

Minturn North PUD SANITARY SEWER ANALYSIS

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Wright Water Engineers, Inc.

November 2022

Job No. 191-093.050

Minturn North PUD Sanitary Sewer Analysis

FOR REVIEW

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1.0 INTRODUCTION

Wright Water Engineers, Inc. (WWE) prepared this report to estimate wastewater flows and discuss the hydraulic model created to evaluate the proposed sanitary sewer mains for the Minturn North Planned Unit Development (PUD) (Project) near Minturn, Colorado. The Minturn North PUD is located on the north side of Minturn between Taylor Street and Minturn Road. WWE was retained by Rick Hermes of Minturn Crossing, LLC (Developer) to perform this hydraulic modeling sanitary sewer main analysis (Study). See Figure 1: Location and Vicinity Map.

Information developed in this report is based on information provided by Developer and civil engineer, Boundaries Unlimited (Civil Engineer). Civil design drawings are provided in the appendices for reference. This report was developed based on information supplied as of November 20, 2022.

2.0 PURPOSE

The purpose of this Study is to evaluate the proposed gravity sanitary sewer mains to serve the Minturn North PUD considering the *Rules and Regulations for Water and Wastewater Service* published by the Eagle River Water & Sanitation District (ERWSD 2019). Specifically, this Study was conducted to address Requirement 2.3 – Sizing Collection Mains for the ERWSD *Rules and Regulations for Water and Wastewater Service*. The Study includes a review of the existing sanitary sewer mains which will remain in service following construction of the Minturn North PUD. Existing and proposed hydraulic models were created to evaluate the wastewater contribution of the Minturn North PUD to the existing sanitary sewer interceptor located west of the development and evaluate the proposed sanitary sewer mains. The scope of work for this Study is limited to evaluating the Minturn North PUD anticipated peak wastewater flow contribution to the existing interceptor, and not an evaluation of the entire Town of Minturn sanitary sewer system. The hydraulic models were created using Autodesk Storm and Sanitary Analysis, a software application developed to help plan and design urban drainage systems, storm sewers, and sanitary sewers. based on exports from Autodesk Civil3D.

3.0 STUDY AREA

The Minturn North PUD is located on the north side of Minturn between Taylor Street and Minturn Road and is planned to provide developable lots available for purchase by private entities. The initial project will include infrastructure to support future construction of actual residential or multi-family units by others. The lots will be sold to allow individual buyers to prepare residential and multi-family building plans to be approved by the Town of Minturn. Therefore, actual building dimensions and site layouts are unknown.

The Study area includes the existing 74 units along Taylor Street, Fourth Street, and Fourth Avenue currently served by the ERWSD's sanitary sewer system. It is assumed the 74 units along Taylor Street equate to 74 single family equivalents (SFE). Included with the 74 units are

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6 mobile homes that will be removed as part of the project and therefore not included in the proposed calculations. A total of 68 existing SFE are included in the proposed conditions analysis.

The proposed Project will develop 39 total lots requiring sanitary service. There are two different categories of lots. A total of 33 lots will be standard single family home residential lots with 2 SFE per lot. These lots will be limited to 6,000 square feet homes. There are 6 deed restricted units which will only have one SFE per lot. These lots will be limited to 3,000 square feet homes. There is a total of 72 proposed residential SFE.

The ERWSD criteria was evaluated to understand the ERWSD's definition of a Single-Family Equivalent (SFE). Based on the definition below from the ERWSD's criteria a residential unit with up to 3,000 square feet in floor area is equal to 1.0 SFE. A total of 33 lots will be able to have residential units with up to 6,000 square feet, therefore each of those lots will count as 2 SFE.

The total number of additional SFE proposed as part of the Project is 175 SFE. The following table outlines the lot type, number of lots and maximum SFE per lot type.

Table 1. Number of Developable Lots and SFE Count

Lot Type	Number of Lots	Maximum SFE Per Lot Type
Standard Sites*	33	66
Deed Restricted	6	6
Total	39	72

Therefore, the total number of SFE including existing and proposed is 140 SFE.

The existing and proposed Project was evaluated by grouping residential units into applicable service areas. These service areas were delineated based on sanitary service lines. Included in the figures at the end of this report are two maps outlining proposed and existing conditions for the Project, including delineation of discrete service areas to evaluate various demands at various locations in the Project.

4.0 ANTICIPATED WASTEWATER FLOWS

Anticipated wastewater flow criteria for the Minturn North PUD were provided by ERWSD via email on December 15, 2020. ERWSD recommended an average daily wastewater flow during the maximum month of usage (including infiltration) of 198 gallons per day per SFE. The ERWSD guidance is based on recommendations from the Colorado Department of Public Health and Environment (CDPHE) Design Criteria for Domestic Wastewater Treatment Works (2012) for residential SFE.

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CDPHE requires a maximum month average daily wastewater flow of no less than 180 gallons per day (gpd) per SFE and an infiltration rate of 10% of the maximum month, average daily wastewater flow, which equates to approximate 198 gpd per SFE. ERWSD recommended assuming 2.3 persons per SFE which is consistent with the CDPHE guidance on per capita wastewater generation. The existing sanitary sewer system serves 74 SFE and the proposed system will serve an additional 169 SFE, for a total of 243 SFE. To estimate the anticipated peak hourly wastewater flow, a wastewater flow peaking factor was calculated considering the ERWSD's recommendation of 2.3 persons per SFE and the following peaking factor equation included in the CDPHE Design Criteria:

$\frac{Q \text{ peak hourly}}{Q \text{ design average}}$	$= \frac{18 + \sqrt{P}}{4 + \sqrt{P}}$
Q peak hourly	= Maximum rate of wastewater flow (peak hourly flow)
Q design average	= Design average daily wastewater flow
P	= Population in thousands

For existing conditions, assuming a population of 170.2 people based on 74 SFE and 2.3 persons per SFE, the peaking factor was calculated to be 4.17. For proposed conditions, assuming a population of 558.9 based on 243 SFE and 2.3 persons per SFE, the peaking factor was calculated to be 3.95. Considering the maximum month average daily wastewater flow provided by ERWSD and the calculated peaking factor, the anticipated peak hourly wastewater flow (including infiltration) under existing conditions is 61,139 gpd or 42.5 gallons per minute (gpm). The anticipated peak hourly wastewater flow including the proposed development is 112,686 gpd or 78.25 gpm.

5.0 HYDRAULIC MODEL DEVELOPMENT

WWE developed a hydraulic model to evaluate the wastewater contribution under existing conditions and with the inclusion of the Project. The analysis routed flows to the existing sanitary sewer interceptor located west of the development at manhole SSMH-0620 as noted on the ERWSD Web Map provided by ERWSD. This map is included in the appendices for reference. The hydraulic model was developed to evaluate the sanitary sewer main sizing requirements as defined in Section 2.3 of Appendix D to the ERWSD *Standard Specifications for Sewer Mains*. Below is a summary of the requirements listed in Section 2.3 of Appendix D:

- Sanitary sewer mains to be sized to collect and convey estimated peak hourly wastewater flows of the ultimate population of the tributary area to be served.
- Projected peak hourly flows in sanitary sewer mains 12 inches in diameter or smaller shall convey the flow at a depth of flow no greater than half of the inside diameter of the pipe (depth/Diameter not to exceed 0.50).
- All mains shall be designed to give mean velocities, when flowing full, of not less than two feet per second (2 fps) to insure self-cleaning, and maximum velocities of not more than ten feet per second (10 fps).

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The existing 74 SFE were divided into 8 service areas, with each service area being a single demand point in the model. The anticipated peak hourly wastewater flow for each service area was calculated by multiplying the number of SFE in a service area by the daily demand per SFE and by the peaking factor. See Figure 2: Existing Sanitary Analysis map attached to the end of this report for the additional information.

The same approach was taken for the proposed 72 SFE, totaling 140 SFE at ultimate buildout. The proposed 72 SFE were divided into 10 service areas, with each service area being a single demand point in the model. See Figure 3: Proposed Sanitary Analysis map attached to the end of this report for the additional information.

See the following tables for the distribution of wastewater flows at each service area. Table 1 provides information on the calculation of existing anticipated peak wastewater flows within the Project. Table 2 provides information on the calculation of existing and additional anticipated peak wastewater flows being proposed as part of the Project.

Table 2. Existing Conditions – Anticipated Peak Hourly Wastewater Flows

Service Area	Manhole	Direct SFE Input	Flow	
			(gpd)	(gpm)
Ex Area 1	SSMH-0209	28	23,134	16.07
Ex Area 2	SSMH-0180	6	4,957	3.44
Ex Area 3	SSMH-0080	6	4,957	3.44
Ex Area 4	SSMH-0100	7	5,783	4.02
Ex Area 5	SSMH-0120	5	4,131	2.87
Ex Area 6	SSMH-0060	6	4,957	3.44
Ex Area 7	SSMH-0040	10	8,262	5.74
Ex Area 8	SSMH-0320	6	4,957	3.44
Total		74	61,139	42.46

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Table 3. Proposed Conditions – Anticipated Peak Hourly Wastewater Flows

Service Area	Manhole	Number of Lots	Direct SFE Input	Flow	
				(gpd)	(gpm)
Ex Area 1	SSMH-0209		28	22,537	15.65
Ex Area 2A	SSMH-0180		4	3,220	2.24
Ex Area 2B	SSMH-0200		2	1,610	1.12
Ex Area 3	SSMH-0080		6	4,829	3.35
Ex Area 4	SSMH-0100		7	5,634	3.91
Ex Area 5	SSMH-0120		5	4,025	2.79
Ex Area 6	SSMH-0060		6	4,829	3.35
Ex Area 7	SSMH-0040		10	8,049	5.59
Prop Area 1	MH B-8	2	4	3,220	2.24
Prop Area 2	MH B-7	2	4	3,220	2.24
Prop Area 3	MH B-6	3	6	4,829	3.35
Prop Area 4	MH A-4	4	8	6,439	4.47
Prop Area 5	MH A-3	4	8	6,439	4.47
Prop Area 6	MH B-4	5	10	8,049	5.59
Prop Area 7	MH B-3	5	10	8,049	5.59
Prop Area 8	SSMH-0160	1	2	1,610	1.12
Prop Area 9	MH C-2	7	14	11,269	7.83
Prop Area 10*	MH C-3	6	6	4,829	3.35
Total			140.0	112,686	78.25

*Deed Restricted Units

6.0 HYDRAULIC MODEL ASSUMPTIONS AND EXCLUSIONS

Below is a list of the assumptions made to develop the hydraulic model.

- Existing and proposed sanitary sewer elevations and materials were provided by Civil Engineer.
- It is understood the existing conditions of the sanitary system provided by Civil Engineer were developed out of a combination of resources including ground survey by Gore Range Surveying and measurements by ERWSD.
- The existing sanitary trunk line on the west of the railroad tracks was modeled as 12-inch diameter PVC pipes. All other existing and proposed sanitary sewer mains were modeled as 8-inch diameter PVC pipes. The Manning's roughness coefficient or "n" value of 0.013 was used for all sewer mains in the hydraulic model in accordance with the ERWSD Rules and Regulations.
- Pipe lengths for both the existing system and proposed system were set based on the design plans by Civil Engineer.

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- Both the “Existing Service Areas” and the “Proposed Service Areas” SFE have anticipated peak hourly wastewater flows. Anticipated peak hourly wastewater flows were calculated based on the ERWSD’s recommended maximum month average daily wastewater flow (including infiltration), and the peaking factor was calculated in accordance with CDPHE’s Design Criteria.
- The Minturn North PUD sanitary sewer system will tie into the existing sewer interceptor at existing manhole MH-0520 via the existing 8-inch sewer main that flows east to west from 4th Street.

7.0 HYDRAULIC MODEL OUTPUT

Hydraulic modeling of existing and proposed sanitary sewer pipes was completed using Autodesk Storm and Sanitary Analysis 2022, Version 13.4. The hydraulic model electronic files are available upon request. The horizontal and vertical locations of system components in the models were exported from Autodesk Civil3D drawings provided by Civil Engineer. Output summaries from both models are provided in the appendices.

Table 3 and Table 4 provide a summary output for the anticipated peak hourly wastewater flow from the sanitary sewer analysis including relevant information for ERWSD review. Under both existing and proposed conditions, all analyzed pipes have a d/D ratio less than the required 0.5. Several existing pipes, which will remain in service, have slopes less than the required 0.7% and flow velocity less than the required 2 feet per second.

All proposed pipes have slopes greater than or equal to the required 0.7%. Many of the existing pipes, under proposed conditions, will convey more wastewater than existing conditions, but the flow increase will not cause the pipes to meet the 2 feet per second requirement.

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Table 4. Existing Conditions Sanitary Analysis (Peak Hourly Rate)

Pipe ID	Inlet	Outlet	Slope (%)	Diameter (in)	Flow (gpm)	Velocity (ft/s)	Flow Depth (ft)	(in)	d/D (in/in)
109	SSMH-0040	SSMH-0060	9.28%	8	5.7	2.44	0.03	0.36	0.05
110	SSMH-0060	SSMH-0140	2.89%	8	9.2	1.88	0.05	0.60	0.07
111	SSMH-0120	SSMH-0140	3.77%	8	10.3	2.14	0.05	0.60	0.07
112	SSMH-0100	SSMH-0120	0.36%	8	7.5	0.84	0.07	0.84	0.10
113	SSMH-0080	SSMH-0100	0.84%	8	3.4	0.91	0.04	0.48	0.06
114	SSMH-0180	SSMH-0200	3.83%	8	3.4	1.54	0.03	0.36	0.04
115	SSMH-0210	SSMH-0211	9.75%	8	16.2	3.41	0.05	0.60	0.07
116	SSMH-0211	SSMH-0220	0.65%	8	16.1	1.33	0.09	1.08	0.13
117	SSMH-0220	SSMH-0240	0.70%	8	19.5	1.45	0.09	1.08	0.13
118	SSMH-0240	SSMH-0260	0.39%	8	19.5	1.18	0.11	1.32	0.16
119	SSMH-0260	SSMH-0280	1.24%	8	19.5	1.77	0.08	0.96	0.12
120	SSMH-0280	SSMH-0340	1.62%	8	19.5	1.94	0.08	0.96	0.12
121	SSMH-0320	SSMH-0340	0.53%	8	3.4	0.77	0.04	0.48	0.06
122	SSMH-0300	SSMH-0320	2.08%	8	0.0	0.00	0.00	0.00	0.00
123	SSMH-0140	SSMH-0160	6.79%	8	19.5	3.19	0.05	0.60	0.08
124	SSMH-0160	SSMH-0340	5.43%	8	19.5	2.94	0.06	0.72	0.09
125	SSMH-0340	SSMH-0360	4.20%	8	42.5	3.41	0.09	1.08	0.14
126	SSMH-0360	SSMH-0520	1.77%	8	42.5	2.52	0.11	1.32	0.17
127	SSMH-0200	SSMH-0220	6.46%	8	3.4	1.85	0.02	0.24	0.03
128	SSMH-0209	SSMH-0210	5.84%	8	16.1	2.86	0.05	0.60	0.08
129	SSMH-0520	SSMH-0540	0.89%	12	42.5	1.88	0.12	1.44	0.12
130	SSMH-0540	SSMH-0560	0.88%	12	42.5	1.88	0.12	1.44	0.12
131	SSMH-0560	SSMH-0580	0.78%	12	42.5	1.80	0.12	1.44	0.12
132	SSMH-0580	SSMH-0600	6.50%	12	42.5	3.74	0.07	0.84	0.07
133	SSMH-0600	SSMH-0620	2.02%	12	42.5	2.48	0.10	1.20	0.10
134	SSMH-0620	SSMH-0640	1.12%	12	42.5	1.95	0.11	1.32	0.11

* Pipes not meeting ERWSD criteria have been highlighted and red text indicates value not meeting criteria.

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Table 5. Proposed Conditions Sanitary Analysis (Peak Hourly Rate)

Pipe ID	Inlet	Outlet	Slope	Diameter	Flow	Velocity	Flow Depth		d/D	Doesn't Meet Criteria Under Existing Conditions
			(%)	(in)	(gpm)	(ft/s)	(ft)	(in)	(in/in)	
109	SSMH-0040	SSMH-0060	9.28%	8	5.6	2.42	0.03	0.36	0.04	
110	SSMH-0060	SSMH-0140	2.89%	8	8.9	1.86	0.05	0.60	0.07	X
111	SSMH-0120	SSMH-0140	3.77%	8	10.1	2.12	0.05	0.60	0.07	
112	SSMH-0100	SSMH-0120	0.36%	8	7.3	0.83	0.07	0.84	0.10	X
113	SSMH-0080	SSMH-0100	0.84%	8	3.4	0.90	0.04	0.48	0.06	X
114	SSMH-0180	SSMH-0200	3.83%	8	2.2	1.35	0.02	0.24	0.03	X
115	SSMH-0210	SSMH-0211	9.75%	8	15.7	3.39	0.05	0.60	0.07	
116	SSMH-0211	SSMH-0220	0.65%	8	15.7	1.32	0.09	1.08	0.13	X
117	SSMH-0220	SSMH-0240	0.70%	8	19.0	1.44	0.09	1.08	0.13	X
118	SSMH-0240	SSMH-0260	0.39%	8	19.0	1.17	0.11	1.32	0.16	X
119	SSMH-0260	SSMH-0280	1.24%	8	19.0	1.76	0.08	0.96	0.12	X
120	SSMH-0280	SSMH-0340	1.62%	8	19.0	1.92	0.08	0.96	0.12	X
121A	SSMH-0320	MH B-1	0.53%	8	0.0	0.00	0.00	0.00	0.00	X
121B	MH B-1	SSMH-0340	0.52%	8	19.0	1.29	0.10	1.20	0.15	X
122	SSMH-0300	SSMH-0320	2.08%	8	0.0	0.00	0.00	0.00	0.00	X
123	SSMH-0140	SSMH-0160	6.79%	8	19.0	3.17	0.05	0.60	0.07	
124A	SSMH-0160	MH A-1	5.43%	8	20.1	2.97	0.06	0.72	0.09	
124B	MH A-1	MH C-1	5.43%	8	29.1	3.23	0.07	0.84	0.10	
124C	MH C-1	SSMH-0340	5.42%	8	40.2	3.69	0.08	0.96	0.12	
125	SSMH-0340	SSMH-0360	4.20%	8	78.3	4.10	0.12	1.44	0.18	
126	SSMH-0360	SSMH-0520	1.77%	8	78.3	3.02	0.15	1.80	0.22	
127	SSMH-0200	SSMH-0220	6.46%	8	3.4	1.84	0.02	0.24	0.03	X
128	SSMH-0209	SSMH-0210	5.84%	8	15.7	2.83	0.05	0.60	0.07	
129	SSMH-0520	SSMH-0540	0.89%	12	78.3	2.25	0.15	1.80	0.15	X
130	SSMH-0540	SSMH-0560	0.88%	12	78.3	2.25	0.15	1.80	0.15	X
131	SSMH-0560	SSMH-0580	0.78%	12	78.3	2.15	0.16	1.92	0.16	X
132	SSMH-0580	SSMH-0600	6.50%	12	78.3	4.48	0.10	1.20	0.10	
133	SSMH-0600	SSMH-0620	2.02%	12	78.3	3.02	0.13	1.56	0.13	
134	SSMH-0620	Out-1134	1.12%	12	78.3	2.45	0.15	1.80	0.15	X
A2 - A1	MH A-2	MH A-1	1.60%	8	8.9	1.53	0.05	0.60	0.07	
A3 - A2	MH A-3	MH A-2	2.80%	8	8.9	1.84	0.05	0.60	0.07	
A4 - A3	MH A-4	MH A-3	7.20%	8	4.5	2.08	0.03	0.36	0.04	
B2 - B1	MH B-2	MH B-1	2.11%	8	19.0	2.03	0.07	0.84	0.10	
B3 - B2	MH B-3	MH B-2	2.05%	8	19.0	2.01	0.07	0.84	0.10	
B4 - B3	MH B-4	MH B-3	2.60%	8	13.4	2.03	0.06	0.72	0.09	
B5 - B4	MH B-5	MH B-4	3.41%	8	7.8	1.90	0.04	0.48	0.06	
B6 - B5	MH B-6	MH B-5	5.60%	8	7.8	2.32	0.04	0.48	0.06	
B7 - B6	MH B-7	MH B-6	6.69%	8	4.5	2.05	0.03	0.36	0.04	
B8 - B7	MH B-8	MH B-7	8.00%	8	2.2	1.73	0.02	0.24	0.03	
C2 - C1	MH C-2	MH C-1	1.80%	8	11.2	1.69	0.06	0.72	0.09	
C3 - C2	MH C-3	MH C-2	2.00%	8	3.4	1.21	0.03	0.36	0.04	

* Pipes not meeting ERWSD criteria have been highlighted and red text indicates value not meeting criteria.

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8.0 CONCLUSIONS AND RECOMMENDATIONS

There are several existing pipes not meeting the criteria for the flow velocity, under anticipated peak hourly flow, and slope. Construction of the proposed development will improve the flow conditions with the increase in wastewater flow, but the pipes still will not realize flow exceeding 2 feet per second. The sanitary sewer system operators will need to monitor these pipe reaches and perform flushing maintenance activities periodically to avoid clogging.

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9.0 REFERENCES

Eagle River Water and Sanitation District (ERWSD). Rules and Regulations for Water and Wastewater Service. March 2019.

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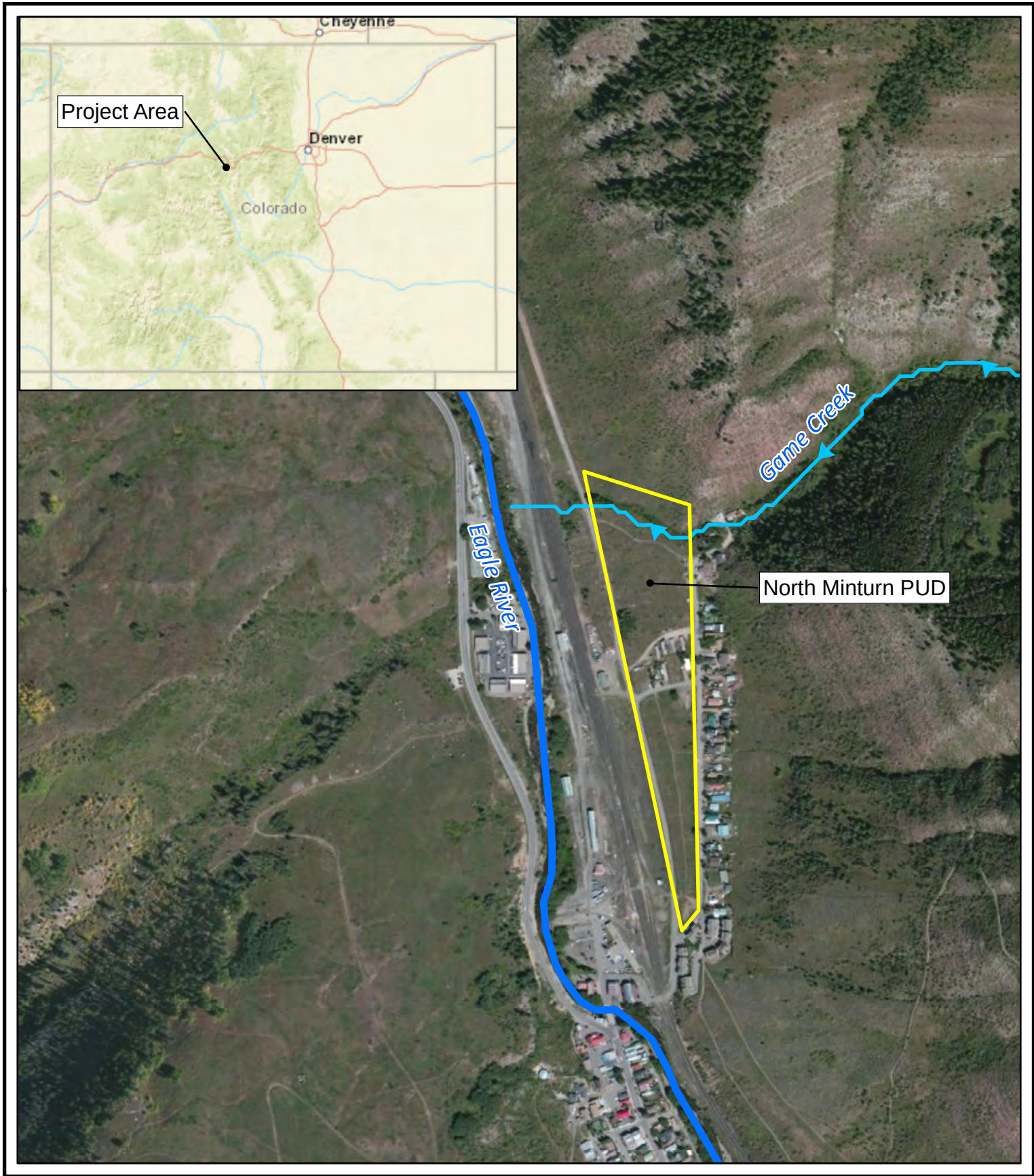
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Minturn North PUD: Sanitary Sewer Main Analysis

FIGURES

FIGURE 1

Location and Vicinity Map



Path: G:\WWE\191-092\000\GIS\2_MXD\Location and Vicinity Map.mxd

MINTURN, CO

LOCATION AND VICINITY MAP

MINTURN NORTH PUD

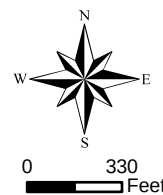


FIGURE
1

FIGURE 2

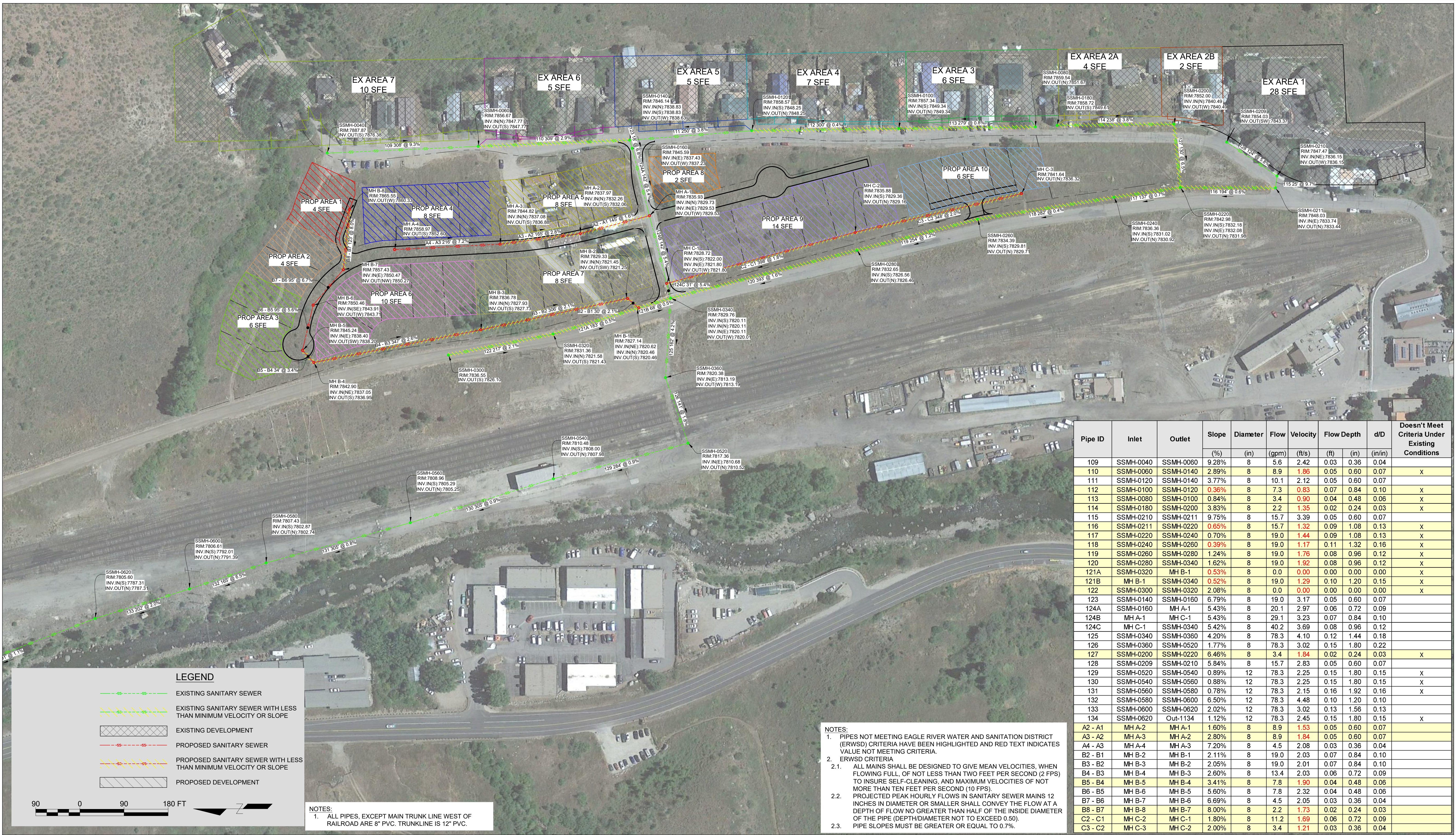
Existing Sanitary Sewer System Map



EXISTING SANITARY ANALYSIS NORTH MINTURN PUD

FIGURE 3

Proposed Sanitary Sewer System Map

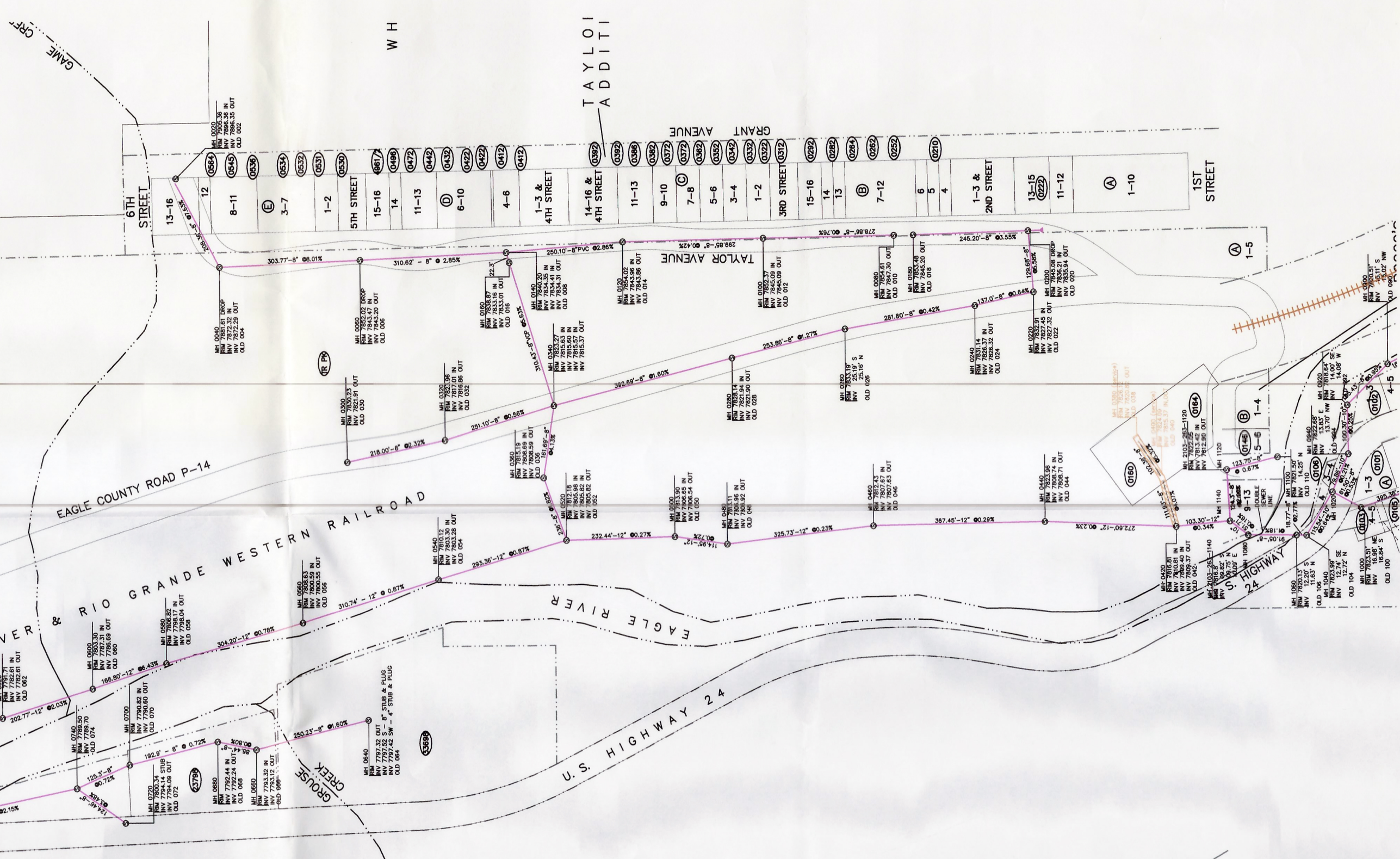


Minturn North PUD: Sanitary Sewer Main Analysis

APPENDICES

APPENDIX A

ERWSD Sewer Map



APPENDIX B

Autodesk Storm and Sanitary Analysis Outputs

Project Description

File Name Existing Sanitary Model.SPF

Project Options

Flow Units GPM
Elevation Type Elevation
Hydrology Method Rational
Time of Concentration (TOC) Method User-Defined
Link Routing Method Kinematic Wave
Enable Overflow Ponding at Nodes YES
Skip Steady State Analysis Time Periods NO

Analysis Options

Start Analysis On 00:00:00 0:00:00
End Analysis On 00:00:00 0:00:00
Start Reporting On 00:00:00 0:00:00
Antecedent Dry Days 0 days
Runoff (Dry Weather) Time Step 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step 0 00:05:00 days hh:mm:ss
Reporting Time Step 0 00:05:00 days hh:mm:ss
Routing Time Step 30 seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins.....	0
Nodes.....	27
<i>Junctions</i>	26
<i>Outfalls</i>	1
<i>Flow Diversions</i>	0
<i>Inlets</i>	0
<i>Storage Nodes</i>	0
Links.....	26
<i>Channels</i>	0
<i>Pipes</i>	26
<i>Pumps</i>	0
<i>Orifices</i>	0
<i>Weirs</i>	0
<i>Outlets</i>	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period..... 2 year(s)

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooding Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(gpm)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	SSMH-0040	Junction	7876.38	7887.87	7876.38	7887.87	0.00	5.74	7876.41	0.00	11.46	0 00:00	0.00	0.00
2	SSMH-0060	Junction	7847.77	7856.67	7847.77	7856.67	0.00	9.18	7847.82	0.00	8.85	0 00:00	0.00	0.00
3	SSMH-0080	Junction	7851.67	7859.54	7851.67	7859.54	0.00	3.44	7851.71	0.00	7.83	0 00:00	0.00	0.00
4	SSMH-0100	Junction	7849.34	7857.34	7849.34	7857.34	0.00	7.46	7849.41	0.00	7.93	0 00:00	0.00	0.00
5	SSMH-0120	Junction	7848.25	7858.57	7848.25	7858.57	0.00	10.33	7848.32	0.00	10.26	0 00:00	0.00	0.00
6	SSMH-0140	Junction	7838.63	7846.14	7838.63	7846.14	0.00	19.51	7838.88	0.00	7.27	0 00:00	0.00	0.00
7	SSMH-0160	Junction	7837.23	7845.59	7837.23	7845.59	0.00	19.51	7837.48	0.00	8.10	0 00:00	0.00	0.00
8	SSMH-0180	Junction	7849.61	7858.72	7849.61	7858.72	0.00	3.44	7849.64	0.00	9.08	0 00:00	0.00	0.00
9	SSMH-0200	Junction	7840.49	7852.00	7840.49	7852.00	0.00	3.44	7840.52	0.00	11.48	0 00:00	0.00	0.00
10	SSMH-0209	Junction	7843.37	7854.03	7843.37	7854.03	0.00	16.07	7843.42	0.00	10.61	0 00:00	0.00	0.00
11	SSMH-0210	Junction	7836.15	7847.47	7836.15	7847.47	0.00	16.07	7836.20	0.00	11.27	0 00:00	0.00	0.00
12	SSMH-0211	Junction	7833.44	7848.03	7833.44	7848.03	0.00	16.16	7833.79	0.00	14.25	0 00:00	0.00	0.00
13	SSMH-0220	Junction	7831.98	7842.98	7831.98	7842.98	0.00	19.51	7832.27	0.00	10.72	0 00:00	0.00	0.00
14	SSMH-0240	Junction	7830.92	7836.36	7830.92	7836.36	0.00	19.51	7831.11	0.00	5.24	0 00:00	0.00	0.00
15	SSMH-0260	Junction	7829.71	7834.39	7829.71	7834.39	0.00	19.51	7829.92	0.00	4.47	0 00:00	0.00	0.00
16	SSMH-0280	Junction	7826.46	7832.65	7826.46	7832.65	0.00	19.51	7826.64	0.00	6.01	0 00:00	0.00	0.00
17	SSMH-0300	Junction	7826.10	7836.55	7826.10	7836.55	0.00	0.00	7826.10	0.00	10.45	0 00:00	0.00	0.00
18	SSMH-0320	Junction	7821.43	7831.36	7821.43	7831.36	0.00	3.44	7821.58	0.00	9.78	0 00:00	0.00	0.00
19	SSMH-0340	Junction	7820.01	7829.76	7820.01	7829.76	0.00	42.46	7820.19	0.00	9.57	0 00:00	0.00	0.00
20	SSMH-0360	Junction	7813.19	7820.38	7813.19	7820.38	0.00	42.46	7813.30	0.00	7.08	0 00:00	0.00	0.00
21	SSMH-0520	Junction	7810.52	7817.36	7810.52	7817.36	0.00	42.46	7810.79	0.00	6.57	0 00:00	0.00	0.00
22	SSMH-0540	Junction	7807.98	7810.48	7807.98	7810.48	0.00	42.46	7808.12	0.00	2.37	0 00:00	0.00	0.00
23	SSMH-0560	Junction	7805.25	7808.96	7805.25	7808.96	0.00	42.46	7805.41	0.00	3.55	0 00:00	0.00	0.00
24	SSMH-0580	Junction	7802.74	7807.43	7802.74	7807.43	0.00	42.46	7802.99	0.00	4.44	0 00:00	0.00	0.00
25	SSMH-0600	Junction	7791.39	7806.61	7791.39	7806.61	0.00	42.46	7792.08	0.00	14.53	0 00:00	0.00	0.00
26	SSMH-0620	Junction	7787.31	7805.60	7787.31	7805.60	0.00	42.46	7787.42	0.00	18.17	0 00:00	0.00	0.00
27	SSMH-0640	Outfall	7782.95					42.46	7783.06					

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Reported	Surcharged Condition
					(ft)	(ft)	(ft)	(%)	(in)		(gpm)	(gpm)		(ft/sec)	(ft)		(min)	
1	109	Pipe	SSMH-0040	SSMH-0060	308.45	7876.38	7847.77	9.2800	8.000	0.0130	5.74	1651.83	0.00	2.44	0.03	0.04	0.00	Calculated
2	110	Pipe	SSMH-0060	SSMH-0140	308.92	7847.77	7838.83	2.8900	8.000	0.0130	9.18	922.67	0.01	1.88	0.05	0.07	0.00	Calculated
3	111	Pipe	SSMH-0120	SSMH-0140	249.73	7848.25	7838.83	3.7700	8.000	0.0130	10.33	1053.38	0.01	2.14	0.05	0.07	0.00	Calculated
4	112	Pipe	SSMH-0100	SSMH-0120	299.80	7849.34	7848.25	0.3600	8.000	0.0130	7.46	327.04	0.02	0.84	0.07	0.11	0.00	Calculated
5	113	Pipe	SSMH-0080	SSMH-0100	278.63	7851.67	7849.34	0.8400	8.000	0.0130	3.44	495.98	0.01	0.91	0.04	0.06	0.00	Calculated
6	114	Pipe	SSMH-0180	SSMH-0200	238.39	7849.61	7840.49	3.8300	8.000	0.0130	3.44	1060.84	0.00	1.54	0.03	0.04	0.00	Calculated
7	115	Pipe	SSMH-0210	SSMH-0211	24.72	7836.15	7833.74	9.7500	8.000	0.0130	16.16	1693.44	0.01	3.41	0.05	0.07	0.00	Calculated
8	116	Pipe	SSMH-0211	SSMH-0220	194.02	7833.44	7832.18	0.6500	8.000	0.0130	16.07	437.08	0.04	1.33	0.09	0.13	0.00	Calculated
9	117	Pipe	SSMH-0220	SSMH-0240	136.89	7831.98	7831.02	0.7000	8.000	0.0130	19.51	454.20	0.04	1.45	0.09	0.14	0.00	Calculated
10	118	Pipe	SSMH-0240	SSMH-0260	281.73	7830.92	7829.81	0.3900	8.000	0.0130	19.51	340.44	0.06	1.18	0.11	0.16	0.00	Calculated
11	119	Pipe	SSMH-0260	SSMH-0280	253.69	7829.71	7826.56	1.2400	8.000	0.0130	19.51	604.37	0.03	1.77	0.08	0.12	0.00	Calculated
12	120	Pipe	SSMH-0280	SSMH-0340	392.52	7826.46	7820.11	1.6200	8.000	0.0130	19.51	689.85	0.03	1.94	0.08	0.12	0.00	Calculated
13	121	Pipe	SSMH-0320	SSMH-0340	250.57	7821.43	7820.11	0.5300	8.000	0.0130	3.44	393.66	0.01	0.77	0.04	0.07	0.00	Calculated
14	122	Pipe	SSMH-0300	SSMH-0320	217.47	7826.10	7821.58	2.0800	8.000	0.0130	0.00	781.93	0.00	0.00	0.00	0.00	0.00	Calculated
15	123	Pipe	SSMH-0140	SSMH-0160	17.67	7838.63	7837.43	6.7900	8.000	0.0130	19.51	1413.47	0.01	3.19	0.05	0.08	0.00	Calculated
16	124	Pipe	SSMH-0160	SSMH-0340	315.46	7837.23	7820.11	5.4300	8.000	0.0130	19.51	1263.51	0.02	2.94	0.06	0.09	0.00	Calculated
17	125	Pipe	SSMH-0340	SSMH-0360	162.36	7820.01	7813.19	4.2000	8.000	0.0130	42.46	1111.61	0.04	3.41	0.09	0.13	0.00	Calculated
18	126	Pipe	SSMH-0360	SSMH-0520	141.43	7813.19	7810.68	1.7700	8.000	0.0130	42.46	722.55	0.06	2.52	0.11	0.16	0.00	Calculated
19	127	Pipe	SSMH-0200	SSMH-0220	130.10	7840.49	7832.08	6.4600	8.000	0.0130	3.44	1379.00	0.00	1.85	0.02	0.04	0.00	Calculated
20	128	Pipe	SSMH-0209	SSMH-0210	123.66	7843.37	7836.15	5.8400	8.000	0.0130	16.07	1310.53	0.01	2.86	0.05	0.08	0.00	Calculated
21	129	Pipe	SSMH-0520	SSMH-0540	284.18	7810.52	7808.00	0.8900	12.000	0.0130	42.46	1505.83	0.03	1.88	0.12	0.12	0.00	Calculated
22	130	Pipe	SSMH-0540	SSMH-0560	304.97	7807.98	7805.29	0.8800	12.000	0.0130	42.46	1501.84	0.03	1.88	0.12	0.12	0.00	Calculated
23	131	Pipe	SSMH-0560	SSMH-0580	305.35	7805.25	7802.87	0.7800	12.000	0.0130	42.46	1411.77	0.03	1.80	0.12	0.12	0.00	Calculated
24	132	Pipe	SSMH-0580	SSMH-0600	165.05	7802.74	7792.01	6.5000	12.000	0.0130	42.46	4077.20	0.01	3.74	0.07	0.07	0.00	Calculated
25	133	Pipe	SSMH-0600	SSMH-0620	201.66	7791.39	7787.31	2.0200	12.000	0.0130	42.46	2274.57	0.02	2.48	0.10	0.10	0.00	Calculated
26	134	Pipe	SSMH-0620	SSMH-0640	390.66	7787.31	7782.95	1.1200	12.000	0.0130	42.46	1689.35	0.03	1.95	0.11	0.11	0.00	Calculated

Junction Input

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1 SSMH-0040	7876.38	7887.87	11.49	7876.38	0.00	7887.87	0.00	0.00	0.00
2 SSMH-0060	7847.77	7856.67	8.90	7847.77	0.00	7856.67	0.00	0.00	0.00
3 SSMH-0080	7851.67	7859.54	7.87	7851.67	0.00	7859.54	0.00	0.00	0.00
4 SSMH-0100	7849.34	7857.34	8.00	7849.34	0.00	7857.34	0.00	0.00	0.00
5 SSMH-0120	7848.25	7858.57	10.32	7848.25	0.00	7858.57	0.00	0.00	0.00
6 SSMH-0140	7838.63	7846.14	7.51	7838.63	0.00	7846.14	0.00	0.00	0.00
7 SSMH-0160	7837.23	7845.59	8.36	7837.23	0.00	7845.59	0.00	0.00	0.00
8 SSMH-0180	7849.61	7858.72	9.11	7849.61	0.00	7858.72	0.00	0.00	0.00
9 SSMH-0200	7840.49	7852.00	11.51	7840.49	0.00	7852.00	0.00	0.00	0.00
10 SSMH-0209	7843.37	7854.03	10.66	7843.37	0.00	7854.03	0.00	0.00	0.00
11 SSMH-0210	7836.15	7847.47	11.32	7836.15	0.00	7847.47	0.00	0.00	0.00
12 SSMH-0211	7833.44	7848.03	14.59	7833.44	0.00	7848.03	0.00	0.00	0.00
13 SSMH-0220	7831.98	7842.98	11.00	7831.98	0.00	7842.98	0.00	0.00	0.00
14 SSMH-0240	7830.92	7836.36	5.44	7830.92	0.00	7836.36	0.00	0.00	0.00
15 SSMH-0260	7829.71	7834.39	4.68	7829.71	0.00	7834.39	0.00	0.00	0.00
16 SSMH-0280	7826.46	7832.65	6.19	7826.46	0.00	7832.65	0.00	0.00	0.00
17 SSMH-0300	7826.10	7836.55	10.45	7826.10	0.00	7836.55	0.00	0.00	0.00
18 SSMH-0320	7821.43	7831.36	9.93	7821.43	0.00	7831.36	0.00	0.00	0.00
19 SSMH-0340	7820.01	7829.76	9.75	7820.01	0.00	7829.76	0.00	0.00	0.00
20 SSMH-0360	7813.19	7820.38	7.19	7813.19	0.00	7820.38	0.00	0.00	0.00
21 SSMH-0520	7810.52	7817.36	6.84	7810.52	0.00	7817.36	0.00	0.00	0.00
22 SSMH-0540	7807.98	7810.48	2.50	7807.98	0.00	7810.48	0.00	0.00	0.00
23 SSMH-0560	7805.25	7808.96	3.71	7805.25	0.00	7808.96	0.00	0.00	0.00
24 SSMH-0580	7802.74	7807.43	4.69	7802.74	0.00	7807.43	0.00	0.00	0.00
25 SSMH-0600	7791.39	7806.61	15.22	7791.39	0.00	7806.61	0.00	0.00	0.00
26 SSMH-0620	7787.31	7805.60	18.29	7787.31	0.00	7805.60	0.00	0.00	0.00

Junction Results

SN Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surcharge Depth Attained	Min Average HGL Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooded Volume	Total Time Flooded
	(gpm)	(gpm)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1 SSMH-0040	5.74	5.74	7876.41	0.03	0.00	11.46	7876.41	0.03	0 00:00	0 00:00	0.00	0.00
2 SSMH-0060	9.18	3.44	7847.82	0.05	0.00	8.85	7847.82	0.05	0 00:33	0 00:00	0.00	0.00
3 SSMH-0080	3.44	3.44	7851.71	0.04	0.00	7.83	7851.71	0.04	0 00:00	0 00:00	0.00	0.00
4 SSMH-0100	7.46	4.02	7849.41	0.07	0.00	7.93	7849.41	0.07	0 01:16	0 00:00	0.00	0.00
5 SSMH-0120	10.33	2.87	7848.32	0.07	0.00	10.26	7848.32	0.07	0 01:36	0 00:00	0.00	0.00
6 SSMH-0140	19.51	0.00	7838.88	0.25	0.00	7.27	7838.88	0.25	0 00:44	0 00:00	0.00	0.00
7 SSMH-0160	19.51	0.00	7837.48	0.25	0.00	8.10	7837.48	0.25	0 01:38	0 00:00	0.00	0.00
8 SSMH-0180	3.44	3.44	7849.64	0.03	0.00	9.08	7849.64	0.03	0 00:00	0 00:00	0.00	0.00
9 SSMH-0200	3.44	0.00	7840.52	0.03	0.00	11.48	7840.52	0.03	0 00:40	0 00:00	0.00	0.00
10 SSMH-0209	16.07	16.07	7843.42	0.05	0.00	10.61	7843.42	0.05	0 00:00	0 00:00	0.00	0.00
11 SSMH-0210	16.07	0.00	7836.20	0.05	0.00	11.27	7836.20	0.05	0 00:11	0 00:00	0.00	0.00
12 SSMH-0211	16.16	0.00	7833.79	0.35	0.00	14.25	7833.79	0.35	0 00:02	0 00:00	0.00	0.00
13 SSMH-0220	19.51	0.00	7832.27	0.29	0.00	10.72	7832.27	0.29	0 00:42	0 00:00	0.00	0.00
14 SSMH-0240	19.51	0.00	7831.11	0.19	0.00	5.24	7831.11	0.19	0 00:45	0 00:00	0.00	0.00
15 SSMH-0260	19.51	0.00	7829.92	0.21	0.00	4.47	7829.92	0.21	0 01:08	0 00:00	0.00	0.00
16 SSMH-0280	19.51	0.00	7826.64	0.18	0.00	6.01	7826.64	0.18	0 01:09	0 00:00	0.00	0.00
17 SSMH-0300	0.00	0.00	7826.10	0.00	0.00	10.45	7826.10	0.00	0 00:00	0 00:00	0.00	0.00
18 SSMH-0320	3.44	3.44	7821.58	0.15	0.00	9.78	7821.58	0.15	0 00:00	0 00:00	0.00	0.00
19 SSMH-0340	42.46	0.00	7820.19	0.18	0.00	9.57	7820.19	0.18	0 01:13	0 00:00	0.00	0.00
20 SSMH-0360	42.46	0.00	7813.30	0.11	0.00	7.08	7813.30	0.11	0 01:37	0 00:00	0.00	0.00
21 SSMH-0520	42.46	0.00	7810.79	0.27	0.00	6.57	7810.79	0.27	0 01:37	0 00:00	0.00	0.00
22 SSMH-0540	42.46	0.00	7808.12	0.14	0.00	2.37	7808.11	0.13	0 01:40	0 00:00	0.00	0.00
23 SSMH-0560	42.46	0.00	7805.41	0.16	0.00	3.55	7805.40	0.15	0 01:41	0 00:00	0.00	0.00
24 SSMH-0580	42.46	0.00	7802.99	0.25	0.00	4.44	7802.99	0.25	0 01:42	0 00:00	0.00	0.00
25 SSMH-0600	42.46	0.00	7792.08	0.69	0.00	14.53	7792.08	0.69	0 01:42	0 00:00	0.00	0.00
26 SSMH-0620	42.46	0.00	7787.42	0.11	0.00	18.17	7787.42	0.11	0 01:44	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length	Inlet Invert	Inlet Invert Offset	Outlet Invert	Outlet Invert Offset	Total Drop	Average Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(in)	(in)					(gpm)		
1	109	308.45	7876.38	0.00	7847.77	0.00	28.61	9.2800	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
2	110	308.92	7847.77	0.00	7838.83	0.20	8.94	2.8900	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
3	111	249.73	7848.25	0.00	7838.83	0.20	9.42	3.7700	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
4	112	299.80	7849.34	0.00	7848.25	0.00	1.09	0.3600	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
5	113	278.63	7851.67	0.00	7849.34	0.00	2.33	0.8400	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
6	114	238.39	7849.61	0.00	7840.49	0.00	9.12	3.8300	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
7	115	24.72	7836.15	0.00	7833.74	0.30	2.41	9.7500	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
8	116	194.02	7833.44	0.00	7832.18	0.20	1.26	0.6500	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
9	117	136.89	7831.98	0.00	7831.02	0.10	0.96	0.7000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
10	118	281.73	7830.92	0.00	7829.81	0.10	1.11	0.3900	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
11	119	253.69	7829.71	0.00	7826.56	0.10	3.15	1.2400	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
12	120	392.52	7826.46	0.00	7820.11	0.10	6.35	1.6200	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13	121	250.57	7821.43	0.00	7820.11	0.10	1.32	0.5300	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
14	122	217.47	7826.10	0.00	7821.58	0.15	4.52	2.0800	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
15	123	17.67	7838.63	0.00	7837.43	0.20	1.20	6.7900	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
16	124	315.46	7837.23	0.00	7820.11	0.10	17.12	5.4300	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
17	125	162.36	7820.01	0.00	7813.19	0.00	6.82	4.2000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
18	126	141.43	7813.19	0.00	7810.68	0.16	2.51	1.7700	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
19	127	130.10	7840.49	0.00	7832.08	0.10	8.41	6.4600	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
20	128	123.66	7843.37	0.00	7836.15	0.00	7.22	5.8400	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
21	129	284.18	7810.52	0.00	7808.00	0.02	2.52	0.8900	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
22	130	304.97	7807.98	0.00	7805.29	0.04	2.69	0.8800	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
23	131	305.35	7805.25	0.00	7802.87	0.13	2.38	0.7800	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
24	132	165.05	7802.74	0.00	7792.01	0.62	10.73	6.5000	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
25	133	201.66	7791.39	0.00	7787.31	0.00	4.08	2.0200	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
26	134	390.66	7787.31	0.00	7782.95	0.00	4.36	1.1200	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
		(gpm)	(days hh:mm)	(gpm)		(ft/sec)	(min)	(ft)		(min)		
1	109	5.74	0 00:33	1651.83	0.00	2.44	2.11	0.03	0.04	0.00		Calculated
2	110	9.18	0 00:44	922.67	0.01	1.88	2.74	0.05	0.07	0.00		Calculated
3	111	10.33	0 01:37	1053.38	0.01	2.14	1.94	0.05	0.07	0.00		Calculated
4	112	7.46	0 01:36	327.04	0.02	0.84	5.95	0.07	0.11	0.00		Calculated
5	113	3.44	0 01:16	495.98	0.01	0.91	5.10	0.04	0.06	0.00		Calculated
6	114	3.44	0 00:40	1060.84	0.00	1.54	2.58	0.03	0.04	0.00		Calculated
7	115	16.16	0 00:02	1693.44	0.01	3.41	0.12	0.05	0.07	0.00		Calculated
8	116	16.07	0 00:43	437.08	0.04	1.33	2.43	0.09	0.13	0.00		Calculated
9	117	19.51	0 00:45	454.20	0.04	1.45	1.57	0.09	0.14	0.00		Calculated
10	118	19.51	0 01:10	340.44	0.06	1.18	3.98	0.11	0.16	0.00		Calculated
11	119	19.51	0 01:11	604.37	0.03	1.77	2.39	0.08	0.12	0.00		Calculated
12	120	19.51	0 01:13	689.85	0.03	1.94	3.37	0.08	0.12	0.00		Calculated
13	121	3.44	0 01:22	393.66	0.01	0.77	5.42	0.04	0.07	0.00		Calculated
14	122	0.00	0 00:00	781.93	0.00	0.00		0.00	0.00	0.00		Calculated
15	123	19.51	0 01:38	1413.47	0.01	3.19	0.09	0.05	0.08	0.00		Calculated
16	124	19.51	0 01:37	1263.51	0.02	2.94	1.79	0.06	0.09	0.00		Calculated
17	125	42.46	0 01:38	1111.61	0.04	3.41	0.79	0.09	0.13	0.00		Calculated
18	126	42.46	0 01:39	722.55	0.06	2.52	0.94	0.11	0.16	0.00		Calculated
19	127	3.44	0 00:40	1379.00	0.00	1.85	1.17	0.02	0.04	0.00		Calculated
20	128	16.07	0 00:11	1310.53	0.01	2.86	0.72	0.05	0.08	0.00		Calculated
21	129	42.46	0 01:40	1505.83	0.03	1.88	2.52	0.12	0.12	0.00		Calculated
22	130	42.46	0 01:41	1501.84	0.03	1.88	2.70	0.12	0.12	0.00		Calculated
23	131	42.46	0 01:42	1411.77	0.03	1.80	2.83	0.12	0.12	0.00		Calculated
24	132	42.46	0 01:43	4077.20	0.01	3.74	0.74	0.07	0.07	0.00		Calculated
25	133	42.46	0 01:44	2274.57	0.02	2.48	1.36	0.10	0.10	0.00		Calculated
26	134	42.46	0 01:48	1689.35	0.03	1.95	3.34	0.11	0.11	0.00		Calculated

Project Description

File Name Proposed Sanitary Model.SPF

Project Options

Flow Units GPM
Elevation Type Elevation
Hydrology Method Rational
Time of Concentration (TOC) Method User-Defined
Link Routing Method Kinematic Wave
Enable Overflow Ponding at Nodes YES
Skip Steady State Analysis Time Periods NO

Analysis Options

Start Analysis On 00:00:00 0:00:00
End Analysis On 00:00:00 0:00:00
Start Reporting On 00:00:00 0:00:00
Antecedent Dry Days 0 days
Runoff (Dry Weather) Time Step 0 01:00:00 days hh:mm:ss
Runoff (Wet Weather) Time Step 0 00:05:00 days hh:mm:ss
Reporting Time Step 0 00:05:00 days hh:mm:ss
Routing Time Step 30 seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins.....	0
Nodes.....	42
<i>Junctions</i>	41
<i>Outfalls</i>	1
<i>Flow Diversions</i>	0
<i>Inlets</i>	0
<i>Storage Nodes</i>	0
Links.....	41
<i>Channels</i>	0
<i>Pipes</i>	41
<i>Pumps</i>	0
<i>Orifices</i>	0
<i>Weirs</i>	0
<i>Outlets</i>	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period..... 2 year(s)

Node Summary

SN	Element ID	Element Type	Invert Elevation	Ground/Rim (Max) Elevation	Initial Water Elevation	Surcharge Elevation	Ponded Area	Peak Inflow	Max HGL Elevation Attained	Max Surcharge Depth Attained	Min Freeboard Attained	Time of Peak Flooding Occurrence	Total Flooding Volume	Total Time Flooded
			(ft)	(ft)	(ft)	(ft)	(ft²)	(gpm)	(ft)	(ft)	(ft)	(days hh:mm)	(ac-in)	(min)
1	MH A-1	Junction	7829.53	7835.93	7829.53	7835.93	10.00	29.05	7829.78	0.00	6.14	0 00:00	0.00	0.00
2	MH A-2	Junction	7831.11	7837.36	7831.11	7837.36	10.00	8.94	7832.31	0.00	5.05	0 00:00	0.00	0.00
3	MH A-3	Junction	7836.38	7844.82	7836.38	7844.82	10.00	8.94	7837.11	0.00	7.72	0 00:00	0.00	0.00
4	MH A-4	Junction	7852.11	7858.97	7852.11	7858.97	10.00	4.47	7852.63	0.00	6.34	0 00:00	0.00	0.00
5	MH B-1	Junction	7820.46	7827.14	7820.46	7827.14	10.00	19.01	7820.69	0.00	6.45	0 00:00	0.00	0.00
6	MH B-2	Junction	7821.22	7829.33	7821.22	7829.33	10.00	19.01	7821.52	0.00	7.81	0 00:00	0.00	0.00
7	MH B-3	Junction	7827.54	7836.78	7827.54	7836.78	10.00	19.01	7827.99	0.00	8.79	0 00:00	0.00	0.00
8	MH B-4	Junction	7836.07	7842.90	7836.07	7842.90	10.00	13.42	7837.09	0.00	5.81	0 00:00	0.00	0.00
9	MH B-5	Junction	7837.28	7845.24	7837.28	7845.24	10.00	7.83	7838.44	0.00	6.80	0 00:00	0.00	0.00
10	MH B-6	Junction	7844.18	7850.46	7844.18	7850.46	10.00	7.83	7844.22	0.00	6.24	0 00:00	0.00	0.00
11	MH B-7	Junction	7850.74	7857.43	7850.74	7857.43	10.00	4.48	7850.77	0.00	6.66	0 00:00	0.00	0.00
12	MH B-8	Junction	7860.33	7865.55	7858.71	7865.55	10.00	2.24	7860.35	0.00	5.20	0 00:00	0.00	0.00
13	MH C-1	Junction	7821.80	7828.72	7821.80	7828.72	10.00	40.23	7822.06	0.00	6.66	0 00:00	0.00	0.00
14	MH C-2	Junction	7828.37	7835.88	7828.37	7835.88	10.00	11.18	7829.39	0.00	6.49	0 00:00	0.00	0.00
15	MH C-3	Junction	7834.14	7841.64	7834.14	7841.64	10.00	3.35	7836.35	0.00	5.29	0 00:00	0.00	0.00
16	SSMH-0040	Junction	7876.38	7887.87	7876.38	7887.87	0.00	5.59	7876.41	0.00	11.46	0 00:00	0.00	0.00
17	SSMH-0060	Junction	7847.77	7856.67	7847.77	7856.67	0.00	8.94	7847.82	0.00	8.85	0 00:00	0.00	0.00
18	SSMH-0080	Junction	7851.67	7859.54	7851.67	7859.54	0.00	3.35	7851.71	0.00	7.83	0 00:00	0.00	0.00
19	SSMH-0100	Junction	7849.34	7857.34	7849.34	7857.34	0.00	7.26	7849.41	0.00	7.93	0 00:00	0.00	0.00
20	SSMH-0120	Junction	7848.25	7858.57	7848.25	7858.57	0.00	10.05	7848.32	0.00	10.26	0 00:00	0.00	0.00
21	SSMH-0140	Junction	7838.63	7846.14	7838.63	7846.14	0.00	18.99	7838.88	0.00	7.27	0 00:00	0.00	0.00
22	SSMH-0160	Junction	7837.23	7845.59	7837.23	7845.59	0.00	20.11	7837.48	0.00	8.10	0 00:00	0.00	0.00
23	SSMH-0180	Junction	7849.61	7858.72	7849.61	7858.72	0.00	2.24	7849.63	0.00	9.09	0 00:00	0.00	0.00
24	SSMH-0200	Junction	7840.49	7852.00	7840.49	7852.00	0.00	3.36	7840.51	0.00	11.48	0 00:00	0.00	0.00
25	SSMH-0209	Junction	7843.37	7854.03	7843.37	7854.03	0.00	15.65	7843.42	0.00	10.61	0 00:00	0.00	0.00
26	SSMH-0210	Junction	7836.15	7847.47	7836.15	7847.47	0.00	15.65	7836.20	0.00	11.27	0 00:00	0.00	0.00
27	SSMH-0211	Junction	7833.44	7848.03	7833.44	7848.03	0.00	15.73	7833.79	0.00	14.25	0 00:00	0.00	0.00
28	SSMH-0220	Junction	7831.98	7842.98	7831.98	7842.98	0.00	19.01	7832.27	0.00	10.72	0 00:00	0.00	0.00
29	SSMH-0240	Junction	7830.92	7836.36	7830.92	7836.36	0.00	19.01	7831.11	0.00	5.24	0 00:00	0.00	0.00
30	SSMH-0260	Junction	7829.71	7834.39	7829.71	7834.39	0.00	19.01	7829.92	0.00	4.47	0 00:00	0.00	0.00
31	SSMH-0280	Junction	7826.46	7832.65	7826.46	7832.65	0.00	19.01	7826.64	0.00	6.01	0 00:00	0.00	0.00
32	SSMH-0300	Junction	7826.10	7836.55	7826.10	7836.55	0.00	0.00	7826.10	0.00	10.45	0 00:00	0.00	0.00
33	SSMH-0320	Junction	7821.43	7831.36	7821.43	7831.36	0.00	0.00	7821.58	0.00	9.78	0 00:00	0.00	0.00
34	SSMH-0340	Junction	7820.01	7829.76	7820.01	7829.76	0.00	78.25	7820.21	0.00	9.55	0 00:00	0.00	0.00
35	SSMH-0360	Junction	7813.19	7820.38	7813.19	7820.38	0.00	78.25	7813.34	0.00	7.04	0 00:00	0.00	0.00
36	SSMH-0520	Junction	7810.52	7817.36	7810.52	7817.36	0.00	78.25	7810.83	0.00	6.53	0 00:00	0.00	0.00
37	SSMH-0540	Junction	7807.98	7810.48	7807.98	7810.48	0.00	78.25	7808.15	0.00	2.33	0 00:00	0.00	0.00
38	SSMH-0560	Junction	7805.25	7808.96	7805.25	7808.96	0.00	78.25	7805.44	0.00	3.51	0 00:00	0.00	0.00
39	SSMH-0580	Junction	7802.74	7807.43	7802.74	7807.43	0.00	78.25	7803.03	0.00	4.40	0 00:00	0.00	0.00
40	SSMH-0600	Junction	7791.39	7806.61	7791.39	7806.61	0.00	78.25	7792.11	0.00	14.50	0 00:00	0.00	0.00
41	SSMH-0620	Junction	7787.31	7805.60	7787.31	7805.60	0.00	78.25	7787.46	0.00	18.14	0 00:00	0.00	0.00
42	Out-1134	Outfall	7782.95					78.25	7783.10					

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Reported	Surcharged Condition
					(ft)	(ft)	(ft)	(%)	(in)		(gpm)	(gpm)		(ft/sec)	(ft)		(min)	
1	109	Pipe	SSMH-0040	SSMH-0060	308.45	7876.38	7847.77	9.2800	8.000	0.0130	5.59	1651.83	0.00	2.42	0.03	0.04	0.00	Calculated
2	110	Pipe	SSMH-0060	SSMH-0140	308.91	7847.77	7838.83	2.8900	8.000	0.0130	8.94	922.68	0.01	1.86	0.05	0.07	0.00	Calculated
3	111	Pipe	SSMH-0120	SSMH-0140	249.74	7848.25	7838.83	3.7700	8.000	0.0130	10.05	1053.37	0.01	2.12	0.05	0.07	0.00	Calculated
4	112	Pipe	SSMH-0100	SSMH-0120	299.79	7849.34	7848.25	0.3600	8.000	0.0130	7.26	327.04	0.02	0.83	0.07	0.10	0.00	Calculated
5	113	Pipe	SSMH-0080	SSMH-0100	278.63	7851.67	7849.34	0.8400	8.000	0.0130	3.35	495.98	0.01	0.90	0.04	0.06	0.00	Calculated
6	114	Pipe	SSMH-0180	SSMH-0200	238.39	7849.61	7840.49	3.8300	8.000	0.0130	2.24	1060.84	0.00	1.35	0.02	0.03	0.00	Calculated
7	115	Pipe	SSMH-0210	SSMH-0211	24.72	7836.15	7833.74	9.7500	8.000	0.0130	15.73	1693.49	0.01	3.39	0.05	0.07	0.00	Calculated
8	116	Pipe	SSMH-0211	SSMH-0220	194.01	7833.44	7832.18	0.6500	8.000	0.0130	15.65	437.09	0.04	1.32	0.09	0.13	0.00	Calculated
9	117	Pipe	SSMH-0220	SSMH-0240	136.90	7831.98	7831.02	0.7000	8.000	0.0130	19.01	454.18	0.04	1.44	0.09	0.14	0.00	Calculated
10	118	Pipe	SSMH-0240	SSMH-0260	281.73	7830.92	7829.81	0.3900	8.000	0.0130	19.01	340.44	0.06	1.17	0.11	0.16	0.00	Calculated
11	119	Pipe	SSMH-0260	SSMH-0280	253.69	7829.71	7826.56	1.2400	8.000	0.0130	19.01	604.37	0.03	1.76	0.08	0.12	0.00	Calculated
12	120	Pipe	SSMH-0280	SSMH-0340	392.52	7826.46	7820.11	1.6200	8.000	0.0130	19.01	689.85	0.03	1.92	0.08	0.11	0.00	Calculated
13	121A	Pipe	SSMH-0320	MH B-1	182.62	7821.43	7820.46	0.5300	8.000	0.0130	0.00	395.28	0.00	0.00	0.00	0.00	0.00	Calculated
14	121B	Pipe	MH B-1	SSMH-0340	67.95	7820.46	7820.11	0.5200	8.000	0.0130	19.01	389.26	0.05	1.29	0.10	0.15	0.00	Calculated
15	122	Pipe	SSMH-0300	SSMH-0320	217.48	7826.10	7821.58	2.0800	8.000	0.0130	0.00	781.91	0.00	0.00	0.00	0.00	0.00	Calculated
16	123	Pipe	SSMH-0140	SSMH-0160	17.67	7838.63	7837.43	6.7900	8.000	0.0130	18.99	1413.42	0.01	3.17	0.05	0.08	0.00	Calculated
17	124A	Pipe	SSMH-0160	MH A-1	141.82	7837.23	7829.53	5.4300	8.000	0.0130	20.11	1263.79	0.02	2.97	0.06	0.09	0.00	Calculated
18	124B	Pipe	MH A-1	MH C-1	142.47	7829.53	7821.80	5.4300	8.000	0.0130	29.05	1263.36	0.02	3.23	0.07	0.11	0.00	Calculated
19	124C	Pipe	MH C-1	SSMH-0340	31.16	7821.80	7820.11	5.4200	8.000	0.0130	40.23	1263.11	0.03	3.69	0.08	0.12	0.00	Calculated
20	125	Pipe	SSMH-0340	SSMH-0360	162.36	7820.01	7813.19	4.2000	8.000	0.0130	78.25	1111.61	0.07	4.10	0.12	0.18	0.00	Calculated
21	126	Pipe	SSMH-0360	SSMH-0520	141.43	7813.19	7810.68	1.7700	8.000	0.0130	78.25	722.54	0.11	3.02	0.15	0.22	0.00	Calculated
22	127	Pipe	SSMH-0200	SSMH-0220	130.10	7840.49	7832.08	6.4600	8.000	0.0130	3.36	1378.98	0.00	1.84	0.02	0.04	0.00	Calculated
23	128	Pipe	SSMH-0209	SSMH-0210	123.67	7843.37	7836.15	5.8400	8.000	0.0130	15.65	1310.49	0.01	2.83	0.05	0.08	0.00	Calculated
24	129	Pipe	SSMH-0520	SSMH-0540	284.18	7810.52	7808.00	0.8900	12.000	0.0130	78.25	1505.84	0.05	2.25	0.15	0.15	0.00	Calculated
25	130	Pipe	SSMH-0540	SSMH-0560	304.97	7807.98	7805.29	0.8800	12.000	0.0130	78.25	1501.84	0.05	2.25	0.15	0.15	0.00	Calculated
26	131	Pipe	SSMH-0560	SSMH-0580	305.35	7805.25	7802.87	0.7800	12.000	0.0130	78.25	1411.77	0.06	2.15	0.16	0.16	0.00	Calculated
27	132	Pipe	SSMH-0580	SSMH-0600	165.05	7802.74	7792.01	6.5000	12.000	0.0130	78.25	4077.25	0.02	4.48	0.10	0.10	0.00	Calculated
28	133	Pipe	SSMH-0600	SSMH-0620	201.66	7791.39	7787.31	2.0200	12.000	0.0130	78.25	2274.55	0.03	3.02	0.13	0.13	0.00	Calculated
29	134	Pipe	SSMH-0620	Out-1134	390.66	7787.31	7782.95	1.1200	12.000	0.0130	78.25	1689.35	0.05	2.45	0.15	0.15	0.00	Calculated
30	A2 - A1	Pipe	MH A-2	MH A-1	145.40	7832.06	7829.73	1.6000	8.000	0.0130	8.94	686.58	0.01	1.53	0.05	0.08	0.00	Calculated
31	A3 - A2	Pipe	MH A-3	MH A-2	165.07	7836.88	7832.26	2.8000	8.000	0.0130	8.94	907.37	0.01	1.84	0.05	0.07	0.00	Calculated
32	A4 - A3	Pipe	MH A-4	MH A-3	215.58	7852.60	7837.08	7.2000	8.000	0.0130	4.47	1455.26	0.00	2.08	0.03	0.04	0.00	Calculated
33	B2 - B1	Pipe	MH B-2	MH B-1	29.83	7821.25	7820.62	2.1100	8.000	0.0130	19.01	788.21	0.02	2.03	0.07	0.11	0.00	Calculated
34	B3 - B2	Pipe	MH B-3	MH B-2	306.19	7827.73	7821.45	2.0500	8.000	0.0130	19.01	776.75	0.02	2.01	0.07	0.11	0.00	Calculated
35	B4 - B3	Pipe	MH B-4	MH B-3	347.02	7836.95	7827.93	2.6000	8.000	0.0130	13.42	874.43	0.02	2.03	0.06	0.09	0.00	Calculated
36	B5 - B4	Pipe	MH B-5	MH B-4	33.68	7838.20	7837.05	3.4100	8.000	0.0130	7.83	1002.22	0.01	1.90	0.04	0.06	0.00	Calculated
37	B6 - B5	Pipe	MH B-6	MH B-5	94.75	7843.71	7838.40	5.6000	8.000	0.0130	7.83	1339.64	0.01	2.32	0.04	0.05	0.00	Calculated
38	B7 - B6	Pipe	MH B-7	MH B-6	95.00	7850.27	7843.91	6.6900	8.000	0.0130	4.48	1425.65	0.00	2.05	0.03	0.04	0.00	Calculated
39	B8 - B7	Pipe	MH B-8	MH B-7	123.30	7860.33	7850.47	8.0000	8.000	0.0130	2.24	1512.28	0.00	1.73	0.02	0.03	0.00	Calculated
40	C2 - C1	Pipe	MH C-2	MH C-1	398.01	7829.16	7822.00	1.8000	8.000	0.0130	11.18	727.46	0.02	1.69	0.06	0.09	0.00	Calculated
41	C3 - C2	Pipe	MH C-3	MH C-2	348.00	7836.32	7829.36	2.0000	8.000	0.0130	3.35	767.03	0.00	1.21	0.03	0.05	0.00	Calculated

Junction Input

SN Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1 MH A-1	7829.53	7835.93	6.40	7829.53	0.00	7835.93	0.00	10.00	66.34
2 MH A-2	7831.11	7837.36	6.25	7831.11	0.00	7837.36	0.00	10.00	53.20
3 MH A-3	7836.38	7844.82	8.44	7836.38	0.00	7844.82	0.00	10.00	84.92
4 MH A-4	7852.11	7858.97	6.86	7852.11	0.00	7858.97	0.00	10.00	68.43
5 MH B-1	7820.46	7827.14	6.68	7820.46	0.00	7827.14	0.00	10.00	70.24
6 MH B-2	7821.22	7829.33	8.12	7821.22	0.00	7829.33	0.00	10.00	86.62
7 MH B-3	7827.54	7836.78	9.24	7827.54	0.00	7836.78	0.00	10.00	98.21
8 MH B-4	7836.07	7842.90	6.83	7836.07	0.00	7842.90	0.00	10.00	62.21
9 MH B-5	7837.28	7845.24	7.96	7837.28	0.00	7845.24	0.00	10.00	74.07
10 MH B-6	7844.18	7850.46	6.28	7844.18	0.00	7850.46	0.00	10.00	70.59
11 MH B-7	7850.74	7857.43	6.69	7850.74	0.00	7857.43	0.00	10.00	75.57
12 MH B-8	7860.33	7865.55	5.22	7858.71	-1.62	7865.55	0.00	10.00	54.64
13 MH C-1	7821.80	7828.72	6.92	7821.80	0.00	7828.72	0.00	10.00	72.67
14 MH C-2	7828.37	7835.88	7.51	7828.37	0.00	7835.88	0.00	10.00	70.24
15 MH C-3	7834.14	7841.64	7.51	7834.14	0.00	7841.64	0.00	10.00	55.88
16 SSMH-0040	7876.38	7887.87	11.49	7876.38	0.00	7887.87	0.00	0.00	129.87
17 SSMH-0060	7847.77	7856.67	8.90	7847.77	0.00	7856.67	0.00	0.00	98.76
18 SSMH-0080	7851.67	7859.54	7.87	7851.67	0.00	7859.54	0.00	0.00	86.47
19 SSMH-0100	7849.34	7857.34	8.00	7849.34	0.00	7857.34	0.00	0.00	88.03
20 SSMH-0120	7848.25	7858.57	10.32	7848.25	0.00	7858.57	0.00	0.00	115.89
21 SSMH-0140	7838.63	7846.14	7.51	7838.63	0.00	7846.14	0.00	0.00	79.75
22 SSMH-0160	7837.23	7845.59	8.36	7837.23	0.00	7845.59	0.00	0.00	89.90
23 SSMH-0180	7849.61	7858.72	9.11	7849.61	0.00	7858.72	0.00	0.00	101.32
24 SSMH-0200	7840.49	7852.00	11.51	7840.49	0.00	7852.00	0.00	0.00	130.09
25 SSMH-0209	7843.37	7854.03	10.66	7843.37	0.00	7854.03	0.00	0.00	119.92
26 SSMH-0210	7836.15	7847.47	11.32	7836.15	0.00	7847.47	0.00	0.00	127.82
27 SSMH-0211	7833.44	7848.03	14.59	7833.44	0.00	7848.03	0.00	0.00	163.51
28 SSMH-0220	7831.98	7842.98	11.00	7831.98	0.00	7842.98	0.00	0.00	121.65
29 SSMH-0240	7830.92	7836.36	5.44	7830.92	0.00	7836.36	0.00	0.00	56.04
30 SSMH-0260	7829.71	7834.39	4.68	7829.71	0.00	7834.39	0.00	0.00	46.93
31 SSMH-0280	7826.46	7832.65	6.19	7826.46	0.00	7832.65	0.00	0.00	65.05
32 SSMH-0300	7826.10	7836.55	10.45	7826.10	0.00	7836.55	0.00	0.00	117.38
33 SSMH-0320	7821.43	7831.36	9.93	7821.43	0.00	7831.36	0.00	0.00	109.38
34 SSMH-0340	7820.01	7829.76	9.75	7820.01	0.00	7829.76	0.00	0.00	107.75
35 SSMH-0360	7813.19	7820.38	7.19	7813.19	0.00	7820.38	0.00	0.00	78.28
36 SSMH-0520	7810.52	7817.36	6.84	7810.52	0.00	7817.36	0.00	0.00	70.08
37 SSMH-0540	7807.98	7810.48	2.50	7807.98	0.00	7810.48	0.00	0.00	17.82
38 SSMH-0560	7805.25	7808.96	3.71	7805.25	0.00	7808.96	0.00	0.00	32.04
39 SSMH-0580	7802.74	7807.43	4.69	7802.74	0.00	7807.43	0.00	0.00	42.76
40 SSMH-0600	7791.39	7806.61	15.22	7791.39	0.00	7806.61	0.00	0.00	163.17
41 SSMH-0620	7787.31	7805.60	18.29	7787.31	0.00	7805.60	0.00	0.00	207.48

Junction Results

SN Element ID	Peak Inflow	Peak Lateral Inflow	Max HGL Elevation Attained	Max HGL Depth Attained	Max Surge Depth Attained	Min Freeboard Attained	Average HGL Elevation Attained	Average HGL Depth Attained	Time of Max HGL Occurrence	Time of Peak Flooding Occurrence	Total Flooding Volume	Total Time Flooded
	(gpm)	(gpm)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(days hh:mm)	(days hh:mm)	(ac-in)	(min)
1 MH A-1	29.05	0.00	7829.78	0.25	0.00	6.14	7829.78	0.25	0 00:32	0 00:00	0.00	0.00
2 MH A-2	8.94	0.00	7832.31	1.20	0.00	5.05	7832.31	1.20	0 00:27	0 00:00	0.00	0.00
3 MH A-3	8.94	4.47	7837.11	0.73	0.00	7.72	7837.11	0.73	0 00:28	0 00:00	0.00	0.00
4 MH A-4	4.47	4.47	7852.63	0.52	0.00	6.34	7852.63	0.52	0 00:00	0 00:00	0.00	0.00
5 MH B-1	19.01	0.00	7820.69	0.23	0.00	6.45	7820.69	0.23	0 00:47	0 00:00	0.00	0.00
6 MH B-2	19.01	0.00	7821.52	0.30	0.00	7.81	7821.52	0.30	0 00:46	0 00:00	0.00	0.00
7 MH B-3	19.01	5.59	7827.99	0.45	0.00	8.79	7827.99	0.45	0 00:43	0 00:00	0.00	0.00
8 MH B-4	13.42	5.59	7837.09	1.02	0.00	5.81	7837.09	1.02	0 00:20	0 00:00	0.00	0.00
9 MH B-5	7.83	0.00	7838.44	1.16	0.00	6.80	7838.44	1.16	0 00:18	0 00:00	0.00	0.00
10 MH B-6	7.83	3.35	7844.22	0.04	0.00	6.24	7844.22	0.04	0 00:19	0 00:00	0.00	0.00
11 MH B-7	4.48	2.24	7850.77	0.03	0.00	6.66	7850.77	0.03	0 00:18	0 00:00	0.00	0.00
12 MH B-8	2.24	2.24	7860.35	0.02	0.00	5.20	7860.35	0.02	0 00:00	0 00:00	0.00	0.00
13 MH C-1	40.23	0.00	7822.06	0.26	0.00	6.66	7822.06	0.26	0 01:11	0 00:00	0.00	0.00
14 MH C-2	11.18	7.83	7829.39	1.02	0.00	6.49	7829.39	1.02	0 01:09	0 00:00	0.00	0.00
15 MH C-3	3.35	3.35	7836.35	2.21	0.00	5.29	7836.35	2.21	0 00:00	0 00:00	0.00	0.00
16 SSMH-0040	5.59	5.59	7876.41	0.03	0.00	11.46	7876.41	0.03	0 00:00	0 00:00	0.00	0.00
17 SSMH-0060	8.94	3.35	7847.82	0.05	0.00	8.85	7847.82	0.05	0 00:32	0 00:00	0.00	0.00
18 SSMH-0080	3.35	3.35	7851.71	0.04	0.00	7.83	7851.71	0.04	0 00:00	0 00:00	0.00	0.00
19 SSMH-0100	7.26	3.91	7849.41	0.07	0.00	7.93	7849.41	0.07	0 01:17	0 00:00	0.00	0.00
20 SSMH-0120	10.05	2.79	7848.32	0.07	0.00	10.26	7848.32	0.07	0 01:37	0 00:00	0.00	0.00
21 SSMH-0140	18.99	0.00	7838.88	0.25	0.00	7.27	7838.88	0.25	0 00:47	0 00:00	0.00	0.00
22 SSMH-0160	20.11	1.12	7837.48	0.25	0.00	8.10	7837.48	0.25	0 01:38	0 00:00	0.00	0.00
23 SSMH-0180	2.24	2.24	7849.63	0.02	0.00	9.09	7849.63	0.02	0 00:00	0 00:00	0.00	0.00
24 SSMH-0200	3.36	1.12	7840.51	0.02	0.00	11.48	7840.51	0.02	0 00:44	0 00:00	0.00	0.00
25 SSMH-0209	15.65	15.65	7843.42	0.05	0.00	10.61	7843.42	0.05	0 00:00	0 00:00	0.00	0.00
26 SSMH-0210	15.65	0.00	7836.20	0.05	0.00	11.27	7836.20	0.05	0 00:11	0 00:00	0.00	0.00
27 SSMH-0211	15.73	0.00	7833.79	0.35	0.00	14.25	7833.79	0.35	0 00:02	0 00:00	0.00	0.00
28 SSMH-0220	19.01	0.00	7832.27	0.29	0.00	10.72	7832.27	0.29	0 00:41	0 00:00	0.00	0.00
29 SSMH-0240	19.01	0.00	7831.11	0.19	0.00	5.24	7831.11	0.19	0 00:45	0 00:00	0.00	0.00
30 SSMH-0260	19.01	0.00	7829.92	0.21	0.00	4.47	7829.92	0.21	0 01:07	0 00:00	0.00	0.00
31 SSMH-0280	19.01	0.00	7826.64	0.18	0.00	6.01	7826.64	0.18	0 01:07	0 00:00	0.00	0.00
32 SSMH-0300	0.00	0.00	7826.10	0.00	0.00	10.45	7826.10	0.00	0 00:00	0 00:00	0.00	0.00
33 SSMH-0320	0.00	0.00	7821.58	0.15	0.00	9.78	7821.58	0.15	0 00:00	0 00:00	0.00	0.00
34 SSMH-0340	78.25	0.00	7820.21	0.20	0.00	9.55	7820.21	0.20	0 00:48	0 00:00	0.00	0.00
35 SSMH-0360	78.25	0.00	7813.34	0.15	0.00	7.04	7813.34	0.15	0 01:38	0 00:00	0.00	0.00
36 SSMH-0520	78.25	0.00	7810.83	0.31	0.00	6.53	7810.83	0.31	0 01:38	0 00:00	0.00	0.00
37 SSMH-0540	78.25	0.00	7808.15	0.17	0.00	2.33	7808.15	0.17	0 01:40	0 00:00	0.00	0.00
38 SSMH-0560	78.25	0.00	7805.44	0.19	0.00	3.51	7805.44	0.19	0 01:42	0 00:00	0.00	0.00
39 SSMH-0580	78.25	0.00	7803.03	0.29	0.00	4.40	7803.03	0.29	0 01:41	0 00:00	0.00	0.00
40 SSMH-0600	78.25	0.00	7792.11	0.72	0.00	14.50	7792.10	0.71	0 01:41	0 00:00	0.00	0.00
41 SSMH-0620	78.25	0.00	7787.46	0.15	0.00	18.14	7787.45	0.14	0 01:42	0 00:00	0.00	0.00

Pipe Input

SN	Element ID	Length	Inlet Invert	Inlet Invert Offset	Outlet Invert	Outlet Invert Offset	Total Drop	Average Slope	Pipe Shape	Pipe Diameter or Height	Pipe Width	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses	Initial Flow	Flap Gate	No. of Barrels
		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(%)		(in)	(in)					(gpm)		
1	109	308.45	7876.38	0.00	7847.77	0.00	28.61	9.2800	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
2	110	308.91	7847.77	0.00	7838.83	0.20	8.94	2.8900	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
3	111	249.74	7848.25	0.00	7838.83	0.20	9.42	3.7700	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
4	112	299.79	7849.34	0.00	7848.25	0.00	1.09	0.3600	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
5	113	278.63	7851.67	0.00	7849.34	0.00	2.33	0.8400	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
6	114	238.39	7849.61	0.00	7840.49	0.00	9.12	3.8300	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
7	115	24.72	7836.15	0.00	7833.74	0.30	2.41	9.7500	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
8	116	194.01	7833.44	0.00	7832.18	0.20	1.26	0.6500	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
9	117	136.90	7831.98	0.00	7831.02	0.10	0.96	0.7000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
10	118	281.73	7830.92	0.00	7829.81	0.10	1.11	0.3900	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
11	119	253.69	7829.71	0.00	7826.56	0.10	3.15	1.2400	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
12	120	392.52	7826.46	0.00	7820.11	0.10	6.35	1.6200	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
13	121A	182.62	7821.43	0.00	7820.46	0.00	0.97	0.5300	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
14	121B	67.95	7820.46	0.00	7820.11	0.10	0.35	0.5200	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
15	122	217.48	7826.10	0.00	7821.58	0.15	4.52	2.0800	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
16	123	17.67	7838.63	0.00	7837.43	0.20	1.20	6.7900	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
17	124A	141.82	7837.23	0.00	7829.53	0.00	7.70	5.4300	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
18	124B	142.47	7829.53	0.00	7821.80	0.00	7.73	5.4300	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
19	124C	31.16	7821.80	0.00	7820.11	0.10	1.69	5.4200	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
20	125	162.36	7820.01	0.00	7813.19	0.00	6.82	4.2000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
21	126	141.43	7813.19	0.00	7810.68	0.16	2.51	1.7700	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
22	127	130.10	7840.49	0.00	7832.08	0.10	8.41	6.4600	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
23	128	123.67	7843.37	0.00	7836.15	0.00	7.22	5.8400	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
24	129	284.18	7810.52	0.00	7808.00	0.02	2.52	0.8900	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
25	130	304.97	7807.98	0.00	7805.29	0.04	2.69	0.8800	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
26	131	305.35	7805.25	0.00	7802.87	0.13	2.38	0.7800	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
27	132	165.05	7802.74	0.00	7792.01	0.62	10.73	6.5000	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
28	133	201.66	7791.39	0.00	7787.31	0.00	4.08	2.0200	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
29	134	390.66	7787.31	0.00	7782.95	0.00	4.36	1.1200	CIRCULAR	12.000	12.000	0.0130	0.5000	0.5000	0.0000	0.00	No	1
30	A2 - A1	145.40	7832.06	0.95	7829.73	0.20	2.33	1.6000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
31	A3 - A2	165.07	7836.88	0.50	7832.26	1.15	4.62	2.8000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
32	A4 - A3	215.58	7852.60	0.49	7837.08	0.70	15.52	7.2000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
33	B2 - B1	29.83	7821.25	0.03	7820.62	0.16	0.63	2.1100	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
34	B3 - B2	306.19	7827.73	0.19	7821.45	0.23	6.28	2.0500	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
35	B4 - B3	347.02	7836.95	0.88	7827.93	0.39	9.02	2.6000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
36	B5 - B4	33.68	7838.20	0.92	7837.05	0.98	1.15	3.4100	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
37	B6 - B5	94.75	7843.71	-0.47	7838.40	1.12	5.31	5.6000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
38	B7 - B6	95.00	7850.27	-0.47	7843.91	-0.27	6.36	6.6900	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
39	B8 - B7	123.30	7860.33	0.00	7850.47	-0.27	9.86	8.0000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
40	C2 - C1	398.01	7829.16	0.79	7822.00	0.20	7.16	1.8000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1
41	C3 - C2	348.00	7836.32	2.18	7829.36	0.99	6.96	2.0000	CIRCULAR	8.040	8.040	0.0130	0.5000	0.5000	0.0000	0.00	No	1

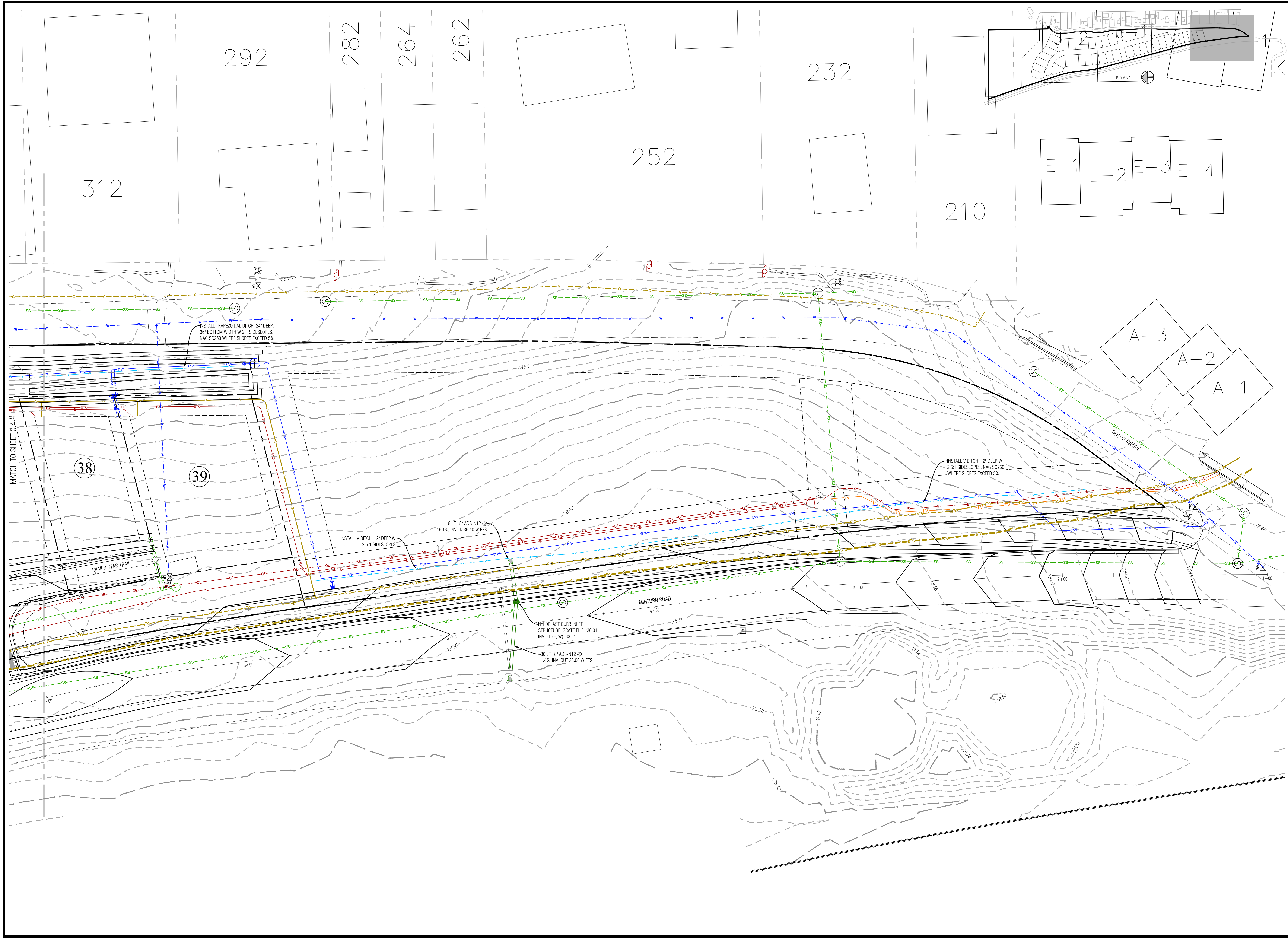
Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Number	Reported Condition
		(gpm)	(days hh:mm)	(gpm)		(ft/sec)	(min)	(ft)		(min)		
1	109	5.59	0 00:33	1651.83	0.00	2.42	2.12	0.03	0.04	0.00		Calculated
2	110	8.94	0 00:47	922.68	0.01	1.86	2.77	0.05	0.07	0.00		Calculated
3	111	10.05	0 01:37	1053.37	0.01	2.12	1.96	0.05	0.07	0.00		Calculated
4	112	7.26	0 01:37	327.04	0.02	0.83	6.02	0.07	0.10	0.00		Calculated
5	113	3.35	0 01:17	495.98	0.01	0.90	5.16	0.04	0.06	0.00		Calculated
6	114	2.24	0 00:44	1060.84	0.00	1.35	2.94	0.02	0.03	0.00		Calculated
7	115	15.73	0 00:02	1693.49	0.01	3.39	0.12	0.05	0.07	0.00		Calculated
8	116	15.65	0 00:41	437.09	0.04	1.32	2.45	0.09	0.13	0.00		Calculated
9	117	19.01	0 00:46	454.18	0.04	1.44	1.58	0.09	0.14	0.00		Calculated
10	118	19.01	0 01:08	340.44	0.06	1.17	4.01	0.11	0.16	0.00		Calculated
11	119	19.01	0 01:07	604.37	0.03	1.76	2.40	0.08	0.12	0.00		Calculated
12	120	19.01	0 01:11	689.85	0.03	1.92	3.41	0.08	0.11	0.00		Calculated
13	121A	0.00	0 00:00	395.28	0.00	0.00		0.00	0.00	0.00		Calculated
14	121B	19.01	0 00:49	389.26	0.05	1.29	0.88	0.10	0.15	0.00		Calculated
15	122	0.00	0 00:00	781.91	0.00	0.00		0.00	0.00	0.00		Calculated
16	123	18.99	0 01:38	1413.42	0.01	3.17	0.09	0.05	0.08	0.00		Calculated
17	124A	20.11	0 01:41	1263.79	0.02	2.97	0.80	0.06	0.09	0.00		Calculated
18	124B	29.05	0 01:42	1263.36	0.02	3.23	0.74	0.07	0.11	0.00		Calculated
19	124C	40.23	0 01:42	1263.11	0.03	3.69	0.14	0.08	0.12	0.00		Calculated
20	125	78.25	0 01:42	1111.61	0.07	4.10	0.66	0.12	0.18	0.00		Calculated
21	126	78.25	0 01:39	722.54	0.11	3.02	0.78	0.15	0.22	0.00		Calculated
22	127	3.36	0 00:45	1378.98	0.00	1.84	1.18	0.02	0.04	0.00		Calculated
23	128	15.65	0 00:11	1310.49	0.01	2.83	0.73	0.05	0.08	0.00		Calculated
24	129	78.25	0 01:40	1505.84	0.05	2.25	2.11	0.15	0.15	0.00		Calculated
25	130	78.25	0 01:42	1501.84	0.05	2.25	2.26	0.15	0.15	0.00		Calculated
26	131	78.25	0 01:41	1411.77	0.06	2.15	2.37	0.16	0.16	0.00		Calculated
27	132	78.25	0 01:41	4077.25	0.02	4.48	0.61	0.10	0.10	0.00		Calculated
28	133	78.25	0 01:42	2274.55	0.03	3.02	1.11	0.13	0.13	0.00		Calculated
29	134	78.25	0 01:44	1689.35	0.05	2.45	2.66	0.15	0.15	0.00		Calculated
30	A2 - A1	8.94	0 00:32	686.58	0.01	1.53	1.58	0.05	0.08	0.00		Calculated
31	A3 - A2	8.94	0 00:29	907.37	0.01	1.84	1.50	0.05	0.07	0.00		Calculated
32	A4 - A3	4.47	0 00:28	1455.26	0.00	2.08	1.73	0.03	0.04	0.00		Calculated
33	B2 - B1	19.01	0 00:48	788.21	0.02	2.03	0.24	0.07	0.11	0.00		Calculated
34	B3 - B2	19.01	0 00:48	776.75	0.02	2.01	2.54	0.07	0.11	0.00		Calculated
35	B4 - B3	13.42	0 00:43	874.43	0.02	2.03	2.85	0.06	0.09	0.00		Calculated
36	B5 - B4	7.83	0 00:20	1002.22	0.01	1.90	0.30	0.04	0.06	0.00		Calculated
37	B6 - B5	7.83	0 00:19	1339.64	0.01	2.32	0.68	0.04	0.05	0.00		Calculated
38	B7 - B6	4.48	0 00:19	1425.65	0.00	2.05	0.77	0.03	0.04	0.00		Calculated
39	B8 - B7	2.24	0 00:18	1512.28	0.00	1.73	1.19	0.02	0.03	0.00		Calculated
40	C2 - C1	11.18	0 01:12	727.46	0.02	1.69	3.93	0.06	0.09	0.00		Calculated
41	C3 - C2	3.35	0 01:10	767.03	0.00	1.21	4.79	0.03	0.05	0.00		Calculated

APPENDIX C

Minturn North Sanitary Design Plans

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Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If "Yes", SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

Engineer or Surveyor Seal

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CONSTRUCTION

Client Information:
MINTURN NORTH LAND COMPANY LLC
PO BOX 2633
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970 926-1720

NORTH

0 20' 40'

Scale: 1" = 20'

811

Know what's below.
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TOWN OF MINTURN, COLORADO

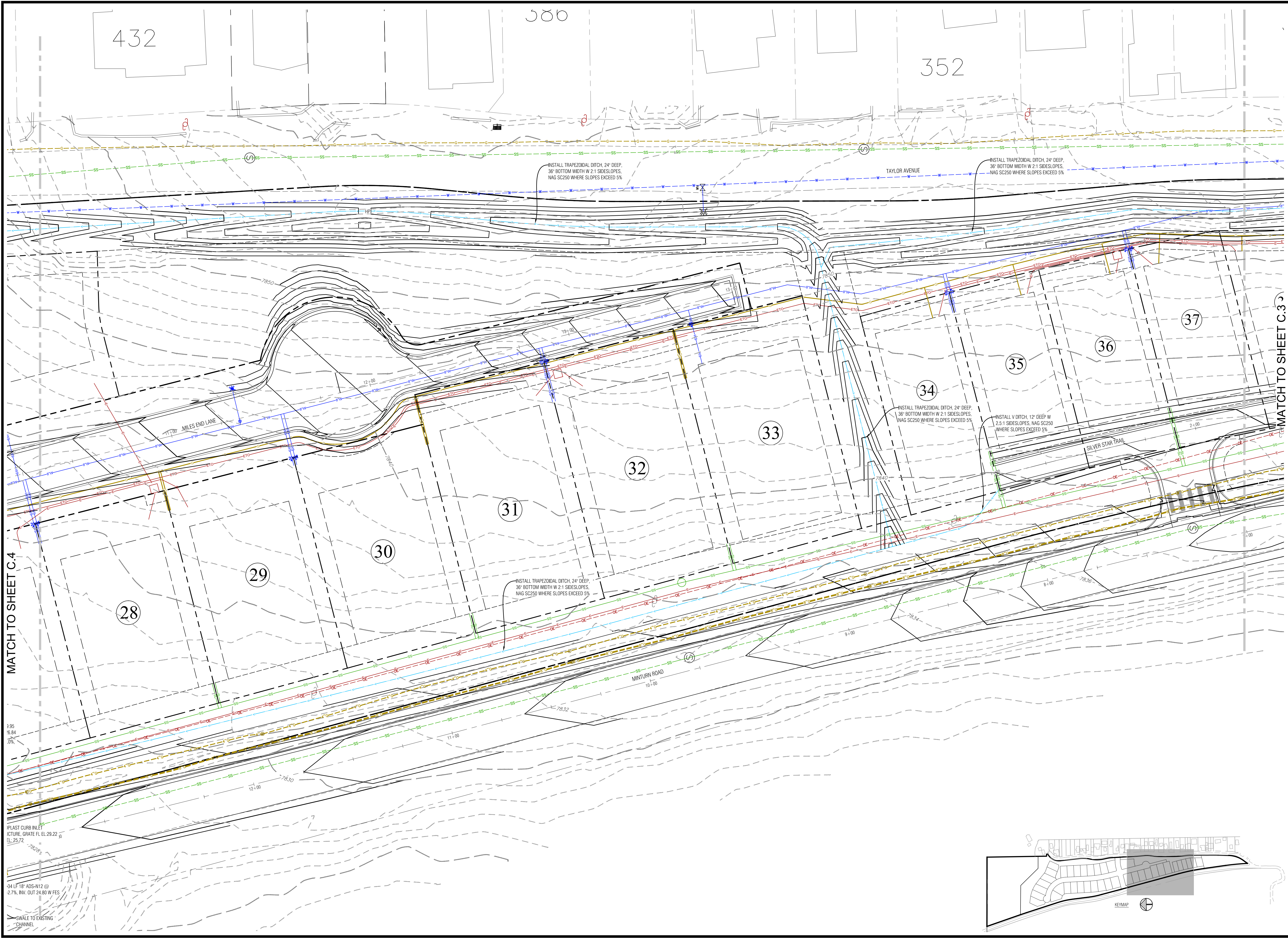
Minturn North P.U.D.
Overall Grading and Drainage Plan
Progress Print 11.19.22

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Required Project: TBD
If "Yes", SUE Certification by:
Firm: TBD
Job #: TBD
Date: TBD

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NORTH

0 20' 40'

Scale: 1" = 20'

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Overall Grading and Drainage Plan

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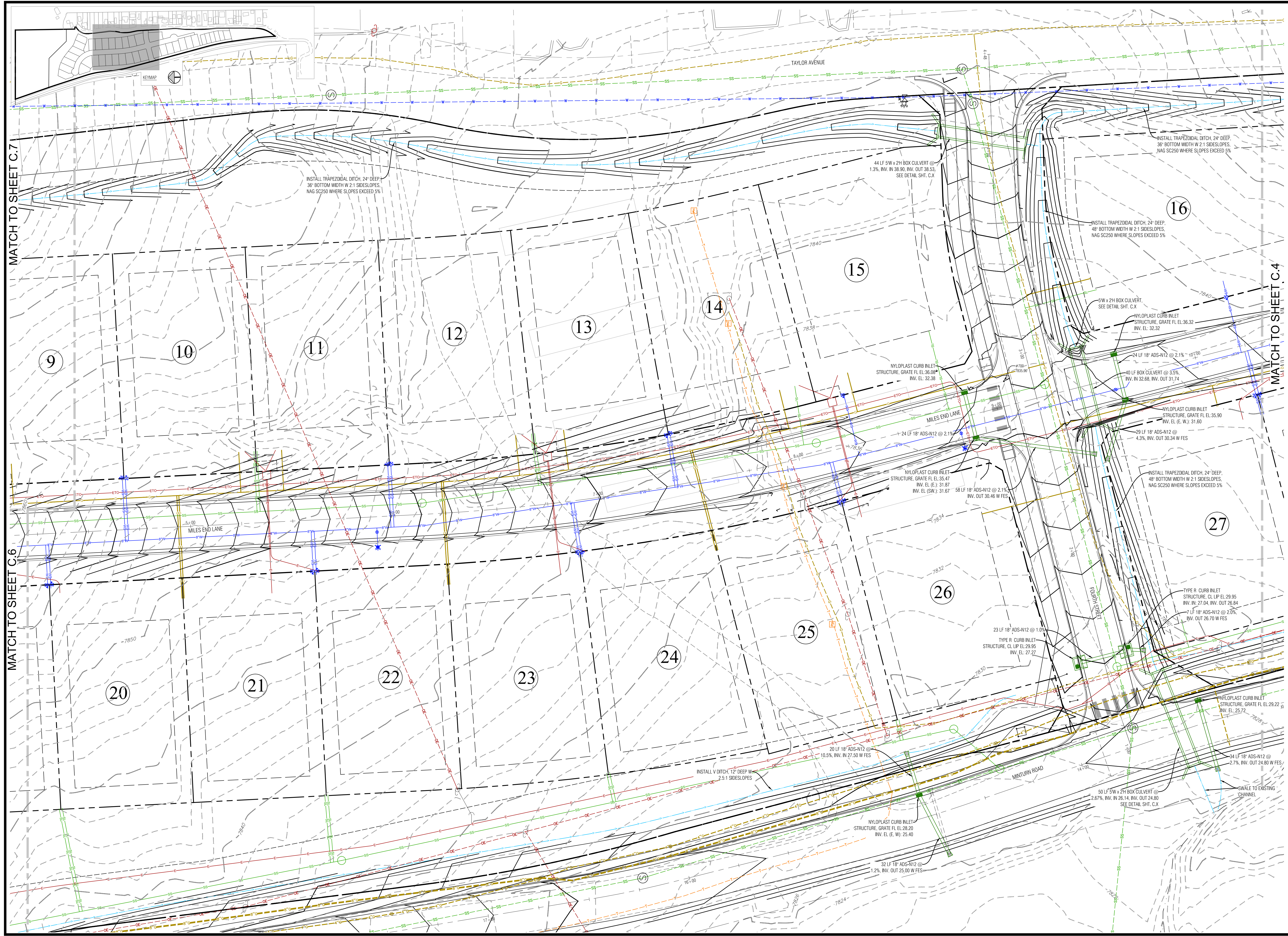
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Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If Yes: SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

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NORTH

0 20' 40'

Scale: 1" = 20'

811

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Minturn North P.U.D.

Overall Grading and Drainage Plan

Progress Print 11.19.22

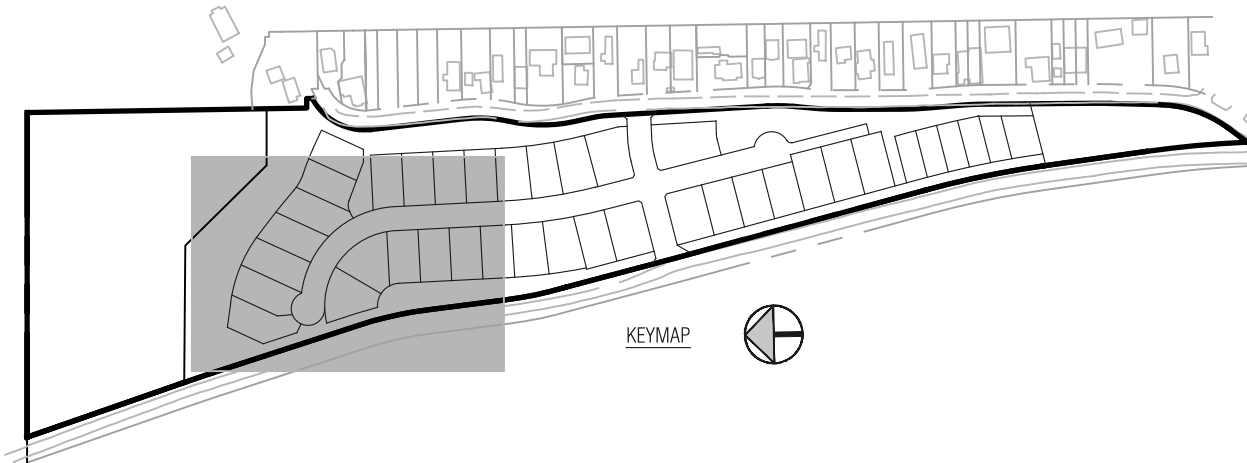
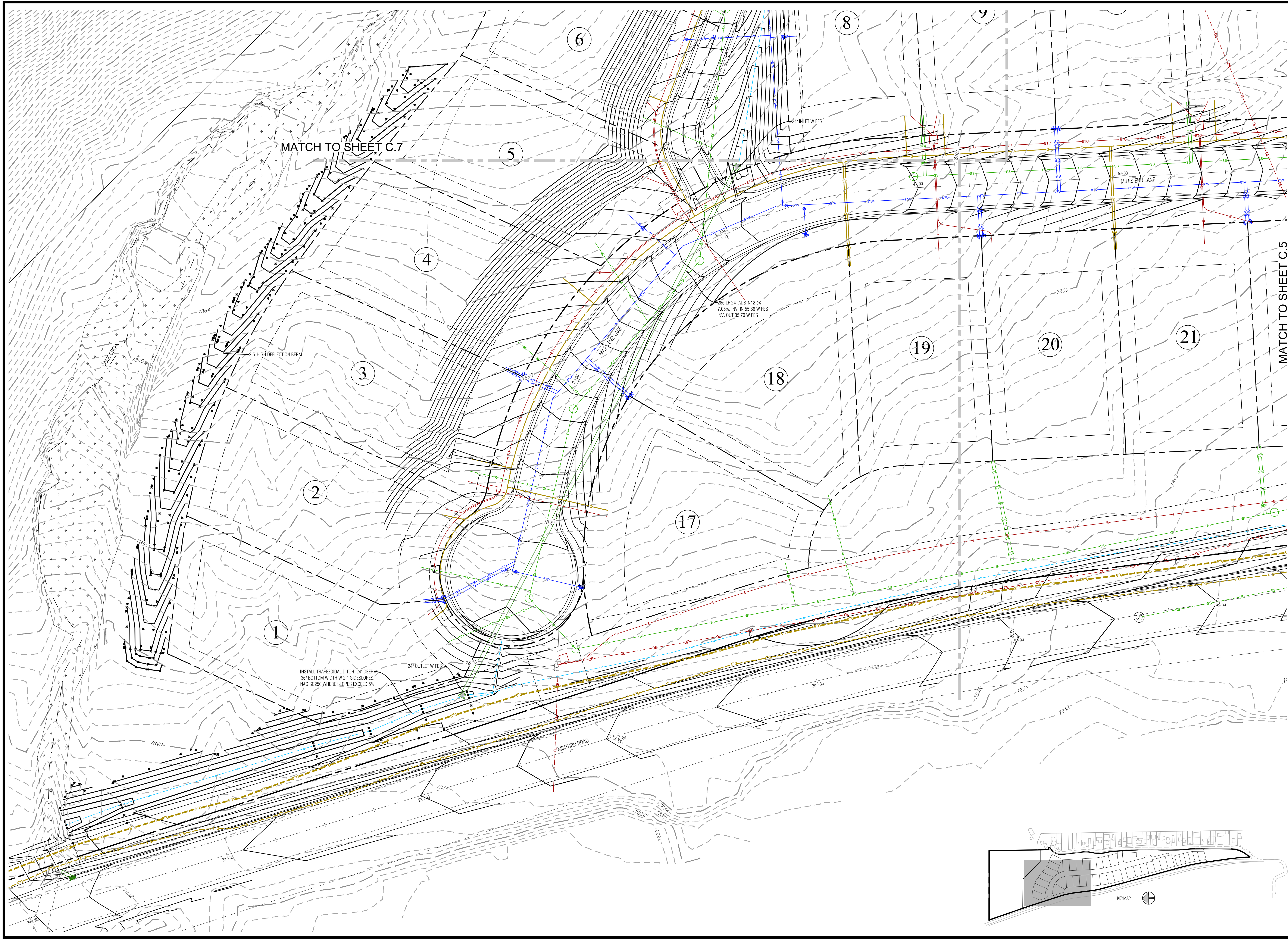
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12/28/22

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If "Yes": SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

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NORTH

0 20' 40'

Scale: 1" = 20'

811

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Minturn North P.U.D.

Overall Grading and Drainage Plan

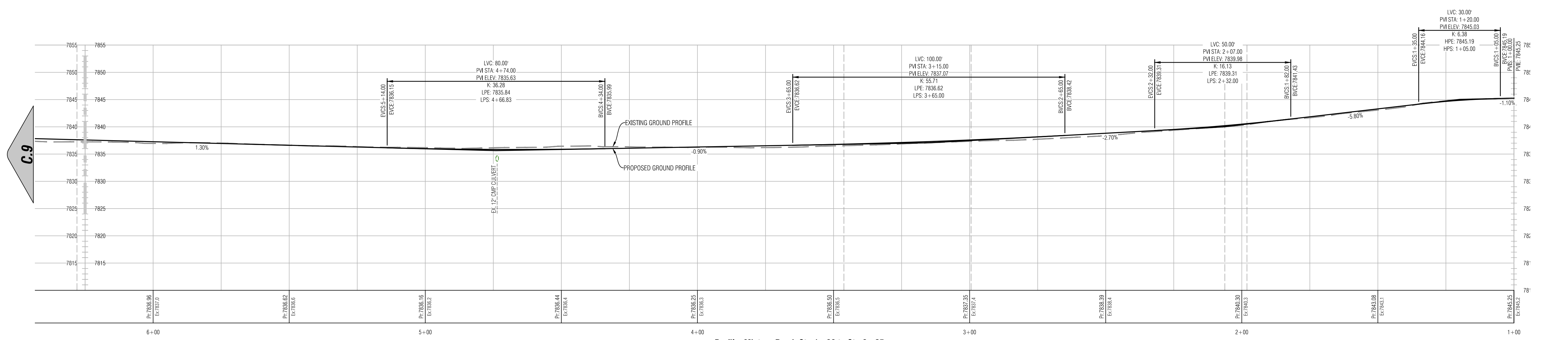
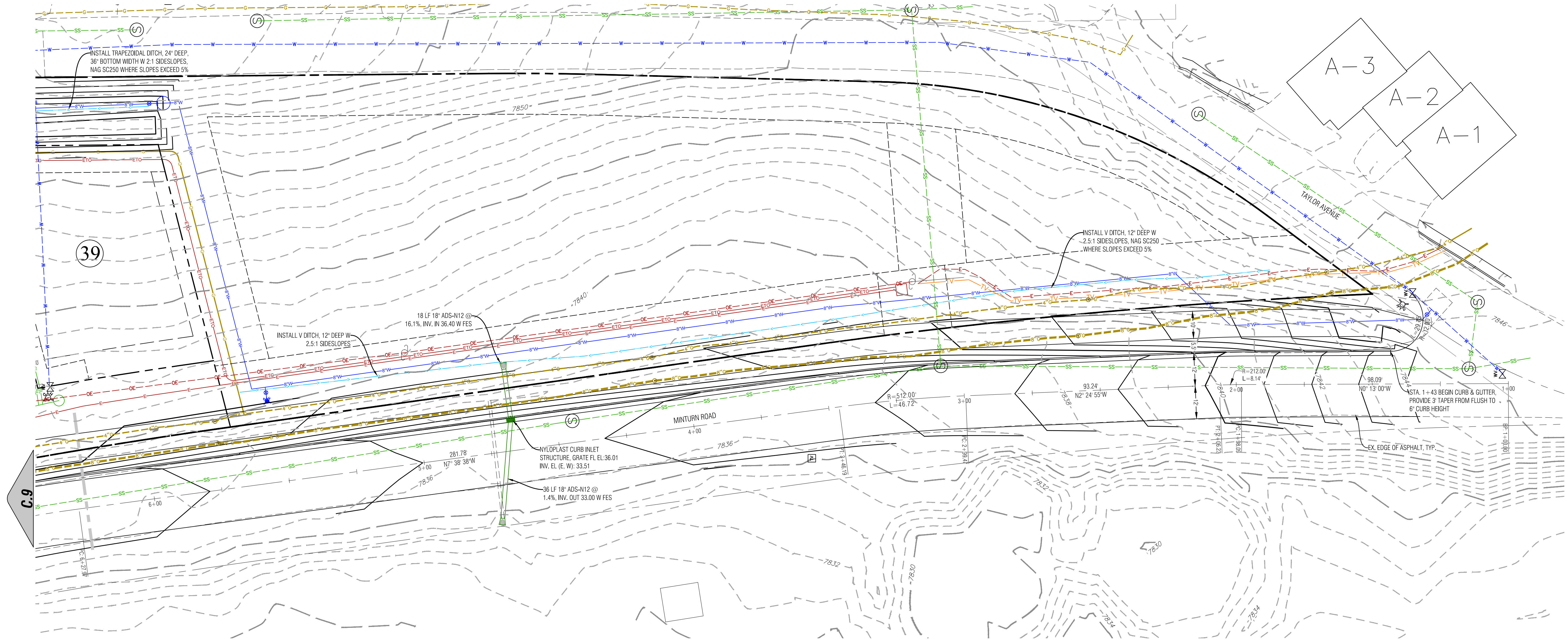
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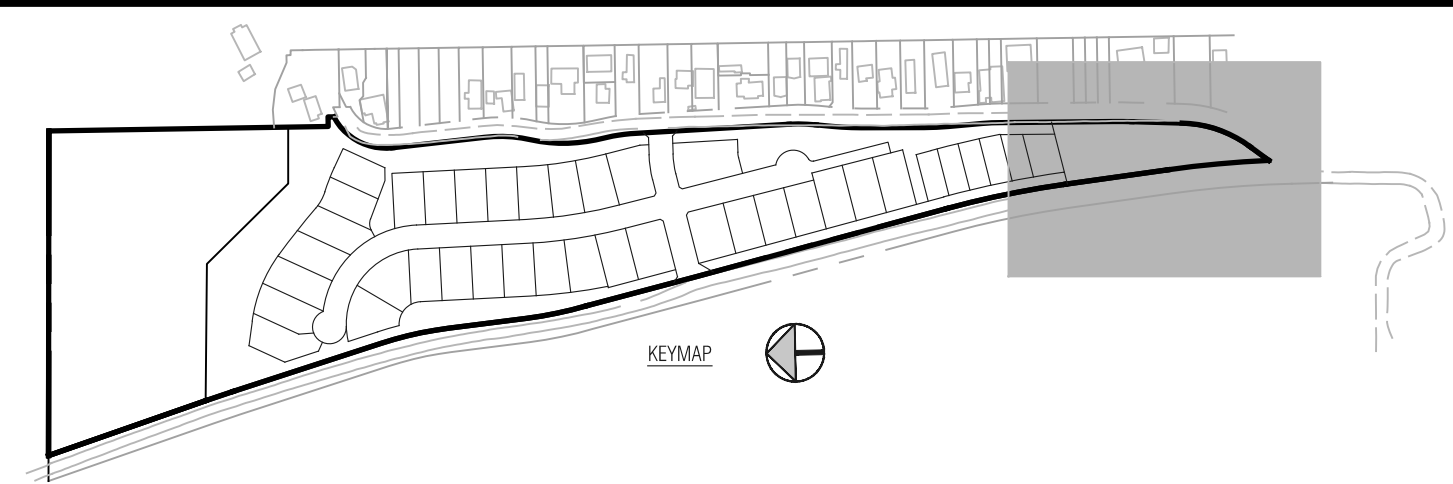
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Profile: Minturn Road, Sta:1+00 to Sta:6+25
Scale: Vert. = 10', Horiz. = 20'



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Required Project: **TBD**
If "Yes", SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

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NORTH

0 20' 40'

Scale: 1" = 20'

811

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TOWN OF MINTURN, COLORADO

Minturn North P.U.D.
Minturn Road Plan and Profile
Progress Print 11.19.22

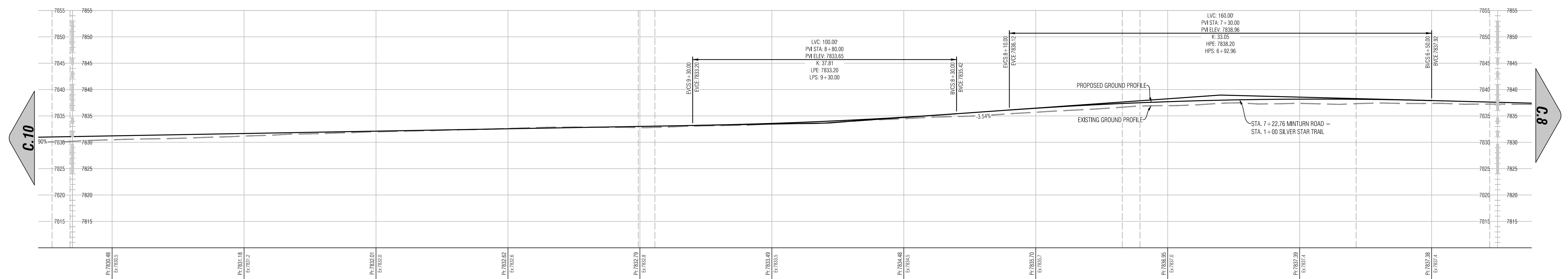
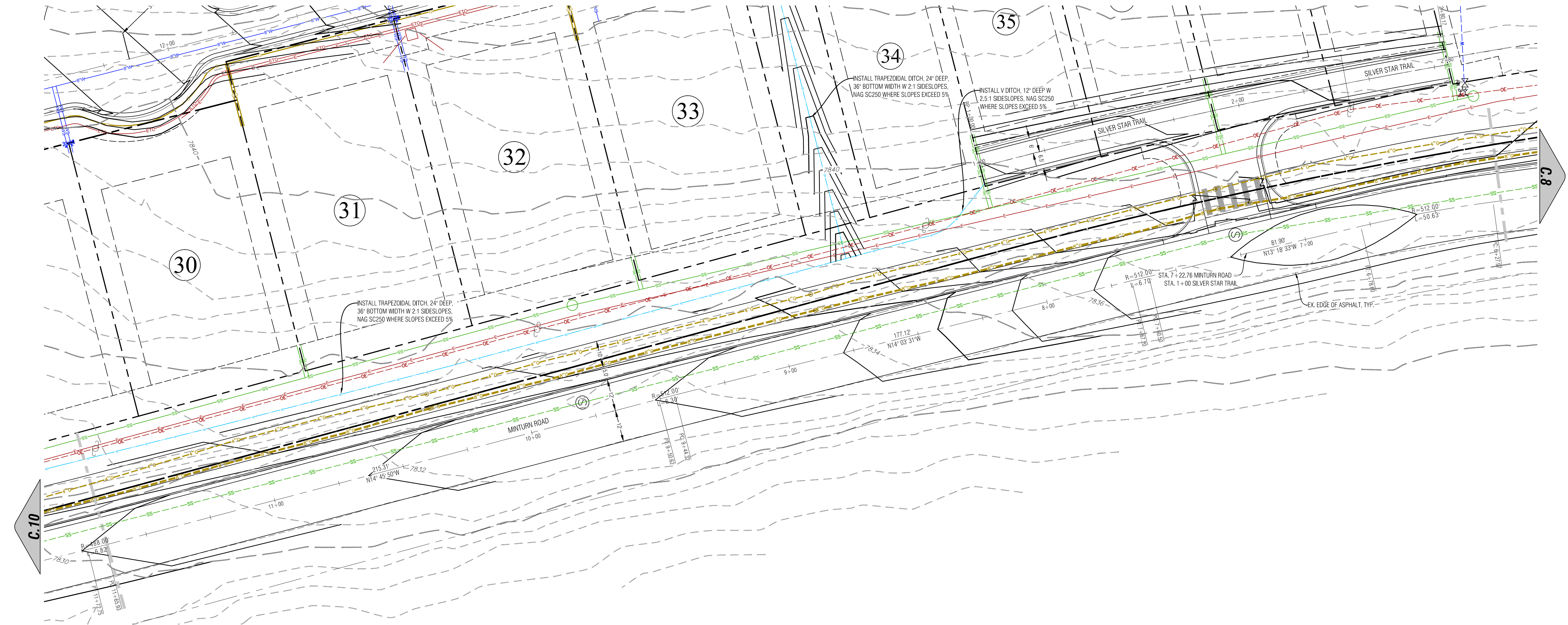
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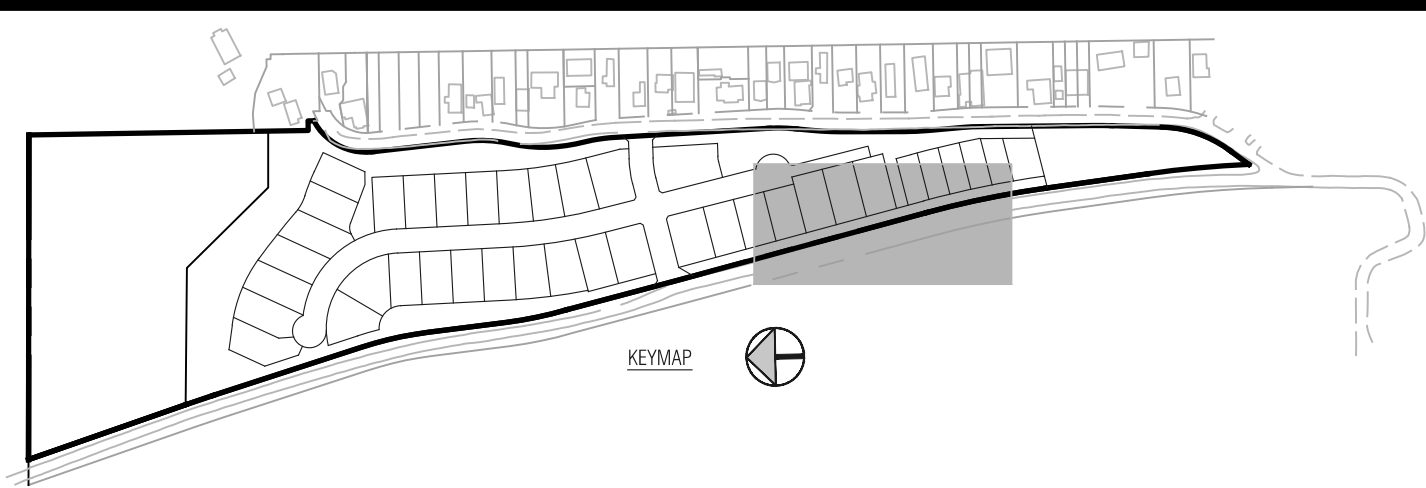
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Profile: Minturn Road, Sta:6+25 to Sta:11+65
Scale: Vert.=10', Horiz.=20'



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Required Project: **TBD**
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Job #: **TBD**
Date: **TBD**

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NORTH

0 20' 40'

Scale: 1" = 20'

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Minturn North P.U.D.

Minturn Road Plan and Profile

Progress Print 11.19.22

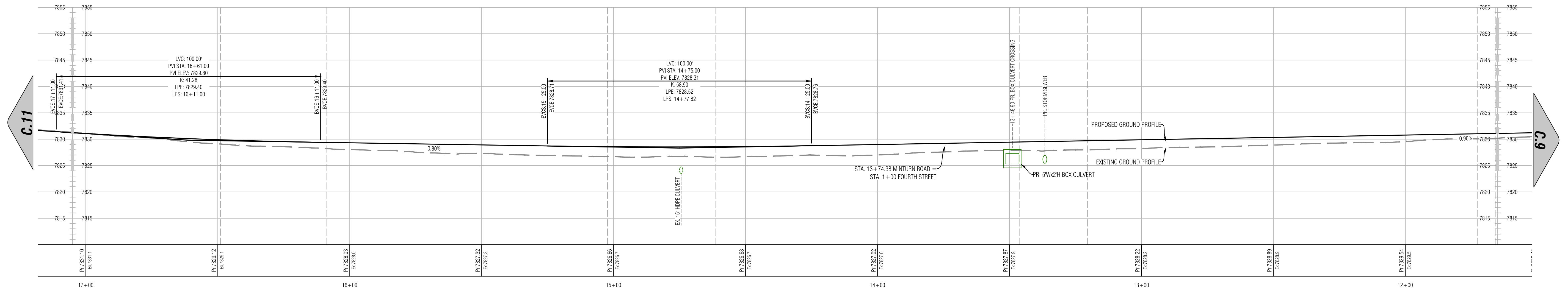
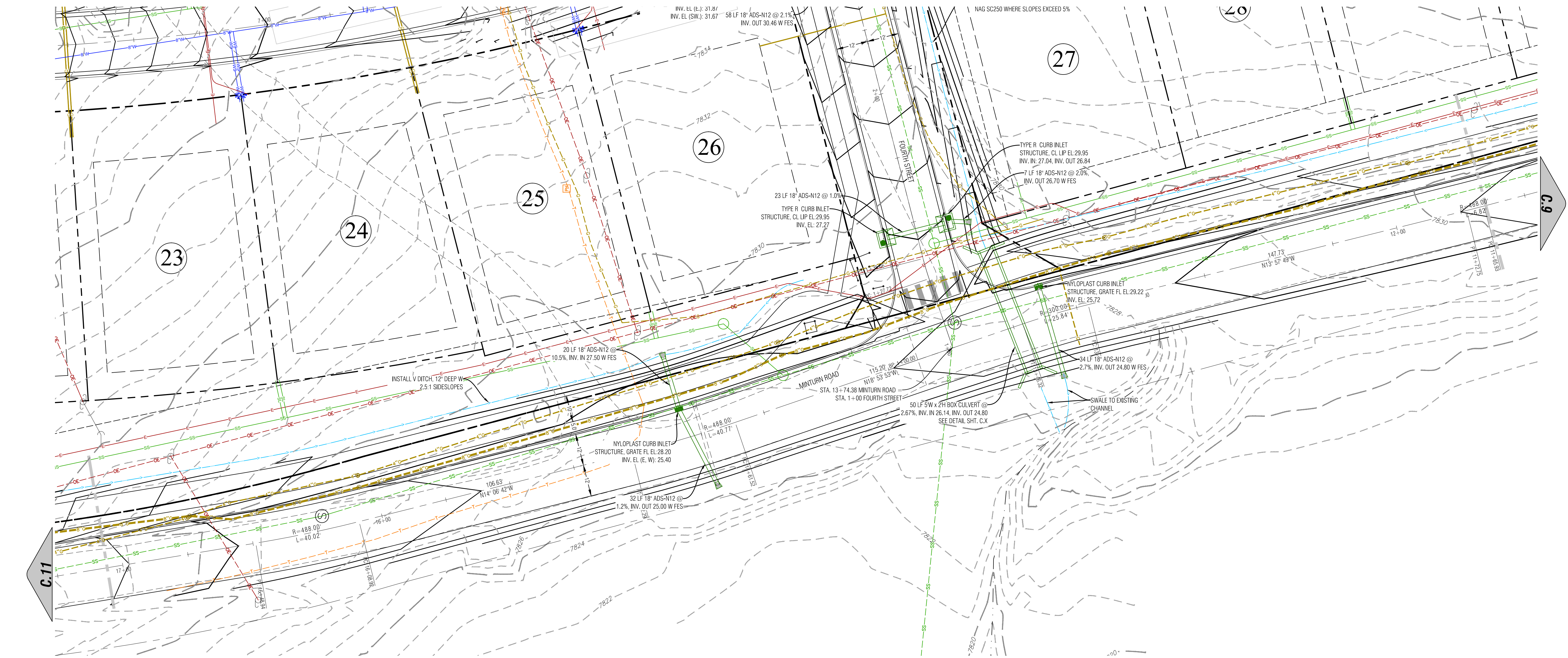
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12/26/22

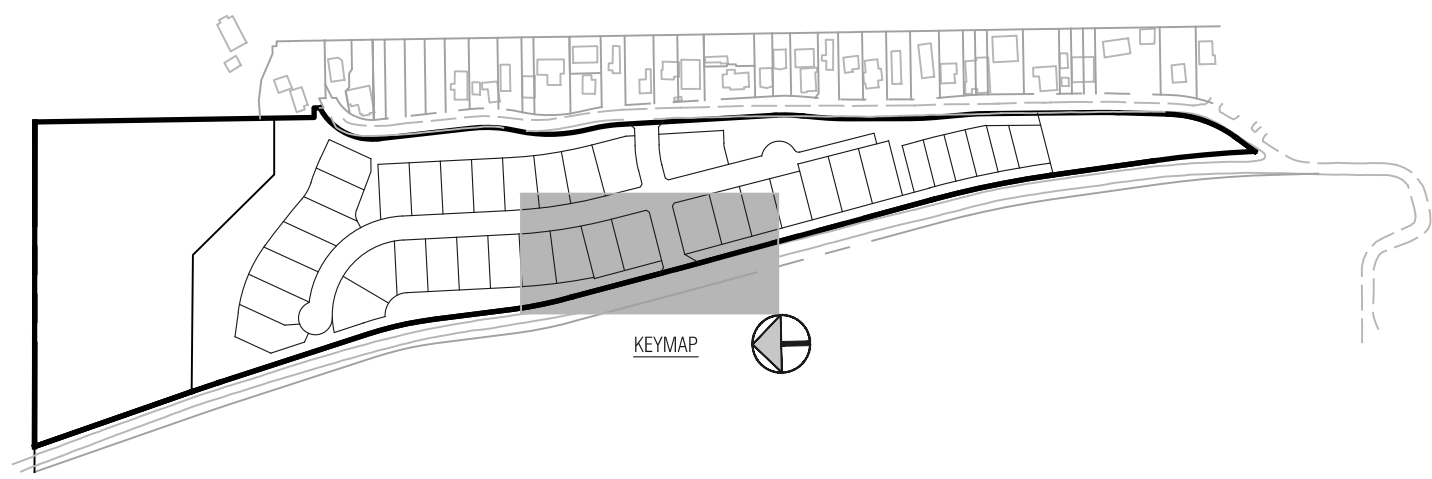
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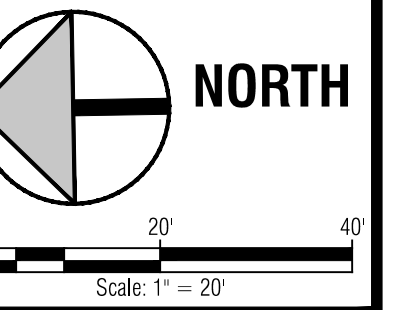
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Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If "Yes", SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

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Minturn North P.U.D.
Minturn Road Plan and Profile
Progress Print 11.19.22

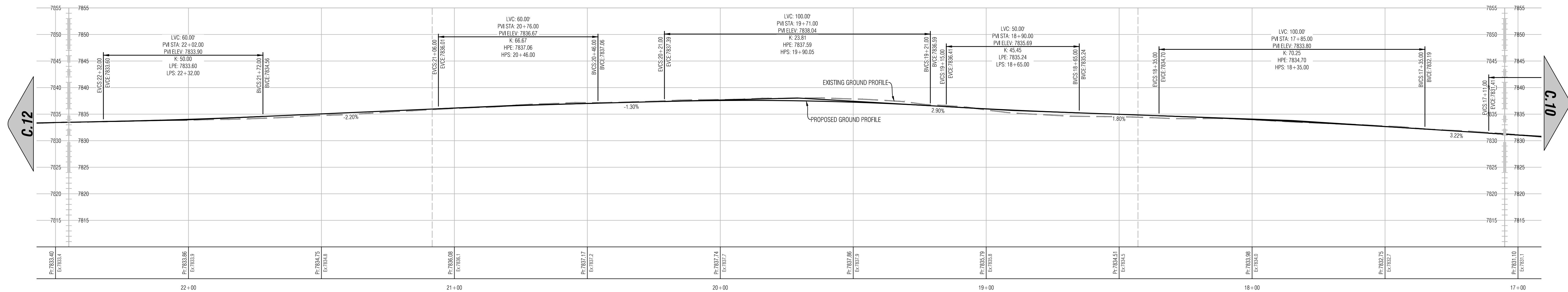
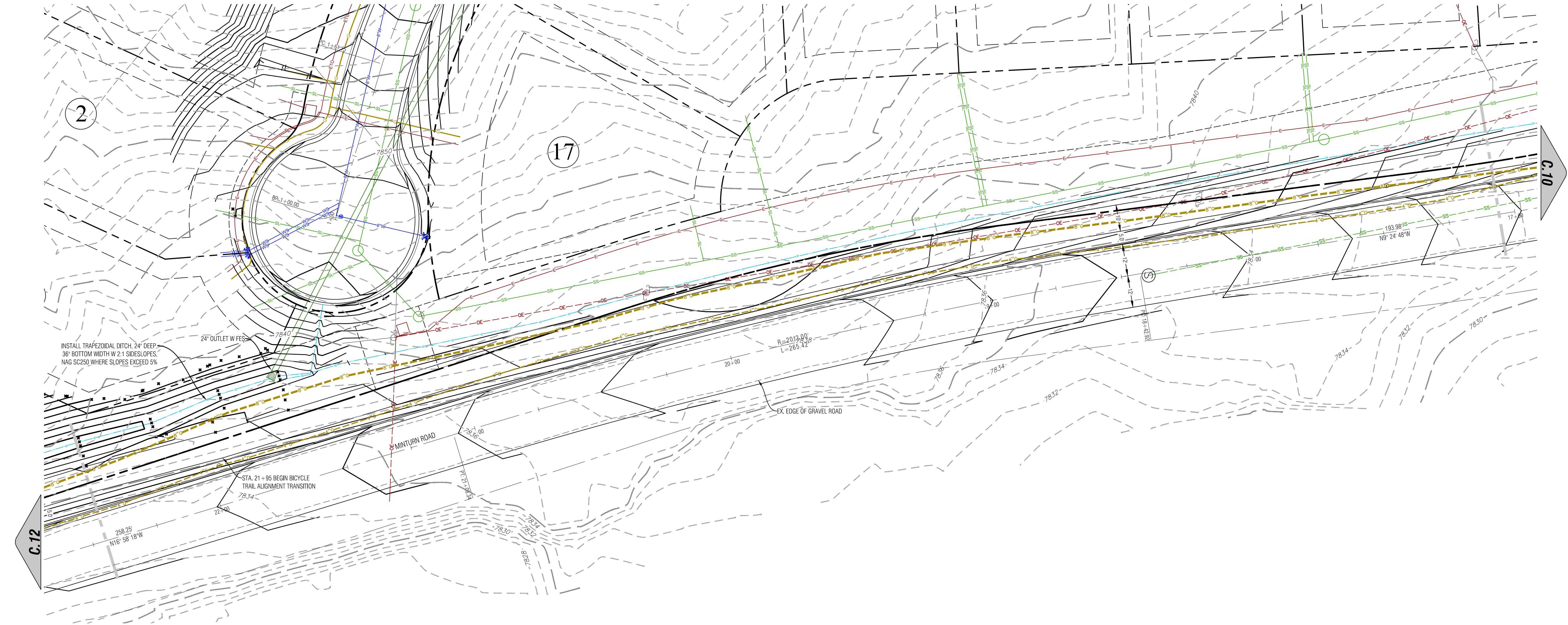
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12/28/22

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Profile: Minturn Road, Sta:17+05 to Sta:22+45
Scale: Vert.=10', Horiz.=20'

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Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If "Yes", SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

Engineer or Surveyor Seal

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970 926-1720

NORTH

0 20' 40'

Scale: 1" = 20'

811

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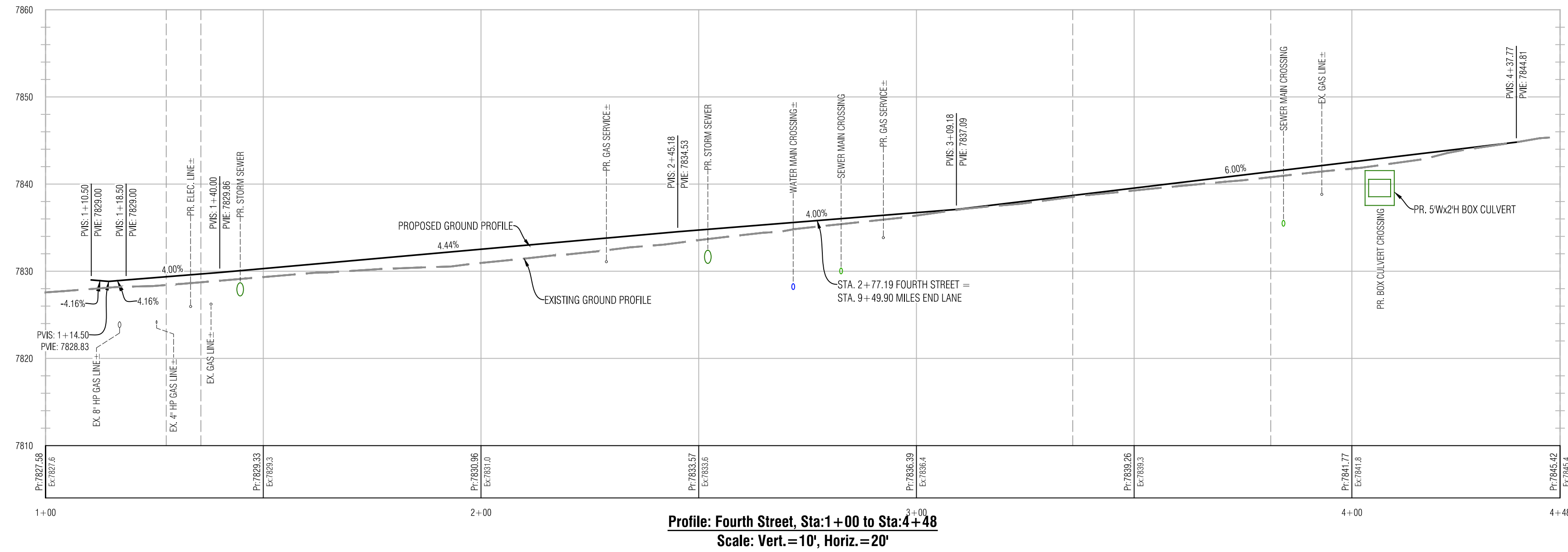
Minturn North P.U.D.
Minturn Road Plan and Profile
Progress Print 11.19.22

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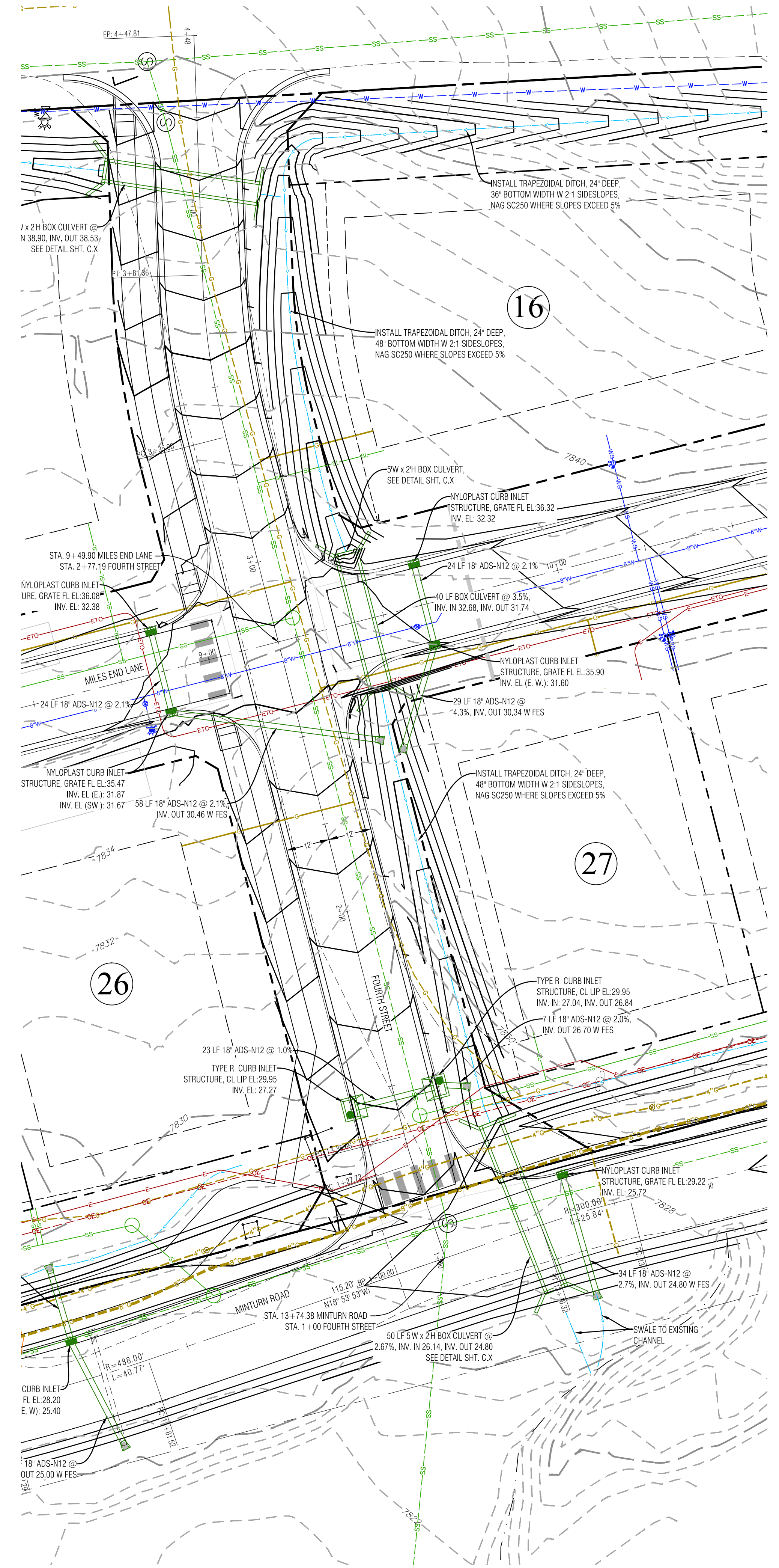
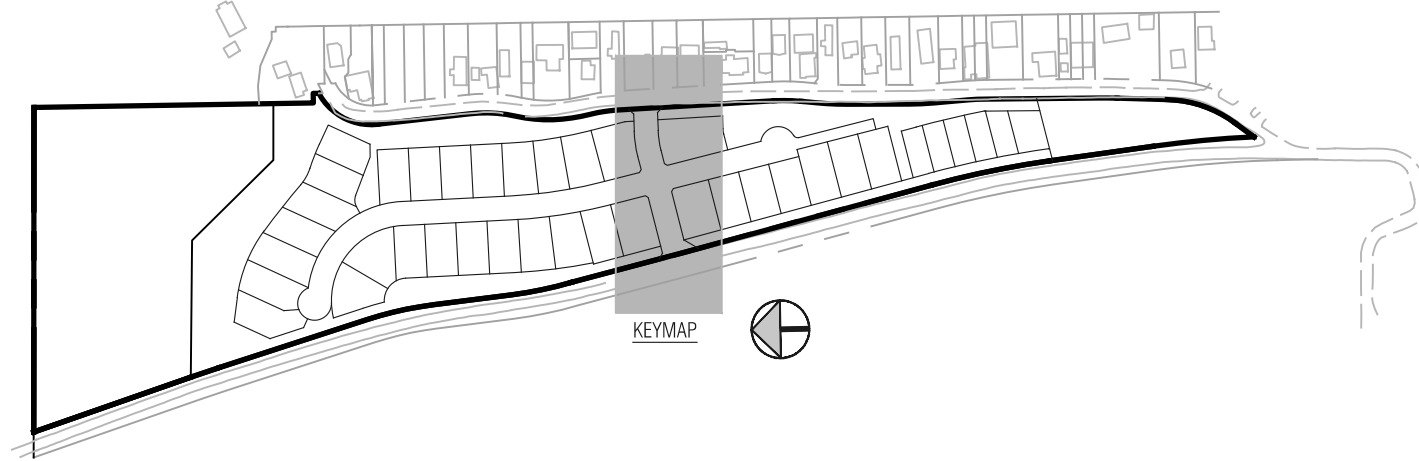
PROJECT NO.
22036
Designer:
PAH
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BU
Date:
12/26/22

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File Name: 22036 c-grading.dwg



Profile: Fourth Street, Sta.1+00 to Sta.4+48
Scale: Vert.=10', Horiz.=20'



Civil Engineering
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Boundaries Unlimited Inc.

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Glenwood Springs, CO 81601
(T) 970.945.5252
www.bu-inc.com

Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If "Yes", SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

Engineer or Surveyor Seal

NOT FOR
Review
CONSTRUCTION

Client Information:
MINTURN NORTH LAND COMPANY LLC
PO BOX 2633
EDWARDS, CO 81632
970 926-1720

NORTH

0 20' 40'
Scale: 1" = 20'

811

Know what's below.
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TOWN OF MINTURN, COLORADO

Minturn North P.U.D.

Fourth Street Plan and Profile

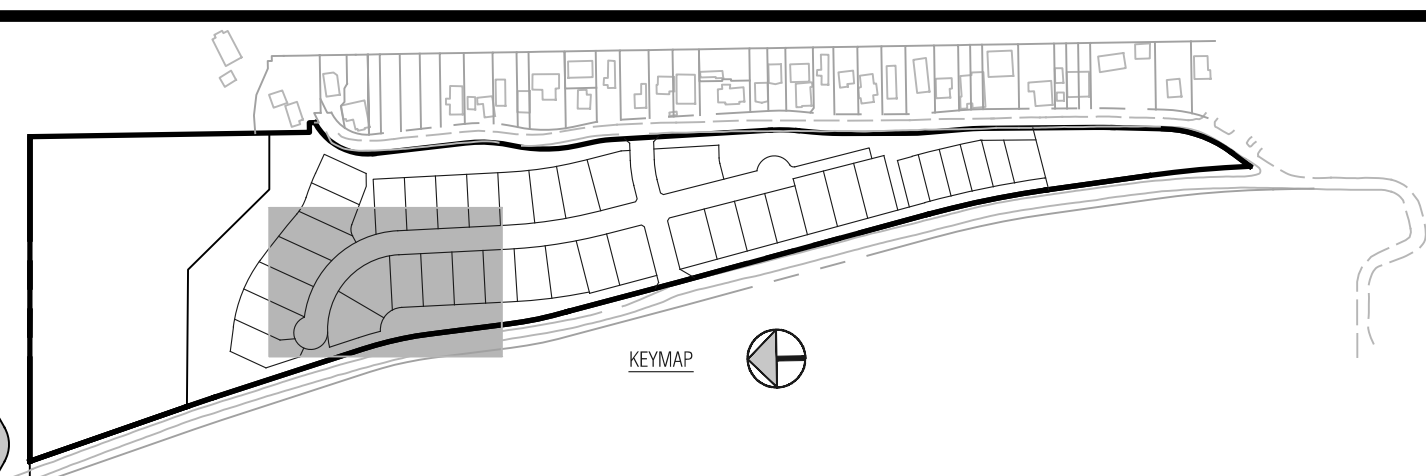
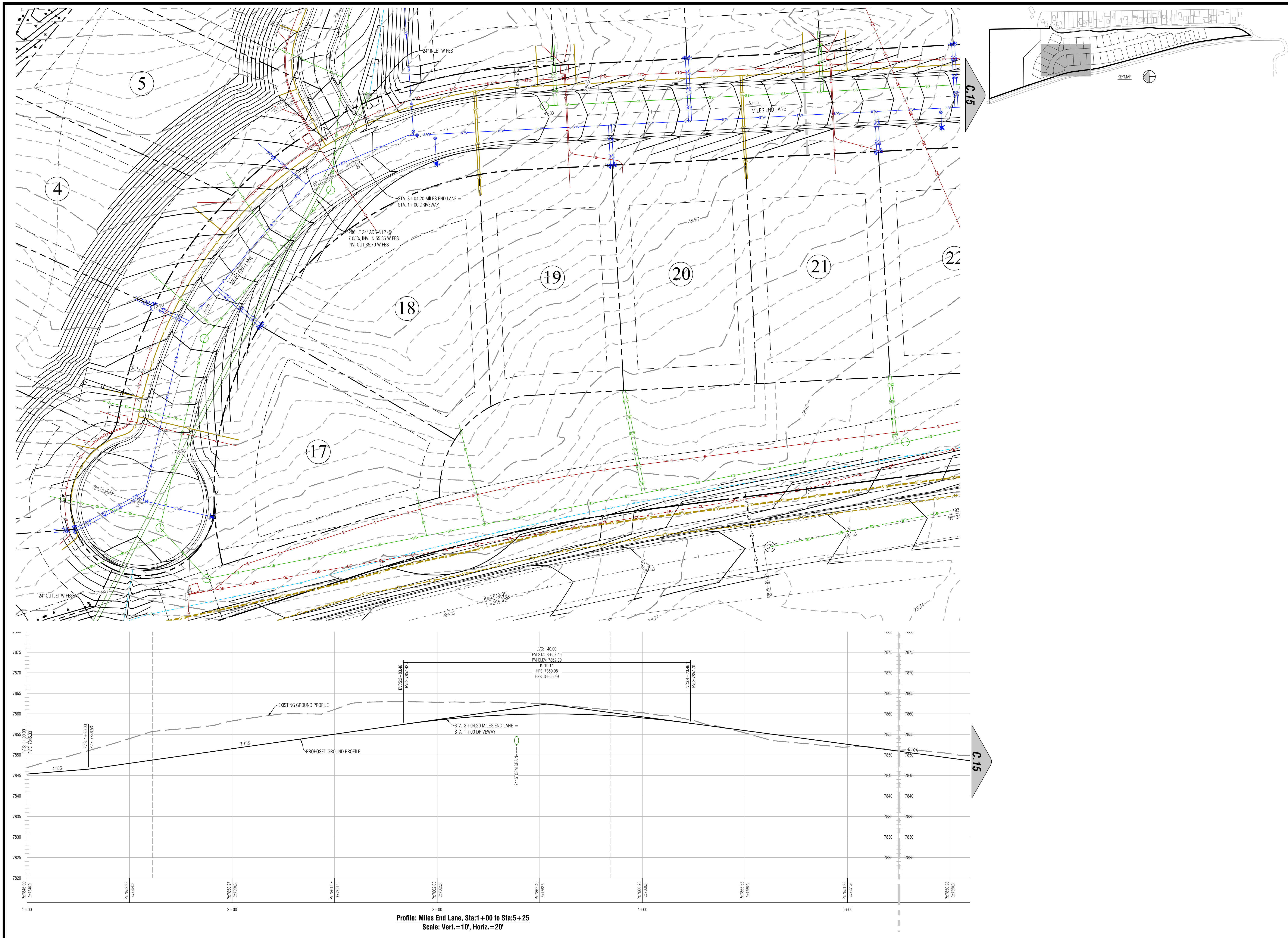
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By									
Revision									

PROJECT NO.
22038
Designer:
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Date:
12/28/22

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File Name: 22038 c-grading.dwg



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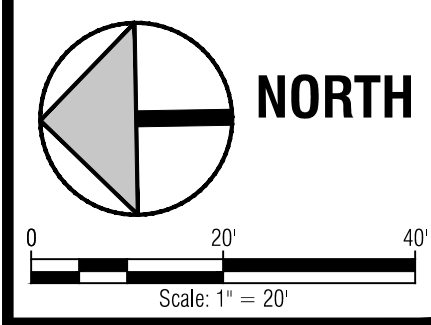
**923 Cooper Ave., Ste. 201
Glenwood Springs, CO 81601
(T) 970.945.5252
www.bu-inc.com**

Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If "Yes", SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

Engineer or Surveyor Seal



Client Information:
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TOWN OF MINTURN, COLORADO

Minturn North P.U.D.

Miles End Lane Plan and Profile

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PROJECT NO.
22036

Designer:
PJM

Drafter:
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Date:
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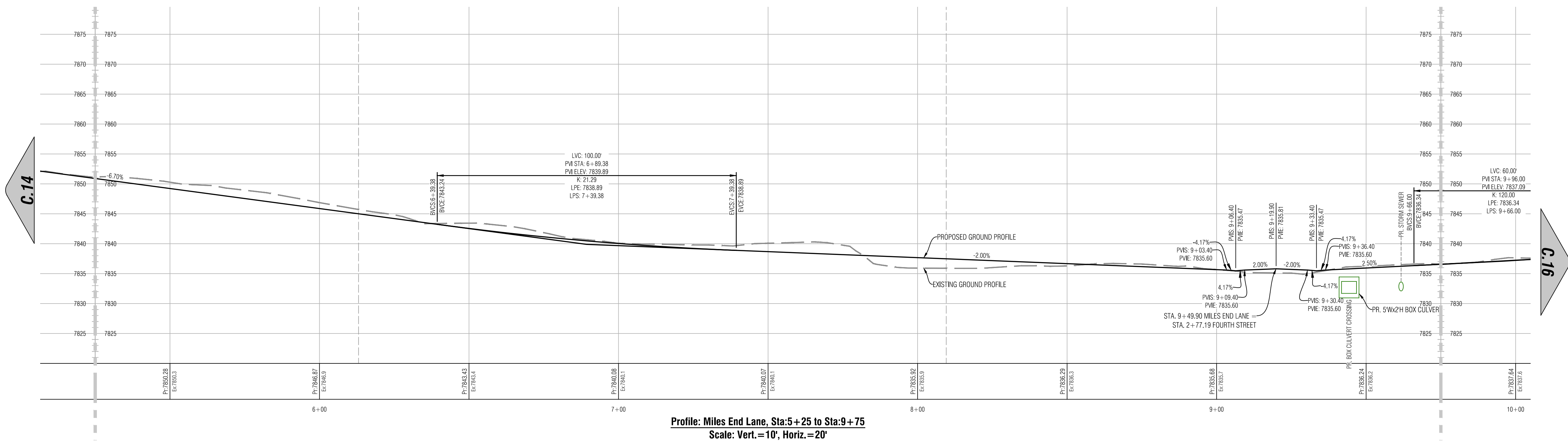
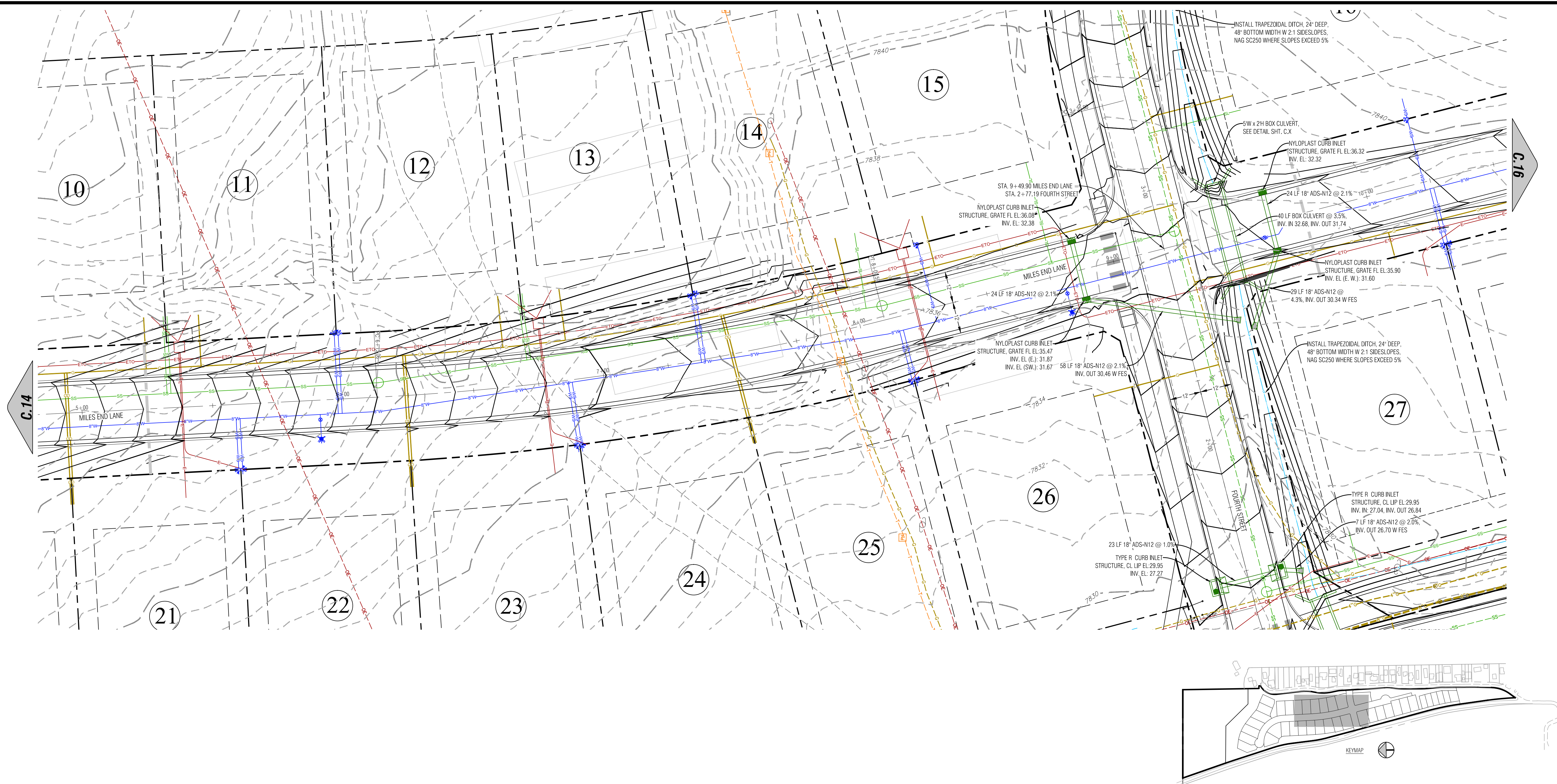
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File Name: 22036 c-grading.dwg

PROJECT NO. 22036 Designer: PAH Drafter: BUI Date: 12/25/22	Sheet C.14
File Name: 22036 c-grading.dwg	

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Profile: Miles End Lane, Sta:5+25 to Sta:9+75
Scale: Vert. = 10', Horiz. = 20'

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Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If "Yes", SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

Engineer or Surveyor Seal

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Client Information:
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970 926-1720

NORTH

0 20' 40'

Scale: 1" = 20'

811

Know what's below.
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TOWN OF MINTURN, COLORADO

Minturn North P.U.D.

Miles End Lane Plan and Profile

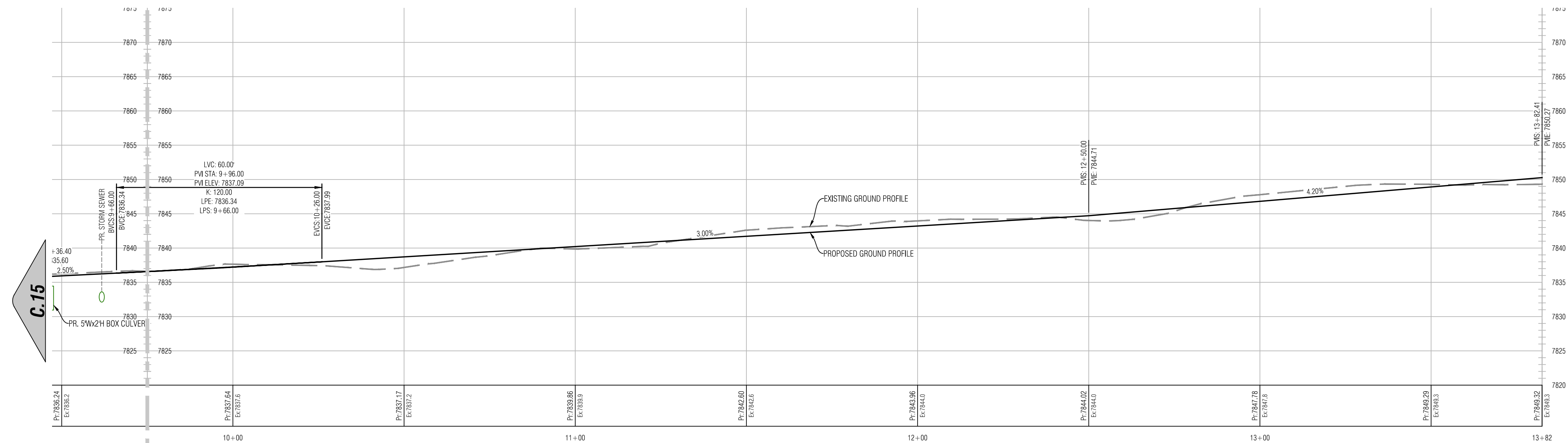
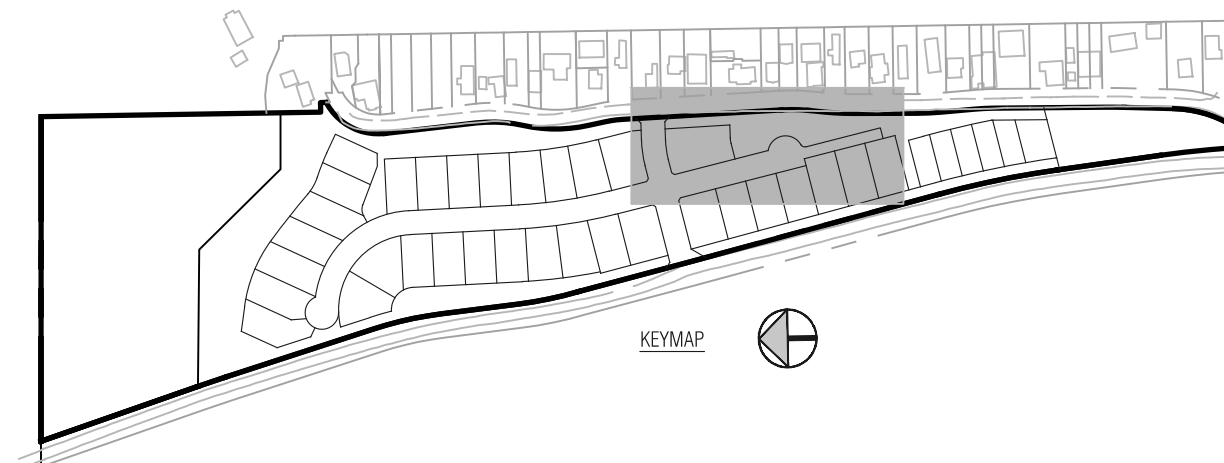
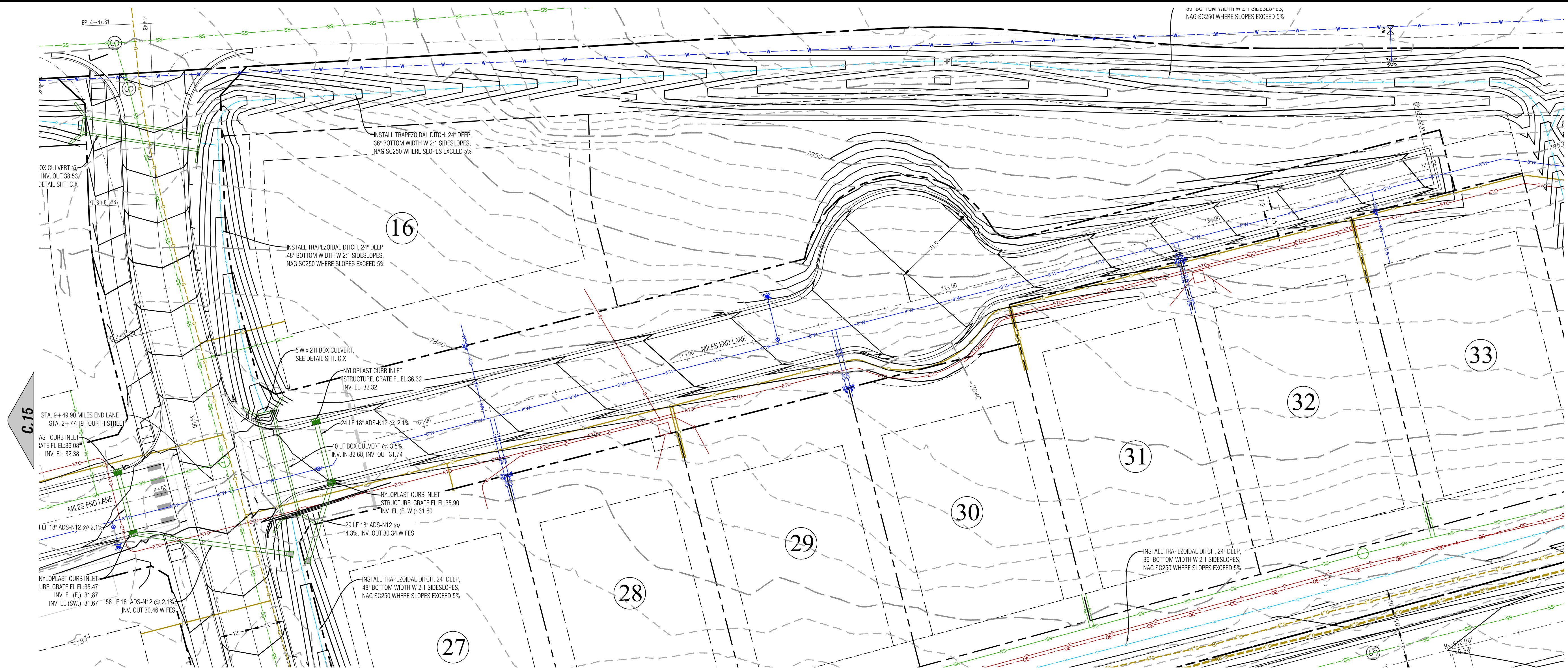
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PROJECT NO.
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Profile: Miles End Lane, Sta:9+75 to Sta:13+82
Scale: Vert.=10', Horiz.=20'

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Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If "Yes": SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

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Client Information:
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EDWARDS, CO 81632
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NORTH

0 20' 40'

Scale: 1" = 20'

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TOWN OF MINTURN, COLORADO

Minturn North P.U.D.

Miles End Lane Plan and Profile

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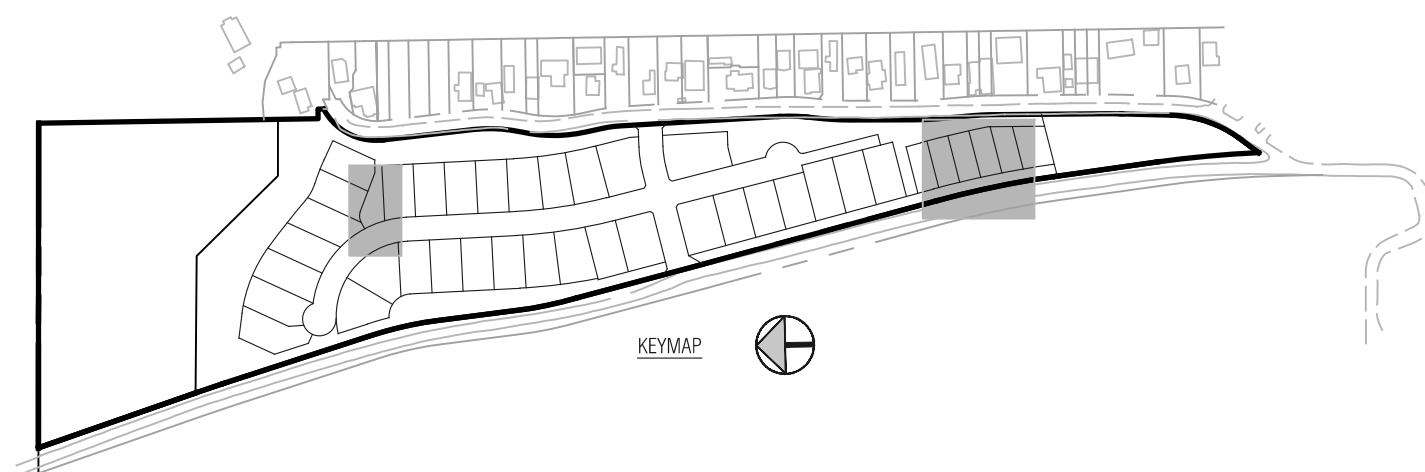
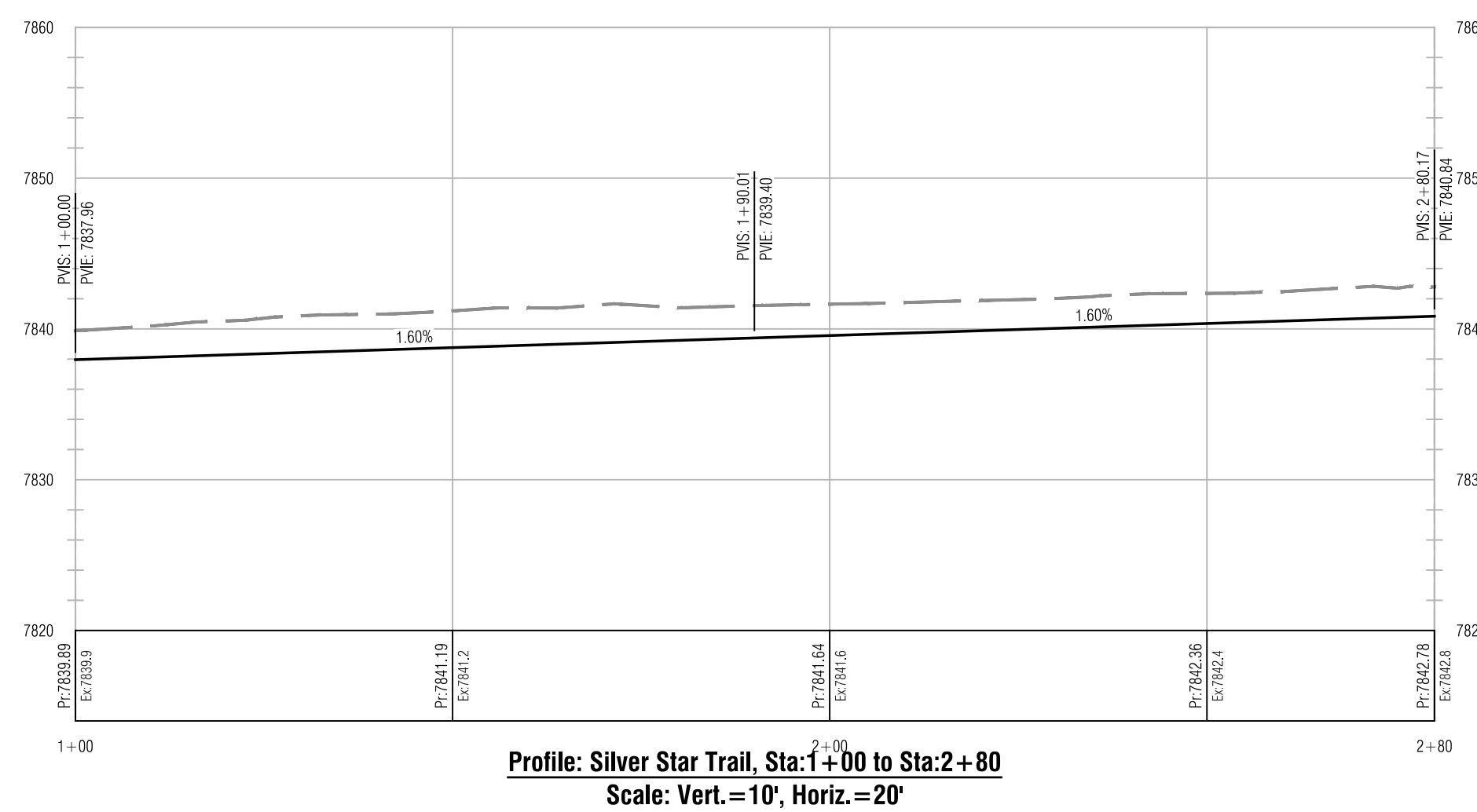
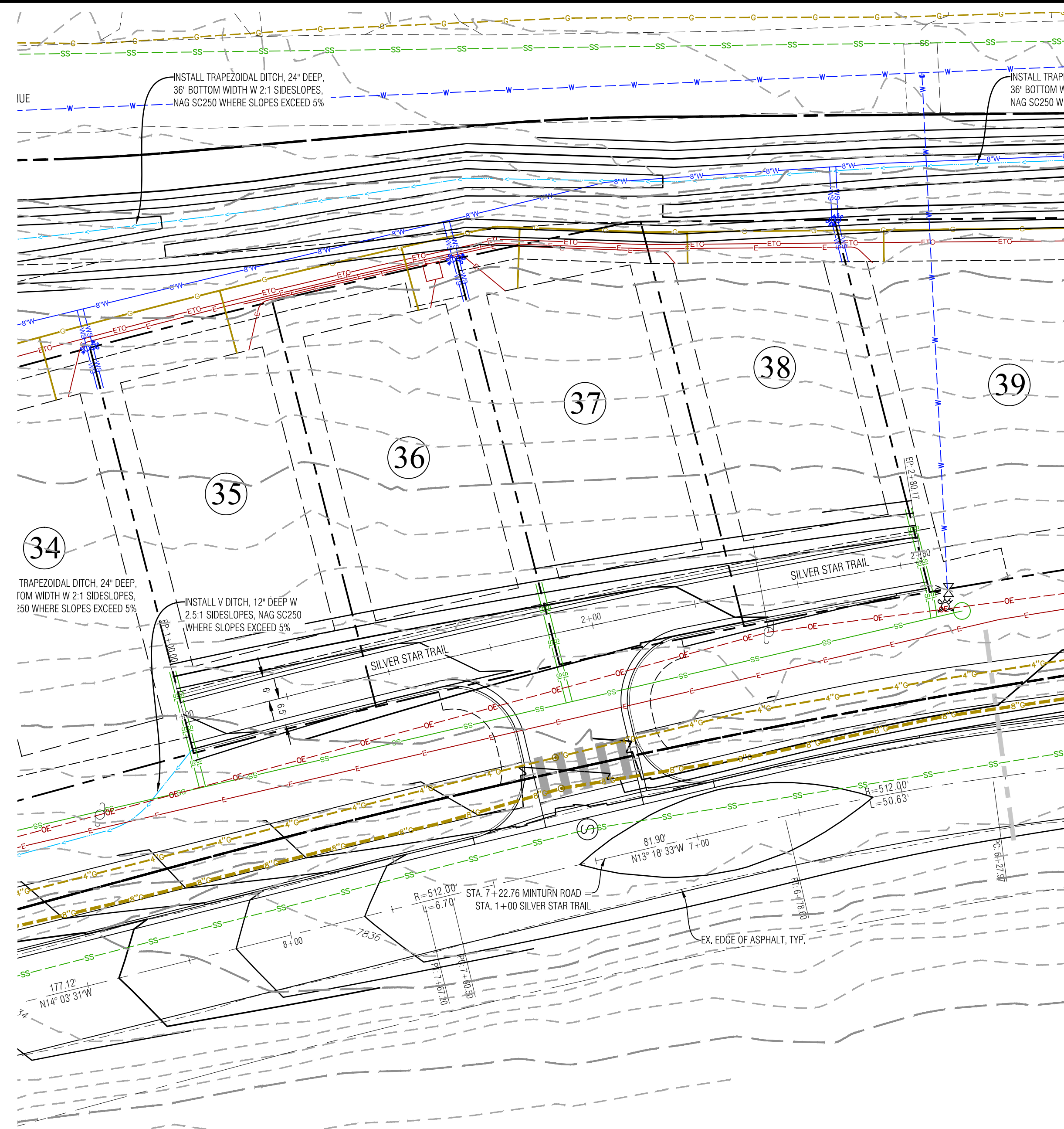
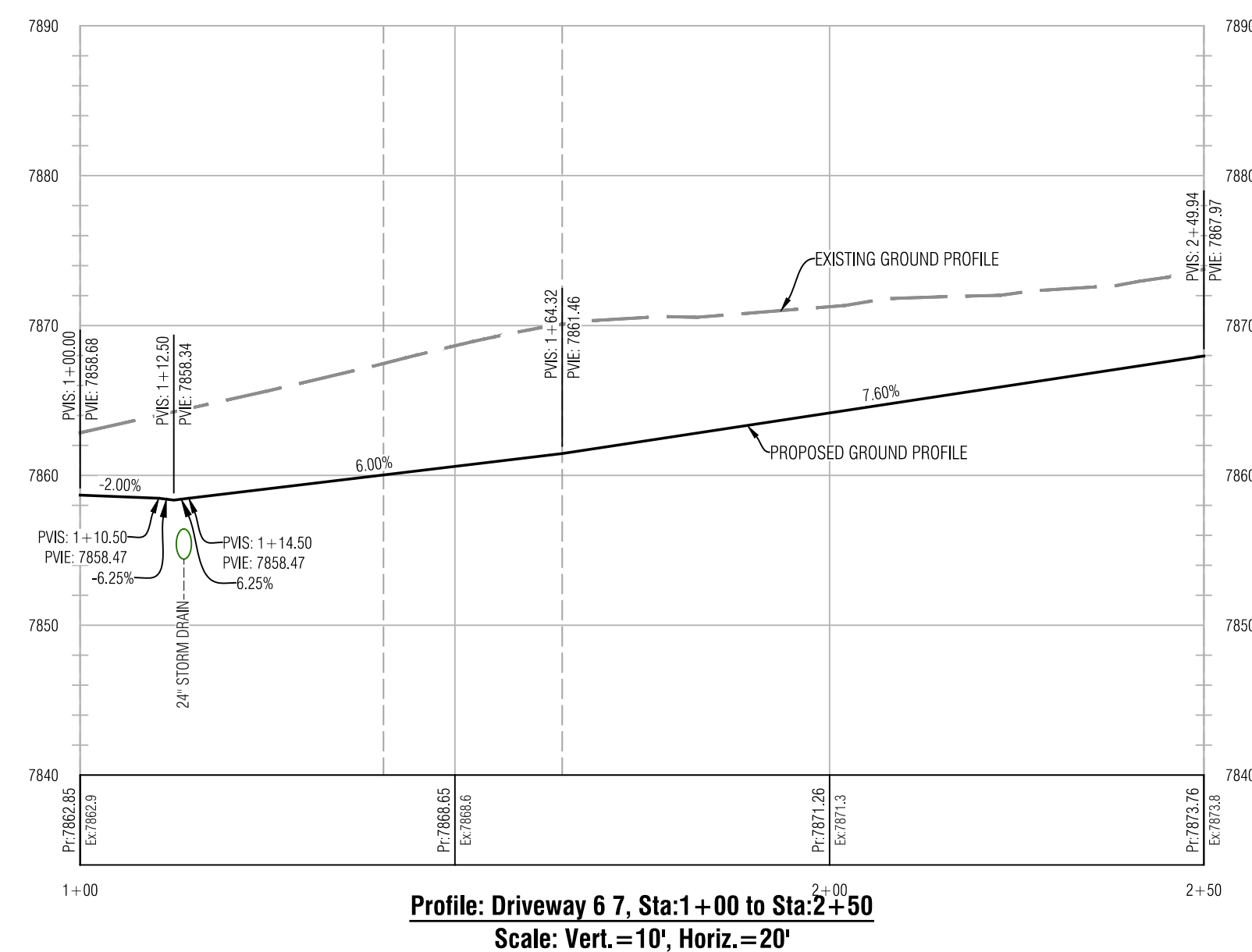
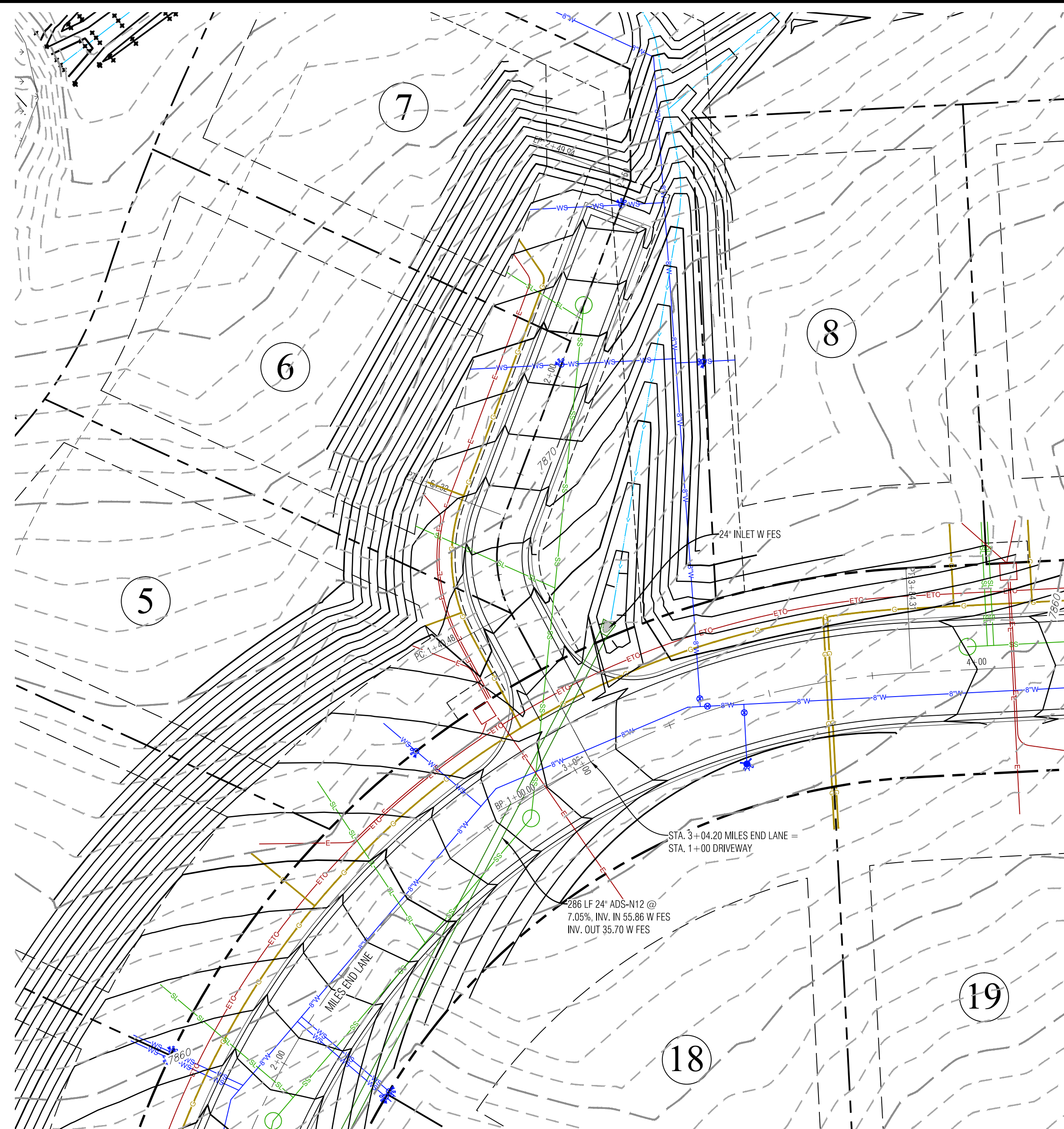
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Subsurface Utility Engineering (SUE)
Required Project: **TBD**
If "Yes", SUE Certification by:
Firm: **TBD**
Job #: **TBD**
Date: **TBD**

Engineer or Surveyor Seal

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NORTH

0 20' 40'

Scale: 1" = 20'

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Minturn North P.U.D.

Silver Star Trail Plan and Profile

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No.	Date	Revision	By
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DENVER

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Denver, Colorado 80211
Phone: 303.433.2788
Fax: 303.480.1020

GLENWOOD SPRINGS

818 Colorado Avenue
Glenwood Springs, Colorado 81601
Phone: 970.945.7755
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