1086	5	13.8	33.000	0.074	18	1.500	0.013	0.375	3.90%	11.739	20.744	OK	14.352	4782.84	4766
TR-3	TR-4	402	0	38		0	35	68	140	1086	43	13.8	68.000	0.152	18	1.500	0.013	0.375	7.36%	16.126	28.498	OK	29.587	4765.8	4736.43
TR-4	SR-15	496	0			0	0	68	0	1086	43	13.8	68.000	0.152	18	1.500	0.013	0.375	1.80%	7.975	14.093	OK	8.928	4736.23	4716.3

MORNING GLORY ROAD SEWER COMPUTATIONS

FROM	TO	LENGTH (ft)	Number of units Introduced	Comm sq. ft. Introduced	Civic/Park Church Int (acres)	Total ERU Introduced	Average Flow Introduced	Total Average Flow	Peak Flow Introduced	Total Units Served	Total Comm Sq. Ft.	Total Civ/Park Church	REQUIRED CAPACITY (GPM)	REQUIRED CAPACITY (ft^3/s)	PIPE SIZE (in)	PIPE SIZE (ft)	MANNING'S NUMBER	HYDRAULIC RADIUS	SLOPE	VELOCITY (ft/s)	CAPACITY (ft^3/s)	Designed Capacity vs. required	FALL (ft)	UPPER END	LOWER END
MG-1	MG-2	316	102		5.4	12	3	3	12	102	0	5.4	3.000	0.007	8	0.667	0.013	0.167	3.34%	6.327	2.208	OK	10.554	5097.6	5086.53
MG-2	MG-3	441	0			0	0	3	0	102	0	5.4	3.000	0.007	8	0.667	0.013	0.167	0.80%	3.096	1.081	OK	3.528	5086.33	5083.7
MG-3	MG-4	288	0			0	0	3	0	102	0	5.4	3.000	0.007	8	0.667	0.013	0.167	0.74%	2.978	1.040	OK	2.131	5083.5	5078.91
MG-4	MG-5	374	64			6	2	5	8	166	0	5.4	5.000	0.011	8	0.667	0.013	0.167	1.13%	3.680	1.285	OK	4.226	5078.71	5074.68
MG-5	MG-6	336	0			0	0	5	0	166	0	5.4	5.000	0.011	8	0.667	0.013	0.167	1.12%	3.664	1.279	OK	3.763	5074.48	5070.35
MG-6	MG-7	201	0			0	0	5	0	166	0	5.4	5.000	0.011	8	0.667	0.013	0.167	0.50%	2.448	0.854	OK	1.005	5070.15	5069.07
MG-7	MG-8	320	0			0	0	5	0	166	0	5.4	5.000	0.011	8	0.667	0.013	0.167	0.87%	3.229	1.127	OK	2.784	5068.87	5066.07
MG-8	MG-9	217	0			0	0	5	0	166	0	5.4	5.000	0.011	8	0.667	0.013	0.167	1.23%	3.839	1.340	OK	2.669	5065.87	5063.2
MG-9	MG-10	365	0			0	0	5	0	166	0	5.4	5.000	0.011	8	0.667	0.013	0.167	0.50%	2.448	0.854	OK	1.825	5063	5061.17
MG-10	MG-11	350	0			0	0	5	0	166	0	5.4	5.000	0.011	8	0.667	0.013	0.167	4.28%	7.160	2.499	OK	14.970	5060.97	5046
MG-11	MG-12	413	826		17.0	87	23	28	92	992	0	22.4	28.000	0.062	8	0.667	0.013	0.167	0.92%	3.321	1.159	OK	3.800	5045.8	5042
MG-12	MG-13	871	0			0	0	28	0	992	0	22.4	28.000	0.062	8	0.667	0.013	0.167	5.60%	8.194	2.860	OK	48.800	5041.8	4993
MG-13	MG-14	503	0		3.0	1	0	28	0	992	0	25.4	28.000	0.062	8	0.667	0.013	0.167	6.72%	8.974	3.132	OK	33.800	4992.8	4959
MG-14	MG-15	388	458			46	12	40	48	1450	0	25.4	40.000	0.089	8	0.667	0.013	0.167	10.77%	11.363	3.966	OK	41.800	4958.8	4917
MG-15	MG-16	581	0	27		0	25	65	100	1450	27	25.4	65.000	0.145	12	1.000	0.013	0.250	4.96%	10.100	7.932	OK	28.800	4916.8	4888
MG-16	SR-3	715	0	38		0	35	100	140	1450	65	25.4	100.000	0.223	12	1.000	0.013	0.250	5.99%	11.099	8.717	OK	42.800	4887.8	4845

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CABELA'S BLVD SEWER COMPUTATIONS

FROM	TO	LENGTH (ft)	Number of units Introduced	Comm sq. ft. Introduced	Civic/Park Church Int (acres)	Total ERU Introduced	Average Flow Introduced	Total Average Flow	Peak Flow Introduced	Total Units Served	Total Comm Sq. Ft.	Total Civ/Park Church	REQUIRED CAPACITY (GPM)	REQUIRED CAPACITY (ft^3/s)	PIPE SIZE (in)	PIPE SIZE (ft)	MANNING'S NUMBER	HYDRAULIC RADIUS	SLOPE	VELOCITY (ft/s)	CAPACITY (ft^3/s)	Designed Capacity vs. required	FALL (ft)	UPPER END	LOWER END
CB-1	CB-2	126	183			18	5	5	20	183	0	0.0	5.000	0.011	8	0.667	0.013	0.167	3.10%	6.091	2.126	OK	3.900	4806.6	4802.7
CB-2	CB-3	437	29			3	1	6	4	212	0	0.0	6.000	0.013	8	0.667	0.013	0.167	3.23%	6.218	2.171	OK	14.100	4802.5	4788.4
CB-3	CB-4	108	0	8		0	7	13	28	212	8	0.0	13.000	0.029	12	1.000	0.013	0.250	0.22%	2.128	1.671	OK	0.238	4788.2	4787.96
CB-4	CB-5	488	0	7		0	6	19	24	212	15	0.0	19.000	0.042	12	1.000	0.013	0.250	7.04%	12.036	9.453	OK	34.365	4787.76	4748.27
RR-11	CB-5	258	2634	17	58.4	279	89	108	356	2846	31	58.4	108.000	0.241	18	1.500	0.013	0.375	1.17%	6.430	11.362	OK	3.019	4750.19	4748.27
CB-5	CB-6	204	0			0	0	108	0	2846	31	58.4	108.000	0.241	18	1.500	0.013	0.375	3.90%	11.739	20.744	OK	7.956	4748.07	4739.83
CB-6	CB-7	335	0			0	0	108	0	2846	31	58.4	108.000	0.241	18	1.500	0.013	0.375	5.92%	14.463	25.558	OK	19.832	4739.63	4719.79
CB-7	CB-8	567	0	32		0	29	137	116	2846	63	58.4	137.000	0.305	18	1.500	0.013	0.375	3.35%	10.860	19.226	OK	18.995	4719.59	4693.56
CB-9	CB-10	300	0			0	0	137	0	0	63	58.4	0.000	0.000	12	1.000	0.013	0.250	0.30%	2.485	1.951	OK	0.900	4711.19	4710.31
CB-10	CB-11	300	0	5		0	5	142	20	0	68	58.4	5.000	0.011	12	1.000	0.013	0.250	0.30%	2.485	1.951	OK	0.900	4710.11	4709.22
CB-11	CB-12	547	0			0	0	142	0	0	68	58.4	5.000	0.011	12	1.000	0.013	0.250	0.30%	2.485	1.951	OK	1.641	4709.02	4708.89
CB-12	CB-8	315	0			0	0	142	0	0	68	58.4	5.000	0.011	12	1.000	0.013	0.250	3.22%	8.140	6.393	OK	10.143	4708.69	4693.56
CB-8	CB-13	380	2846			285	75	217	296	2846	68	58.4	142.000	0.316	18	1.500	0.013	0.375	2.83%	10.000	17.671	OK	10.755	4682.223	4671.469
CB-13	CB-14	477	0			0	0	217	0	2846	68	58.4	142.000	0.316	18	1.500	0.013	0.375	2.83%	10.000	17.671	OK	13.500	4671.269	4657.769
CB-14	CB-15	600	0			0	0	217	0	2846	68	58.4	142.000	0.316	18	1.500	0.013	0.375	2.83%	10.000	17.671	OK	16.981	4657.569	4640.588
CB-15	CB-16	600	0			0	0	217	0	2846	68	58.4	142.000	0.316	18	1.500	0.013	0.375	2.83%	10.000	17.671	OK	16.981	4640.388	4623.407
CB-16	SR-21	290	0			0	0	217	0	2846	68	58.4	142.000	0.316	18	1.500	0.013	0.375	2.83%	10.000	17.671	OK	8.207	4623.207	4615

GRAND TERRACE SEWER COMPUTATIONS

FROM	TO	LENGTH (ft)	Number of units Introduced	Comm sq. ft. Introduced	Civic/Park Church Int (acres)	Total ERU Introduced	Average Flow Introduced	Total Average Flow	Peak Flow Introduced	Total Units Served	Total Comm Sq. Ft.	Total Civ/Park Church	REQUIRED CAPACITY (GPM)	REQUIRED CAPACITY (ft^3/s)	PIPE SIZE (in)	PIPE SIZE (ft)	MANNING'S NUMBER	HYDRAULIC RADIUS	SLOPE	VELOCITY (ft/s)	CAPACITY (ft^3/s)	Designed Capacity vs. required	FALL (ft)	UPPER END	LOWER END
GT-1	GT-2	317	0	3		0	2	2	8	0	3	0.0	2.000	0.004	12	1.000	0.013	0.250	2.98%	7.831	6.150	OK	9.447	4780.32	4760.42
GT-2	GT-3	373	0	0		0	0	0	0	0	3	0.0	2.000	0.004	12	1.000	0.013	0.250	3.94%	9.004	7.072	OK	14.696	4760.22	4745.54
GT-3	GT-4	360	0	36		0	33	33	132	0	38	0.0	35.000	0.078	12	1.000	0.013	0.250	4.94%	10.082	7.919	OK	17.784	4745.34	4726.89
GT-4	GT-5	448	0			0	0	0	0	0	38	0.0	35.000	0.078	12	1.000	0.013	0.250	3.30%	8.241	6.472	OK	14.784	4726.69	4708.98
GT-5	GT-6	47	0			0	0	0	0	0	38	0.0	35.000	0.078	12	1.000	0.013	0.250	25.06%	22.709	17.835	OK	11.778	4708.78	4697
GT-6	GT-7	462	0	15		0	14	14	56	0	53	0.0	49.000	0.109	12	1.000	0.013	0.250	1.04%	4.624	3.632	OK	4.800	4696.8	4692
GT-7	SR-18	462	0			0	0	0	0	0	53	0.0	49.000	0.109	12	1.000	0.013	0.250	1.03%	4.595	3.609	OK	4.740	4691.8	4687.06

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TRAVERSE MOUNTAIN

OFF-SITE SEWER SR-92

SEWER CALCUATIONS

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Date: 11/23/11 Project No.: 2010.037 Prepared by: MWB Revisions:	**Offsite Sewer Calculations** **Traverse Mountain Sewer Feasibility Study** **SR-92 Sewer** **Summary (Page 1 of 1)**	**MW. BROWN ENGINEERING, INC.** **578 East 770 North** **Orem, UT 84097**

Lehi City Master Plan Data

	Existing	Required	Lehi City Master Plan							
Pipe Number	Dia. Inches	Dia. Inches	Master Plan		Full Pipe		Additional Units left	Master Plan + 1180		Notes
			Peak Flow MGD	Units	Peak Flow MGD	Units		Peak Flow MGD	Units	
422	22	22	7.171	6912	20.58	17250	8026	11.005	9224	I-15 Bore at TGP
424-1	21	24	7.171	6197	25.07	20809	12300	10.254	8509	Frontage Road
424-2	21	24	7.171	5798	10.34	8526	417	9.837	8110	Frontage Road
424-3	21	24	7.171	5616	10.34	8498	570	9.648	7928	Frontage Road
424-3	21	24	7.171	5616	10.34	8498	570	9.648	7928	Frontage Road
426-1	21	24	7.029	5338	10.37	8464	814	9.371	7650	Frontage Road
426-2	21	24	7.029	5338	10.45	8527	877	9.371	7650	Frontage Road
440-1	18	18	7.107	5398	18.10	14491	7914	8.215	6578	SR-92
440-2	18	18	7.107	5398	20.62	16513	9936	8.215	6578	SR-92
440-3	18	18	7.107	5398	10.87	8702	2124	8.215	6578	Sr-92 at Tracks
442-1	18	18	3.992	3032	11.95	9052	4840	5.563	4212	SR-92
442-2	18	18	3.992	3032	11.16	8451	4239	5.563	4212	SR-92
442-3	18	18	3.992	3032	10.73	8128	3916	5.563	4212	Sr-92 Triumph
444-1	18	18	3.260	2476	10.95	8051	4811	4.408	3240	SR-92
444-2	18	18	3.260	2208	13.58	9867	6895	4.091	2972	SR-92
444-3	18	18	3.260	2208	14.41	10466	7494	4.091	2972	SR-92
444-4	18	18	3.260	2403	13.58	9954	6787	4.322	3167	SR-92
444-5	18	18	3.260	2208	8.32	6042	3070	4.091	2972	SR-92
444-6	18	18	3.260	2817	7.18	5321	1788	4.765	3533	Sr-92 - Bull River
446-1	18	18	3.260	2723	5.31	3922	483	4.652	3439	Bull River
446-2	18	18	3.260	2723	5.30	3921	482	4.652	3439	Bull River
446-3	18	18	3.260	2723	5.30	3921	482	4.652	3439	Bull River
446-4	18	18	3.260	2723	5.30	3921	482	4.652	3439	Morning Glory (1200 West)

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Date: 11/23/11 Project No.: 2010.037 Prepared by: MWB Revisions:	**Offsite Sewer Calculations** **Traverse Mountain Sewer Feasibility Study** **SR-92 Sewer** **Lehi Master Plan Design Data (Page 1 of 1)**		**MW. BROWN ENGINEERING, INC.** **578 East 770 North** **Orem, UT 84097**

Lehi City Master Plan Data

Pipe Number	Dia. Inches	Length Feet	Upstrm Elev.	Dwnstrm Elev.	Slope	Full Pipe Flow (MGD)	Peak Factor	Master Plan Peak Flow MGD	Master Plan Units	Master Plan Adtl Conn	Notes
422	22	349	4609.19	4598.20	3.15%	20.58	2.6	7.171	6912	12925	I-15 Bore at TGP
424-1	21	394	4620.97	4609.39	2.94%	17.56	2.9	7.171	6197	8981	Frontage Road
424-2	21	390	4623.12	4621.17	0.50%	7.24	3.1	7.171	5798	59	Frontage Road
424-3	21	392	4625.28	4623.32	0.50%	7.24	3.2	7.171	5616	57	Frontage Road
424-3	21	268	4626.82	4625.48	0.50%	7.24	3.2	7.171	5616	57	Frontage Road
426-1	21	199	4628.02	4627.02	0.50%	7.26	3.3	7.029	5338	177	Frontage Road
426-2	21	300	4629.75	4628.22	0.51%	7.32	3.3	7.029	5338	218	Frontage Road
440-1	18	395	4658.00	4629.95	7.10%	18.10	3.3	7.107	5398	8347	SR-92
440-2	18	199	4676.55	4658.20	9.22%	20.62	3.3	7.107	5398	10265	SR-92
440-3	18	339	4685.23	4676.55	2.56%	10.87	3.3	7.107	5398	2856	Sr-92 at Tracks
442-1	18	385	4697.36	4685.43	3.10%	11.95	3.3	3.992	3032	6048	SR-92
442-2	18	371	4707.58	4697.56	2.70%	11.16	3.3	3.992	3032	5445	SR-92
442-3	18	269	4714.50	4707.78	2.50%	10.73	3.3	3.992	3032	5120	Sr-92 Triumph
444-1	18	256	4721.36	4714.70	2.60%	10.95	3.3	3.260	2476	5843	SR-92
444-2	18	381	4736.80	4721.56	4.00%	13.58	3.7	3.260	2208	6992	SR-92
444-3	18	392	4754.64	4737.00	4.50%	14.41	3.7	3.260	2208	7550	SR-92
444-4	18	398	4770.76	4754.84	4.00%	13.58	3.4	3.260	2403	7609	SR-92
444-5	18	348	4776.18	4770.96	1.50%	8.32	3.7	3.260	2208	3426	SR-92
444-6	18	300	4779.73	4776.38	1.12%	7.18	2.9	3.260	2817	3385	Sr-92 - Bull River
446-1	18	136	4780.86	4780.03	0.61%	5.31	3.0	3.260	2723	1709	Bull River
446-2	18	400	4783.3	4780.86	0.61%	5.30	3.0	3.260	2723	1708	Bull River
446-3	18	400	4785.74	4783.3	0.61%	5.30	3.0	3.260	2723	1708	Bull River
446-4	18	400	4788.18	4785.74	0.61%	5.30	3.0	3.260	2723	1708	1200 West / Micron flows

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Date: 11/23/11 Project No.: 2010.037 Prepared by: MWB Revisions:	**Offsite Sewer Calculations** **Traverse Mountain Sewer Feasibility Study** **SR-92 Sewer** **Pipe Calculations (Page 1 of 1)**	MW. BROWN ENGINEERING, INC. 578 East 770 North Orem, UT 84058

Pipe Number	PIPE SIZE (in.)	PIPE SIZE (ft.)	Manning's n	Hydraulic Radius (R)	SLOPE	VELOCITY (ft/s)	CAPACITY (ft^3/s)	Capacity MGD
422	22.00	1.83	0.013	0.458	3.15%	12.09	31.90	20.58
424-1	21.00	1.75	0.013	0.438	2.94%	11.32	27.22	17.56
424-2	21.00	1.75	0.013	0.438	0.50%	4.67	11.23	7.24
424-3	21.00	1.75	0.013	0.438	0.50%	4.67	11.23	7.24
424-3	21.00	1.75	0.013	0.438	0.50%	4.67	11.23	7.24
426-1	21.00	1.75	0.013	0.438	0.50%	4.68	11.26	7.26
426-2	21.00	1.75	0.013	0.438	0.51%	4.72	11.34	7.32
440-1	18.00	1.50	0.013	0.375	7.10%	15.88	28.05	18.10
440-2	18.00	1.50	0.013	0.375	9.22%	18.10	31.97	20.62
440-3	18.00	1.50	0.013	0.375	2.56%	9.54	16.85	10.87
442-1	18.00	1.50	0.013	0.375	3.10%	10.49	18.53	11.95
442-2	18.00	1.50	0.013	0.375	2.70%	9.80	17.30	11.16
442-3	18.00	1.50	0.013	0.375	2.50%	9.42	16.64	10.73
444-1	18.00	1.50	0.013	0.375	2.60%	9.61	16.98	10.95
444-2	18.00	1.50	0.013	0.375	4.00%	11.92	21.05	13.58
444-3	18.00	1.50	0.013	0.375	4.50%	12.64	22.33	14.41
444-4	18.00	1.50	0.013	0.375	4.00%	11.92	21.05	13.58
444-5	18.00	1.50	0.013	0.375	1.50%	7.30	12.89	8.32
444-6	18.00	1.50	0.013	0.375	1.12%	6.30	11.12	7.18
446-1	18.00	1.50	0.013	0.375	0.61%	4.66	8.22	5.31
446-2	18.00	1.50	0.013	0.375	0.61%	4.66	8.22	5.30
446-3	18.00	1.50	0.013	0.375	0.61%	4.66	8.22	5.30
446-4	18.00	1.50	0.013	0.375	0.61%	4.66	8.22	5.30

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Offsite Sewer Calculations
Traverse Mountain Sewer Feasibility Study
SR-92 Sewer
Tm Flow Pipes (Page 1 of 1)

MW. BROWN ENGINEERING, INC.
578 East 770 North
Orem, UT 84097

Lehi City Master Plan Data

Pipe	Master Plan		TM	Total	New	Required	Required	Pipe Cap		
Number	Peak Flow	Units	Adtl Units	Units	Peak Factor	Flow (MGD)	Pipe Size	Flow MGD	Units	Add Units
422	7.171	6912	2312	9224	2.99	11.00	22	20.58	17250	8026
424-1	7.171	6197	2312	8509	3.02	10.25	24	25.07	20809	12300
424-2	7.171	5798	2312	8110	3.04	9.84	24	10.34	8526	417
424-3	7.171	5616	2312	7928	3.05	9.65	24	10.34	8498	570
424-3	7.171	5616	2312	7928	3.05	9.65	24	10.34	8498	570
426-1	7.029	5338	2312	7650	3.07	9.37	24	10.37	8464	814
426-2	7.029	5338	2312	7650	3.07	9.37	24	10.45	8527	877
440-1	7.107	5398	1180	6578	3.13	8.21	18	18.10	14491	7914
440-2	7.107	5398	1180	6578	3.13	8.21	18	20.62	16513	9936
440-3	7.107	5398	1180	6578	3.13	8.21	18	10.87	8702	2124
442-1	3.992	3032	1180	4212	3.31	5.56	18	11.95	9052	4840
442-2	3.992	3032	1180	4212	3.31	5.56	18	11.16	8451	4239
442-3	3.992	3032	1180	4212	3.31	5.56	18	10.73	8128	3916
444-1	3.26	2476	764	3240	3.41	4.41	18	10.95	8051	4811
444-2	3.26	2208	764	2972	3.45	4.09	18	13.58	9867	6895
444-3	3.26	2208	764	2972	3.45	4.09	18	14.41	10466	7494
444-4	3.26	2403	764	3167	3.42	4.32	18	13.58	9954	6787
444-5	3.26	2208	764	2972	3.45	4.09	18	8.32	6042	3070
444-6	3.26	2817	716	3533	3.38	4.77	18	7.18	5321	1788
446-1	3.26	2723	716	3439	3.39	4.65	18	5.31	3922	483
446-2	3.26	2723	716	3439	3.39	4.65	18	5.30	3921	482
446-3	3.26	2723	716	3439	3.39	4.65	18	5.30	3921	482
446-4	3.26	2723	716	3439	3.39	4.65	18	5.30	3921	482

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Date: 11/23/11 Project No.: 2010.037 Prepared by: MWB Revisions:	**Offsite Sewer Calculations** **Traverse Mountain Sewer Feasibility Study** **SR-92 Sewer** **TM Pipe Calculations (Page 1 of 1)**	**MW. BROWN ENGINEERING, INC.** **578 East 770 North** **Orem, UT 84097**

Pipe Number	PIPE SIZE (in.)	PIPE SIZE (ft.)	Manning's n	Hydraulic Radius (R)	SLOPE	VELOCITY (ft/s)	CAPACITY (ft^3/s)	Capacity MGD	REQ' CAPCITY MGD	EXCESS CAPACITY MGD
		12.00								
422	22.00	1.83	0.013	0.458	3.15%	12.09	31.90	20.58	11.00	9.575000615
424-1	24.00	2.00	0.013	0.500	2.94%	12.38	38.87	25.07	10.25	14.82087216
424-2	24.00	2.00	0.013	0.500	0.50%	5.11	16.03	10.34	9.84	0.505593752
424-3	24.00	2.00	0.013	0.500	0.50%	5.11	16.03	10.34	9.65	0.693715948
424-3	24.00	2.00	0.013	0.500	0.50%	5.11	16.03	10.34	9.65	0.693715948
426-1	24.00	2.00	0.013	0.500	0.50%	5.12	16.07	10.37	9.37	0.996978336
426-2	24.00	2.00	0.013	0.500	0.51%	5.16	16.19	10.45	9.37	1.0739352
440-1	18.00	1.50	0.013	0.375	7.10%	15.88	28.05	18.10	8.21	9.883190854
440-2	18.00	1.50	0.013	0.375	9.22%	18.10	31.97	20.62	8.21	12.40826622
440-3	18.00	1.50	0.013	0.375	2.56%	9.54	16.85	10.87	8.21	2.65262145
442-1	18.00	1.50	0.013	0.375	3.10%	10.49	18.53	11.95	5.56	6.392398509
442-2	18.00	1.50	0.013	0.375	2.70%	9.80	17.30	11.16	5.56	5.598494999
442-3	18.00	1.50	0.013	0.375	2.50%	9.42	16.64	10.73	5.56	5.171571574
444-1	18.00	1.50	0.013	0.375	2.60%	9.61	16.98	10.95	4.41	6.545863698
444-2	18.00	1.50	0.013	0.375	4.00%	11.92	21.05	13.58	4.09	9.491296369
444-3	18.00	1.50	0.013	0.375	4.50%	12.64	22.33	14.41	4.09	10.31522591
444-4	18.00	1.50	0.013	0.375	4.00%	11.92	21.05	13.58	4.32	9.260994708
444-5	18.00	1.50	0.013	0.375	1.50%	7.30	12.89	8.32	4.09	4.226263459
444-6	18.00	1.50	0.013	0.375	1.12%	6.30	11.12	7.18	4.77	2.411393241
446-1	18.00	1.50	0.013	0.375	0.61%	4.66	8.22	5.31	4.65	0.653227762
446-2	18.00	1.50	0.013	0.375	0.61%	4.66	8.22	5.30	4.65	0.651949176
446-3	18.00	1.50	0.013	0.375	0.61%	4.66	8.22	5.30	4.65	0.651949176
446-4	18.00	1.50	0.013	0.375	0.61%	4.66	8.22	5.30	4.65	0.651949176

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TM OFFISTE SEWER FEASIBILITY STUDY

TRAVERSE MOUNTAIN

OFFSITE SEWER

PROJECT NO

SHEET NO

SHT 00

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9-24-2007

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Client: TRAVERSE MOUNTAIN

Drawing Name: OFFSITE SEWER

PROJECT NO 2010.037

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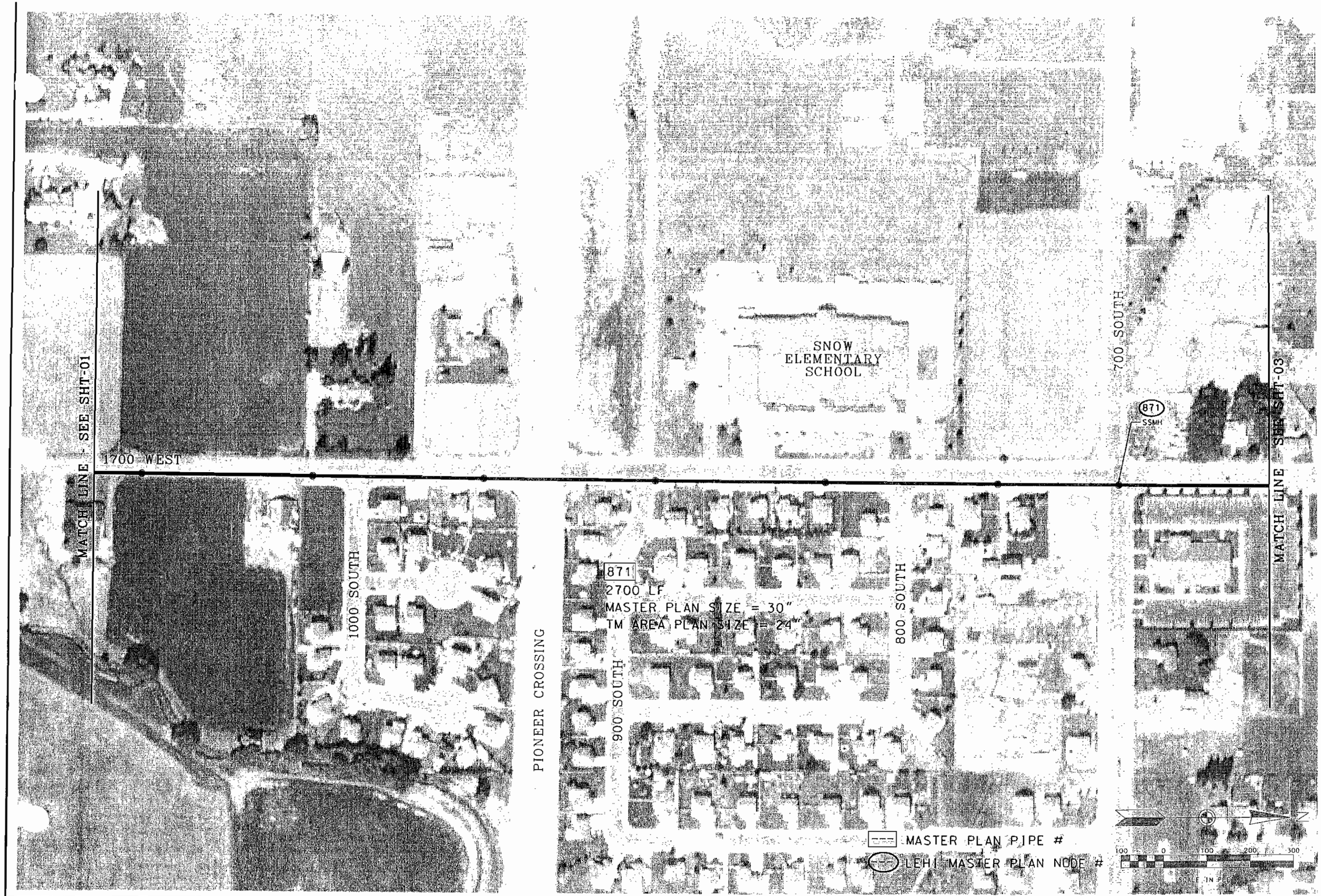

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Client: TRAVERSE MOUNTAIN

Drawing Name: OFFSITE SEWER

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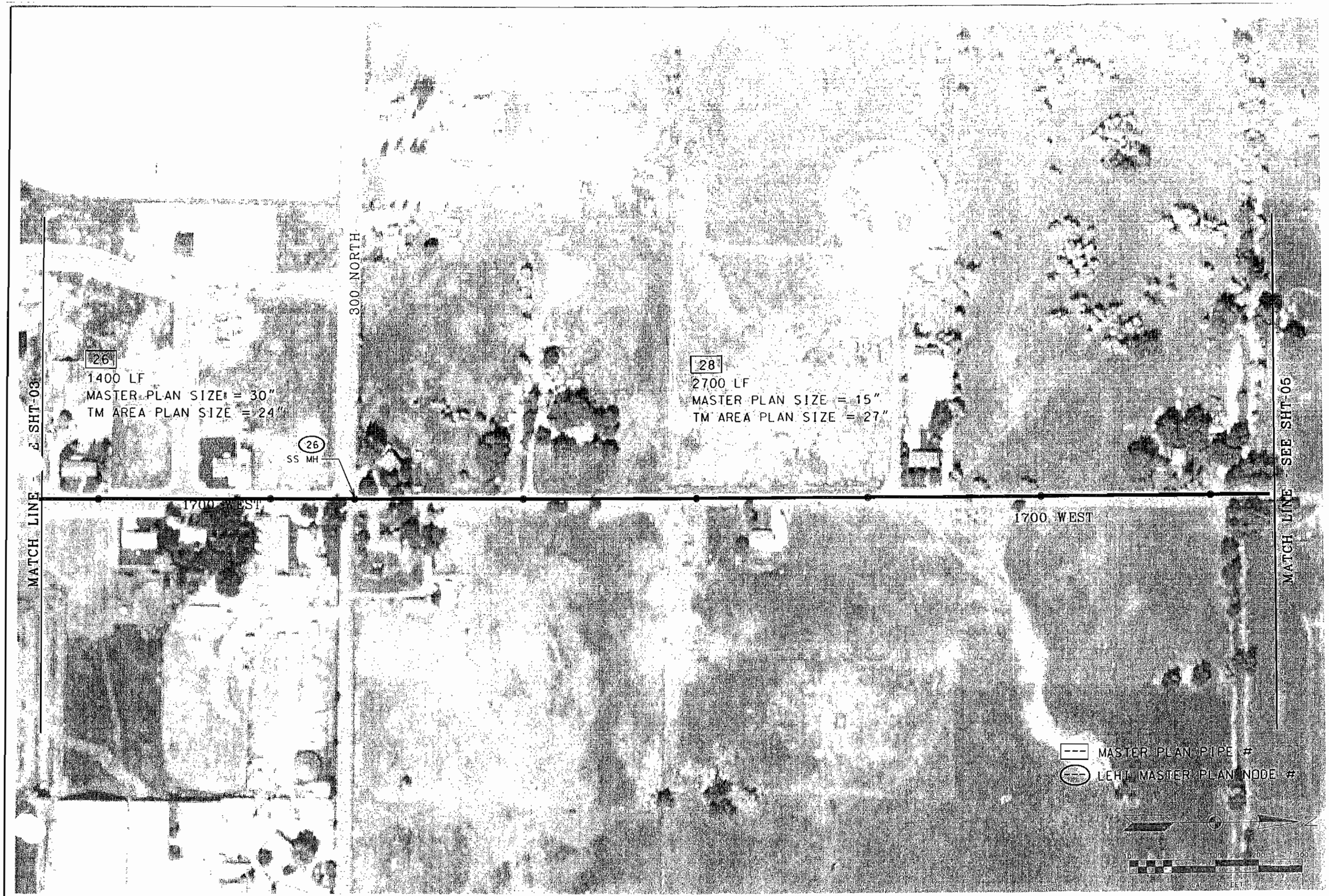

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Designed J. MORRISON

Checked 9-24-2007

Title TM OFFSITE SEWER FEASIBILITY STUDY

Client TRAVERSE MOUNTAIN

Drawing Name OFFSITE SEWER

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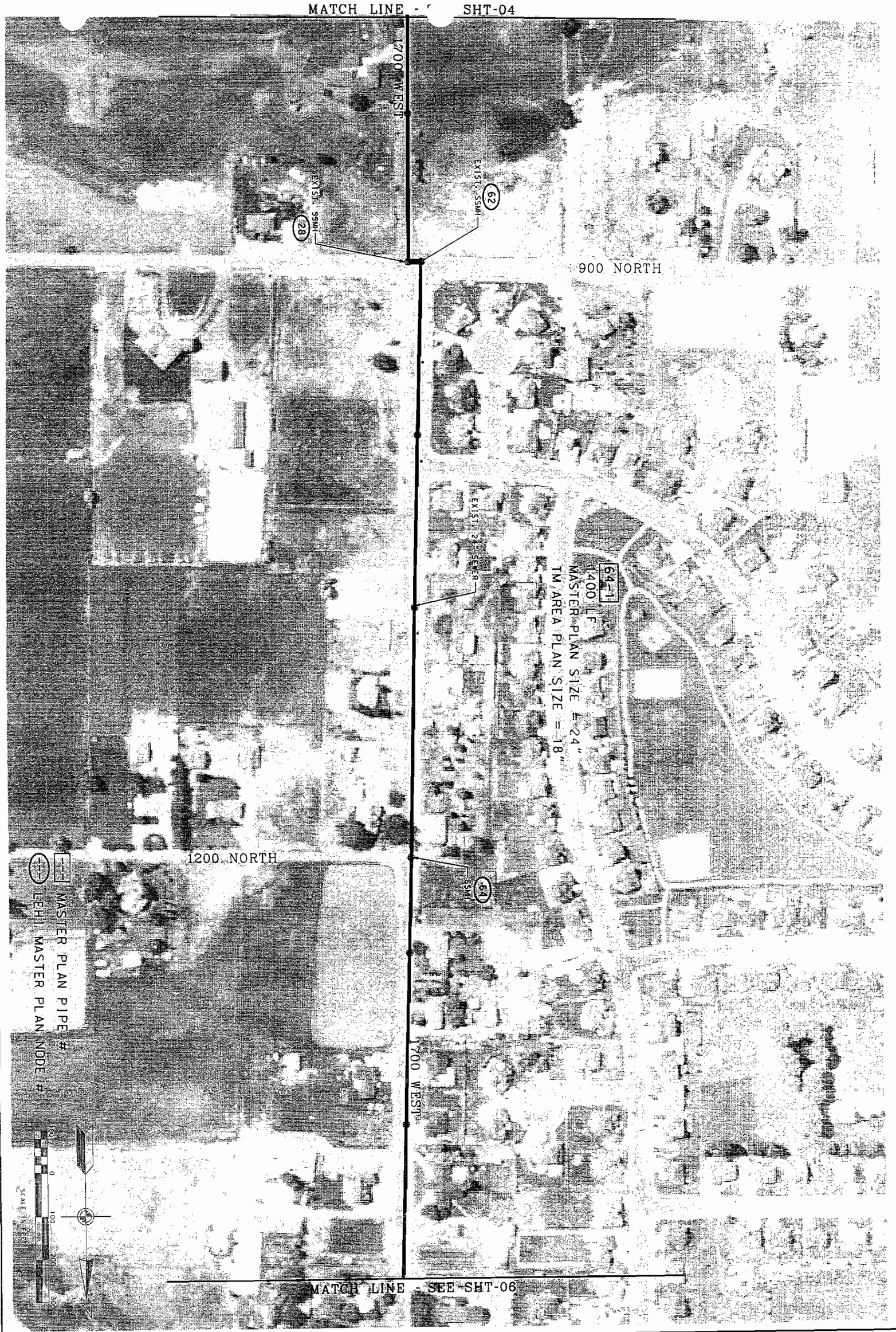

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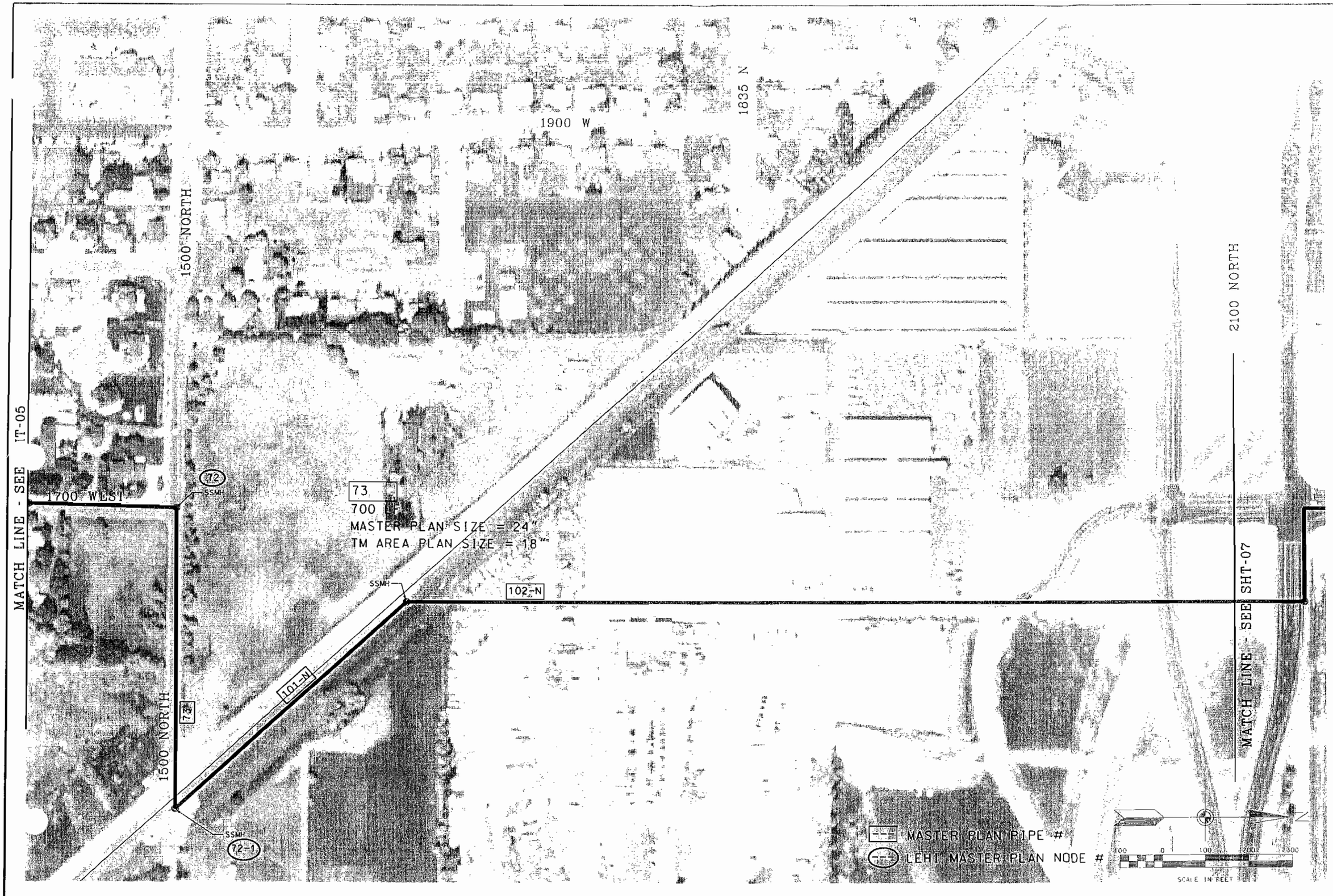
Office: (801) 377-1790 Fax: (801) 377-1789
578 East 770 North, Orem UT 84097



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J. MORRISON

9-24-2007

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Client: TRAVERSE MOUNTAIN

Drawing Name: OFFSITE SEWER

PROJECT NO 2010.037

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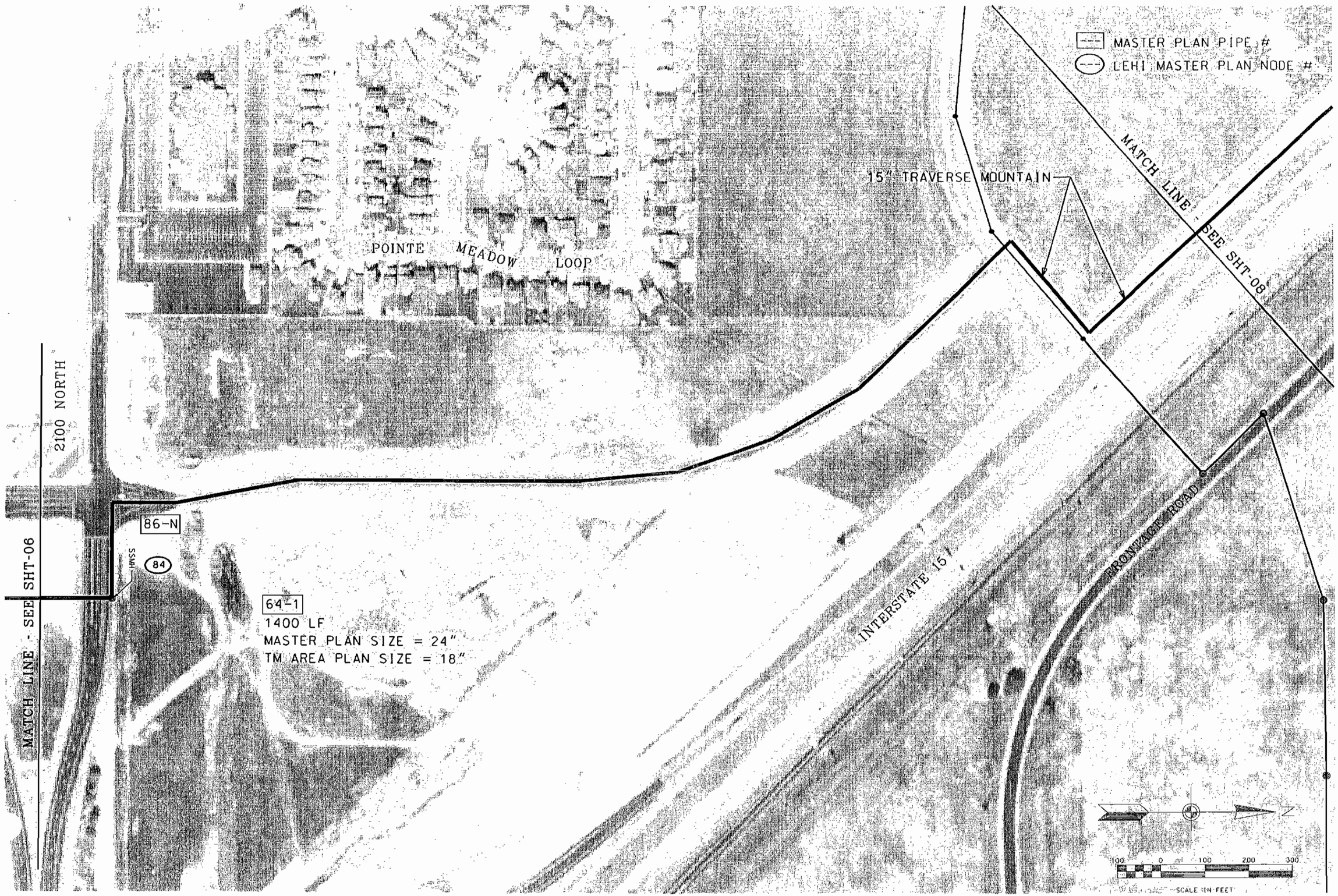

MW BROWN ENGINEERING, INC

REGISTERED PROFESSIONAL ENGINEER
MATT W. BROWN
STATE OF UTAH

REVISIONS

Designed J. MORRISON
Checked
Date 9-24-2007

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Client TRAVERSE MOUNTAIN
Drawing Name OFFSITE SEWER

PROJECT NO 2013.037

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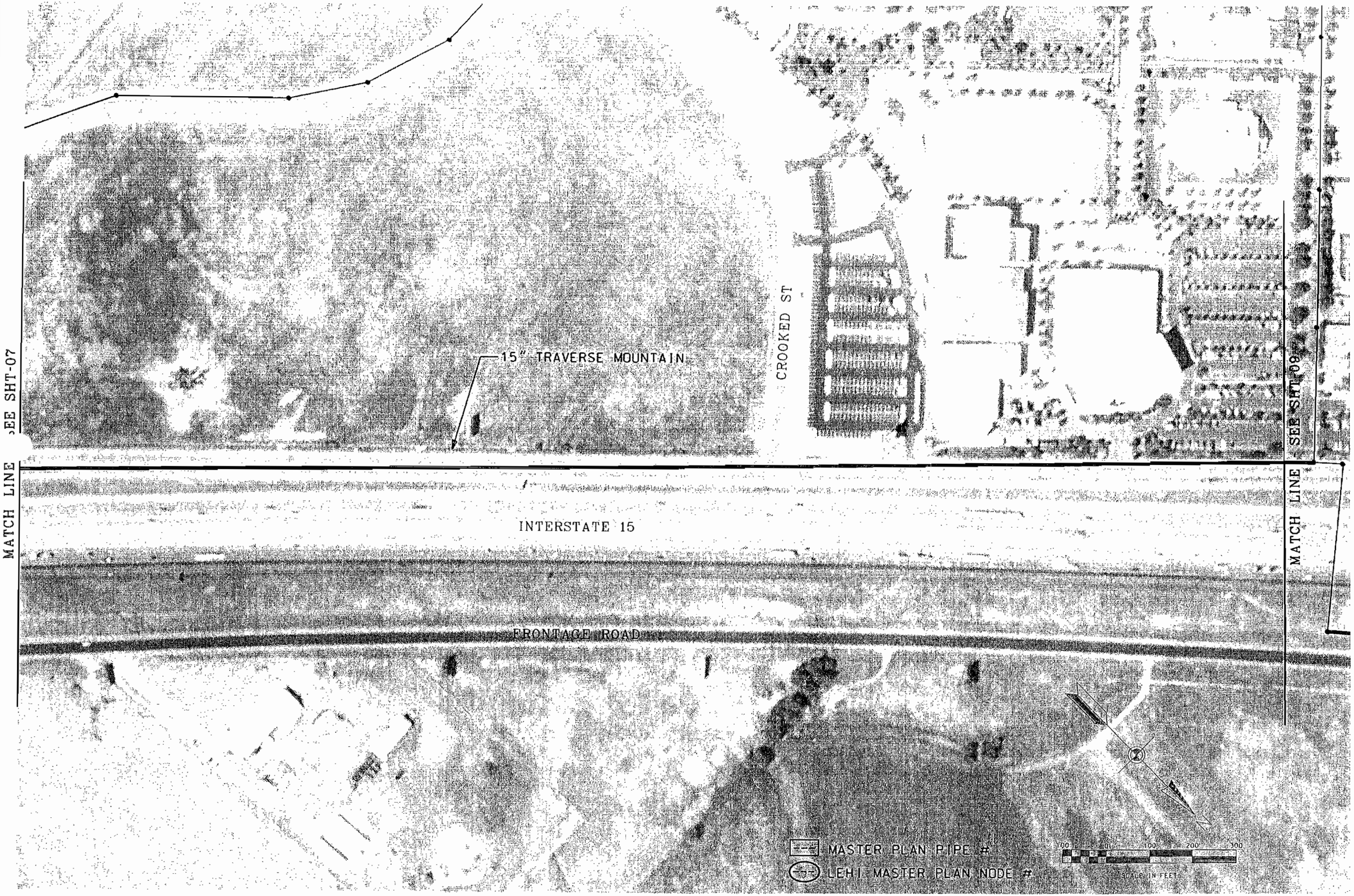

MW BROWN ENGINEERING, INC

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J. MORRISON

9-24-2007

TM OFFSITE SEWER FEASIBILITY STUDY

TRAVERSE MOUNTAIN

OFFSITE SEWER

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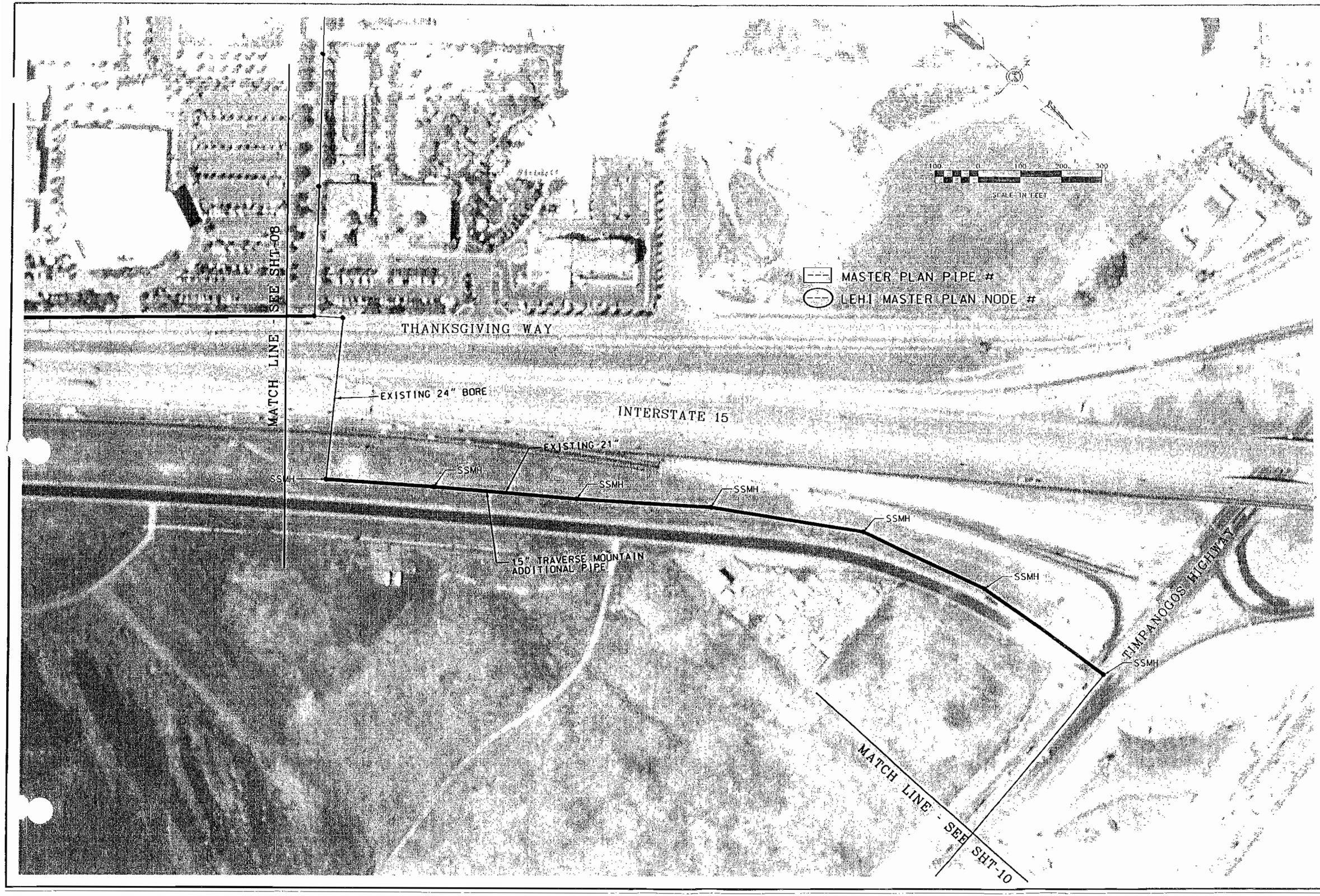

MW BROWN ENGINEERING, INC
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REGISTERED PROFESSIONAL ENGINEER
NO. 171771
MATT W BROWN
STATE OF UTAH

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Drawn
Checked 9-24-2007
Date

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Client: TRAVERSE MOUNTAIN
Drawing Name: OFFSITE SEWER

PROJECT NO
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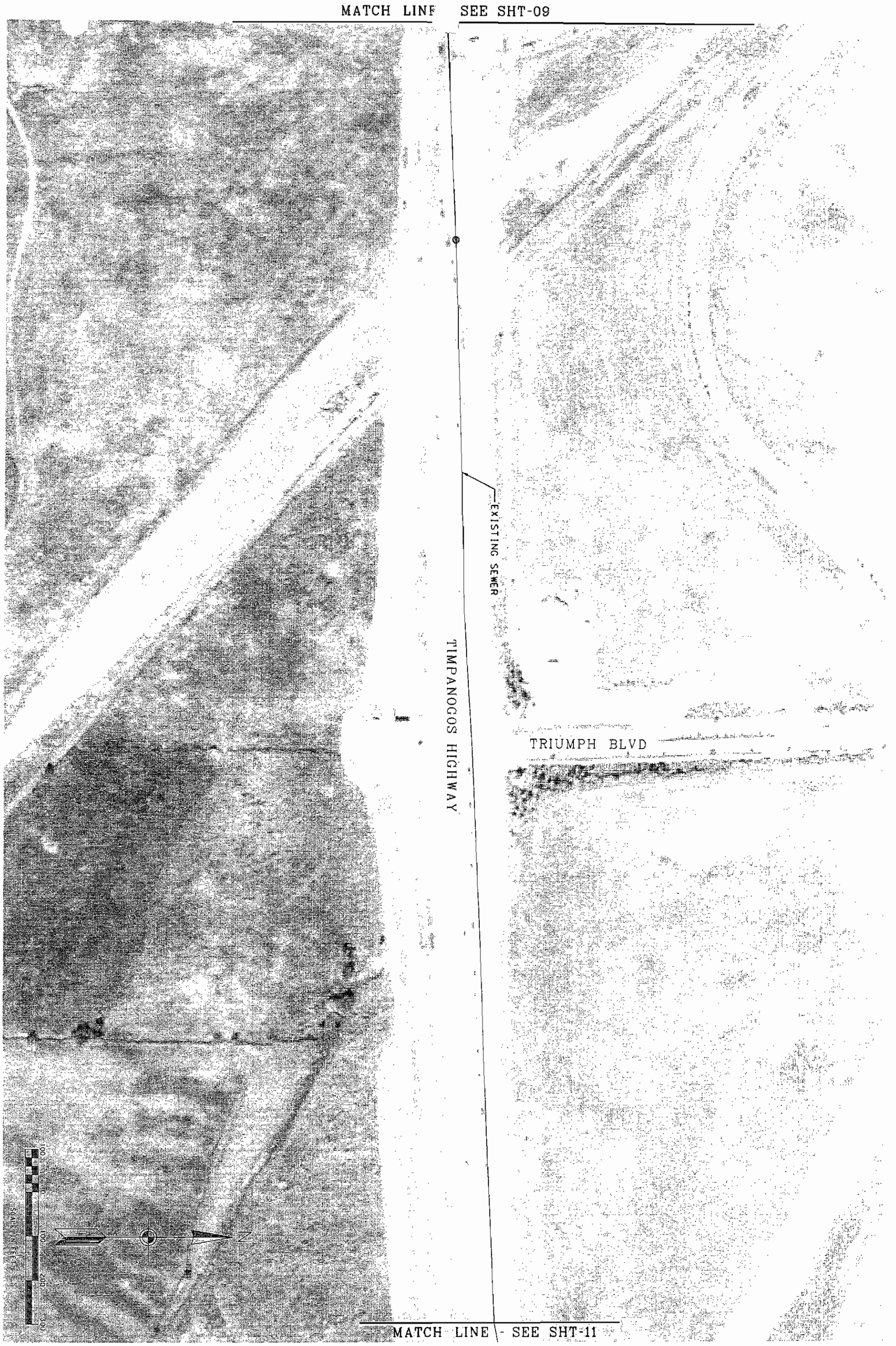

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PROJECT NO. 2010.037

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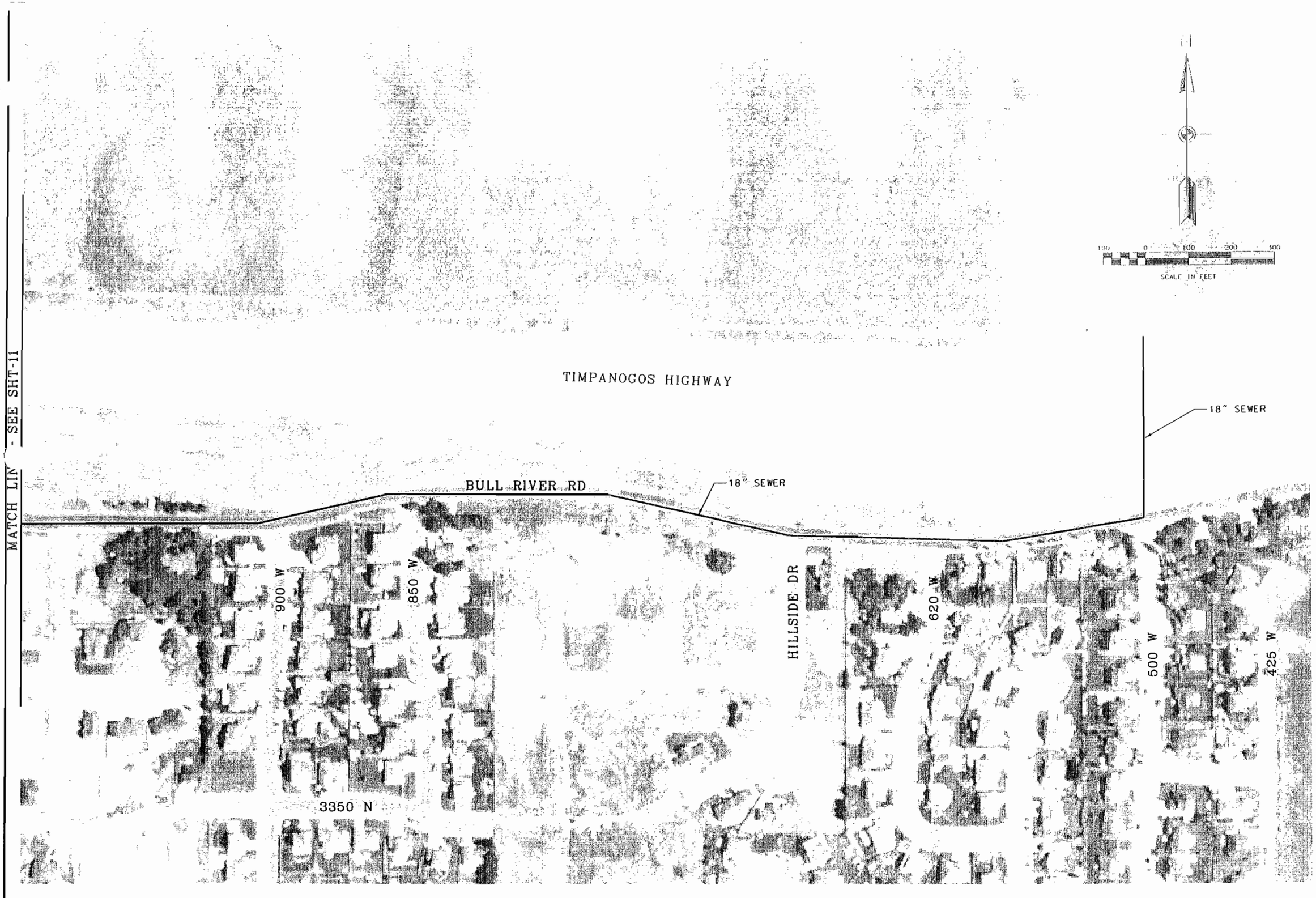

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Client: TRAVERSE MOUNTAIN

Drawing Name: OFFSITE SEWER

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